



Food and Agriculture
Organization of the
United Nations

SCALING UP AGROECOLOGY TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS

**PROCEEDINGS OF THE SECOND
FAO INTERNATIONAL SYMPOSIUM**

3-5 APRIL 2018, ROME, ITALY



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PHOTO Vendors selling vegetables at the central market

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The Symposium had a great level of attendance, with the participation of 768 representatives from 72 governments, from 350 non-state actor organizations and from six United Nations (UN) organizations, who made rich discussions and dynamic inter-disciplinary exchanges possible.

FAO recognizes the important work carried out by the Members of the *Friends of Agroecology Group*¹ and its fundamental support and guidance in the organization of the Symposium. We would like to give special thanks to the Permanent Representations of Brazil, China, Côte d’Ivoire, France, Hungary, Japan, Senegal, Switzerland and Venezuela.

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A special note of appreciation to Braulio Ferreira de Souza Dias for his commitment and excellent work in chairing the Symposium.

¹ The *Friends of Agroecology Group* is composed by the Permanent Representations of Brazil, China, Côte d’Ivoire, France, Hungary, Japan, Senegal, Switzerland and Venezuela.

ABBREVIATIONS AND ACRONYMS

- ABA** Brazilian Agroecology Association
- ABC** Amrita Bhoomi Center
- AFSA** Alliance for Food Sovereignty in Africa
- AFUNADES** Asociación de Familias y Jóvenes Unidos de Nápoles
- AGFORWARD** AGroFORestry that Will Advance Rural Development
- AGREENIUM** Agricultural, Veterinary and Forestry Institute
- ANAP** Associação Nacional de Trabalhadores Pequenos
- APPI** Azim Premji Philanthropic Initiatives
- AS-PTA** Agricultura Familiar e Agroecologia
- AVSF** Agronomes et Vétérinaires Sans Frontières
- BDIRW** Barli Development Institute for Rural Communities
- BLW** Federal Office for Agriculture
- BvAT** Biovision Africa Trust
- CAE** Colectivo Agroecológico del Ecuador
- CAP** European Union Common Agricultural Policy
- CARICOM** Caribbean Community
- CBD** Convention of Biological Diversity
- CBO** Community Based Organization
- CDPM** Centre for the Development
of Community Participatory Monitoring of Resources
- CELAC** Community of Latin American and Caribbean States
- CEPAD** Cooperative Exploitation of Agricultural Products of Duekoue
- CFS** Committee on World Food Security
- CIA** Confederazione Italiana Agricoltori
- CIRAD** Centre de Coopération Internationale
en Recherche Agronomique pour le Développement
- CGIAR** Research Programme on Grain Legumes and Dryland Cereals
- CNOP** Coordination Nationale des Organisations Paysannes
- CO₂** Carbon Dioxide
- COAG** Committee on Agriculture
- COP** Conference of the Parties

- CREA** Consiglio per la Ricerca in agricoltura e l'analisi dell'Economia Agraria
- CSOs** Civil Society Organizations
- DNA** Deoxyribonucleic Acid
- EAA** Ecosystem Approach to Aquaculture
- ECOSOC** United Nations Economic and Social Council
- ECOSUR** El Colegio de la Frontera Sur
- EMBRAPA** Embrapa Fisheries and Aquaculture
- ENDA PRONAT** Environnement et Développement du Tiers Monde
- EOA-I** Ecological Organic Agriculture Initiative
- ERSTE Foundation** Die Erste österreichische Spar-Casse Privatstiftung
- EU** European Union
- FAO** Food and Agriculture Organization of the United Nations
- FAO-RAF** Integrated Production and Pest Management Programme in Africa
- FAO-RLC** FAO Regional Office for Latin America and the Caribbean
- FAO-RNE** FAO Near East and North Africa
- FFF** Forest and Farm Facility
- FFS** Farmer Field Schools
- FMNR** Farmer-Managed Natural Regeneration
- GEF** Global Environment Facility
- GFAR** Global Forum on Agricultural Research
- GHG** Global Greenhouse Gas
- GIAHS** Globally Important Agricultural Heritage System
- GIEE** Groups of Interest in Economic and Environmental issues
- GKP** Global Knowledge Product
- GMOs** Genetically Modified Organisms
- ICRAF** World Agroforestry Centre
- IFAD** International Fund for Agricultural Development
- IFOAM - Organics International** International Federation of Organic Agriculture Movements
- IFPRI** International Food Policy Research Institute
- IITC** International Indian Treaty Council
- ILO** International Labor Organization
- INNER** International Network of Eco-Regions
- INRA** Institut National de la Recherche Agronomique
- IPES-Food** International Panel of Experts on Sustainable Food Systems

- IRD** National Research Institute for Sustainable Development
- KATC** Kasisi Agricultural Traininig Centre
- KSC** Kaydara School Farm
- MAG** Ministerio de Agricultura y Ganadería
- N₂O** Nitrogen
- NGO** Non-Governmental Organization
- P4P** Purchase for Progress programme
- PGS** Participatory Guarantee Systems
- PEPB** Participatory and Evolutionary Plant Breeding
- PhD** Doctor of Philosophy
- PNG** Papua New Guinea
- RBA** Rome-based Agencies
- SAT** Sustainable Agriculture Tanzania SAT
- SBSTA** Subsidiary Body of Scientific and Technological Advice
- SDG** Sustainable Development Goal
- SFCA** Slow Food India Chef's Alliance
- SOCLA** Sociedad Científica Latinoamericana de Agroecología
- TEEB-AGRIFOOD** Economics of the Ecosystem Services and Biodiversity for Agriculture and Food
- UN** United Nations
- UNDP** United Nations Development Programme
- UNEP** United Nations Environmental Programme
- UNFCCC** United Nations Framework Convention on Climate Change
- USA** United States of America
- USAID** United States Agency for International Development
- USD** United States Dollar
- WFP** World Food Programme
- WHO** World Health Organization

SUMMARY

I. THE SECOND INTERNATIONAL SYMPOSIUM ON AGROECOLOGY: “SCALING UP AGROECOLOGY TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS”

In 2014, the First FAO International Symposium on Agroecology for Food Security and Nutrition provided an opportunity to share experiences and build the evidence base on Agroecology as a key approach in favouring transitions to sustainable agriculture and food systems. The need to understand the specific local needs and realities of Agroecology led to a series of regional multi-stakeholder seminars co-organized by FAO and partners in Latin America and the Caribbean, sub-Saharan Africa, Asia and the Pacific, China, Europe and Central Asia, and the Near East and North Africa from 2015 to 2017².

The First International Symposium and seven subsequent regional seminars brought together more than 1 400 participants from 170 countries, who provided evidence on the important contribution of Agroecology in terms of: (i) enhancing smallholder and family farmers’ adaptation and resilience to the impacts of climate change; (ii) improving food security and nutrition through healthy food and diversified diets; (iii) protecting and enhancing agro-biodiversity in support of ecosystem services such as pollination, soil health and recovery of degraded lands and forests; (iv) improving livelihoods in rural areas, and; (v) achieving a transformative change in agricultural practices towards sustainable development.

With the objective of moving from dialogue to action, in April 2018, FAO organized the Second International Symposium on Agroecology: “Scaling up Agroecology to achieve the Sustainable Development Goals” (hereafter the “Symposium”). The Symposium brought together more than 760 participants and catalysed inter-disciplinary dialogue and collaboration from a wide variety of actors. The Symposium enabled and consolidated fundamental agreements and commitments needed to scale up and scale out Agroecology at all levels in order to achieve the Sustainable Development Goals (SDGs).

Representatives from 72 governments discussed how public policies for Agroecology can enable progressive transitions to sustainable agriculture and food systems in the framework of the 2030 Agenda for Sustainable Development (2030 Agenda). Representatives from 350 non-state actors (including civil society organizations, academia and research organizations, cooperatives,

² FAO. 2018. *Catalysing Dialogue and Cooperation to Scale up Agroecology: Outcomes of the FAO Regional Seminars on Agroecology, Summary* (available at <http://www.fao.org/3/I9035EN/i9035en.pdf>)

producers' organizations and the private sector) discussed the main benefits that Agroecology provides on the ground, in terms of local innovations, practices, techniques and integrated approaches that respond to different challenges, built through dynamic interactions among farmers, scientists, researchers, consumers and practitioners. Representatives from six United Nations (UN) organizations identified opportunities to promote Agroecology at global level as well as concrete pathways to bring Agroecology into their global programmes of work as a way to support countries in the transition towards sustainable food and agriculture.

The Symposium produced the following outcomes:

- » The launch of the Scaling up Agroecology Initiative, in collaboration with UN partners³.
- » The agreement to include the key outcomes of the Symposium into a discussion paper to be submitted to FAO governing bodies, in particular to the Twenty-sixth Session of the Committee on Agriculture (COAG) held in October 2018, and to the Forty-first Session of the FAO Conference, to be held on July 2019⁴.
- » The validation of a set of 10 Elements of Agroecology, circumscribing the salient features of Agroecology⁵.
- » A Chair's Summary which outlines the main conclusions and agreements reached during the Symposium discussions, and addresses current challenges and opportunities to make agriculture more sustainable through Agroecology⁶.
- » The presentation of 45 case studies, featuring successful agroecological experiences and innovations from different countries, regions and contexts (included in Chapter 7 "*Agroecology in Action: successful experiences and innovations*").

Participants of the Symposium acknowledged that innovation for Agroecology is more than just the invention of new technologies or products; it entails processes where socially and environmentally sustainable ideas, technologies, products and practices emerge through stakeholder interaction. Participants also emphasized that agroecological innovations should be people centered, meet smallholder and family farmers' and consumers' needs, be co-created, combine research and traditional knowledge, be locally adaptable, be based on open source data and technology, and enhance capacity for collective action and responsible investments.

³ Please refer to Appendix A for the complete text of the Scaling up Agroecology Initiative, which is also available at <http://www.fao.org/3/I9049EN/i9049en.pdf>

⁴ The outcomes of the Symposium were included in the paper "Agroecology: from Advocacy to Action" which was submitted for discussion to the Twenty-sixth Session of the Committee on Agriculture (COAG) held in October 2018 and is also available at http://www.fao.org/fileadmin/user_upload/bodies/COAG_Sessions/COAG_26/MX456_5/MX456_COAG_2018_5_en.pdf

⁵ The publication "*The 10 Elements of Agroecology: guiding the transition to sustainable food and agricultural systems*" can be found in Appendix B and is also available at <http://www.fao.org/3/i9037en/I9037EN.pdf>

⁶ Please refer to Appendix C for the full text of the Chair's Summary which is also available at <http://www.fao.org/3/CA0346EN/ca0346en.pdf>

A. THE SCALING UP AGROECOLOGY INITIATIVE

The Scaling up Agroecology Initiative (hereafter the “Initiative”) was launched during the Symposium in cooperation with major UN partners and received wide support from 760 participants representing national and international institutions, and constituencies, who committed to engage in its adoption and implementation through increased partnerships and collaboration (Appendix A). The Initiative is proposed as a way forward and as a strategic approach to promote and achieve the 2030 Agenda through Agroecology, in particular SDG 2.

The Initiative aims to accompany and support national agroecological transition processes through policies and technical capacities that build synergies among countries. The Initiative will provide a framework for concerted action with other UN agencies and partners and include a funding strategy for its implementation.

A ten-year action plan will be developed by FAO and UN partners to foster a successful implementation of the Initiative. The implementation will focus on target countries through three areas of work: (i) knowledge and innovation for sustainable agriculture and food systems; (ii) policy processes for transformation of agriculture and food systems, and; (iii) building connections for transformative change (Table 1).

TABLE 1 Main areas of work and key actions of the Scaling up Agroecology Initiative

AREAS OF WORK	KEY ACTIONS TO SCALE UP AGROECOLOGY
I. KNOWLEDGE AND INNOVATION	<ol style="list-style-type: none"> 1. Strengthen the central role of family farmers and their organizations in safeguarding, utilizing and accessing natural resources 2. Foster experience and knowledge sharing, collaborative research and innovations
II. POLICY PROCESSES	<ol style="list-style-type: none"> 3. Promote markets for agroecologically based products for health, nutrition and sustainability 4. Review institutional policy, legal and financial frameworks to promote agroecology transitions for sustainable food systems
III. BUILDING CONNECTIONS	<ol style="list-style-type: none"> 5. Take agroecology to scale through integrated and participatory territorial processes

Partnerships will be key in the implementation of the Initiative. UN partners and related bodies can join efforts in a coordinated way to scale up Agroecology through policies, science, investments, technical support and awareness, according to their mandates and expertise, in support of the SDGs.

Governments can share knowledge and expertise through South-South and Triangular Cooperation programmes to scale up and scale out successful agroecological approaches between countries and regions. UN agencies and bodies can jointly identify priorities and strategies for the Initiative and implement specific activities, building on synergies between normative work and operational functions.

Non-state actors play a vital role in developing, implementing and advocating for agroecology. Family farmers and their organizations have developed the knowledge, capacities and networks that must be at the core of creating sustainable food systems through Agroecology. National, regional and international research institutions are pioneering transdisciplinary participatory research to tackle complex problems facing food and agricultural systems. Consumers and the private sector create the demand and also opportunities for inclusive and equitable food systems.

B. AGROECOLOGY IN FAO GOVERNING BODIES

As agreed during the Symposium, the outcomes of the Symposium were included in the discussion paper “Agroecology: from advocacy to action” (COAG/2018/5), which was submitted to the Twenty-sixth Session of the Committee on Agriculture (COAG). COAG is one of FAO’s Governing Bodies providing overall policy and regulatory guidance on issues relating to agriculture, livestock, food safety, nutrition, rural development and natural resource management.

The discussion paper provided an overview of FAO’s work on Agroecology to strengthen sustainable food and agricultural systems and achieve Zero Hunger, particularly in response to challenges related to climate change, protection and preservation of biodiversity and ecosystems, conservation and recovery of degraded natural resources (forests, soils and water), and reduction of rural poverty among smallholders and family farmers. The paper also summarized the outcomes of the Symposium, including the launch of the Scaling up Agroecology Initiative and the 10 Elements of Agroecology.

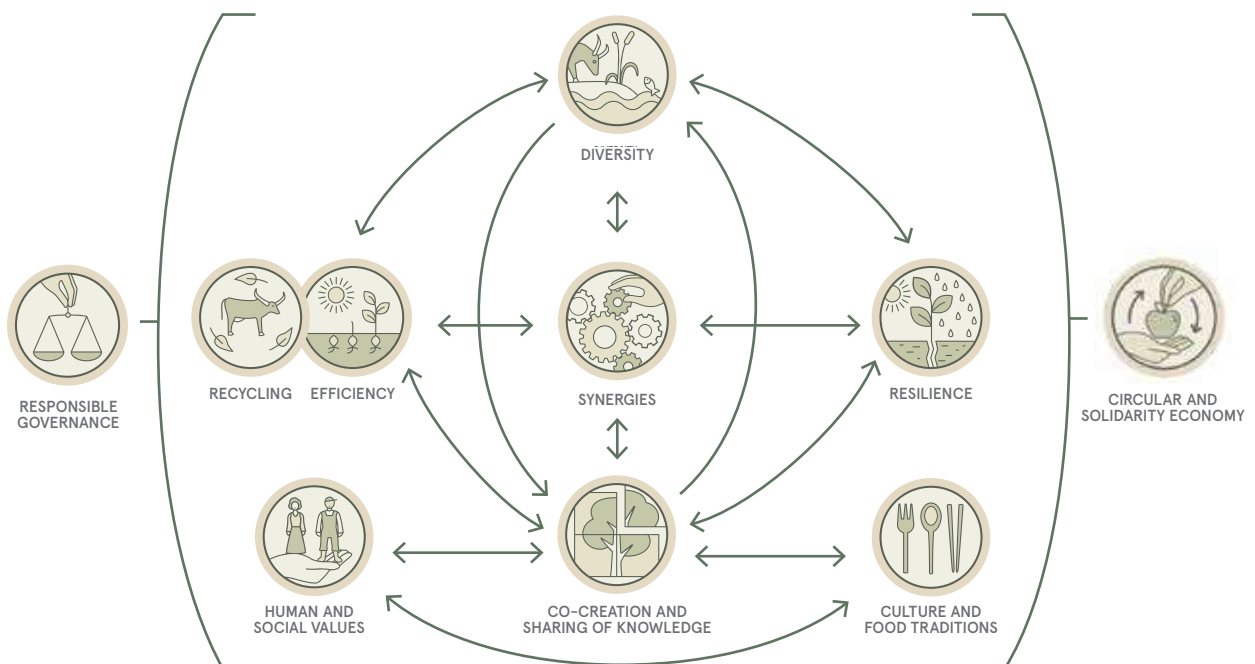
The Twenty-sixth Session of the COAG discussed and welcomed the outcomes of the Symposium. In particular, the Committee:

- a. welcomed the Scaling up Agroecology Initiative and requested FAO to develop an action plan with partners, taking into account country needs and capacities;
- b. supported the *10 Elements of Agroecology*, as presented by FAO, as a guide to one of the ways to promote sustainable agriculture and food systems, as benefits each country’s national context, and requested FAO to further revise them to reflect the discussions of this session (to be presented to the FAO Council together with the COAG report);
- c. requested FAO to continue applying agroecology as one of the approaches to implement the five principles of sustainable food and agriculture in support of the SDGs and to assist countries and regions to engage more effectively in the transition processes towards sustainable agriculture and food systems by:
 - i. strengthening normative, science and evidence-based work on agroecology, developing metrics, tools and protocols to evaluate the contribution of Agroecology and other approaches to the transformation of sustainable agriculture and food systems;
 - ii. catalysing scientific evidence and co-creation of knowledge and innovation to facilitate its dissemination; and

- iii. providing policy and technical support to countries, upon their request, including capacity development of smallholders and family farmers.
- d. requested the COAG Secretariat to prepare, in collaboration with the COAG Bureau, a draft resolution on the further integration of sustainable agricultural approaches, including agroecology, in the future planning activities of the Organization to be discussed in the next Council (Para 13-17, C 2019/21 Rev.1).

C. THE 10 ELEMENTS OF AGROECOLOGY

The 10 Elements emanated from the FAO regional seminars on Agroecology, and aim to guide countries in transforming their food and agricultural systems to mainstream sustainable agriculture on a large scale to achieve Zero Hunger and multiple other SDGs. The elements are: 1. Diversity; 2. Co-creation and sharing of knowledge; 3. Synergies; 4. Efficiency; 5. Recycling; 6. Resilience; 7. Human and social values; 8. Culture and food traditions; 9. Responsible governance; 10. Circular and solidarity economy. (Please refer to Appendix B for the publication *The 10 Elements of Agroecology: guiding the transition to sustainable food and agricultural systems*). The 10 Elements of Agroecology are interlinked and interdependent.



The 10 Elements of Agroecology are based on seminal scientific literature on Agroecology – in particular, Altieri’s five principles of agroecology⁷ and Gliessman’s five levels of agroecological transitions⁸. This scientific foundation was complemented by discussions held in workshop settings during FAO’s multi-actor regional meetings on Agroecology from 2015 to 2017, which incorporated civil society values on Agroecology, and subsequently, several rounds of revisions by international and FAO experts.

D. THE CHAIR’S SUMMARY

The Summary outlines the main conclusions and agreements reached during the Symposium discussions, and refers to the current challenges and opportunities to make agriculture more sustainable through Agroecology: reducing the impact on the environment, soil and water; increasing biodiversity; reducing natural resources depletion; and building resilience to climate change.

It also identifies possible ways forward, including opportunities and needs to be addressed with partners to better coordinate actions and support further progress in the Scaling up Agroecology Initiative. The way forward also refers to the opportunities for synergies provided by the UN Decade on Family Farming 2019–2028 and the UN Decade of Action on Nutrition 2016–2025.

The important role of non-state actors in promoting Agroecology is also highlighted in the document, including civil society organizations (CSOs), academia and research organizations, foundations and funding agencies.

E. WAY FORWARD

Following guidance received from Governing Bodies, FAO is engaged in the implementation of the Initiative, in close collaboration with UN agencies (including International Fund for Agricultural Development, World Food Programme, United Nations Environmental Programme, United Nations Development Programme, World Health Organization and Convention of Biological Diversity) partner governments and non-state actors. In the framework of the Initiative’s three areas of work, FAO is carrying out the following activities:

- a. Development of a ten-year action plan to implement the Initiative based on agreements with partners and taking into account country needs and capacities;
- b. Development of a global knowledge product, which includes a global database on Agroecology, an analytical framework and matrix of indicators for policymaking to assess the economic, social and environmental performance of Agroecology and move beyond the paradigm of simply increasing yields;

⁷ Altieri, M.A. 1995. *Agroecology: The Science of Sustainable Agriculture*. CRC Press.

⁸ Gliessman, S.R. 2015. *Agroecology: The Ecology of Sustainable Food Systems*. 3rd Edition. Boca Raton, FL, USA, CRC Press, Taylor & Francis Group.

- c. Partnering with farmers, scientists and researchers to promote participatory inter-disciplinary research and innovation processes which are people centered, locally adapted, low cost and enhances livelihoods' autonomy;
- d. Building indicators to collect evidence on the linkages between agroecological approaches and resilience building in response to climate change challenges;
- e. Implementation at national levels. Project proposals for implementation at country levels are being formulated with partners and local national actors in focus countries;
- f. Strengthening synergies with the UN Decade of Family Farming 2019–2028. The Initiative will join efforts with the work plan of the Decade to raise awareness of, and support for, the inter-linkages between Agroecology and family farming. In particular, there are opportunities for collaboration in the areas of awareness and knowledge creation, promotion of best agroecological practices for smallholder and family farmers, increased pro-poor investments for Agroecology, contributing to selected SDG indicators, and implementation of national policies and programmes;
- g. Strengthening synergies with the UN Decade of Action on Nutrition 2016–2025. Collaboration will highlight the contribution of Agroecology to sustainable food systems that deliver healthy diets and improved nutrition. Agroecology contributes to the Nutrition Decade's vision of addressing malnutrition in all its forms by applying sustainable food production and effective natural resource management for healthy diets.

Agroecological approaches offer an opportunity to implement institutional innovations that prioritize working across different agriculture and food sectors, favouring transitions and synergies across all stages of the food system. Agroecology enables the design of inter-ministerial legal frameworks, creating synergies and engaging a variety of sectors and partners to simultaneously achieve inter-linked sustainability objectives.

Through the Initiative, FAO stands ready to assist countries in the implementation of agroecological transitions towards sustainable agriculture and food systems in support of the SDGs. However, this can only be achieved by working in partnership and fostering participatory inter-disciplinary collaboration among different actors at all levels.

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UNIVERSITÀ DEGLI STUDI ROMA TRE	Gabrielle Edwards	Student
	Carlotta Silanos	Student
WORLD FARMERS' ORGANISATION	Maria Giulia De Castro	Junior Policy Officer
	Maximilian Martin Dieter	Policy Officer
	Arianna Giuliadori	Secretary General
	Luisa Volpe	Senior Policy Officer
WORLD FUTURE COUNCIL FOUNDATION	Daniel Dahm	Senior Advisor
	Alexandra Wandel	Director
WORLD PERMACULTURE ASSOCIATION	Giuseppe Tallarico	General Manager
BAYER CROP SCIENCE	Martin Märkl	Stakeholder Engagement Officer
ETHANOL EUROPE	James Cogan	Policy Analyst
INTERNATIONAL AGRI-FOOD NETWORK	Brian Baldwin	Development and Policy Advisor
	April Dodd	Partnership Officer
	Siddharth Mehta	Executive Vice President
	Benjamin Robinson	Policy Coordinator



CHAPTER 1

OPENING PLENARY SESSION

- OPENING REMARKS
- WELCOME ADDRESS
- KEY NOTE ADDRESS
- POLICY ORIENTATIONS

1.1 OPENING REMARKS

José Graziano da Silva

Director-General, Food and Agriculture Organization of the UN (FAO)

In September 2014, FAO organized the First International Symposium on Agroecology. On that occasion, governments, civil society, the private sector and research institutions had the opportunity to share experiences on the benefits of Agroecology as an important approach to make agriculture more sustainable and compatible with the 2030 Development Agenda.

Following the First International Symposium, regional meetings were organized in Latin America, sub-Saharan Africa, Asia and the Pacific, and in Europe and Central Asia. More than 1400 participants from 170 countries have been involved in this global effort to discuss and highlight the importance of Agroecology. FAO also launched the website “Agroecology Knowledge Hub” to boost exchange and collaboration on Agroecology.

The Second International Symposium aims to compile and build on the outcomes of the regional meetings, and provides an opportunity to discuss how to elaborate and implement policies that can help scale up Agroecology and accelerate achieving the Sustainable Development Goals (SDGs).

Today, the world still produces food mainly based on the principles of the Green Revolution. Most of this production is based on high-input and resource-intensive farming systems which have a high cost for the environment and the society. As a result, soils, forests, water, air quality and biodiversity continue to degrade. Still, this focus on increasing production at any cost has not been sufficient to eradicate hunger, despite the fact that nowadays we produce enough food to feed everyone. In addition, we are experiencing a global epidemic of obesity and malnutrition. This situation is unsustainable.

We have reached an inflection point. We must promote transformative changes to the way we produce and consume food. We must develop truly sustainable food systems that offer healthy and nutritious food, while also preserving the environment. Agroecology can offer several contributions to this process.

One of the main conclusions from the regional meetings was that Agroecology transcends the farm *per se*, addressing relevant components and their interactions in the food system, providing significant economic, social and environmental co-benefits. In fact, Agroecology can improve the resilience of farmers, especially in developing countries where hunger is concentrated. It can contribute to boosting the local economy. It can safeguard natural resources and biodiversity, as well as promote adaptation to and mitigation of climate change. It can also promote local culture and traditional knowledge.

These multiple benefits make Agroecology an important path for meeting the 2030 Agenda and addressing the interlinked challenges.



To scale up Agroecology, three important issues need to be highlighted: (i) this Symposium should produce a declaration, which would include all the decisions adopted by consensus; (ii) the decisions adopted by the Symposium will be submitted to FAO's Committee on Agriculture (COAG) to be held in the first week of October and to the FAO Conference to be held in July 2019; (iii) it is essential to include Agroecology in legal and regulatory frameworks at country level. There are approximately 30 countries from different continents that have already adopted legal frameworks to promote Agroecology, but to move forward, we need the engagement of more governments and policy makers around the globe. In this context, I wish to express my gratitude for the important work carried out in Rome by the Friends of Agroecology Group.

During the First International Symposium, I said we were opening a window in the cathedral of the Green Revolution and bringing the agroecological perspective to the heart of the debate on the future of food and agriculture. Since then much has been done, and I wish to acknowledge with deep appreciation the important work that has been done by the former French Minister, Stéphane Le Foll, to boost Agroecology in Europe and in many other parts of the world. I also wish to recognize the pivotal role of civil society organizations in the global effort to promote Agroecology.

While much has been done, much is still to be achieved. We have reached the moment where we must consolidate and scale up Agroecology and I hope this Second International Symposium will help pave the way for creating more sustainable and fair food systems for all. No one can be left behind.

1.2 WELCOME ADDRESS

Gilbert F. Hougbo

President, International Fund for Agricultural Development (IFAD)

Transforming food systems to be genuinely sustainable and resilient means making radical changes at economic, social and cultural levels, while being environmentally sound. Promoting such a change requires a holistic approach and a combination of investments, policy changes and other interventions. Taking a holistic approach is key to guide investments that generate multiple benefits. For example, diversification of cropping systems with pulses can improve nutrition, fix nitrogen in the soil and improve soil fertility, increase farm productivity and reduce dependency on synthetic fertilizers, while contributing to diversified diets and climate-conscious consumption. Pulses also have a lower food waste footprint than other crops, and they provide a healthy animal feed in integrated farming systems.

We need to shift away from the mono-crops and highly selective livestock production systems that dominated the last century. A sustainable farming system for the 21st century must take an integrated and holistic approach to agriculture based on the principle that diversity is the essence of life. This is a paradigm shift that moves us away from viewing nature as a threat that needs to be contained, and instead, enhances productivity in harmony with ecological processes so that farms become sustainable, resilient and productive. In other words, a system of agroecological production.

Agroecology is embedded in IFAD's investment stream because of our focus on poverty alleviation, and on building resilient rural communities. Our target group are the poor smallholder farmers – especially women and rural youth – who live in remote areas and depend on fragile ecosystems for their food, shelter, energy and income. Strengthening their ability to withstand shocks starts with building the resilience of their agricultural systems for ensuring their access to healthy diets and lifting them out of poverty. A more integrated focus on resource-efficient farming and food systems has to include innovative technologies and practices that will make farming attractive to youth. Technology can also be labour saving for women and girls, who spend hours providing energy and water for household consumption.

Key questions still remain, including: How can we improve the evidence base and better share knowledge of the efficacy and profitability of Agroecology? What incentives are needed to support smallholder farmers in shifting toward agroecological farming? And what are the enabling policy, regulatory, infrastructure and market conditions necessary to facilitate the scaling up of Agroecology? To achieve such changes, we need to work in partnership with smallholder farmers, farmers' organizations, governments, development agencies, research institutes and civil society. IFAD is prepared to join forces with our sister agencies and other partners to move toward the scaling up of Agroecology.

1.3 KEY NOTE ADDRESS

Stéphane Le Foll

Former Minister of Agriculture of France and Member of French Parliament

Today there is a debate at the scale of humanity, which questions all actors from every country, whether we will be able to respond to the big challenges the whole humanity is facing. Big challenges such as the fight against global warming and finding ways to feed the growing human population. Agriculture, which includes croplands, pasturelands, forestry and fisheries, is at the heart of these challenges because it is the most important form of human-environment interaction and occupies a large proportion of surface on the Earth. Agriculture, therefore, does not need to be only a problem but also part of the solution that will allow us to respond to global challenges. The main question we face today concerns the profound change that needs to take place. We are at that moment of human history when major choices need to be made, when paradigms are modified and the stakes are redefined, which are essential for our common future.

We can focus on finding our specific country solutions and settle a fraction of the problem or we come together to address the totality of challenges facing humanity. That is the question, and that is why Agroecology – as a shared and collective project but at the same time building on different experiences and realities of each country and ecosystem – is a way of approaching the great question posed to all humanity, without ever denying the diversity and legitimacy of each part of humanity. In contrast to other global messages, the ability to combine the universal and the singular is an essential characteristic of Agroecology.

Everyone has a share in the knowledge that must enable humanity to find solutions to global problems. If Agroecology makes sense, it is because it relies on social and cultural diversity to build a common project, a collective ambition, a universal choice, a choice for humanity. In order to do that, technique and technologies are necessary, researchers are needed, but we must also rely on farmers' knowledge from all around the world; farmers who have acquired experiences, who know their ecosystems. What we need to do is to enable economic viability and ecological sustainability all over the world.

Great concern about ecological sustainability comes from the frequent reports of disappearance of birds, bees and of biodiversity as a whole, resulting from the impact of agricultural intensification that heavily relies on chemical inputs. The dominant "high-input" Green Revolution agricultural model, supported by FAO at one point, has reached the end of its cycle. We are here at FAO to open a new cycle, the "double green" revolution that will seek to rely on nature to be able to develop agricultural production. The double green revolution is at the heart of the debates that we must have. It requires the convergence of local, technical and technological knowledge, and also requires at the international level, an ability to govern the whole, to set goals, to ensure



that public policies everywhere can be implemented to achieve the global challenges facing humanity. Here is where the big international bodies must play a key role ensuring that the debate takes place and that at the same time we can decide on major public policy orientations that will enable the achievement of these goals.

One of the big questions today is about migration. We will not be able to solve this issue by building walls, on the contrary, we will have to address this challenge once again by developing a universal project, at the level of humanity, by allowing development, allowing activity, allowing everyone to find their ability to build a destiny and a life. Agroecology is part of the solution to fight against global warming with the development of agricultural and food production to cope with demography without excluding the need for agricultural transformation to support employment for men, women and young people in particular.

1.4 POLICY ORIENTATIONS

François Pythoud

Ambassador, Permanent Representative of Switzerland to FAO, IFAD and WFP

The challenges facing the agricultural and food systems today highlight the increasing future food and nutrition needs of the planet while contributing to all of the SDGs of the 2030 Agenda without leaving anyone behind. This will only be possible through a transformative change of conventional farming and food systems towards greater efficiency and sustainability to achieve SDGs. Recent publications provide evidence and concrete examples on the potential of agroecological approaches to guide transformative changes both in terms of agricultural productivity and the provision of ecosystem services and public goods in relation to global challenges. Given all this evidence, a question remains: what hinders the agroecological transition of conventional agricultural and food systems towards sustainable food and agricultural systems?

Today, following the adoption of the 2030 Agenda, there is a growing awareness of the need to bring conventional agricultural models towards greater sustainability. Despite the imminent urgency of the matter, this is not yet sufficiently reflected in concrete actions and impacts on the ground, largely because those convinced or even practitioners of agroecological approaches represent a very small fraction of the influential political and economic actors in the agri-food chains. An important challenge that should not be minimized concerns the lack of clarity of what Agroecology is about. The development of a framework which embodies a systemic approach to agricultural production, based on the provision of more ecosystem services and public goods would be welcomed. In this regard, the document summarizing the *10 Elements of Agroecology* prepared by FAO for this Symposium, provides a good basis for reflection. This reflection should focus on: (i) demonstrating the economic benefits of Agroecology, (ii) the opportunities offered by Agroecology, and (iii) developing an enabling environment for Agroecology.

The adaptation of existing indicators of economic performance, as well as the development of integrative indicators adapted to context, will be critical to assess the overall performance and benefits of Agroecology in its multiple dimensions of action and impact. Capitalizing on new market demands for healthier food, on political support for food produced by smallholders and on new technologies that are attractive to young professionals to increase efficiency, services and products of agricultural operations are clear entry-points for promoting agroecological transition processes.

There is a need to promote change in research and innovation systems to meet the needs of agroecological approaches. This means investing more in bottom-up participatory approaches that facilitate knowledge-sharing and co-innovation hence valuing traditional knowledge and practices. There is also a need to develop or strengthen supply chains and markets for products and services provided by agroecological approaches. This includes increased price transparency reflecting all production costs including costs related to negative externalities in order to inform possible insurance mechanisms to cover losses associated with transition risks.

FAO must continue to play a role of global leadership in developing policies to support agroecological approaches in collaboration with its partners. Focus should be put on (i) strengthening normative activities including the development of methodological tools and benchmarks to measure performance on the three components of sustainability based on the five principles for sustainable food and agriculture developed by FAO; (ii) mobilizing non-state actors, especially farmers and the private sector, by facilitating the Scaling up Agroecology Initiative multi-stakeholder platform; (iii) promoting advocacy at the international, regional and national levels (this year's session of the UN High Level Political Forum on Sustainable Development, is a good opportunity to highlight the contribution of agroecological approaches to all the SDGs); and (iv) provide a platform for discussion, negotiation and harmonized development of public and private strategies and policies.

This Symposium contributes to the reinforcement of knowledge by the sharing of experiences and offers a unique space to feed the political debate and to develop and propose innovative and even provocative ideas and proposals on: (i) the role of FAO, partner organizations and other public and private actors in the context of the Scaling up Agroecology Initiative; (ii) concrete actions to support existing agroecological systems, but even more important, to accelerate transition.





CHAPTER 2

REGIONAL SYNTHESIS TAKING STOCK OF FAO'S GLOBAL DIALOGUE ON AGROECOLOGY

- JOINT INTRODUCTORY PRESENTATION
- INTERACTIVE PANEL: COMMON CHALLENGES AND ACHIEVEMENTS FROM THE REGIONAL DIALOGUES
- INTERACTIVE PANEL: KEY ELEMENTS, GAPS AND MEASURES IDENTIFIED TO SCALE UP AGROECOLOGY

2.1 JOINT INTRODUCTORY PRESENTATION

2.1.1 PRESENTATION BY LUO SHIMING

Professor, South China Agricultural University, China

Agroecology started to develop in China from late 70s and more than thirty text books on Agroecology have been published during the last 34 years. Agroecosystem structure patterns and agroecological techniques were explored through investigation, demonstration and research. For example, traditional fish ponds – mulberry dike systems, and high dike – low ditch systems in the Pearl River Delta were investigated, and research on methods related to the rice-duck and rice-fish was conducted. The number of scientific articles related to Agroecology in China has increased rapidly from a single paper in 1975 to 349 papers in 2017. It is an early sign of the scaling up of Agroecology in China.

Nevertheless, many stakeholders including government officers, scientists and farmers are still concerned about different definitions (e.g. sustainable agriculture, green agriculture, eco-friendly agriculture, low-carbon agriculture) and explanations about the concept of Agroecology. The differences between Agroecology and other terms, methods and goals chased, should be clearly defined and popularized. Only when clear answers are given, obstacles can be removed and people can begin to consider Agroecology seriously.

Another important aspect in the scaling up of Agroecology is related to the practical method. In order to get a locally-adapted guide on agroecological methods, bottom-up and top-down methods are needed. The bottom-up approach relates to the wisdom from local farmers and the top-down method relates to scientific research. We often combine these two approaches to identify good agroecological practices. Classifying agroecological practices is a good way to help people understand and handle them. We classified practices by comparing agroecosystems with natural ecosystems. Natural ecosystems have their inputs, outputs and their internal structure from individuals, populations, communities, ecosystems landscapes and above.

Similarly, methods for Agroecology can be classified into input, output and different levels of internal structure of an agroecosystem. Methods to regulate agroecosystem inputs include resources saving; replacing and replenishing techniques. Methods related to agroecosystem outputs include treatments, recycling and reusing pollutants and byproducts from agricultural production. In terms of agroecological methods for internal structures, we have: (i) biodiversity use in agriculture from genetic level to community level; (ii) recycling systems and web system design for energy and material flows at ecosystem levels; (iii) pattern arrangement and planning at landscape and regional levels.



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Once farmers know clearly what Agroecology is and how to conduct agroecological practices, it is likely that more people will devote efforts to change. Nevertheless, farmers would ask whether it is necessary to take action. The great opportunity in the future of Agroecology should be clearly showed. Farmers would also like to know whether they could handle the challenge during the change. It is essential to have a successful demonstration site nearby and frequent exchange of experiences and ideas, both horizontally among farmers and vertically between different stakeholders. Finally, farmers are interested in the economic benefit besides health, culture and good environment. Both stable and higher market prices for agroecological products and better financial policies towards Agroecology are essential.

In order to scale up Agroecology, international exchange and cooperation should not be neglected. In the framework of international cooperation and with the encouragement of Stephen Gliessman, we co-edited a book on “Agroecology in China – science, practice and sustainable management” in English, which was published in 2016. Agroecology courses have been conducted in China International Centre for Agriculture Training since 1989 by myself for more than 500 international trainees.

In conclusion, four priorities can be identified to scale up Agroecology in China: (i) clarify doubts and concerns about the definition and future of Agroecology; (ii) sort out locally-adapted agroecological practices, set up demonstration sites and knowledge-sharing platforms; (iii) motivate more stakeholders to engage in agroecological movement through market and government policy, and; (iv) strengthen both national and international cooperation.

2.1.2 PRESENTATION BY RILMA ROMAN

National Direction, Asociación Nacional de Agricultores Pequeños (ANAP), Cuba

The National Association of Smallholder Farmers “Asociación Nacional de Agricultores Pequeños” (ANAP) from Cuba is a founding member of La Via Campesina (LVC). ANAP groups and represents Cuban family farmers and their families, and has been promoting the Farmer-to-Farmer Agroecological Movement for more than 20 years, involving more than 150 000 families. LVC represents many smallholder and consumer organizations as well as national movements including farmers, indigenous peoples, communities, rural workers, pastoralists and fisherfolk. LVC involves people who practice Agroecology daily to produce healthy food and create job opportunities, while contributing to efforts across many localities to strengthen food sovereignty.

Cuba is an example of the implementation of Agroecology at scale, through an integral agrarian reform that gives the land to family farmers, and public policies that benefit farmers and the production of healthy food.

We have a common view of what Agroecology is. Agroecology is not something new: it is the result of traditional wisdom from our ancestral communities. It is a legacy to humanity that we need to respect and honor by protecting agroecological practices. Agroecology relies on local knowledge, promotes social justice, promotes identity and culture, and strengthens the economy of rural areas. It is our alternative to face the industrial food production model and the political, social and environmental crisis generated by such model.

We believe that Agroecology is not only a way to produce and live, it is based on principles that value the diversity of different localities or territories, respect nature and promote shared common values. We do not use toxic products, genetically modified organisms (GMOs) or harmful technologies.

Knowledge sharing is very important as our learning process is horizontal and fair, based on popular education, such as the farmer-to-farmer approach. Women are active participants in our organizations, with important roles in the promotion and practice of Agroecology.

Our Agroecology is political, as we demand the right to land, water and other natural resources to produce healthy food. The massive application of Agroecology involves more and more families producing healthy food. Public policies that improve land tenure, access to credits, to natural resources and markets are key to developing favourable conditions for food production by smallholder farmers and thus key to scaling up Agroecology. Public policies in Cuba, for example, have enabled ANAP to improve the livelihoods of more than 300 000 families through Agroecology.

2.1.3 PRESENTATION BY MARION GUILLOU

President of the Board of Director, Agreenium, France

Agroecology has generated great expectations as it involves technical and social methods, recognizing agricultural production’s role to manage the environment and respond to social needs. Some farmers are improving system’s efficacy through precision agriculture – which promotes the precise use of agricultural inputs on farm – and are replacing inputs by increasing reliance on biological processes (e.g. biocontrol of pests and diseases). Other farmers are re-designing their systems more thoroughly. The first group of farmers are the most widely spread in France. This entails a re-conceptualization focusing on achieving the two-fold objective of ecological and economic performance (and therefore also social performance). If we wish to go further, we need not only farmers to change the way they farm but we need to change the entire food system. Prices paid by the consumers should recognize the efforts made to produce in such way.

Farmers and researchers’ joint efforts on Agroecology have taken between five to eight years to identify innovations, categorize them, and further improve them when possible for a given area. It is key that messages to farmers concerning the benefits of Agroecology are communicated clearly and concisely. For example, it is key to show that in addition to greater production and profits, agroecological systems are more resilient and thus better adapted to withstand unexpected crises.

We have to create feasible conditions from both an economic and social point of view. Therefore, policies supporting holistic approaches that encourage agroecological innovations are instrumental for scaling up Agroecology. Cooperation and knowledge-sharing among farmers also supports innovation. It is hard to innovate on your own, and thus it is very important to promote agricultural innovation groups. Furthermore, we need to increase the capacity of technical experts and farmers through training and educational programs that integrate agroecological principles and practices to better respond to agricultural challenges at national and global level.

Monitoring of failures and successes is also critical to guide the agroecological transition towards sustainable food and agricultural systems. Agroecological innovations that are needed to support transition processes beyond subsidies include market rewards, such as those associated with product labelling. The relevance and legitimacy of market rewards could be supported by modern monitoring methods that contribute to greater consumer awareness of the precautionary measures taken by farmers using agroecological principles and practices.

Since 2014, France has put forward an Agroecology programme that involves tens of thousands of farmers and is consistent with the FAO *10 Elements of Agroecology*: diversity, co-creation and sharing of knowledge, synergies, efficiency, recycling, resilience, human and social values, culture and food traditions, responsible governance and circular and solidarity economy.



When we look at the recommendations from the various FAO regional symposia and the consensus reached by more than 1 400 people across the world, I can confirm France's priority to put agriculture at the very centre, and put the organizations of farmers at the centre, to work for the diversification of crops and the protection of soil quality.

Agroecology has changed the way we share and develop knowledge, the way we work for innovations, and it has changed secondary and higher education programmes. The promotion of sustainable markets has also been very important to support transitions, which needs to be complemented with the revision of institutional policies, including legal and economic frameworks, to promote agroecological transitions that will contribute to achieving the SDGs.

2.2 INTERACTIVE PANEL: COMMON CHALLENGES AND ACHIEVEMENTS FROM THE REGIONAL DIALOGUES

PANELLISTS

1. **Etienne Hainzelin**, Advisor to Chief Executive Officer, Centre de Coopération Internationale en Recherche Agronomique Pour le Développement (CIRAD), France
2. **Mariam Sow**, Director, Environnement et Développement du Tiers Monde (ENDA Pronat), Senegal
3. **Million Belay**, Coordinator, Alliance for Food Sovereignty in Africa (AFSA)
4. **Maria Heubuch**, Member, European Parliament (EP)
5. **Pasquale Steduto**, Regional Strategic Programme Coordinator, FAO Regional Office for the Near East and North Africa (FAO-RNE)
6. **Shi Yan**, Founder, Shared Harvest, China

FACILITATOR

Stephen Gliessman, Professor, University of California Santa Cruz

This session provided a summary of the different reflections arising from the First FAO International Symposium on Agroecology and from the subsequent seven regional seminars held from 2014 to 2017⁹. In the first part, panellists described how their organizations support Agroecology. In the second part and through an interactive dialogue, panellists addressed the following questions:

- a. What were the most important features and outcomes of the FAO regional processes, especially from the regions in which your organization has worked or participated?
- b. How can FAO use Agroecology to contribute to solving some of the key challenges in each region?

FACILITATOR’S SUMMARY

Participants discussed how Agroecology is favouring transitions and change, through the concepts of a new civilization and a paradigm shift. They identified differences between transition and transformation, and emphasized the need to move from a yield and profit focus in food systems to an ecological focus. Participants also addressed the role of Agroecology in helping establishing sustainable food systems, and how and when that transformation happens and spreads out.

⁹ FAO. 2018. *Catalysing Dialogue and Cooperation to Scale up Agroecology: Outcomes of the FAO Regional Seminars on Agroecology* (available at <http://www.fao.org/3/I8992EN/i8992en.pdf>)

2.2.1 PRESENTATION BY ETIENNE HAINZELIN

Advisor to Chief Executive Officer, Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), France

Around 15 years ago, I was the Scientific Director of CIRAD, which allowed me to witness the organization's changes when 800 scientists decided to place Agroecology as a priority in their strategic vision of work.

CIRAD's research interests in this field primarily focused on:

- a. the use of agro-biodiversity in cropping systems through breeding and understanding of agro-biodiversity dynamics in developing countries;
- b. Creating together with producers, and evaluating agroecological cropping systems (i.e. horticulture in Reunion Island and West Africa; animal integration in Burkina Faso; rice-based systems in Madagascar and Laos; agroforestry in Central America and Cameroon and intensive banana production in French West Indies)
- c. a territorial approach to understanding the drivers of agroecological transition, to defining the policies it needs, the connections with markets and foods systems, and the kind of innovation systems to promote.

As discussed during the FAO regional seminars' synthesis, the perspectives, experiences, cultures and policies related to agroecological transitions are immensely diverse and creative; there is no canonic pathway to "achieve" agroecology but there are principles in which the transformation must be rooted. This translates into a diversity of pathways that can be designed with stakeholders, considering local contexts and constraints, with various "starting points" and implemented at different paces. Therefore, there will be co-habitation of different systems, at different stages of transition. Because agroecology is context-based and draws mainly on local resources and capacities, innovation needs to be rooted in local contexts and dynamics. Therefore, local innovation systems integrated with knowledge produced by research, are the main engine of agroecological transitions, which differs from the "prescriptive agriculture" of the Green Revolution.

Beyond the diversity of approaches, convictions and visions of the transition, there is a growing sense that we urgently have to change the paradigm of agricultural production, with two main turning points: (i) changing the performance paradigm, exclusively centered on yield; (ii) promoting multi-stakeholders dialogue to make transition a reality in the vision of policymakers and in farmers' lives.

Question a: *What were the most important features and outcomes of the FAO regional processes, especially the regions in which your organization has worked or participated?*

I would like to focus on two important points. First, I am glad that we have moved away from the debate about how to define Agroecology and now move towards actions. There is no unique definition, there is no need to unify theory, and there is not only one pathway to achieve Agroecology. There are many different starting points, many different pathways and all the agricultural systems are questioned; some have to dis-intensify while others may have to intensify. Nevertheless, all is questioned in that transformation.

The second point concerns innovation systems and the importance of moving away from prescriptive agriculture. Agroecology is not about applying a recipe. Instead, it has to be built sturdily with different building blocks such as policy capacity, research and knowledge. This issue was mentioned very clearly during the regional conferences.

Question b: *How can FAO use Agroecology to contribute to solving some of the key challenges of each region?*

FAO can help speed transitions to Agroecology by doing two things:

- i. Change the culture in terms of what is understood by agricultural performance. It is clear from documents prepared for the Symposium that performance is beyond yield, and it should also include other indicators like job creation and ecosystem services.
- ii. Following the good process of multi-stakeholder dialogues during the last four years, FAO should further encourage dialogue between scientists and policymakers, and between scientists and producers, to progressively change – with a sense of urgency – and recognize the need for an agroecological transition.

2.2.2 PRESENTATION BY MARIAM SOW

Director, Environnement et Développement du Tiers Monde (ENDA Pronat), Senegal

I am the President of a network called ENDA. In the 1980s, we performed a study on pesticide use and management in Senegal, given the serious harm it was causing to the environment, farmers and consumers. We shared our results with smallholder farmers, who interestingly already knew about the problems along with the decline in crop yield and increase in child mortality. From this arose the need to investigate what farmers could do to respond to this alarming situation.

Farmers started to conduct experiments that explored agricultural production without fertilizers and pesticides. Today, we have with us in this room, one of the first producers who was part of this experience to explore alternative sustainable production models. We managed to design a training process that focused on the type of agriculture we wanted to promote. The change was not about fertilizers and pesticides, but rather about the local and international policies on production systems in Senegal.

Farmers from CEPAD, which is a French acronym for Cooperative Exploitation of Agricultural Products of Duekoue, researchers and policymakers concluded that we needed to promote Agroecology to guide the transition into sustainable agriculture in rural communities and at the local level. As a consequence, following FAO's regional workshop held in Senegal, we have been building a broad coalition involving all relevant stakeholders to come together and take ownership of agroecological policies at national level.

We are currently shaping a national platform to ensure that our family holdings actually manage to be sustainable in terms of food security. Internationally, our local and national experience in Senegal may encourage others.

Question a: *What were the most important features and outcomes of the FAO regional processes, especially the regions in which your organization has worked or participated?*

The FAO regional seminars have shown that we are not alone in the transition towards Agroecology. Hence, ENDA Pronat has to strengthen its commitment to Agroecology as a political and social project that must move forward. Various coalitions have also started to emerge such as the National Association of Ecological Mayors that understands the need of change and the key role that distribution channels have in promoting Agroecology.

We agreed on the importance of bringing together smallholder organizations that produce and distribute food in agroecological systems. We also agreed to hold "Agroecology Days" on an annual basis with the various stakeholders such as the local government, peasant seed producers, farmers' associations, the national organization of rural women farmers, and academia. The "Agroecology Days" aim at making a national assessment of agroecological practices in Senegal and to involve the political decision makers.

The “Agroecology Days” held this year were a success. We managed to bring together more than 1 500 stakeholders and get a strong statement from the Minister of Agriculture on the importance of Agroecology as a means to fighting for the governance of our natural resources. If we do not govern the natural resource base, then the agroecological vision will be doomed to fail in Africa and elsewhere.

We have established a national platform to bring together all the strategies for the implementation of Agroecology because it is an unavoidable alternative for the Sahel countries, particularly regarding water resources, the challenges of climate change, pollution, drought, and food security and nutrition.

Question b: *How can FAO use Agroecology to contribute to solving some of the key challenges of each region?*

Advocacy cannot happen in a vacuum because it needs to be strengthened through supporting examples coming from the field. Such examples can be used as evidence to influence policymakers and build the case for donors to allocate more resources to research.

Similarly, consumers also represent important stakeholders. Better communication of research findings and their implications to consumers is needed to enhance credibility about the merits and limitations of Agroecology. We have data from research showing that family farming following Agroecology principles and practices creates more jobs and thus keep young African people in agriculture in their countries.

It is important to recognize that this will only be successful if markets support agroecological products against the flow of cheap foods produced elsewhere with little or no environmental care, nutrition, food safety or ethical standards. This means that civil society, farmers and consumers need to work together to make Agroecology profitable and attractive to young farmers.

2.2.3 PRESENTATION BY MILLION BELAY

Coordinator, Alliance for Food Sovereignty in Africa (AFSA)

I work for the Stockholm Resilience Centre and I am the coordinator of AFSA in Africa, which is a network of networks working in 50 of the 55 countries in Africa. We can say, conservatively, that we reach up to 200 million African members, which include food producers, indigenous people, pastoralists, faith-based organizations, women groups and youth groups.

We have two main areas of work in Africa: one concerns advocacy against the industrial food production model, while the other focuses on what we can do for Agroecology. The first thing that we did was to collect a set of 50 case studies on Agroecology all over Africa, which can also be found in our website¹⁰. Through meta-analysis, we have analysed whether these case studies addressed economic, social or environmental issues for food producers in the region, and we found that agroecological production contributed to 11 of the SDGs.

More recently, we have started to organize trainings of farmers on agroecological techniques with the help of a farmers' exchange mechanism developed in Colombia. We started in East Africa, followed by West Africa and should end in East and Southern Africa.

We have also initiated discussions on food systems in Africa. The first discussion took place in 2016 in Addis Ababa, Ethiopia, and the second one will be organized in Cameroon.

Last, I was honoured to participate in the Advisory Committee in the regional meeting on Agroecology in sub-Saharan Africa, organized by FAO in Dakar, Senegal, where we launched a book on Agroecology. During this Symposium, we will launch a book analysing policy spaces for agriculture in Africa¹¹.

Question a: *What were the most important features and outcomes of the FAO regional processes, especially the regions in which your organization has worked or participated?*

The limited coverage of Agroecology in Africa is likely the result of the few democratic spaces for food producers and civil-society actors to promote Agroecology. The space for policy change is already crowded with governmental and non-governmental organizations promoting commercial agriculture. Therefore, we need more spaces for the voice of Agroecology.

Many African farmers want to move away from using agrochemicals and hybrid seeds, however, they are often engaged in locked systems with input-supplying companies and would need financial support to join the transition to Agroecology.

¹⁰ <https://afsafrica.org/case-studies/>

¹¹ <https://afsafrica.org/Agroecology-the-bold-future-of-farming-in-africa/>

Finally, there needs to be a market for agroecological products, which is why the linkage between producers and consumers needs to be strengthened. Traditional agricultural practices in Africa are often consistent with agroecological principles and the Alliance for Food Sovereignty in Africa is interested in Agroecology because it respects the culture of the African people.

Question b: *How can FAO use Agroecology to contribute to solving some of the key challenges of each region?*

As a continental civil society organization representing Africa, our main work is on advocacy. The first request to FAO would be that we need a democratic space and given that FAO has offices in most African countries, we would like FAO to open these spaces for food producers and civil society organizations.

The second request to FAO – for Africa but also globally – concerns food-related diseases that have dramatically increased. Agroecology needs to include human health issues.

Finally, in the context of the complex world we live in and the challenges brought by social, economic and environmental changes, FAO should prioritize Agroecology to guide transformational changes to increase resilience while managing complexity.



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2.2.4 PRESENTATION BY MARIA HEUBUCH

Member, European Parliament (EP)

I am a member of the European Parliament, a member of the Committee on Agriculture and Rural Development in the EP, and a member of Germany's Green Party. I have also been a farmer since 1980 with my family in the South part of Germany, hence my commitment to rethink agriculture to ensure food security and combat hunger worldwide.

Agriculture reforms are on the horizon in the coming years and important decisions need to be made today. The key decision will be whether we move courageously towards Agroecology, and be pioneers in Europe. I do not support maintaining the current agricultural system path, and I encourage that together we should support others outside this room in prioritizing agricultural sustainability.

During the development of our new development policy strategy for development cooperation, the EP ensured that Agroecology is included in all 28 member states because of the commitment to give greater support to Agroecology.

My official visits to Eastern Africa confirmed the pressing need for a transformative change in agriculture in the region, and we know that the 2030 Agenda is calling for far-reaching transformation within agriculture.

As we have heard in an earlier presentation, we need five–eight years to have a meaningful transformation change in agriculture. The only way to meet the SDGs by 2030, which is twelve years from now, is to implement major changes in the way agriculture is practiced because cosmetic changes will not be sufficient anymore.

Question a: *What were the most important features and outcomes of the FAO regional processes, especially the regions in which your organization has worked or participated?*

Regarding the comments about agriculture being closely linked to industry and capital in India, this is also the dominant situation in Europe as a result of decades of Green Revolution high-performance agriculture. Its agricultural model has always been sold as economically successful and now we are increasingly realizing that a number of negative impacts are also resulting from this model. For example, the recent milk crisis in Germany led to the loss of about 300 milk farmers and 11 farms on a daily basis, due to ecological and price pressures from the international market. Consequently, 40 percent of agricultural land in Europe has been degraded, and such poor land-use management highlights that the system is reaching its natural limits.

While the ecological side of Agroecology is well understood, we need to look at the economical side of Agroecology and demonstrate that it is an alternative to industrial agriculture and that it can lead to economic progress. International markets play a major role, and thus, good governance and policies are needed so that agroecological production can really compete with massive industrial agricultural infrastructures and significantly reduce costs of production.

Current policies are mainly concerned with industrial models and they should re-focus towards small farmers to strengthen them as enterprises, as part of food systems and as an alternative to industrial models. Nevertheless, as the EU, we need to recognize the global demographic challenge: the scaling up of Agroecology demands a strong alignment of political will, good governance and partnerships.

Question b: *How can FAO use Agroecology to contribute to solving some of the key challenges of each region?*

The EU is a major player within the UN and within FAO. We have now seen that Agroecology can guide the agricultural transformation towards sustainable food and agricultural systems. Nevertheless, there is need that European research funds channel the priorities to support Agroecology at all levels and they are accompanied by the development of policies and jobs.

We have said in our development policy strategy that Agroecology will be a priority. Therefore we need to ensure that more money is spent on Agroecology and that there are stronger commitments to mainstreaming Agroecology in FAO processes. As EU, for example, we could become a member of the Friends of Agroecology group and proactively offer this platform to our partner countries because we need to take the first steps to show that Agroecology is a priority.

2.2.5 PRESENTATION BY PASQUALE STEDUTO

Regional Strategic Programme Coordinator, FAO Regional Office for the Near East and North Africa (FAO-RNE)

Following the First FAO International Symposium on Agroecology held in 2014, we were inspired to systematically explore, identify, analyse and document impactful ancient agroecological systems in the region, through pastoralist systems, oasis systems with different layers of date palms and vegetables, artisanal fisheries, and local irrigation systems.

We benefited significantly from the work in the region of the Globally Important Agricultural Heritage Systems (GIAHS) programme at FAO, which provided expertise and a framework to study those systems.

In preparation for the current Symposium on Agroecology, we organized a regional seminar on Agroecology, where we were delighted to discover that several countries have already included Agroecology among their national priorities.

The priorities arising from the regional seminar focused on water scarcity, small-scale family farming, and on building resilience for food security and nutrition. We actually have these areas of focus within the FAO Regional Initiatives, which are a proper delivery mechanism to introduce and scale up Agroecology in our work programme.

Another outcome of the seminar was the preparation of a discussion paper for policymakers to be presented during the FAO Regional Conference for the Near East and North Africa. This document aims at exploring the country response at a political level in the region, in relation to the possible role of Agroecology as a mechanism for agricultural reform.

Question a: *What were the most important features and outcomes of the FAO regional processes, especially the regions in which your organization has worked or participated?*

During the FAO regional seminar on Agroecology, there were a few key points mentioned. The first was the need for raising awareness on Agroecology. There is little recognition of several ancient agroecological systems that are still working in the region and that continue to be relevant. Therefore, there is a need to build awareness particularly amongst consumers, because markets can be a key driver of demand of agroecological products with increasing benefits to producers.

The second point is the need to foster participatory processes that facilitate the combination of local knowledge and experiences with scientific knowledge. Traditional systems hold relevant knowledge but they may be limited in responding to new challenges like diseases, pests, and climate change, which may need more systematic approaches to be tackled effectively.

The last point concerns policies to address the challenge of high unemployment rates in the region, particularly youth unemployment, and how Agroecology, as a knowledge-intensive form of agriculture, could take care of food production and bring dignity to the farming profession.

Question b: *How can FAO use Agroecology to contribute to solving some of the key challenges of each region?*

Given the particular challenges faced by the Near East and North Africa region such as armed conflicts; very high food imports; transboundary pests and diseases; and high vulnerability to climate change, two SDGs stand out where Agroecology can contribute to the FAO Regional Initiatives.

Agroecology can provide a mechanism to achieve SDG 6 in the region, as a means of increasing water productivity in rain-fed agriculture, which represents 60 percent of the cultivated land. The use of agroecological principles, like fostering diversification, can help increase productivity and resilience, and thus reduce farmers’ vulnerability to weather uncertainties introduced by climate change. Achieving SDG 6 in the region is core to achieving SDG 12, which concerns responsible consumption and production.

To sum up, since the region experiences high rates of food loss and natural resources waste, I would like to recommend that each region and FAO work on reconsidering the whole value chain through policies that support producers and educate consumers.



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2.2.6 PRESENTATION BY SHI YAN

Founder, Shared Harvest, China

I am a farmer from China and the Vice President of Urgenci, which is an international movement of partnerships between consumers and farmers. I am also the founder of a community-supported organic agriculture initiative consisting of about 50 farmers, where half of us are young farmers. We produce and deliver door-to-door organic products every week to approximately 1 000 families in Beijing using a crowdfunding prepayment scheme. The name of this farm is Shared Harvest, located 70 km north of the capital.

The crowdfunding prepayment scheme is characterized by: (i) economic dimension: the consumer prepayment system ensures the continuous operation of the farm; (ii) cultural dimension: we invest most of the profit in educational programs for children in schools, and conduct trainings for around 20 teachers per month who become farmers in the farm during the training period; (iii) social dimension: besides running the farm, we also promote ideas of community-supported agriculture in China.

Because of the success of SH, we have organized national conferences to present our work and practices in the past 10 years. In the conference held last year there were approximately 1 000 participants. These platforms allow us to mobilize people including consumers, farmers and scholars, and we are able to build a national network in China. I also participated in the FAO International Symposium on Agroecology conducted in Kunming, China and I noticed that Asia is a region with diversity in agriculture, with a vast majority of smallholder farmers. Despite the diversity of agricultural ideas in China, we are all people, whether you are consumers or producers. We have to put people at the centre of national policies and practices.

We have already so many successful agroecological practices and models. What is left is for these successful examples to be scaled up and be acknowledged by policymakers to ensure the necessary policy changes enabling more farmers and consumers to join us.

Question a: *What were the most important features and outcomes of the FAO regional processes, especially the regions in which your organization has worked or participated?*

In Asia, an important discussion is the lack of recognition of family farmers in agricultural policies, which are largely focused on industry. Therefore, policies are intrinsically linked to capital and not to people. During the FAO regional seminar, we highlighted that family farming has occupied the first place of importance for thousands of years in China and hence the critical need to refocus agricultural policy on producers and farmers. Furthermore, during the 19th Party Congress last year in China, our president highlighted “rural regeneration” as a new national strategy that supports a paradigm change: the ecological civilization paradigm. This new paradigm is consistent with Agroecology and has been put forward in China as an alternative way to face the challenges generated by our industrialized civilization.

Question b: *How can FAO use Agroecology to contribute to solving some of the key challenges of each region?*

I would recommend everyone in the world to work one day in a farm.

2.3 INTERACTIVE PANEL: KEY ELEMENTS, GAPS AND MEASURES IDENTIFIED TO SCALE UP AGROECOLOGY

PANELLISTS

1. **Isabel Andreoni**, Director, Montevideo Rural, Uruguay
2. **Luiz Beduschi**, Policy Officer, FAO Regional Office for Latin America and the Caribbean (FAO-RLC)
3. **Makhfousse Sarr**, National Coordinator, Integrated Production and Pest Management Programme in Africa, FAO Regional Office for Africa (FAO-RAF)
4. **David Amudavi**, Executive Director, Biovision Africa Trust (BvAT)
5. **Markus Arbenz**, Executive Director, International Federation of Organic Agriculture Movements (IFOAM - Organics International)
6. **Eva Torremocha**, Professor, Universidad Pablo de Olavide (UPO), Spain

FACILITATOR

Braulio Ferreira de Souza Dias, Vice Chair, Bioversity International Board of Trustees – Symposium Chair

This session provided examples of the transformative change that Agroecology can bring when implementation is based on local needs and engages local actors. In the first part, panellists described how their organizations support Agroecology. In the second part and through an interactive dialogue, panellists addressed the following questions:

- a. What are the major opportunities and challenges to scale up Agroecology in your region?
- b. Which actions could be prioritized to scale up Agroecology in your region?
- c. How do you see the future of Agroecology in your region and how can your organization contribute to collective action to scale up Agroecology?

The last part of the session consisted of a discussion which allowed the audience to interact with the panel.

2.3.1 PRESENTATION BY ISABEL ANDREONI

Director, Montevideo Rural, Uruguay

I am glad to represent the experience of Uruguay in this platform for collective construction of initiatives to scale up Agroecology. Our experience suggests that in order to progress toward Agroecology, there is a need for a radical transformation of the dominating and prevailing economic and organizational system. Two levels of action are needed to achieve that: local and national levels. Our Parliament is in the process of approving the national Agroecology plan, which has taken almost 25 years to develop.

Agroecology should not only address changes in the agronomic practices but also bring out economic and social transformation, especially when it comes to interactions between human beings and nature.

In Uruguay we work at local levels. Given that 95 percent of the population lives in urban centers and 50 percent of those are concentrated in the Montevideo department (capital), it is crucial that public policies and all initiatives are well aligned with urban centers. This highlights that agricultural production is not only an issue that concerns rural areas but concerns the whole country.

Access to land is a key issue both at local and national levels as land concentration characterizes many regions in Uruguay. In order to facilitate institutional and organizational change, we established a “transformation committee” that brings together government representatives and social organizations to debate over challenges of biodiversity conservation, reduction of environmental damage, and the concept of food sovereignty at national and local levels.

The weakest part in our plan of action is the economic dimension, as there is a need for public financial support. We still need to further develop the Agroecology and Gender Strategy, bringing forward the concept that there can be no Agroecology without the contribution of women.

Question b: *Which actions could be prioritized to scale up Agroecology in your region?*

A regulatory and provisional framework would be one of the most important actions to be undertaken, which can lead to a new economic system. This would be the broader initiative to be implemented at both the micro and the macroeconomic levels.

We also need to continue supporting the initiatives that have been undertaken by civil society organizations, farmers and consumer organizations, not only within this framework, but also so that they enjoy economic support, such as subsidies. These subsidies should be similar to those commonly found in industrial agriculture all over the world. States and state economies need to take strong economic actions such as the possibility of subsidizing family farming and agroecological systems.



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It is key that we dismantle the paradigm that urban cultures are the paradigm of modernity because it puts two cultures up against each other rather than bringing them together in cooperation, given their close interdependencies.

Another paradigm to be dismantled is that agricultural production is just a form of economic business. Agriculture needs to be recognized as the closest form of interaction between humans and nature.

When building policies, we need to keep a systemic approach to promote greater equity in countries in Latin America, where such great cultural diversity exists and prevails to date.

2.3.2 PRESENTATION BY LUIZ BEDUSCHI

Policy Officer – FAO Regional Office for Latin America and the Caribbean (FAO-RLC)

FAO-RLC has three major programmes: (i) food security and nutrition; (ii) climate change; (iii) family farming and sustainable rural development. I am responsible for the last programme and this is where the Agroecology agenda is based.

The working agenda of the programme provides for intense dialogue with civil society organizations especially with the Alliance for Food Sovereignty of the Peoples of Latin American and the Caribbean (“Alianza por la Soberanía Alimentaria de los Pueblos de América Latina y el Caribe”).

We also give great emphasis to strengthening regional and sub-regional policies. For example, we work with the Specialized Meeting of Family Farming of the Southern Common Market, which is a platform focusing on regional public policies for family farming, with members such as ECOSUR (Colegio de la Frontera Sur), CARICOM (Caribbean Community) and CELAC (Community of Latin American and Caribbean States). We work particularly with CELAC’s regional office, providing support to ensure that the technical capacity reaches various countries. Furthermore, we support countries very closely, in their efforts to implement their working agenda.

Fundamental to our agenda is the challenge of revitalizing rural areas. We understand that economic dynamism, trust and cohesion are key elements that can generate greater prosperity in rural areas and it is in this context that Agroecology plays a key role to trigger the productive potential of millions of people in rural Latin America.

Question a: *What are the major opportunities and challenges to scale up Agroecology in your region?*

At the beginning of this meeting, the Director-General showed a map of 30 countries with existing political or legal frameworks, and 16 of those countries are located in Latin America and the Caribbean. We are well placed to discuss experiences, including five opportunities in the countries and four challenges.

Opportunities

1. There is a considerable number of experiences on Agroecology in Latin America and the Caribbean, which are both practices and public policies. I see abundant capacity in these countries, especially governmental capacity, but above all, capacity within the food producers’ organizations. This is a real advantage for FAO-RLC, particularly concerning South-South cooperation as a means to scale up Agroecology.
2. There is rapid and profound change in society consumption patterns that increasingly demand products which have cultural, environmental or social traits. This is a great opportunity for Agroecology from the ground up to strengthen the rural–urban linkages.



3. There is a very strong social movement emphasis in the Latin America and the Caribbean region that recognizes the importance of Agroecology for family farmers in rural areas to support discussion spaces. The 2014 Fourth Special Conference of Social Movements of Latin America and the Caribbean for Food Sovereignty held in Santiago, Chile, was organized by the Alliance for the Food Sovereignty of the Peoples of Latin American and the Caribbean and other key stakeholders. Last year, for example, more than 150 young people met to discuss an agenda for rural youth. Agroecology was discussed in that occasion as a promising opportunity to re-engage youth to the rural world, and bring dignity back to the farming profession, which is a key component of a joint FAO/IFAD project on rural youth in the Caribbean.
4. There is political will in the region to move Agroecology forward. For instance, CELAC, which brings together 33 heads of state from the region, provides very clear support. The CELAC Working Group on Family Farming and Rural Development supports the special strengthening of public policies that contribute to the development of Agroecology and family farming. This shows the significant political will within that community, which paves the way to accelerate the implementation of the Agroecology agenda.
5. This region has a great deal of experience also in combining social protection systems with inclusive productive systems. There is an opportunity to make Agroecology one of the strategies for inclusive production for the most vulnerable populations in the world.

Challenges

1. To go from farm level implementation to territorial level implementation and meet the demands of the 2030 Agenda, the scaling up of Agroecology should involve not only governments, but also non-governmental organizations (NGOs) and local organizations, as well as different stakeholders in territories and in public-policy development.
2. Agricultural innovation is another important challenge. This includes: (i) technological innovation that allows the work of farmers to be less difficult, (ii) technologies that generate dignified working conditions; (iii) institutional innovations that promote and strengthen institutions to attract qualified people from environment or social protection sectors, and related agencies. Such innovations revitalize rural areas supported by Agroecology, to develop a work agenda that guides a more inclusive and sustainable agricultural transformation.
3. The limited access to land and financial resources is another important challenge that demands the strengthening of organizations and institutions to increase access to land and assets. In order to address this challenge, FAO has been working on the Voluntary Guidelines on the Responsible Governance of Land Tenure, which serves as a normative tool built collectively to develop safety nets for farmers so that they can increase the amount of labor and financial resources that they are putting into agroecological systems.
4. The final challenge concerns the call by CELAC to FAO and other international organizations in the region to facilitate the identification of ten territories in the region where accelerated action can be taken. This initiative involves a shared effort to reach these territories with proposed mechanisms to broaden the dialogue and bring multiple stakeholders together (including governments, social organizations, and the private sector) to define investment plans. The experiences in these selected territories will be very useful to support a new real push towards accelerated implementation of Agroecology in Latin America and the Caribbean prior to 2030.

2.3.3 PRESENTATION BY MAKHFOUSSE SARR

National Coordinator, Integrated Production and Pest Management Programme in Africa (FAO-RAF)

My professional experience with fallow land management systems, before joining FAO, highlighted the importance of adequate support and follow-up with smallholder farmers during the implementation of sustainable systems. Such sustainable systems included soil-fertility management, agroforestry and efforts to reduce negative environmental impacts associated with pesticide use and management programmes for locust control. During assessments of the environmental impact of chemical products, it was agreed that important problems were identified and, thus also, the need to provide alternatives.

It was in this context that I joined FAO with the Farmer Field Schools (FFS) to learn how we could provide a space where farmers could better understand the problems, the pesticide management options and alternatives for their use. This involved a learning framework where smallholders could understand agroecological concepts and mechanisms of action so that alternatives could be provided and decisions could be made.

I coordinated all projects based on the FFS approach in FAO-RAF, dealing with different issues ranging from the dependence on chemical products to issues related to climate change. Furthermore, we are preparing a new FFS project, which will contribute to the development process of Agroecology.

Question c: *How do you see the future of Agroecology in your region and how can your organization contribute to collective action to scale up Agroecology?*

There are a number of factors influencing the dynamics of Agroecology in Africa. The first factor, identified during the Agroecology meeting held in Dakar, concerns training and research in agriculture. For example, at university level in Senegal, there has been an integration of certain diplomas specific to Agroecology. These diplomas constitute a partnership between the university and civil society as a means to effectively strengthen and reinforce the knowledge necessary to disseminate and scale up Agroecology. There are also informal trainings that meet different needs, carried out through a number of activities. The informal trainings in the field have been important for knowledge sharing, and in leading to concrete results.

There is an increasing trend to bring together researchers, farmers and producers in the co-production of knowledge through FFS, and Agroecology has played a key role in promoting the integration of different disciplines within this system.

Another element is related to awareness and the involvement of stakeholders. It is important to identify ways to involve local decision makers. If we want to promote Agroecology, we must facilitate the integration of Agroecology into local policies and development plans, through the involvement of municipal authorities, for example, so that Agroecology is considered as part of implementation plans and hence becomes more prominent.



In addition, there are a number of global, regional and national commitments and strategic plans where Agroecology could play an important role. For example, the Paris Agreement has generated a process where the countries are developing National Determined Contributions, requiring national commitments.

At regional level, the scaling up of Agroecology can be related to the eradication of hunger and malnutrition by 2025, through the Economic Community of West African States. These commitments can make it possible to use and implement Agroecology in family farming systems. The implementation of the commitments concerning national contributions related to climate change has become a reality in Africa. This is something that will be implemented at the grassroots level so anything that has to do with adaptation and mitigation to climate change is going to rely on Agroecology. All these opportunities highlight that Agroecology is the central mechanism to address these commitments whether we talk about climate change, sustainable agriculture, or the SDGs.

Finally, it is important to highlight the role of Agroecology *vis-à-vis* the phenomenon of migration, given the inherent potential to generate jobs and hence contribute to providing a positive alternative and hopeful vision for agriculture in Africa.

2.3.4 PRESENTATION BY DAVID AMUDAVI

Executive Director, Biovision Africa Trust (BvAT)

I have an agricultural education and extension background from Egerton University (Kenya) with a PhD from Cornell University (USA), followed by a postdoctoral research position at the International Centre of Insect Physiology and Ecology. This academic experience allowed me to be the first Director of the Biovision African Trust in Nairobi, Kenya, established by the Biovision Foundation for Ecological Development (Biovision) based in Switzerland.

In this organization, we look at Agroecology as the foundation and the basis of life support systems: a “green” agriculture. The term “smart” agriculture is used widely and we believe that the genuine “climate-smart” agriculture is what we support through our monthly online magazine “Organic Agriculture” and through our weekly radio programmes in English, Swahili and other local languages. We also have a very rich online database on human, plant, environmental and animal health, which provides farmer-training facilities for 13 out of 47 counties in Kenya, and link farmers to one another. Since 2011, we are part of the Ecological Organic Agriculture Initiative (EOA-I) that brings together various trends of practices that could be considered under the Agroecology umbrella.

Given that Agroecology needs to be profitable for farmers, it is very important to make the connection between value chains and market development to support policies and programmes that can drive the Agroecology agenda.

We are grateful to the African Union Commission for having passed the decision to support organic agriculture. We are currently coordinating the organic agriculture efforts in eight countries in East and West Africa with the help of a coalition of international partners and financial support from the Swiss Agency for Development and Cooperation, the Swedish Society for Nature Conservation, the African Union and the European Union (EU). We hope this initiative will benefit from Agroecology efforts, practices and technologies taking place around the continent.

This Symposium is very timely to promote the joining of efforts of continental initiatives to ensure actions on the ground that have impact on farmers’ livelihoods.

Question c: *How do you see the future of Agroecology in your region and how can your organization contribute to collective action to scale up Agroecology?*

On one hand, the future for agriculture looks bright, while on the other hand we are aware of the challenges that we have to face. From a positivist and optimistic point of view, there is increased mainstreaming of Agroecology in national programmes, national policies and investments. However, even if we have supporting policies in the area of Agroecology, one cannot go very far. Similarly, if we do not have internal or external resources, we cannot move very far.

I see a future for Agroecology if there is a change in the mindsets of our policymakers and our technocrats who need to look at Agroecology as the way of life ensuring a sustainable and healthy nation. If this first step is achieved, then Agroecology will become an issue on the table for consideration in terms of policy, programmes and investments.

I also see Agroecology producing more evidence of the benefits it can bring, and here true-cost accounting has a very important role to play. However, I would like to see more models that show the benefits of Agroecology beyond production and beyond profitability, such as aspects of sustainability and resilience. By being able to show the economic benefits of sustainability and resilience due to Agroecology, we are more likely to increase the chance of attracting significant investments for Agroecology.

In terms of supporting appropriate policies, relevant programmes, and development plans, the future is bright as the Agroecology curricula will be used in our education and training institutions. Being able to mainstream Agroecology from early education stages, like primary school to secondary and higher levels, will be very important to ensure it is included in the national research and development programmes.

Another issue in terms of the future of Agroecology is how to become more inclusive. To date, greater attention seems to be paid to producers and farmers, while processors, particularly those adding value to agroecological products, could bring in various actors to a broader coalition.

There are still, however, numerous challenges. There is a need to increase research in Agroecology to inform evidence-based planning. If we cannot increase research, we will not go very far. The way to influence technocrats and policymakers is to present evidence. Therefore, we need to highlight success stories and programmes that can actually provide key ingredients to inform policy changes. Policymakers are yearning for evidence that is based on research and practices, and hence can guide policy decisions and funding support.

Therefore, it is important to broaden our strategies to come up with a very clear framework, which can be adopted broadly, where we can show that Agroecology can increase production, be profitable, and take care of the environment.

Today, climate change is a reality and if we can demonstrate through good science that Agroecology can provide the opportunity to mitigate the effects of climate change, we will witness a change in the attitude of our policymakers and the drivers of our economy.

Agroecology is the way to go. We want a world that is safe and healthy, which gives a sense of belonging to the people.

2.3.5 PRESENTATION BY MARKUS ARBENZ

Executive Director, International Federation of Organic Agriculture Movements
(IFOAM – Organics International)

I am talking on behalf of IFOAM - Organics International, and we understand ourselves as a global umbrella and agent of change for true sustainability. I am quite grateful to David Amudavi because he provided a good introduction of what I wanted to say. Therefore, on top of what Amudavi said, I would like to make three points:

First, I would like to mention a question I am often asked: what is the difference between organic agriculture and Agroecology? From a distance, there is none. If you look at it from a global perspective, most people refer to similar principles, objectives and even the same methods of working because of the diversity of people, initiatives and movements that look at this Agroecology paradigm. I am referring to regenerating agriculture, biodynamic agriculture, permaculture, natural farming from Japan or ecological organic agriculture. So many different expressions that are not only used in the field, but also in the way we relate to ourselves. This is a diversity, from which we can draw efficient synergies, because as experts, we will be able to differentiate and recognize advantages of the various movements.

Second, when you look at scaling up Agroecology, we think of change. Many times, we have emphasized that we want to promote an agroecological transition and if we want to have a transitional change, we need a theory of change. We have to propose a theory of change that considers three levels of change: (i) supply by producers from around the world, (ii) the global demand by consumers (iii) the world of policy. Policy is not only driven by policymakers but also by citizens and those influencing or trying to influence policy, either as advocates for cases concerning the public sector or for the interests of the private sector.

Third, the continuing reference to the lack of clarity on what Agroecology is, raises the need to develop standards and minimum requirements below which food and agricultural systems would not be called “agroecological”. Furthermore, we also need to refer to the impacts these practices have and showcase those where positive impacts have been achieved. This is the only way to convince those who work in the private sector and policymakers.

To summarize, if we wish to scale up Agroecology we have to do three things: (i) be inclusive, synergistic and focus not inwards but outwards; (ii) look both at policy and markets; (iii) include true-cost accounting in our food costs.

Question b: *Which actions could be prioritized to scale up Agroecology in your region?*

Following the urgent call for a rapid scaling up of Agroecology, we may need to be modest and be aware of the huge transformation we are envisioning. We heard strong words today: agricultural transition and paradigm change. Looking at this world and the ambition of true sustainability, this is a very big step and we have to be mindful of that and be aware of what it actually takes. What it takes not only in terms of production but also in terms of consumption. For example, we also learned from the wide adoption of the Green Revolution agricultural model about a specific type of diet and nutrition aligned with it. This means that there is a lot of unlearning to be done in terms of production as well as consumption. For example, consuming too much meat or sugar, we now know, are unhealthy behaviors that have to be unlearned first. This is quite a big challenge ahead of us.

After these first words of caution, I would like to work along the lines of a theory of change that addresses three areas: supply, demand and policy. When looking at supply, we have to put farmers' priorities at the center; considering what makes sense to farmers in terms of their environmental and ecological sustainability, their economic reality and the social perspective also for the future. Farmers and their families want a life worth living not only for themselves but also for future generations. This involves important knowledge enhancement that goes beyond pure technical knowledge and innovations on new practices. This entails to build consciousness about the planet as related to what farmers are doing on their land and with their livestock.

On the demand side, we have to be very convincing in showing people that the new paradigm is better for people. A promising line of argument should be one centered on health. We all want a healthy diet so that we may have a long and good life and a high quality of life. The argument should highlight that healthy nutrition comes from a healthy system, and a healthy system is based on diversity and built on what nature gives us in terms of ecological principles on how to farm. Other possible arguments include animal welfare, climate change and biodiversity, which have been used before, although none of them beats health.

Looking at policy, there is a very big responsibility in putting forward conditions and actions that are favourable to society, producers and consumers, and leads to true sustainability. In order to do this, true-cost accounting is an essential tool. True-cost accounting uses the "polluter pays" principle: those systems generating negative effects should bear the costs of managing them to prevent damage to human health or the environment, while those creating positive effects should be rewarded. The time seems ripe to push forward in the direction we want.

2.3.6 PRESENTATION BY EVA TORREMOCHA

Professor, Universidad Pablo de Olavide, Spain

I come from social movements of agroecological production from Spain, particularly Andalucía. I have also worked in Latin America and in Europe, where we have seen a number of bridges that need to be built to other understandings of Agroecology. For instance, I am currently working with the Fondation Daniel & Nina Carasso, which provides support to projects on the ground proving that the transition to Agroecology is a reality, along with its positive impacts.

Such work shows that we really can make things change and move in the right direction: the direction of sustainable food systems. My four statements are:

- i. We need to remember that Agroecology is, above all, about people. There is need for knowledge and understanding about pest and disease control, but Agroecology really is about people in addition to all the existing techniques.
- ii. From the European point of view, we are facing a very serious problem, which is the loss of farmers. Our policies have taken away the dignity of this profession. Fewer and fewer people want to work in the field and, in addition, it is difficult to find profitable opportunities to market ecofriendly agricultural products that allow making a decent living as a farmer. We have also seen the role that civil society and farmers’ organizations have played for a long time, in the development of viable agroecological innovations which are recognized by policies such as the Milan Urban Food Policy Pact.
- iii. Agroecology has important things to say. We need to come out of our niche, of our “comfort zone”, and talk to the rest of the food and agricultural systems. We need to have greater dialogue because we need to exchange experiences to become inclusive.
- iv. We need to overcome our reductionist vision. Agroecology recognizes the importance of a systemic vision and we need all of the disciplines to become systemic disciplines (e.g. economy, education) to encourage real change and a paradigm shift. Otherwise we will just continue to reproduce the same model, greener perhaps, but the same model.

Question a: *What are the major opportunities and challenges to scale up Agroecology in your region?*

Agroecology is not just an idea developed by idealistic people, it is much more than that. In order to scale up Agroecology, we need the support from policymakers which we gained by showing that Agroecology is undoubtedly a viable alternative.

Challenges

- i. Rural policies continue to be reductionist. In order for a systemic approach to be implemented, the policies also have to be systemic. We need to have more integrated policies bringing together different ministries at national level.
- ii. In order to have a paradigm shift, we have to relate to each other and to the environment in very new ways. We have to learn to listen to what is going on, what is emerging, because the paradigm shifts need to take place in all segments of society in order for change to take place.
- iii. The return of people to the countryside is an important challenge. While Agroecology is one of the driving forces promoting opportunities for youth in rural areas, we need supportive policies that are systemic such as the Milan Urban Food Policy Pact and everything that is being done at municipal levels.
- iv. Embracing the inherent complexity of Agroecology is another challenge and I am glad digitalization will help enhancing the linkages between rural and urban areas, which will then enable greater access to markets and services. The current reform of the EU Common Agricultural Policy supports Agroecology in becoming our food and nutrition policy. This means thinking of ecosystem services beyond production and of the need for these concepts to reach broader audiences.
- v. We are facing a limited awareness of the contribution of Agroecology to healthy products and of the fact that behind healthy and nutritious food, there are farmers doing things differently. We have to emphasize the connection between healthy food and healthy people, which provides great support to scale up Agroecology.

EMERGING ISSUES FROM THE FLOOR

- » Agroecology is a path towards a paradigm shift, therefore it is not possible to have two paradigms living together. Attention needs to be paid to the risk Agroecology may face if the current model is simply painted green and there is not a real shift in paradigms.
- » The link between Agroecology and the SDGs needs to be underlined and strengthened, considering governments’ commitment.
- » Actions to scale up Agroecology should address national and international legislative and policy mechanisms to restrain models and food systems that hinder the development of Agroecology.
- » Agroecological and agricultural knowledge (on seeds, farms and agricultural territories) has been safeguarded by indigenous peoples, rural peoples but especially by women. A platform such as the UN must emphasize the significant contribution of women’s organizations in agriculture, and recognize them in all its discussions. Likewise, policies that are put in place need to be gender-responsive.
- » Market demand could be a key driver for scaling up Agroecology. In this regard, baseline studies are needed to produce evidence on the opportunities for agroecological production and consumption, in terms of market shares in different countries.
- » At practitioner level, there should be clear distinction between traditional agriculture and climate-smart agriculture.
- » Governments should employ a human rights-based approach, making sure that Agroecology is implemented to achieve food sovereignty, protecting farmers’ and citizens’ right to healthy and safe food, against multinational companies, GMOs, pesticides and other agricultural chemicals.
- » Agroecology has a past and a genealogy at least to indigenous peoples. Therefore, Agroecology has a wide base to learn from, which means that we can have a positive future in agriculture if we can take those key lessons from past experiences.





CHAPTER 3

PARALLEL SESSION: NATIONAL EXPERIENCES ON AGROECOLOGY TO ACHIEVE THE SDGs

● PRESENTATION OF SUCCESSFUL EXPERIENCES FOR SCALING UP

3.1 PRESENTATION OF SUCCESSFUL EXPERIENCES FOR SCALING UP

Iran Keeping biodiversity alive (Maedeh Salimi, *Centre for Sustainable Development and Environment*)

Zambia Small-scale farmers transitioning to Agroecology: improving livelihoods together (Paul Desmarais, *Kasisi Agricultural Training Centre – KATC*)

China Community supported agriculture – connecting consumers and producers (Yiching Song, *Chinese Academy of Sciences*)

India Agroecology and women’s empowerment: transforming the life of rural communities (Yogesh Jadhav, *Barli Development Institute for Rural Communities – BDIRW*)

Ecuador Collective action for Agroecology to achieve food security and nutrition (Roberto Gortaire Amézcuca, *Colectivo Agroecológico del Ecuador – CAE*)

Hungary The pro-ratatulle initiative: Agroecology to improve livelihoods in small rural villages (Melinda Kassai, *Butterfly Movement*)

Italy An agroecological integration experience: bringing knowledge together (Adolfo Rosati, *Consiglio per la Ricerca in agricoltura e l’analisi dell’Economia Agraria – CREA*)

France The experiences of 400 “Economic Interest Groups”: bringing about agroecological transitions (Pierre Pujos, *AGFORWARD Project*)

Senegal Co-creation of knowledge to promote agroecological transitions - the case of peasant “juries” (Tabara Ndiaye, *Joint Action for Farmers’ Organization in West Africa - JAFOWA*)

Tanzania Scaling up Agroecology through a collaborative knowledge platform (Janet Maro, *Sustainable Agriculture Tanzania - SAT*)

Kyrgyzstan Organic Aimak Agroecology for sustainable development in rural and mountain communities (Sultan Sarygulov, *Federation for Organic Development - BIO-KG*)

Mauritania Transitioning to Agroecology in the Senegal River Valley (Arantxa García Brea, *Centro de Estudios Rurales y Agricultura Internacional - CERAI*)

Vietnam A decade of Participatory Guarantee Systems for small organic farmers (Tu Thi Tuyet Nhung, *Centre Development of Community Participatory Monitoring Resources - CDPM*)

Papua New Guinea: Food is Life - educating the Pacific about Agroecology through ICT innovations (Bao Waiko, *Save Papua New Guinea - Save PNG*)

Costa Rica Soil biodiversity and bio-inputs for sustainable production (Rolando Tencio Camacho, *Ministry of Agriculture and Livestock - MAG*)

Switzerland Promoting Agroecology at the national level - the Swiss experience (Ivo Strahm, *Federal Office for Agriculture – BLW*)

FACILITATORS

Benjamin Davis, Strategic Programme Leader, FAO

Brave Ndisale, Strategic Programme Leader, FAO



3.1.1 **IRAN** KEEPING BIODIVERSITY ALIVE

Maedeh Salimi

Centre for Sustainable Development and Environment

The programme on Participatory and Evolutionary Plant Breeding (PEPB), which began in 2008 in Iran, is an example of how crop productivity, adaptive capacity and resilience of small-scale farms can be enhanced in the face of biotic and abiotic stress. Farmers participating in the programme expressed interest in preserving biodiversity in their fields and maximizing it through trials in plant breeding experiments, while recognizing that mixtures of several crop varieties are more sustainable and resilient.

Leveraging on this interest, the programme supported the production of mixtures of mega-diverse populations of barley and wheat. In the case of barley, for example, farmers tested an evolutionary population of 1600 F2-hybrid varieties. Evolutionary populations evolve differently as they face natural selection over the years in response to local climate and environmental conditions (e.g. level of salinity, water availability and water stress, pests and diseases, availability of organic matter, temperatures, etc.) as well as to different types of agronomic management. Farmers can therefore select sub-populations which best reflect their needs.

These practices were initially adopted by a reduced number of farmers at a very small scale, then started to spread widely across the country due to the positive results shown in the first two years, and this favoured the exchange of farm-saved seeds among farmers countrywide. Different stakeholders such as civil society organizations (CSOs), NGOs, farmers' networks, researchers and research stations have a key role in fostering the distribution of these populations across Iran.

PEPB can provide and support markets for healthy food and bring back biodiversity to the table, for example through the production of high quality and nutritious bread, especially traditional bread. Two bakeries in Iran are now making bread with flours obtained from these varieties.



Source: provided by authors/organization

All farmers involved in bread making notice improvements in the bread's quality and aroma, and also have a good opportunity for increasing their yields.

PEPB enhances the availability of nutritious food and feed (SDG 2.1), contributes to fight malnutrition (SDG 2.2), increases agricultural productivity and farmer's incomes (SDG 2.3), and fosters the creation of sustainable food production systems (SDG 2.4). PPEB brings back the control of biodiversity to farmers, granting equal rights to access and control genetic material (SDG 1.4) and promotes the fair and equitable sharing of genetic resources with all stakeholders (SDG 15.6). This methodological approach also constitutes an inexpensive and dynamic approach to *in situ* conservation of plants and genetic material limiting gene erosion (SDG 2.5), to adapt crops to climate-related hazards and water scarcity (SDG 13.1) and to increase plant resistance to pests, eventually enhancing the resilience of small scale farmers and their communities in the face of climate related extreme events and other stresses (SDG 1.5).

3.1.2 ZAMBIA SMALL-SCALE FARMERS TRANSITIONING TO AGROECOLOGY: IMPROVING LIVELIHOODS TOGETHER

Paul Desmarais

Kasisi Agricultural Training Centre (KATC)

KATC is a farmer-based organization owned by the Society of Jesus. Located 30 km from Lusaka, it borders with commercial farms on its western boundary and small farms on the eastern one. The centre offers 17 courses all based on the principles of agroecological farming and structured according to participatory and horizontal learning methodologies which aim at valorizing participants' knowledge. Participants include small-scale farmers, government extension officers, field staff of NGOs, and teachers. Participants are mostly from Zambia but also from Burundi and Malawi. Besides the residential courses, which usually last five days, KATC carries out extension work in the villages, advises on commercial production and value addition, conducts research, lobbying and advocacy and holds a production unit that aims at generating incomes to run the training centre. KATC's project is funded by the government of Finland and a great example of how Agroecology can help transition towards sustainable food systems, achieving social, economic and environmental goals.

Agroecology certainly reverses land degradation and halts biodiversity loss, promotes lifelong learning opportunities for all, favours sustainable industrialization and constitutes an opportunity to revitalize global partnerships for sustainable development. The project involves 100 small-scale farmers growing vegetables on 12.5 ha divided in 20 × 40 m plots, under a centre pivot irrigation system. Participants all live within a 5 km radius from KATC and 60 percent are young farmers including 58 women and 42 men. Examples of agroecological practices promoted by the centre include the use of velvet beans as a green manure crop, compost production for organic fertilization, and the control of both fall armyworms and stem borers by intercropping maize with *Desmodium* (*Desmodium adscendens*) while planting perimeter plots



Source: provided by authors/organization

of *Brachiaria*. KATC also promotes open pollinated varieties as opposed to hybrids. The project is set up as a business model: farmers earn between USD 200–500 per month on the sale of the vegetables, and hereby provide for the salaries of the two KATC staff members and pay for the compost, the seeds and electricity.

The project has generated concrete positive impacts for participants and their communities. The number of daily meals increased from one to five, diets are remarkably more diverse and children in the participating villages are visibly healthier only a few months into the programme. Benefits are also evident in terms of youth productive employment, involvement of civil society, and empowerment of women, who begin to take leadership roles. The project also proved key in building resilience to climate change. For instance, while the shorter rainy seasons and unpredictable rainfalls caused the inorganically fertilized crops of non-participating villages to wilt away, KATC's crops remained green throughout the season. The success factors for KATC's results include the year-round availability of water for irrigation, the organization's long-lasting experience in growing vegetables organically, farmers' willingness to participate in the project, the proximity to Lusaka providing a good market for fresh vegetables, the good state of roads, the availability of electricity, the centre pivot and related back-up service, the involvement of knowledgeable staff, and the trust of the donor for the initial funding of farmers.

KATC also faced a number of constraints including the initial farmer's preference for chicken manure over compost and the government input support programmes subsidizing only inorganic fertilizers and hybrid seeds. These challenges were further increased by the unavailability of organic untreated seeds and the limited funding available to upscale practices and principles of Agroecology. KATC's next steps entails the addition of value to agricultural and horticultural products, stronger efforts to work closer with governments for the training of field staff and trainers, and training led by farmers to disseminate knowledge and out scale best practices.



Source: provided by authors/organization



Source: provided by authors/organization

3.1.3 CHINA COMMUNITY SUPPORTED AGRICULTURE – CONNECTING CONSUMERS AND PRODUCERS

Yiching Song

Chinese Academy of Sciences

China's farming history dates back 4 000 years and today, with over 240 million smallholder farmers, small-scale intensive agriculture still constitutes the backbone of the country's farming economy. Agroecology can have a vital function in preserving and promoting small-scale adaptive and diversified farming in China, responding to the growing environmental concerns, the demand for nutritious and healthy food, and to the emerging needs of farmer communities and civil society. In the year 2000, the Chinese Academy of Sciences started a programme on Participatory Plant Breeding and Participatory Varietal Selection. The programme has been promoting farmer-to-farmer and farmer-to-scientist exchange and co-creation of knowledge as a way to favour the interaction between farmers' seed systems and formal seed systems. Today it involves thousands of smallholders in living labs for diversifying food production, while improving livelihoods and enhancing adaptation and resilience.

The programme promotes the ownership of seeds by communities of farmers and provides the support of scientists from the formal seed systems. It supports farmers in seed registration and in the organization of community seed banks, which are then linked to public gene banks, held in national and provincial research institutes including the Chinese Academy of Agricultural Sciences, the Guanxi Academy of Agricultural Sciences, the Yunnan Academy of Agricultural Sciences and the Kunming Institute of Botany. Community seed banks help to empower and strengthen farmer communities by bolstering collective action, with a special impact on the empowerment of women who have a key role in selection and maintenance of seeds.

A remarkable achievement of the programme was the release in 2003 of the hybrid waxy maize variety, *Guinuo 2006*. Such success highlighted the need for regulation of this synergistic interaction between the formal and informal seed systems in order to ensure equitable knowledge access and profit sharing. Consequently, the team facilitated the formulation of agreements between 11 farmer communities and two formal research institutes, creating a legal space for community-based seed production. Furthermore, in response to the farmers' interest in increasing the value of their products, the programme has also involved groups of producers in the set-up of value-adding institutional innovations, such as Community Supported Agriculture and Participatory Guarantee Systems (PGS), as well as in the organization of cooperatives for women and youth groups. Following these efforts, from 2013 the programme has expanded its geographical outreach and managed to create a National Farmer Seed Network involving 36 rural communities from 11 provinces, four public agricultural research organizations, two universities and a number of NGOs. The growing recognition of the network allowed for the initiation of a fruitful policy dialogue that influenced the formulation of important national legal instruments, creating a more supportive environment for farmer-seed systems. These improvements facilitate participatory variety selection, participatory plant breeding, seed exchange, seed production as well as Community Supported Agriculture /PGS networks.

These steps forward are particularly relevant, especially considering the overall trend in Chinese policy-making. In fact, a recent review of the China Seed Policy conducted by CAS, spanning from 1949 to 2016, highlighted a steady evolution from farmer-centred to corporate-centred, from public to private value. The research also showed that this trend is generating a dramatic erosion of the gene base and a loss of biodiversity at field level. In addition, results show the remarkable regional differentiation in types of seeds used (landraces, improved varieties and hybrids) and forms and levels of agricultural development across areas of the country. Based on these observations, the assessment allowed formulating three key seed policy recommendations, which could contribute to paving the way to sustainable agricultural development in China: (i) fostering *in situ* conservation and sustainable use of farmer-produced seeds to protect farmers' interests and ensure seed security; (ii) building and strengthening linkages among farmers, public researchers and seed enterprises; and (iii) adopting multiple models and sizes of seed supply in different regions and at different levels serving emerging multi-functional agroecological farming practices across China and the related diversified food systems.



Source: provided by authors/organization

3.1.4 INDIA AGROECOLOGY AND WOMEN'S EMPOWERMENT, TRANSFORMING THE LIFE OF RURAL COMMUNITIES

Yogesh Jadhav

Barli Development Institute for Rural Communities (BDIRW)

Gender equality is often mistakenly perceived as an emotional issue and often framed within feminist activism. It is instead a global resource management concern affecting 50 percent of the human population. Gender equality is also a necessary pre-requisite for optimally achieving the SDGs, a highly neglected or overlooked social justice paradigm which needs immediate attention, and a viable means for the development of collective wisdom and the evolution of the human kind. For this reason, work on gender equality encompasses all of the agroecological elements and the SDGs. There is consistent need for integrating agroecological elements within India's development paradigm. This need originates from the growing demand and preference for chemical free, organic and healthy products, the deterioration and depletion of natural resources due to overuse of pesticides, the shrinking of forests due to deforestation and rapid urbanization, population growth, the rising of social inequality due to migration to cities, the growing pollution and environmental concerns, the health concerns around GMOs and inorganically produced foods, and the displacement and migration of rural communities due to increasingly unpredictable rainfall patterns and extreme weather events associated with climate change.

Indian rural and tribal women are the primary users of natural resources as they collect firewood from forests and take care of the family as well as the farms. They are the custodians and main users of indigenous knowledge, and the first to perceive the impacts of climate change and environmental degradation on the ecology of their food and livelihood systems. For over 32 years, BDIRW has worked on the training and empowerment of rural and tribal women as managers of agro-biodiversity to ensure the sustainability of rural ecosystems. The institute conducts free residential six-month training programmes twice a year, with an average of 260 women trained

per year. Currently at its 114th batch, BDIRW has provided training on sustainable agroecological practices to over 8 500 women from more than 850 villages. These practices include: (i) composting (e.g. the use of leaf litter for the production of farm-yard manure); (ii) biological control of weeds through crop rotation, intercropping, and hand weeding; (iii) biodynamic control of insects and pests through the use of herbal and locally available plant material (e.g. leaf extracts); (iv) soil fertility management through reuse and recycling of treated septic waste water; (v) shelter belts and windbreaks for conserving soil moisture; (vi) use of selective agri-horticulture techniques for on-farm biodiversity conservation; (vii) cultivation of medicinal plants and fruit trees as a safety net to reduce economic risk.

The six-month curriculum includes a holistic variety of topics that generate positive impacts on trainees and their communities. Hands-on training in organic farming, biodynamic agriculture, and indigenous methods of weed and pest control results in better management of rural farmlands. The promotion of solar technologies for food processing (e.g. cooking, food drying and power generation, among others) helps improving livelihoods while reducing environmental impacts. Training on the cultivation and use of medicinal plants favours overall rural health including maternal and natal care. Literacy lessons (Hindi) through innovative rapid learning, peer tutoring and other creative learning methodologies led to 100 percent of participants becoming literate. Vocational training in stitching and tailoring enhance women's self-reliance and provide additional livelihood improvements. Training on inter-personal skills boosts self-confidence and favours informed decision-making in the management of agricultural activities. Notably, the majority of our trainees start their own small-scale rural enterprise becoming financially self-reliant. Also, many of the trainees take up or restart their formal studies after returning home. Eventually, all the trainees contribute to their own communities and rural landscapes through knowledge sharing. For instance, they impart health knowledge to other women, they teach men agroecological practices, and they organize village-level campaigns for reforestation and other community services.



Source: provided by authors/organization



Source: provided by authors/organization

3.1.5 ECUADOR COLLECTIVE ACTION FOR AGROECOLOGY TO ACHIEVE FOOD SECURITY AND NUTRITION

Roberto Gortaire Amézcu

Colectivo Agroecologico del Ecuador (CAE)

CAE is an effort to promote social and institutional networks for a coordinated action supporting Agroecology and food sovereignty. It promotes reflection processes among farmer and indigenous organizations, associations of agroecological producers, consumers, academics, communicators, students, universities and activists. The strength of CAE is that it is not a unique organization, but rather a network of organizations that fosters an alliance between the rural and urban areas through better linkages between producers and consumers thus favouring food sovereignty. CAE understands Agroecology as an inspiration for integrated smallholder agriculture that understands and uses natural cycles and blends ancestral with new knowledge for the design of sustainable agroecosystems to avoid using pesticides, GMOs and other pollutants. Agroecology promotes biodiversity, the integration of crops and animals, the adequate management of soil and water, and the farmer empowerment to control their food and agricultural systems. This involves the development of solidarity economy circuits that rebuild the rural-urban alliance and promotes a sustainability culture.

CAE activities are organized across five lines of action:

- i. **Agroecological and Solidarity Economic Circuit:** It is composed of 180 food stands and businesses that are linked to 15 000 farms and 150 000 consumer families. In these circuits, for example, commercial linkages are established such as the agroecological producers' national guide including mechanisms for the efficient distribution of products. The action points for these circuits include: (i) agroecological food production; (ii) enabling the efficient and easy exchange and distribution of products; (iii) active and conscious consumption; (iv) post-consumption activities.

- ii. Capacity building on Agroecology:** In order to foster agroecological approaches and practices in the educational system, a network of Agroecology schools has been created. Farmer capacity building is largely conducted using farmer-to-farmer approaches developed in Central America which are based on the territorial diagnosis of the agricultural context, the collective development of thinking following a paradigm that can be summarized as “listening with your eyes, seeing with your hands, doing with you brain, thinking with your heart, and feeling with the words” (farmer’s pedagogy).
- iii. Agro-biodiversity and GMOs:** Promoting agro-biodiversity, the free movement of local seeds, and a country free of GMOs.
- iv. Networking platform:** It is composed by the Sociedad Científica Latinoamericana de Agroecología (SOCLA) Initiative, the Chef-Farmer alliance, and the solidary economy movements. This networking platform is very important in Ecuador and responsible for political advocacy and the mobilization of social actors. It has led to the establishment of the Farmer Struggle Day, the Food Sovereignty Day, and of a permanent society-government dialogue on Agroecology and food sovereignty. It has produced with more than 2 500 national participants a Law Proposal to promote sustainable agriculture and Agroecology currently under review.
- v. Responsible consumption, health and food sovereignty:** This is a central element of increasing awareness about the importance of conscious consumption. This has involved a permanent sensibilization campaign entitled “how delicious it is” and also activities linked to the Slow Food Movement which has developed a methodology for conscious consumption.

Key factors contributing to the success of CAE include: (i) the development of a solidarity collaborative network as a collective effort that generates greater impact while respecting the autonomy, leadership and local norms of each organization; (ii) CAE does not promote a unique initiative but rather the different individual and local initiatives are analysed, shared and adopted by all as it becomes an objective to guide national action; (iii) developing a common vision and convergence horizon for Agroecology, food sovereignty and solidary economy; (iv) CAE lines of action contribute to SDGs 1, 2, 3, 5, 6, 8, 10, 11, 12, 13, 14, 15, 17.



Source: provided by authors/organization

3.1.6 HUNGARY THE PRO-RATATUILLE INITIATIVE: AGROECOLOGY TO IMPROVE LIVELIHOODS IN SMALL RURAL VILLAGES

Melinda Kassai

Butterfly Movement

The Pro-Ratatouille Initiative is a small-scale community-based agricultural and social-integration project, run by the Butterfly Movement of Hungary and funded by the Norwegian Grant, ERSTE Foundation, LDS Charity, and the Ministry of Human Capacities of Hungary. The project aims at improving livelihoods and favouring social integration of small village communities and disadvantaged groups, including Roma people. The project fosters the creation of agroecological community and individual gardens and the establishment of village networks to favour cooperation. It provides non-formal adult education and experience-based learning around economic and ecological issues.

These activities and the related increase in “environmental income”, which results from these ecosystem-based enterprises, can stabilize household economies, translating into better nutrition and health, greater access to education, more opportunities for saving and investment that reduce vulnerability to financial shocks. Social gains accompany these material gains as the poor assume greater capacity to manage local ecosystems and become more active players in the local economy. These gains are often associated with an increased voice in resource-use decisions and greater equity in the distribution of economic benefits from natural resources.

Despite the high demand for Agroecology scaling up and out, the resources are still rather limited. In order to harness such potential, it is necessary to increase the knowledge and awareness, of both donors and policymakers, on the scope and complexity of the nested problems tackled by the project. One important solution could be a collaboration at the European level to replicate Butterfly Movement efforts in regions which present similar characteristics across Europe.





Source: provided by authors/organization

3.1.7 ITALY AN AGROECOLOGICAL INTEGRATION EXPERIENCE: BRINGING KNOWLEDGE TOGETHER

Adolfo Rosati

Consiglio per la Ricerca in agricoltura e l'analisi dell'Economia Agraria (CREA)

Europe accounts for over four million hectares of olive trees (*Olea europea*), which are increasingly becoming unprofitable due to the combination of the de-coupling of subsidies and the reduced cost of olive oil. Integrating crops and livestock into olive orchards can constitute an agroecological solution for increasing yields and income in a sustainable manner that responds to the lack of profitability often resulting in land abandonment. Especially in Italy, where farmers cultivate on average one to two hectares, increasing the efficiency and profitability of land is key so the integration of different practices could carry important benefits.

Wild asparagus (*Asparagus acutifolius*) is a particularly interesting product since it has an established market demand and holds an appealing market price (10–30 EUR/kg). It also grows naturally under olive trees which facilitates its cultivation. Olive trees need a 55 percent of the incoming solar radiation while the remaining 45 percent, which is generally captured by weeds, can be utilized by the wild asparagus given that it is shade-tolerant. Asparagus can be cultivated both in traditional and super-high density olive orchards.

The addition of free-range chicken is justified by the increased market sensibility to animal welfare, meat quality and better environmental performance, as compared to intensive chicken production. Moreover, olive trees provide protection to chickens from exposure to sun and high temperatures while chickens contribute to soil fertility (e.g. chicken manure often outperforms mineral NPK fertilizers), to control weeds and to provide some level of pest control (e.g. on the olive fly and the weevil). Grazing in the orchard spares land, since chickens graze in an already utilized area, and virtually eliminates the olive orchard environmental impact that is usually associated with mowing and fertilization. This integrated system design could presumably contribute to the scaling up of Agroecology and mitigation of carbon losses. For instance, if we converted the entire European chicken production to this system, the density of chicken in olive orchards would be as low as 1 000 chicken/ha, with savings of about 250 kg/ha of NPK.

3.1.8 FRANCE THE EXPERIENCES OF 400 “ECONOMIC INTEREST GROUPS” BRINGING ABOUT AGROECOLOGICAL TRANSITIONS

Pierre Pujos

AGFORWARD Project

I have managed a 210 ha organic sheep farm in the South West of France, located in hillsides, under rain-fed conditions for the last 20 years. When first settling in, I was shocked by the amount of soil erosion that followed storms and by being unable to stop the loss of my economic potential because I was losing my soil capital. I quickly started to introduce grass strips for erosion control and, over the years, it turned out that the most efficient practice was to always keep soils covered, protected with an organic matter layer that also prevents water loss and that favours biodiversity, with crop diversification and agroforestry as complementary practices. We have talked about farmers' dependence on inputs but since 2004 I have managed to use no inputs, not even organic fertilizers. I rely on self-fertility, and the soil cover and protection with plant materials allow me to manage this fertility. In terms of biodiversity, we get a whole range of flowers that favour pollinators. One of the pillars of the system is biodiversity, which must also be promoted in all areas.

We sow on the natural living cover to minimize soil disturbance, benefit from the mulching effect, and increase the soil organic matter content, derived from no-tillage practices. We have fragile soils and when organic matter levels are low soils no longer retain water, leading to greater erosion and great problems with the increasingly changing climate.



I believe that as mechanization is unable to protect the soil from erosion, we need to allow plant roots and life in the soil to do the work. In addition to the biodiversity benefits associated with plant covers, farmers' reappropriation of the biodiversity of local crop seeds is also a very important topic as it provides them with greater flexibility to adapt to their soils and climate. Agroforestry is another pillar that promotes the integration of crop and animal production on the same land while promoting efficient water use and erosion control on sloping terrains. My project now is to introduce an integrated system of sheep herd management that includes crop production and maintains plant cover in areas that are not exploited today.

This new development and the steps taken over the last 20 years have been possible thanks to networks and farmers' organizations. At the beginning, we were the only ones using the practices described but things improved when the Water Agency financed the development of the network "AGR'EAU" in the south-west of France, which involves 170 farms characterized by social, economic and environmental indicators. This network promotes farmers' group discussions with well-qualified facilitators. Later on, the national system of GIEE (Groups of Interest in Economic and Environmental issues) was introduced, which included three thematic measures: (i) adapting to climate change through integrated systems combining polycultures and livestock; (ii) protecting and enhancing pollination, and; (iii) valorization of woody biomass. We are about 20 farmers in each GIEE and together we think about these themes where good facilitation plays a very important role.

A more recent development is a promising association called "Agriculture of the living" which is driven by market demands and where the distributors are ready to pay more money for products produced by a different type of agriculture that is healthier, more respectful with the environment and thus protecting soils and people.



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3.1.9 **SENEGAL** CO-CREATION OF KNOWLEDGE TO PROMOTE AGROECOLOGICAL TRANSITIONS: THE CASE OF PEASANT “JURIES”

Tabara Ndiaye

Joint Action for Farmers’ Organization in West Africa (JAFOWA)

JAFOWA is an initiative aiming at promoting the transition towards Agroecology in Senegal through a joint action-oriented research project in Senegal and Nicaragua. The project is coordinated by the Forum for Endogenic Sustainable Development, the Senegalese Agricultural Research Institute and the Institute of Development Studies of the UK, and funded by the New Field Foundation. The objective of the research was to identify ways to remove the obstacles to agroecological transition at community level. The project established a jury composed by five women and eight men representing farmers, fisherfolk and pastoralists. Interviews were conducted with producers, input suppliers, retailers, and CSOs to carry out a mapping of the local food system. This approach allowed identifying and finding answers to five key research questions:

How do farmers define the concept of Agroecology and what is the existing knowledge on it?

According to the respondents, Agroecology is a way of farming without chemical fertilizers and pesticides. A diversified wealth of knowledge already exists at community level on agroecological practices, much of which entails traditional knowledge that is transmitted across generations.

What is the most efficient strategy to promote Agroecology?

Traditional communicators (e.g. locally recognized wise-people, elders) play a key role in promoting Agroecology. Experiential learning is also pivotal to the transition towards Agroecology. For example, both demonstration plots and exchange visits increase trust and show to farmers the potential of adopting more sustainable practices in their own fields.

How can a diversified production be better utilized to improve nutrition?

Researchers were able to identify a large diversity of products in agroecological systems, which are easy to access, and established that agroecological products have a higher content in micronutrients as compared to those produced under conventional agriculture.

How to improve access to the inputs needed for agroecological production?

A series of constraints were identified including the limited availability and high costs of local and traditional varieties of seeds, compost and natural pesticides.

How can organizational capacities be improved to promote Agroecology?

The strengthening of organizational capacities is pivotal to the effective promotion of Agroecology. Measures include the training of qualified personnel with diversified technical expertise, the provision of sufficient financial capital, and the creation of capacities for building and sustaining networks of relevant stakeholders such as research organizations, CSOs and value-chain actors.

A Participatory Action Plan

Following these findings, project participants elaborated a joint action plan involving all relevant stakeholders in the transition towards an agroecological food system. These include local restaurants committed to sourcing their products from agroecological farmers, seed experts from the Ministry of Agriculture advocating for the provision of traditional and locally produced seeds, directors of local markets designing storage areas dedicated to agroecological products, community radio promoting Agroecology, nutrition experts providing training to farmer organizations and local communities, organic input producers, and CSOs fostering the creation of Agroecology networks.



Source: provided by authors/organization

3.1.10 TANZANIA SCALING UP AGROECOLOGY THROUGH A COLLABORATIVE KNOWLEDGE PLATFORM

Janet Maro

Sustainable Agriculture Tanzania (SAT)

SAT is a Tanzanian NGO based in the Morogoro region. Between 2009 and 2016 SAT ran the Garden of Solidarity Project which became one of Tanzania's best recognized organizations in Agroecology. The organization works on four pillars:

1. *Dissemination of Knowledge:* Farmers participate in on-farm training in agroecological farming which includes the set-up of demonstration plots for the identification of locally adapted best practices. Content is constantly adapted to farmers' needs and also addresses entrepreneurial skills as well as a saving and lending culture. In addition, farmers are trained to become trainers themselves and disseminate their knowledge by organizing training within their own communities, with a special focus on youth. For these activities, farmers receive credits by the organization which allow them to participate in additional training organized by SAT. Through such iterative approach SAT managed to reach more than 3 000 farmers in the region and to set up over 120 demonstration plots. Besides on-farm training, SAT offers short-term courses at the training centre, attracting trainees from all over Africa. The experiences gathered in the field are further shared across the country through the Mkulima Mbunifu Farmer Magazine, run in collaboration with BvAT (<http://www.infonet-biovision.org/mkulima-mbunifu>).
2. *Application and Marketing:* Following a "practice-what-you-preach" philosophy, SAT's centre also hosts events for practicing, experimenting and fine-tuning the techniques to be proposed to farmers. This approach allowed to run experiments on compost production, merging scientific and empirical knowledge, testing ten different kinds of compost and elaborating a list of recommendations on how to produce the best-suited compost depending on local conditions and locally-available materials.



3. In addition, the centre runs the first organic shop in Morogoro, where the products from agroecological farmers participating in the programmes are sold and obtain recognition.
4. *Research:* SAT also conducts important demand-driven research, collaborating with local universities to respond to questions yet to be answered in Agroecology. Farmers and university students are brought together to discuss the challenges that emerge on the ground when producing agroecologically. Consequently, students elaborate research proposals on relevant topics, and upon selection, receive funding to support their study. A good share of the research efforts is also carried out at the SAT's demonstration farm to build evidence on the potential of agroecological farming practices. All research results are made public and available to farmers and networks.
5. *Networking:* SAT conducts important networking , bringing together national and international organizations, research institutes and public organizations. One remarkable example of such efforts is the partnership with Biovision on the farmer-pastoralist collaboration project through which conflicts are converted into synergistic coexistence built on agroecological principles. For example, farmers have begun to use manure from cattle while pastoralists recycle crop production leftovers (maize and sunflowers) into additional feed supplements for their livestock.

An innovation platform for Agroecology

The wealth of information gathered through SAT in its work with over 3 000 farmers is further valorized through collaborations with universities and important institutes including the Swiss ETH-Zurich. Data gathered through research is collected with smartphones and uploaded to a platform to be disseminated to farmers. Farmers keep producing and sharing important information with the platform, creating an iterative process of information exchange and co-creation of knowledge. The platform also acts as an incubator for young organizations both at country level and abroad. All the information generated through the platform is eventually disseminated to consumers, public organizations the private sector and farmers.

The pioneering work of SAT carries important fruits. In the villages of intervention income has increased by 38 percent, burning activities in fields have decreased by 95 percent, 64 percent of farmers have been able to regenerate infertile land, water consumption was reduced by 59 percent, 91 percent of trained farmers adopt soil erosion-control measures, the use of chemicals and environmental toxins was almost completely eliminated, and lastly, 97 percent of trained farmers reported that they have improved their livelihoods.

3.1.11 KYRGYZSTAN ORGANIC “AIMAK” AGROECOLOGY FOR SUSTAINABLE DEVELOPMENT IN RURAL AND MOUNTAIN COMMUNITIES

Sultan Sarygulov

Federation for Organic Development (BIO-KG)

Organic Aimak is an integrated model for sustainable development of rural and mountain communities in Kyrgyzstan. The concept of Organic Aimak is based on the synthesis of the potentials of traditional culture and modern organic and environmentally friendly technologies. The project has been implemented since 2014 with the support of the Christensen Fund for Agroecology in 20 villages distributed across the provinces of Talas, Naryn, Yssyk Kul, and Chui. The traditional local worldview and culture recognizes respect for nature and its laws as a central condition to ensure the harmonious development of all forms of life.

Common values include the valorization of biodiversity, the personal and collective responsibility for natural resources for future generations, the measured consumption habits, a clear understanding that stable relationships are possible only on the basis of mutual respect, and the unconditional priority given to moral and ethical values in all economic activities.

The project lands in areas with such pre-existing conditions thus enhancing the potential for maximization of benefits. Criteria for selection include the preservation of traditions and rituals which resonate with the organization’s vision, traditional craftsmanship activities, the existence of activities related to sustainable tourism (agro, eco, ethno) and the use of traditional organic farming techniques.



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3.1.12 MAURITANIA TRANSITIONING TO AGROECOLOGY IN THE SENEGAL RIVER VALLEY

Arantxa García Brea

Centro de Estudios Rurales y Agricultura Internacional (CERAI)

The Spanish NGO CERAI and its local partner, AMAT, are working together in the Senegal river valley in Mauritania since 2009. The work is conducted in five thematic areas:

1. Sustainability and environmental resilience: Here Agroecology is used to guide agricultural decision-making in the context of drought for farm design, crop-livestock integration, enhanced agro-biodiversity, biologically active soils, increased biomass production, nutrient cycling and tree planting. The latter is not always easy given land tenure issues.
2. Sustainability and economic resilience: This is based on the notion that economic sustainability requires a self-consumption model that generates excess production that can be sold for additional income, uses appropriate technologies (e.g. tillage, irrigation and fencing systems), promotes the use of local resources (e.g. farm residues, manures, seeds).
3. Sustainability and socio-political resilience: Given the limited number of social organizations in Mauritania this is a very important area of work including: (i) promoting the development of 13 grass-roots organizations (five livestock and eight horticulture producers) with 351 associates; (ii) recovering local technologies like the *zai* technology, the *ñiébé*-sorghum intercropping (*ñiébé* = local bean variety), and other local varieties; (iii) recovery of 315 plots of largely abandoned lands and; (iv) enhancing work with women despite inherent difficulties associated with local norms.

- 4. **Scaling out Agroecology:** we are in the process of adapting the farmer-to-farmer experience from Latin America to strengthen skills for people with different levels of education through: (i) knowledge and technology sharing; (ii) training through four trained Agroecology promoters and facilitators; (iii) engagement of 481 farmers as key actors in the process; (iv) farm visits, exchanges, diagnostics, trials and competitions.
- 5. **Scaling up Agroecology:** bringing agroecology to different levels of governmental and non-governmental decision-making through: (i) organization of meetings, technical visits, and thematic fora; (ii) practical applications and field demonstrations.



Source: provided by authors/organization

3.1.13 VIETNAM A DECADE OF PARTICIPATORY GUARANTEE SYSTEMS FOR SMALL ORGANIC FARMERS

Tu Thi Tuyet Nhung

Centre Development of Community Participatory Monitoring Resources (CDPM)

The CDPM of Vietnam counts on ten years of experience in developing PGS. The work on PGS began to respond to the challenges associated with the sale of organic products resulting from a seven-year project on organic farming. Given the failure of the initial attempts to collaborate with the government for the creation of an organic certification mechanism, CDPM decided to set up a trust-based system operating outside of the framework of third party certification. PGS are locally-based and voluntary quality assurance systems. Certification of producers is based on the active participation of stakeholders in localized groups – farmers, consumers, researchers, municipal public officials, local businesses – and is built on a foundation of trust, social networks and knowledge exchange. PGS are alternative certification mechanisms that proved very efficient in enabling family farmers involved in Agroecology to reach markets in a way that recognizes and valorizes their products.

The process of setting up the PGS included: (i) development of standards for both producers and traders agreed upon by stakeholders; (ii) design of the organizational structure and related functions; (iii) development of PGS manuals for producers and traders (inspection and certification procedures); (iv) choice of a certification logo; (v) the creation of a website and a database system; (vi) registration of groups, farmers and retailers; (vii) training on inspection procedures; (viii) farm inspections; (ix) submission of PGS standards to IFOAM for recognition (official recognition was achieved in 2013).





Source: provided by authors/organization

Besides organizing the PGS, CDPM also worked on the development of a receptive market for agroecologically produced food. Activities entailed: (i) awareness raising for consumers through talk-shows, workshops, marketing campaigns, fairs and media; (ii) encouraging the involvement of traders in the PGS; (iii) linking producer groups to traders and retailers; (iv) developing a supply chain for organic vegetables through organic shops, home-delivery systems and dedicated supermarket sections; (v) organizing organic farm tours for consumers and schools.

Thanks to these efforts, PGS went beyond being simply a certification scheme to becoming a participatory value chain approach where all stakeholders are involved in the realization of the entire value chain, including training, production, packaging, sale, distribution, marketing and communication. The system has grown steadily and increased its figures passing from only four retailers in 2009 to ten retailers, five cooperatives and 65 outlets in 2017, and from 11 groups of farmers to 58. The production area under PGS increased by over 600 percent with the total sale volume increasing from 110 tonnes to 649 tonnes. These results have created the right conditions for the PGS to evolve and incorporate a tracking technology based on QR codes (e.g. barcodes) to increase the traceability of products and the efficiency of the systems.



Source: provided by authors/organization

3.1.14 **PAPUA NEW GUINEA** **FOOD IS LIFE - EDUCATING THE PACIFIC ABOUT** **AGROECOLOGY THROUGH ICT INNOVATIONS**

Bao Waiko

Save Papua New Guinea (Save PNG)

Papua New Guinea (PNG) accounts for seven million people and 1 000 different languages. The concept of Agroecology in PNG is intended as a harmonious balance between people and their land and natural environment to sustain healthy food, water and agricultural systems for a prosperous Pacific community. Trends show, however, a number of key issues which undermine livelihoods and the sustainable development of the country. Smallholder farming is dominated by industrial corporate interest and commercial development models. Widespread conditions of poverty and hunger exist as well as nutritional unbalances associated with the “hidden hunger syndrome” where people lack sufficient vitamins and minerals intake. Traditional agriculture is being disintegrated in favour of store-goods consumption and the rates of lifestyle disease-related deaths are worrisome. In addition, the means for sharing information, skills and knowledge for addressing these issues is limited.

Save PNG’s mission is to equip Pacific islanders with the skills and knowledge to combat common health, land and economic challenges in the region. This is done through training workshops, cultural exchanges, and media education to encourage indigenous peoples to become their own agents of change. Media can have a crucially important role in spreading knowledge to the masses about agricultural and food practices in PNG, achieving a wide impact with limited resources.

For this reason Save PNG, in the context of its *Food is Life* campaign, created a television series in 11 episodes, named Cafe Niugini, which shows food and agricultural traditions of 30 local communities throughout the country. The series, hosted by indigenous food enthusiast and TV personality Jennifer Baing Waiko, reached over one million viewers becoming one of the highest rating television programme in the pacific region. In addition, the video series is streamed online to international audiences.

As part of the *Food is Life* campaign the organization elaborated educational kits including a facilitator's guide, study booklets and a video series. The kits were distributed to 300 high schools throughout the country. In addition, Save PNG conducted 30 peer-education workshops with a variety of stakeholders nationwide. The themes addressed by the educational kit and in the workshops include nutrition, ecological stewardship, land protection, gardens for health and wealth, emergency foods and integrated agriculture. As of 2018, over 300 people have graduated from the *Food is Life* courses teaching best practices in indigenous agriculture and food pathways.

Save PNG has had a key role in strengthening local networks, lobby groups and advocates to promote the *Food is Life* concept and build Agroecology movements. The organization's future challenges include: (i) replicating the PNG model to the entire Pacific region by working with regional partners to implement projects in Solomon Islands, Fiji, Vanuatu and New Caledonia; (ii) increasing knowledge transfer and capacity building of local farming communities; (iii) strengthening peer group networks, local champions and Agroecology education in the region, and; (iv) encouraging mainstream audiences and public opinion to support Agroecology as the sustainable development model for the future.



Source: provided by authors/organization

3.1.15 **COSTA RICA** **SOIL BIODIVERSITY AND BIO-INPUTS** **FOR SUSTAINABLE PRODUCTION**

Rolando Tencio Camacho

Ministry of Agriculture and Livestock (MAG)

The Costa Rican MAG, through its programme on “Use of mountain micro-organisms and bio-inputs for a sustainable agriculture in East-Central region of Costa Rica”, plans to demonstrate that new extension techniques will encourage conventional producers to generate bio-inputs from their own farm resources in order to reduce production costs and be more environmentally friendly. This initiative was launched in 2012 following Costa Rica’s participation in the Japan International Cooperation Agency course entitled “Organic Agriculture Techniques”. This involved a capacity building plan from 2012 to 2018 including theoretical classes, demonstrations of the learning-by-doing method, and a field-day at a training farm with 14–30 producers.

During this learning process new techniques were discussed, the most important of which was dealing with the production of bio-inputs. These are products generated from or through beneficial organisms like insects, fungi, bacteria, yeast, or plant extracts, complemented with rock minerals as a source of nutrients. First, microorganisms are collected from the forest through different techniques, then efficient organisms are multiplied using liquid media, and finally several products are generated like solid organic amendments (e.g. Bokashi and compost), liquid biofertilizers and natural pest repellents. The objective is to encourage conventional producers to initiate the transition towards more sustainable production, and if possible become organic producers. Once the course concluded, a teaching manual was produced which, together with videos, pictures and bulletins, is used by producers to promote and disseminate these practices through social networks.

Three experiences in Costa Rica have been used to demonstrate the positive effects of bio-inputs on crop production: (i) Avocado production in Finca Elmon, Copey de Dota; (ii) Young women project (AFUNADES, Tarrazu); (iii) High altitude fruit production (apples and plums). Achievements following four years include: (i) direct capacity building of 400 farmers; (ii) capacity building in 12 MAG extension agencies in the Eastern region; (iii) exchange of experiences with the Latin Network of Organic Agriculture and Sustainable Production; (iv) increased number of organic farms in the region; (v) more farms with the Ecological Blue Flag Prize which enables a premium to organic producers; (vi) greater than 60 percent reduction in costs, greater yield and product quality; (vii) articles in magazines, newspapers and interviews in radio and national television.

3.1.16 SWITZERLAND PROMOTING AGROECOLOGY AT THE NATIONAL LEVEL - THE SWISS EXPERIENCE

Ivo Strahm

Federal Office for Agriculture (BLW)

The Resource Programme of BLW aims at promoting innovation and Agroecology from local to national level as a means to achieve more sustainable use of natural resources in agriculture. An important objective of the programme concerns gathering knowledge to benefit farmers on the one hand, and to contribute to improving the Swiss Agricultural Policy on the other.

The programme entails a large variety of projects and activities including the promotion of biodiversity in cropping areas, the introduction of nesting and feeding areas for bees and wild bees, soil fertility management through humus formation, optimization in the use of plant protection products, the fight against antimicrobial resistance by eliminating *Staphylococcus aureus*, and by advising farmers on innovative practices and technologies such as improved irrigation and smart farming. The implementation of these projects relies on a three-fold strategy: (i) advisory services and financial support for farmers and organizations to test and implement innovations (limited to six years in a view of sustainability); (ii) advisory services including on-field presentations, discussion of management practices and environmental effects, and farmer workshops facilitated by professionals; (iii) scientific support including monitoring and evaluation of sustainability indicators.

This approach presents a great potential for scaling up and scaling out. On the one hand, the collection of data regarding project performance, with a special attention to sustainability, allows to inform the National Agricultural Policy. On the other hand, farmers are central to the programme and their active involvement and high level of acceptance are key to spreading innovations countrywide.



Source: provided by authors/organization





CHAPTER 4

INTERACTIVE PANEL DISCUSSIONS: AGROECOLOGY AND EMERGING OPPORTUNITIES

- OPENING REMARKS
- WELCOME ADDRESS
- KEY NOTE ADDRESS
- POLICY ORIENTATIONS

4.1. BIODIVERSITY AND CLIMATE CHANGE

PANELLISTS

1. **David Amudavi**, Executive Director, Biovision Africa Trust (BvAT)
2. **David Cooper**, Deputy Executive Secretary, Convention on Biological Diversity (CBD)
3. **Mercedes López Martínez**, México Representative, Via Orgánica, México
4. **Dennis Garrity**, Distinguished Senior Fellow, World Agroforestry Centre (ICRAF)
5. **Clara Nicholls**, President, Sociedad Científica Latinoamericana de Agroecología (SOCLA)

FACILITATOR

Martha Elena Federica Bárcena Coqui, Ambassador, Permanent Representative of Mexico to FAO, IFAD and WFP

Along with the eradication of rural poverty (SDG 1) and the eradication of hunger (SDG 2), Agroecology contributes to other SDGs such as the sustainable use of water (SDG 6), sustainable production and consumption (SDG 12), resilience to climate change and prevention of biodiversity loss (SDG 13).

This session highlighted the contribution of Agroecology to the Paris Agreement on Climate Change, the Conference of the Parties on biodiversity (COP 13) and climate change (COP 24) and the commitments from each country, in terms of adaptation to and mitigation of climate change.

To address the interrelationships between Agroecology, biodiversity and climate change, the five panellists whose work on the subjects is highly recognized, discussed central themes for the future of food systems and sustainable rural development. The presentations covered the following questions:

- a. How can Agroecology contribute to achieving biodiversity targets? Can you share a concrete example?
- b. How can Agroecology help achieve the Paris Agreement?
- c. Can you identify potential barriers to scaling up Agroecology related to biodiversity or climate change?

The second part of the session consisted of an interaction with the audience to further identify gaps and actions that could be taken by FAO to support the inclusion of Agroecology in national climate change adaptation and mitigation plans.

4.1.1 PRESENTATION BY DAVID AMUDAVI

Executive Director, Biovision Africa Trust (BvAT)

BvAT operates in the African continent in support of agroecological and organic farming, with a large share of activities being deployed in Kenya and Tanzania.

Biovision offers a unique farmers' communication programme providing information on organic agriculture as well as support to accessing markets and liaising with organizations and institutions that provide credit and services.

BvAT believes that Agroecology contributes to strengthening the nexus between biodiversity and climate change. It provides a wide range of management options to design agricultural systems that support functional biodiversity. Biodiversity is a main contributor to building resilience to climate change both at the farm and food-system levels.

Agroecological practices protect ecosystems by enhancing soil fertility and soil health leveraging on soil biodiversity, by promoting the diversity of pollinators and by diversifying production on farm. Agroecology can also have a key role in climate change mitigation through carbon sequestration and reduced emissions for example through agroforestry, soil fertility management that increases the incorporation of organic matter into soil, and through the reduced use of nitrogen-based chemical inputs.

A concrete example of BvAT's contribution to achieving the biodiversity and climate change targets is with the EOA-I. This initiative is meant to be mainstreamed into national agricultural production policies, programmes and plans with the objective of increasing food security while safeguarding the environment and improving livelihoods of farmers and their communities.

The EOA-I values the importance of research to generate evidence as a tool to inform and influence policymaking in support of Agroecology. Furthermore, research efforts are key to proactive agricultural systems particularly when they are coupled with a robust training and extension knowledge-sharing strategy.

The EOA-I gives significant attention to the strengthening of markets and value chains for organic and agroecological products. In the following years, networking activities coordinated by BvAT are expected to lead to the mainstreaming of the initiative in all 55 countries of the African Union.

The knowledge gathered through the initiative are shared across the continent through a solid information and communication strategy, reaching out to a large number of African and international stakeholders.

In Africa, National Action Plans, a mandate for all countries of the Union, are key instruments to (i) identify and foster technologies and platforms which can harness the mitigation and adaptation potential of Agroecology; (ii) provide funding to Agroecology related programmes; and (iii) strengthen knowledge management and capacity building.

4.1.2 PRESENTATION BY DAVID COOPER

Deputy Executive Secretary, Convention on Biological Diversity (CBD)

The CBD shapes the global biodiversity agenda and provides the framework for countries to promote the conservation and sustainable use of biodiversity, along with the sharing of benefits from the use of genetic resources.

While entering the final quarter of the UN Decade of Biodiversity 2011–2020, the CBD is accelerating the efforts to meet the goals set in the common Strategic Plan for Biodiversity and the Aichi biodiversity targets.

One of the main outcomes of the COP 13 held in Mexico, was the Cancun Declaration on *Mainstreaming the Conservation and Sustainable Use of Biodiversity for Well-Being*. The decision to mainstream biodiversity acknowledges in fact the role of Agroecology. One key example of how Agroecology can contribute to the Aichi objectives, for instance, is related to the importance of biodiversity in agricultural landscapes and in particular on the role of pollinators in enhancing agricultural productivity and sustainability.

FAO has had a key role in coordinating the work on pollinators in the framework of the programme of work of the Convention on Agricultural Biodiversity. The work conducted has shown that 25 percent of the yield gap, between best performing farms and average performing farms in the same territory, could be met through enhanced pollinator activity. The improved use of pollinators has direct implications on other aspects of sustainable management of farms and landscapes, since it strongly relates to the availability of nesting sites, greater plant diversity, and the reduced use of pesticides.

It should also be noted that if, on the one hand, Agroecology can contribute to the achievement of the Aichi targets, on the other, these targets could contribute to helping the Agroecology agenda. For instance, the targets concerning incentive structures and the deployment of subsidies as well as those related to public awareness, can greatly contribute to creating an enabling environment for Agroecology. Agriculture, forestry, fishery, and aquaculture depend fundamentally on biodiversity. The way humanity will manage agriculture and food systems is probably the single most important issue for the future of biodiversity.

The CBD has analysed potential future scenarios and their implications for biodiversity. Results show that in order to achieve the biodiversity goals, including the 2050 Vision for Biodiversity adopted by the Convention, as well as the goals set in the Paris Agreements, agricultural productivity needs to increase alongside with a reduction in environmental impacts.

Making better use of biodiversity on farms and across agricultural landscapes is essential to achieving sustainable agriculture. This entails making better use of genetic resources, including crop and livestock genetic resources, pollinators, natural enemies of pests, and soil biodiversity which is closely related to soil fertility.



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As clearly expressed in the FAO publication *10 Elements of Agroecology*, biodiversity is an essential part of Agroecology. A wealth of experiences exists confirming the value of the application of agroecological practices and principles on the ground.

The challenge of scaling up is therefore a key one and implies a discussion on what systemic changes are needed, for instance in market incentive structures and land tenure, to allow these experiences to flourish.

4.1.3 PRESENTATION BY MERCEDES LÓPEZ MARTÍNEZ

Mexico Representative, Via Orgánica, Mexico

Via Orgánica is a CSO founded in the semi-arid lands of San Miguel de Allende, Guanajuato, Mexico. It has a farm school where different practices are adapted and taught like agroforestry, rainfall collection and management, use of solar energy, and the empowerment of local communities through fair trade and capacity building on organic agriculture.

Via Orgánica is one of the founding members of Regeneration International, a global network developed in Costa Rica three years ago that connects 3.5 million consumers, farmers, activists, researchers, policymakers, and communicators across more than 60 countries.

This network revitalizes local economies, regenerates soil fertility and water-holding capacity thus feeding biodiversity, reduces greenhouse gas emissions and stores atmospheric carbon in the soil.

Via Orgánica has been part of the climatic summits in Paris, Marrakesh and Bonn, as well as COP 13, the biodiversity summit held in Cancun, and also promoted the “4 per mile” accord signed in Paris.

Via Orgánica faced major challenges as a member of the collective prosecution initiated by civil society four years ago against the planting of GMO maize in Mexico. This measure prevented contamination and protected the 64 local maize races and the hundreds of maize varieties.

Maize is not only a commodity on the stock exchange; it is also food, culture, religion and tradition.



4.1.4 PRESENTATION BY DENNIS GARRITY

Distinguished Senior Fellow, World Agroforestry Centre (ICRAF)

The Evergreen Agriculture Partnership is an alliance of international, national and local NGOs that focuses on the development of agriculture and natural resource management at ground level worldwide. The partnership's vision is the perennialisation of agriculture based on an agricultural paradigm that is truly agroecological and that leverages the interaction that perennials and annuals can have with livestock to create more sustainable systems. Niger is an icon of the Evergreen Agriculture movement. The country suffered tremendously from desertification and from the consequent degradation of income and welfare of its people.

However, over the last 25 years over two million families in Niger have mobilized to create a Farmer-Managed Natural Regeneration (FMNR) of trees on their farmlands. It is a phenomenon that has been reported as the biggest positive environmental transformation that has ever occurred in Africa. Agroecological practices like FMNR consist in the regeneration of three seedlings, usually indigenous ones, and are virtually cost-free. The African Union, the New Partnership for Africa's Development and the World Bank, among other organizations, recognize FMNR, as well as assisted natural regeneration in degraded forests and rangelands, as fundamental to the regeneration of the African drylands.

In the context of climate change resilience, these are iconic practices that can underlie the whole development of Agroecology in many parts of the world and buffer farming systems from high temperatures, radiation and water stress. The evidence base shows that agroforestry, which builds upon farmers' knowledge, is very scalable and, with little support, tens of millions of farmers can apply Agroecology principles in their farms.

There are two main challenges for Agroecology in tropical areas: carbon emissions and nitrogen pollution of ecosystems. A major study published in *Nature Climate Change* in 2016 (Zomer *et al.*, 2016) shows that 43 percent of agricultural land on earth (two billion ha) has more than 10 percent tree cover. The study also shows that in the last decade tree cover on farms increased by 14 percent in Brazil and by approximately seven percent in China, Indonesia and India. The carbon storage associated with the data on tree cover on agricultural land is equivalent to about one-third of the global emissions from agriculture.

These data could suggest that if the agroecological community commits to ramping up the rate at which tree cover increases in agricultural land, by incorporating multi-purpose trees and shrubs in a view of perennialisation of agriculture, the seemingly unattainable goal of making agriculture emission-neutral could be achieved by 2050. The agroecological community should voice this opportunity and influence the global debate on climate change, advocating for the potential of agroecological practices for making global agriculture emission neutral in the next three decades.



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An additional important point in which efforts would be prioritized concerns nitrogen. Biological nitrogen fixation is part of the cycling of nutrients and is part of agroecological practices. Scaling up biological nitrogen fixation through Agroecology would be a great approach to addressing the nitrogen planetary boundary.

In conclusion, the Agroecology community has the tools to propose concrete solutions to the problems that are critical to international conventions (i.e. carbon emissions and nitrogen pollution of ecosystems).

4.1.5 PRESENTATION BY CLARA NICHOLLS

President, Sociedad Científica Latinoamericana de Agroecología (SOCLA)

SOCLA is the first scientific society of Agroecology with over 1200 members including researchers, university professors, students and technical staff from NGOs and other organizations from 12 countries.

SOCLA organizes agroecological congresses, runs an education programme consisting of yearly training courses for farmers, technicians and students and its scientists participate in MSc and PhD Programmes in Latin America.

The scientific association also features publications on a variety of topics, including climate change, agriculture and gender issues, and runs a journal published in collaboration with the University of Murcia in Spain, addressing the political, social, ecological and agronomic dimensions of Agroecology.

SOCLA represents 40 percent of agroecologists worldwide and is open to sharing work with FAO or any other organization, and reaching agreements on fundamental social and political principles.

One of its programmes called *REDAGRES-Resilient Farms* involves a team of researchers from eight countries who visit areas affected by extreme climate events to identify farms that are most resistant in order to identify vulnerability and resilience factors, and then derive the underlying principles. These principles are then shared across farmers' networks and used to redesign farms to increase their readiness to face such events.

In the context of the programme, in June 2018 a group of farmers from Haiti and Puerto Rico will be visiting farms in Cuba to learn about the management practices that enable Cuban farms to be resilient, following their resistance to hurricane Maria in 2017. These practices will then be replicated on farms in both countries.

SOCLA believes that Agroecology is a transformative approach that emphasizes redesigning farms and landscapes in order to bolster social-ecological resilience. It also believes that Agroecology, as a science, is at the service of small farmers to enhance the resilience of their farms and the food sovereignty of their communities.

The role of Agroecology can be measured by two approaches promoted by SOCLA:

1. Sylvo-pastoral systems in El Porvenir and El Hatico, Colombia: El Porvenir is an example of an on-farm diversification combining fodder shrubs, trees and pasture. The project focused on biomass production increase from January to August 2006 and on the improvement on animal body conditions from April 2006 to January 2007. One of the most important indicators is represented by the carrying capacity, which increased from 1.2 to 5.1 cows/ha and milk production from 1.7 to 4.1 litres per cow/day.

At the farm El Hatico in Valle del Cauca department, the application of the intensive sylvo-pastoral system approach led to a reduction in evapotranspiration of 657 mm/day and the relative humidity increased between 20 percent and 30 percent. This particular farm performed remarkably well facing the 2009 drought, the harshest in 40 years, and the southern oscillations of *El Niño* and *La Niña* in the following years. Despite a severe loss in biomass production, the levels of milk production remained constant across the years between 2007 and 2013.

2. Agroecological shaded-coffee systems in Colombia: The National Research Centre on Coffee has long endorsed the transitions towards highly productive coffee varieties that need high levels of sun exposure and inputs, but are particularly vulnerable to climatic conditions.

In contrast, agroecological shaded-coffee systems are based on holistic landscape planning, and the design of farms incorporates a large diversity of plants that provide a great number of ecosystem services. These systems enhance resilience at many levels providing hundreds of potential useful plant species and non-timber forest products, reduce or eliminate the need for external inputs, and reduce the risk of cascading failures leading to ecosystem collapse.

Another important aspect when analysing and evaluating resilience concerns the different organizational and social forms that farming communities assume depending on the farming system they adopt. Monoculture systems tend to be associated with an erosion of knowledge, social cohesion and capacity, which translates into lower social capital and response capacity.

In turn, agroecological systems are characterised by higher levels of knowledge, tight social networks and a higher potential for collective action in responding to the threats posed by climatic conditions and other external stresses.



EMERGING ISSUES FROM THE FLOOR

- » Agroecology contributes to increase resilience at farm and landscape levels. Resilience is not only environmental but concerns also technical and social aspects. Organization of producers, access to information, policies and food systems related to sustainable production are much more impactful when agroecological technology and other elements such as economic, social and environmental resilience are included.
- » Mitigation and adaptation to climate change can be seen as two different agendas. Mitigation occurs as a consequence of agroecological designs, which incorporates, as a regular practice, the use of trees and legumes; diversifying farms with the goal of achieving socio-ecological resilience and food sovereignty. Adaptation uses the transformative science of Agroecology to address the root causes of the problem of an industrial monoculture system, to redesign the farms based on traditional and farmers' knowledge.
- » Agricultural knowledge must be strengthened in terms of being able to determine what kind of tree cover is essential for a specific agroecological system, so those trees and perennial crops provide ecological services to farmers.
- » The world is already producing enough food; in the name of productivity, practices that may hinder biodiversity are often being funded and subsidized whereas diversified agroforestry systems can help to increase both productivity and biodiversity.
- » Is important to highlight the holistic approach of Agroecology, especially now that the consequences of chemical use and their negative effects to the environment are being seen. International agreements focusing on reducing chemical substances need to focus not only on substituting chemicals for "safer" versions, but to replace them with agroecological practices and alternatives.

FINAL STATEMENTS BY PANELLISTS

Clara Nicholls, SOCLA

To scale up true agroecological innovations, instead of other approaches such as climate-smart agriculture, or conventional innovations like sustainable intensification and the use of transgenics, it must be recognized that the most relevant actors are small-scale farmers and peasants. They produce 80 percent of the world's food and their diversified farming systems have proved to be very resilient. Enough evidence is available already, now it is time to move from rhetoric to action in the field.

Mercedes López Martínez, Via Orgánica

FAO has the commitment to encourage governments to: (i) implement public policies in favour of Agroecology, especially related to mitigation and adaptation to climate change; (ii) guarantee that international treaties protect biodiversity against land-grabbing by multinational companies; (iii) provide support to small and medium productions; and (iv) value women in this important work to preserve food sovereignty.

David Amudavi, BvAT

FAO and the agroecological community should continue focusing on production, sustainability and resilience. Agroecology should be mainstreamed in all treaties and tailored down into programmes, together with robust monitoring, verification, accountability and reporting systems. Lastly, continuous work at the ground level must be conducted to produce the evidence base in support of agroecological transition.

Dennis Garrity, ICRAF

Tree cover on agricultural land is increasing across the world and there are many ways in which scaling up perennial trees and shrubs can be further accelerated. These systems are desirable for farmers and the support they need to foster Agroecology could also be the basis for addressing the emissions neutrality goal of the Paris Agreement and for taking a stand in the solution of global issues.

David Cooper, CBD

Transformative change is certainly needed and Agroecology has to be part of it. The key to increasing productivity and reducing the environmental impact on the ground is to invest in smallholder farmers, building their capacities so they can make better use of biodiversity. Projects like FFS in FAO, on-farm research and participatory plant breeding can increase productivity without relying on external inputs; approaching the transformation of the agricultural system in a more systematic way, strengthening the structure of markets, incentives and land tenure rights. Similarly, great attention should be paid to the demand side and to the need for change in consumers' habits, diets and food waste.

4.2 POLICY ISSUES AND INSTRUMENTS FOR AGROECOLOGY

PANELLISTS

1. **Clayton Campanhola**, Strategic Programme Leader, Sustainable Agriculture, FAO
2. **Paulo Petersen**, Executive Coordinator, Agricultura Familiar e Agroecología (AS-PTA), Brazil
3. **Ibrahima Coulibaly**, President, Coordination Nationale des Organisations Paysannes (CNOP), Mali
4. **Vijay Kumar**, Policy Advisor, Department of Agriculture, Government of Andhra Pradesh, India
5. **Leonard Mizzi**, Head of Unit, Director General for International Cooperation and Development, European Commission

FACILITATOR

Wei Zhang, Team Leader for Ecosystem Services, International Food Policy Research Institute (IFPRI)

The objective of this session was to share experiences in developing and implementing policies and programmes supporting Agroecology. Panellists identified the type of institutions that would enable the success of Agroecology at farm, national and regional levels, as well as the efficiency factors to establish evidence-based policies and programmes for Agroecology around the world. The panellists addressed the following questions:

- a. What type of institutions does Agroecology need? And at what scale?
- b. How can evidence-based policies and programmes for Agroecology be established? Which stakeholders should be involved and how?
- c. Building on national and local experiences, what are the key lessons for the development of policies and programmes for Agroecology?

The second part of the session consisted of an interaction with the audience to further identify gaps and actions that could be taken by FAO to support the inclusion of Agroecology in legal frameworks and policy instruments.

4.2.1 PRESENTATION BY CLAYTON CAMPANHOLA

Strategic Programme Leader, Sustainable Agriculture, FAO

FAO Strategic Programme 2, which focuses on sustainable agriculture, alongside with technical departments, regional offices, member countries and several external partner organizations, conduct work on Agroecology towards FAO's Vision for: *"A world free from hunger and malnutrition where food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner"*.

Agroecology can contribute to making this vision a reality. It is an approach that leads to the transformative change needed for agriculture and food systems to keep pace with a changing world.

With its holistic approach, Agroecology can help achieve economic, environmental and social objectives, while taking into consideration the areas of nutrition, health and cultural values, in line with FAO's Common Vision on Sustainable Food and Agriculture.

Moreover, Agroecology contributes directly to at least ten SDGs and can be considered one of the main drivers to implement the SDGs related to agriculture and food systems. Eight percent of FAO's work in the biennium 2018–2019 will directly contribute to agroecological transition for sustainable food systems.

Based on the publication *Agroecology: the ecology of sustainable food systems*¹², FAO has mapped out four levels of transition towards Agroecology at farm, national and regional scales: (i) increasing the efficiency of practices and resources and substituting external inputs; (ii) transforming agricultural production systems to be more resilient and sustainable; (iii) strengthening markets that support Agroecology and; (iv) building an enabling environment for more sustainable food systems.

Another area of work is the systematic collection of evidence for Agroecology. Despite the common understanding of its positive environmental, economic and social impacts, its results are fragmented due to heterogeneous methods and data.

FAO recognizes that for the development of policies and programmes for Agroecology, cross-sectoral integration must be increased across crop and livestock production, forestry, fisheries and aquaculture and by collaborating with farmers, CSOs, governments, NGOs, international organizations and other related agencies supporting Agroecology.

To support more effective decision-making, FAO is developing tools to assess the multi-dimensional impacts of agroecological production systems, by using a wide range of instruments that support Agroecology across the agricultural sectors such as:

¹² Gliessman, S.r. 2015. *Agroecology: the Ecology of Sustainable Food Systems*. 3rd edition. Boca raton, FL, USA, crc Press, Taylor & Francis group.

- » The five principles of Sustainable Food and Agriculture
- » FAO Policy on Gender Equality
- » Implementation of the Voluntary Guidelines on the Responsible Governance of Tenure of Land fisheries and Forests in the Context of National Food Security
- » The Commission on Genetic Resources for Food and Agriculture, as well as global action plans for plant, animal and forest genetic resources
- » The International Treaty on Plant Genetic Resources for Food and Agriculture
- » The Voluntary Guidelines for Sustainable Soil Management
- » The Code of Conduct for Responsible Fisheries
- » The Ecosystem Approach to Fisheries and Aquaculture
- » Global guidelines for the Restoration of Degraded Forests and Landscapes in Drylands.

As a result, evidence-based policies and programmes for Agroecology can be established, first by compiling case studies and successful experiences, and then, by developing a methodology for qualitative, quantitative and geographic data collection to evaluate the performance of Agroecology in a number of dimensions of food systems, including improved livelihoods and living standards.

FAO plans to address this issue through a global mechanism named “Global Knowledge Product” (GKP). The GKP will develop analytical frameworks and tools for policymaking to convey evidenced-based messages from the local level to the highest levels of decision-making and enable the development of national and supra-national policies and instruments to implement them. Such frameworks and tools will be based on flexible and reliable indicators that the GKP will identify, to assess the economic, social and environmental performance of Agroecology and move beyond the paradigm of simply increasing yields.

FAO recognizes the great potential to further accelerate transitions towards sustainable food and agriculture in the 2018–2019 biennium, and acknowledges that increased cross-sectoral integration across crop and livestock production, forestry, fisheries and aquaculture would also strengthen the coherence among the different legal and policy frameworks and instruments. The achievement of these objectives will strongly depend on the collaboration with the large number of partners who, like FAO, see the vast benefits of Agroecology.

The process of scaling up Agroecology must be truly bottom-up, highly inclusive and democratic, and be supported through appropriate incentive systems including subsidies, credits, insurances and market incentives. The idea that Agroecology cannot provide food for all can and should be demystified and Member States be convinced, through a robust and multi-dimensional evidence base, to increase the level of funding allocated to Agroecology. FAO can have a key advocacy role in promoting Agroecology in the upcoming international discussions, taking into consideration the important role of stakeholders at all dimensions: those who produce, distribute, consume and regularize this whole process.

4.2.2 PRESENTATION BY PAULO PETERSEN

Executive Coordinator, Agricultura Familiar e Agroecologia (AS-PTA), Brazil

The Brazilian experience is a great laboratory for the reflections that are being made in this Symposium. Over the last four decades, several attempts have been made to institutionalize the ideas of Agroecology in public policies and we therefore have extensive and complex experiences which to share.

The NGO AS-PTA in Brazil was founded 35 years ago as a response to the modernization period based on the premises of the Green Revolution, with the objective of institutionalizing Agroecological principles in public policies.

It should be acknowledged that when discussing Agroecology, also democracy should be included because Agroecology should be recognized as the “democratization of agri-food systems”.

During the period of dictatorship in Brazil, AS-PTA and other NGOs played an important role in the defence of the territories. During this time a network of different groups, organizations, social movements and academia was established to discuss sustainable alternatives for agriculture.

Platforms such as the Brazilian Agroecology Association and the National Articulation of Agroecology are good examples of this. The former association is a scientific-academic space that brings together researchers and educators. The 10th Brazilian Agroecology Conference just took place together with the 4th SOCLA Congress involving more than 5 000 participants and with 2 000 studies being presented. The latter association involves social movements, NGOs, national networks that also participated in the 4th SOCLA Congress, with the theme “Agroecology and democracy: linking rural and urban areas”.

AS-PTA along with other organizations supporting Agroecology, succeeded in linking Agroecology to organic production policies; but emerging issues lead us to reflect on how it is possible to continue to defend Agroecology and whether it would be feasible to scale up in less democratic contexts.

This brings the issue of what types of institutions are needed for the uptake of agroecology and at what scale. If it is considered that Agroecology is a social and territorially rooted process and an alliance of common interests within the territory, there is a need for a bottom-up participatory approach to develop Agroecological projects. These projects may, however, be in conflict with other projects within the same territory. This means that Agroecology is a social struggle which, while resisting certain perspectives of construction and appropriation of the territory, leads the way to sustainable development of the local communities.

Based on this, and recognizing the central role of the actors in the territory, how can agroecology be scaled up? While this question is as important as querying the role of the State and of public policies, there are not as many answers available as there are for the developed instruments to promote Green Revolution practices. The relation between the actors and Agroecology is on a different level; one where focus is on diversity, heterogeneity and endogenous values, not on massification and standardization. Therefore, the relationship between the State and civil society must be re-evaluated and strengthened to effectively implement a participatory democracy, from the higher levels to the territory.

It is also important to consider other issues such as the territory as a space for social construction, where networks come together to share interests and innovations; and as inter-sectorial approaches that derive from the premise that policies cannot be totally fragmented because there are no policies that have solely environmental, agricultural or social impacts. This is why Agroecology must be recognized as what allows us to reconcile the interests of the actors of the territory. Building a new economy based on the precepts of agroecology means to territorialize and to root the agri-food systems.

One last key issue, in our experience, to be addressed is the de-commodification of the agribusiness systems, and to build common goods. The confidence in farmers must be de-commercialized. Policies for PGS lead in that direction by de-commercializing seeds and allowing farmers to manage their own seeds, de-commercializing knowledge through networks such as *campesino a campesino* and allowing free knowledge sharing instead of relying on patents and privatization of knowledge.

Developing policy instruments that strengthen the role of civil society and support processes to build common goods is crucial to scaling up agroecology, because it enables autonomy and sovereignty and a de-commercialization of relationships, of building and strengthening decision-making powers over how food is produced, transformed, distributed and consumed.

To do this, power relations should be rebalanced. In Brazil, the Food Acquisition Programme is a good example of how public policies allow producers and consumers to be directly in contact with governmental support. Other examples count the community seed banks and the rain water tank system throughout the semi-arid region, a programme managed by civil society, which implements more than one million rural water tanks and promotes water sovereignty. Such a programme helps to transform agri-food processes through empowerment, reflecting improved equilibrium in the power relations between civil society and the State.

4.2.3 PRESENTATION BY IBRAHIMA COULIBALY

President, Coordination Nationale des Organisations Paysannes (CNOP), Mali

Agroecology needs institutions whose legal frameworks often coexist with policies designed to support big interest groups at the expenses of smallholders.

In Mali, for example, the agricultural law was the result of negotiations in which farmers were truly put at the centre, and this translated into a framework that focuses on food sovereignty for the benefit of smallholders and family farming. Similarly, the negotiations for the land law in the country created the conditions for small farmers to secure their land, which is a key prerequisite for Agroecology.

However, evidence-based policies and programmes for Agroecology can only be established if the persistence of contradictory financial interests makes it possible to harness the potential of these frameworks to implementing policies. For instance, an organization such as the CNOP understood that the state would hardly support them. State trainings and support programmes directed at farmers that proved to be unable to deliver the expected results.

Therefore, the organization opted for setting up an instrument, which could be viable over time, and answers the real needs of farmers and farming communities. The infrastructure built on the International Forum on Food Sovereignty was converted into a training centre where children of farmers and young boys and girls receive training on agricultural practices. After a number of training cycles, trainees are able to replicate trainings in their own villages. The training school currently counts on 600 trainers from all regions of the country.

Agroecology is a strong movement fostering a strong political process, which is mostly left unheard at the institutional level. Therefore, the problem may not only be related to building evidence, since the main beneficiaries of Agroecology are already committed to pursuing the agroecological transition. The problem is rather on the shift to the dynamics of power and economic interests that are hindering agroecological transition at the policy level. A wealth of evidence proving the benefits of Agroecology will hardly be sufficient if policy efforts keep being directed to the benefits of conventional markets, chemical input markets and other interest groups. The agroecological movement needs to move forward, with or without political support.

Additionally, markets of agroecological products are key to motivating farmers to engage in agricultural practices that entail a higher workload, compared to conventional farming. For this reason, CNOP, in collaboration with Urgenci, launched an initiative to transform agroecological products, strengthen their value chains and better link producers to consumers. The organization also conducted a mapping of initiatives countrywide, aimed at valorizing and capitalizing on virtuous experiences. CNOP efforts to scale up Agroecology are particularly relevant in the context of public policies at regional and national level, such as those on liberalization and free trade, which often go against the interest of farmers.

4.2.4 PRESENTATION BY VIJAY KUMAR

Policy Advisor, Department of Agriculture, Government of Andhra Pradesh, India

In 2016, the Department of Agriculture of the Government of Andhra Pradesh, India, started implementing a statewide programme on Agroecology.

The first phase of the programme counted on a state investment of USD 200 million and an additional USD15 million grant provided by the philanthropic organization Azim Premji Philanthropic Initiatives (APPI). In this phase, the programme is reaching about 500 000 smallholder farmers in 2 000 villages, covering an agricultural area of approximately 400 000 hectares (the average per capita holding is one hectare). At its second year, the project had covered 972 villages and 63 000 farmers.

Based on the success of the program, the State Government has indicated that it should be scaled up to all 13 000 villages, planning to reach six million farmers and eight million hectares by 2024, and converting all farmers and the entirety of agricultural area to agroecological practices by 2027.

Notably, the programme is driven by farmers themselves, with over 1 000 trained master farmers in charge of knowledge dissemination. The agroecological practices adopted in the project are defined as Zero Budget Natural Farming and farmers do not even need a premium price for their products to grant the viability of the farm, due to the reduced cost of operations.

Through this approach yields increased along with the resilience of farms and villages to climatic threats as well as the representation of women in agriculture and their role, through the women farmers' movement.



Source: provided by authors/organization



Source: provided by authors/organization

In response to the existence of an effective policy of social mobilization, the rise of strong women organizations across all villages was made possible in India, particularly in Andra Pradesh.

Drawing from this experience, it is possible to identify two kinds of institutions that are key to the emergence and scaling up of Agroecology:

- i. **Farmer-support organizations:** It includes the state, whose support is critical for scaling up, as well as NGOs and philanthropic organizations, which can create niche models and learning experiences for the state to scale up. The state, NGOs and philanthropists have a role in harnessing social mobilization, in setting up knowledge creation and dissemination platforms, in mobilizing resources, in providing linkages with markets and in elaborating appropriate legal frameworks.
- ii. **Farmer-owned organizations:** They advocate within communities the deployment of agroecological practices, help create harmony and group cohesion, provide financial management support, grant financial transparency and allow generating social capital. The programme becomes sustainable when farmers' organizations take up most of these responsibilities.

In other words, farmer support organizations have a role in inducing markets, while farmer-owned organizations have a role in developing and nurturing them. These two institutions will undergo:

- a. an induction phase aiming at generating models, social capital, legal frameworks and pathways of development;
- b. an expansion phase; and
- c. a stabilization phase that entails the gradual scaling up and consolidation of the adopted models.

4.2.5 PRESENTATION BY LEONARD MIZZI

Director General for International Cooperation and Development,
European Commission

Within the EU, and in particular in the context of the Common Agricultural Policy (CAP), both the organic farming regulation and the rural development regulation can be considered tools with the potential to foster Agroecology.

Their goal is to develop rural regulation aiming at promoting sustainable agriculture. Three major greening practices – permanent grassland conservation, ecological focus areas and crop diversification – are being promoted to reduce the negative environmental impact of agricultural activities in the EU.

Such policies were established by creating incentives to reduce the pressure of agriculture on the environment while increasing the supply of public goods to the EU society. This context will be particularly favourable for supporting agroecological practices which are, for the greater extent, depending on local conditions.

As a consequence, CAP coherently aligns with the EU Framework Programme for Research and Innovation (Horizon 2020), as exemplified by the fact that Horizon 2020 clearly addresses the provision of ecosystem services and public goods for sustainable agriculture and forestry. Many of the topics developed are contributing to the most salient features of agroecological approaches including diversity, resilience, efficiency, recycling and circular economy.

The EU innovation partnership has been designed as a key initiative for co-creation and sharing of knowledge and for turning ecological approaches into innovation actions. One of the five priorities of the strategic approach to agricultural research and innovation is the promotion of integrated ecological approaches from farm to landscape level.

In other words, institutions using a multidisciplinary approach is needed to conciliate sometimes contradictory processes including work on agriculture, environmental husbandry, research, education and health.

This requires, on the one hand, an inter-ministerial effort and agreements at the highest levels, and on the other, truly bottom-up participatory approaches, which in turn depend on the existence of strong farmers' organizations. For instance, in addition to CAP, other institutions in EU have also promoted multidisciplinary approaches in response to sustainable agriculture and food systems at the landscape level and in relation to climate change.

This has been done through the 2030 EU Climate and Energy Policy Framework, which includes a strategy on soil organic carbon sequestration and food waste emissions regulation, the Koronivia Joint Work on Agriculture, and the 48th session of the Subsidiary Body of Scientific and Technological Advice (SBSTA). The European Commission has recently included gender mainstreaming in its agricultural portfolio.

An additional key type of institutions is represented by innovation groups, including farmer advisors, researchers, businesses and NGOs as well as the platforms where these groups can be integrated, such as the European Commission's Innovation Platforms.

Core examples for the development of policies and programmes for Agroecology need to build upon territorial approaches able to address the growingly complex rural-urban dimension. These approaches are key, for instance, to the design of resilient urban and peri-urban agriculture and food systems in response to the growing population and the rapid expansion of megacities. Nevertheless, territorial approaches for rural development in policy-making are still largely overlooked.

Another key dimension to be addressed concerns the involvement of the private sector. An honest reflection is needed on what type of private sector is best suited for Agroecology and on how to create framework conditions for small and medium enterprises to create Agroecology-related jobs and attract youth. These issues are addressed in the EU External Investment Plans, however, a full map of the investment portfolio is still lacking, which translates into partial information on how price transparency and price signals are moving across the value chains. Such information would allow to address the failure of input subsidy systems across African countries and redesign incentive structures in favour of Agroecology.

EMERGING ISSUES FROM THE FLOOR

- » To scale up Agroecology it is imperative to efficiently assess the performance of Agroecology by developing new indicators and changing the ones used in the past. FAO holds a strategic position to develop a reference methodology to accurately measure the performance of agricultural systems, not only agroecological approaches but all agricultural systems, that would serve as a comparative tool for decision-making.
- » Agroecology is an efficient, cost effective and participatory approach that uses local knowledge and technologies and that, with adequate support from governments, can ensure food and nutrition security and sovereignty.
- » However, the dynamics defining whether Agroecology becomes the model of choice are largely power, money and politics. Multinational corporations with a profit-driving motive are pushing their agendas on to weaker economies. It is necessary to change these dynamics to be able to scale up Agroecology.
- » Agroecological policies must be built on a solid evidence base to be able to withstand political turnover, and not be vulnerable to the agendas of agribusiness and other influential actors.
- » In policies and programmes, policymakers need to protect the important role of rural women, incorporating and strengthening issues that go from technical assistance to collective land titles and credits. It is not possible to have a democratic transformative approach if women are not considered as essential contributors in the construction of Agroecology.
- » Budgetary support is needed to promote Agroecological transition. Multilateral development banks should be influenced for their investment policies to sway away from mainstreaming climate-smart agriculture throughout their work on agriculture, and to support Agroecological approaches instead.
- » Agriculture needs to be discussed in a concrete way in the UN framework for Climate Change (UNFCCC) negotiations, and FAO should ensure that the message from this Symposium is conveyed to the delegates discussing climate change.
- » Farmers' knowledge and experiences should be considered essential building blocks because they demonstrate the benefits of Agroecology. When bringing all stakeholders together, farmers' voices must be heard thus leading to real democratic policies that bring the actual farmers into their participatory approaches.
- » Public policies that help create an enabling environment for the development of Agroecology should protect the investments and labour that Agroecology entails with fair and stable remunerative prices.

FINAL STATEMENTS BY PANELLISTS

Paulo Petersen, AS-PTA

When talking about convincing the unconvinced it is important to accurately establish the target of our efforts. Agroecology is not about convincing individual consumers and producers to do things differently; our efforts must be directed towards changing the institutional enabling environment that decides the direction of a country. For example, when subsidies for agrottoxics are reduced or abolished this is a clear indicator that governments agree that there are other ways to move forward in the development of agricultural schemes. In addition, the homogenization of policy frameworks in areas such as health, environment, education, public procurement, economic, markets and inclusive rural development, suggests a favourable and enabling environment in which Agroecology can thrive. It should also be acknowledged that without women there is no Agroecology, and that policies that recognize and strengthen the role of women in agriculture should be created. The reason why Brazil has a policy that supports Agroecology today is because of the efforts made by women social movements, which were key to the construction of a new and inclusive society, becoming a fundamental driving force for Agroecology.

Vijay Kumar, Government of Andhra Pradesh, India

Women have to be at the forefront of agroecological practices. In fact, the programme in Andhra Pradesh started about 10 years ago through the women farmers' movement. We are building on that to also include the men, and most of our resource persons and most of our trainers are women farmers. We see this as a programme of women and men because each one has a role but we started with the women.

Clayton Campanhola, FAO

With regards to women's representation and the engagement of all stakeholders, FAO has already included specific indicators for women and gender equality in the development of policies and programmes for Agroecology. However, I agree that we cannot solve the misrepresentation of women, youth and smallholders in agriculture from Rome. The change has to happen at the field and country levels. Instead, we can continue to create platforms from which to raise awareness on the significance of knowledge-exchange and contributions from producers, stakeholders, and policymakers of all ages, economic status and gender. Additionally, we need to inform and encourage changes among different types of policies by emphasizing multidisciplinary and transdisciplinary research. If researchers and producers do not work together to generate new knowledge in a different way, we keep on replicating an approach focusing solely on technology. We need research to validate scientifically what we already know. In terms of scaling up Agroecology, we are trying to go beyond technology and look at other benefits including the social and environmental dimensions Agroecology can play a very important role in climate change adaptation and mitigation. With regards to budgetary support, we need to convince governments to establish and allocate budgets to move the Agroecology agenda forward, but



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this is a job that FAO cannot do alone. FAO can continue its efforts to advocate for Agroecology and make sure that the outcomes of this Symposium will resonate and be broadly circulated to engage countries which are willing to change. In relation to the methodology for assessment, FAO has proposed to use one SDG indicator on sustainable agriculture, which is a very comprehensive indicator as it comprises nine social economic and environmental sub-indicators. We are working with IFPRI on a report on the status of sustainable agriculture in the world. That will raise some important questions to help change the current trajectory. FAO depends on the support of countries, and countries have the autonomy to decide what they want.

Ibrahima Coulibaly, CNOP

Regarding institutions, redefining the role of public administrations is a priority so that they can effectively help communities progress. It is a recurrent observation that good policies and strategies are being elaborated, but when they are to be implemented there are not enough resources. The judicious use of public resources is a huge problem that needs to be looked at in depth. It is unreasonable to continue to develop policies with the World Bank and the International Monetary Fund if they cannot be implemented. An example is the Law for Agricultural Orientation that was developed ten years ago. It defines all the institutional instruments for the operations and we have a national fund for the support of agriculture, which has been funded by the state budget for seven years. Yet, we were unable to mobilize these resources – situations like that are inadmissible and a lot of work needs to be done to reverse that. We need to ask the real questions: Who is blocking what? Why can the good policies we elaborate and the public money we have allocated for agricultural development – to allow

smallholders to be trained, organize the markets, transform their products, sell the products and obtain revenues – not be operationalized? In addition, the free trade agreements and liberalization policies allow overly competitive products to flood our markets and affect local products, both conventional and agroecological. Agroecology could represent a solution since it could propose recognizable products and stimulate the interest of consumers in choosing them rather than imported ones. Youth and women are vital for the development of Agroecology. The conditions of youth in our region is so critical that the situation could take a violent turn. This is because we did not do anything for the youth in rural areas to have a future. From our point of view, the only solution is to take advantage of the employment potential of Agroecology to reintegrate youth and women into society. The government is largely overlooking youth and women in terms of budget allocations, so Agroecology could also be a solution to grant peace and security for all.

Leonard Mizzi, European Commission

To tackle the institutional impasse we have a number of instruments including budget support, and it is important that donor communities such as FAO and IFAD leverage their position. It is important that we merge efforts in a knowledge centre, which is in an embryonic phase within the EU Commission services joint research centre and which is in contact with FAO. Let us put all our brains together to develop a methodology that is robust, not disputable, and able to become embedded in a public policy context.

Regarding trade issues, we need to assess to what extent trade is still the devil in the room in local, regional as well as international markets. If there are problems in the international markets, let us dissect them and see whether there is room for policies or not. On the position of Agroecology on the global agenda, I fully agree with the Swiss Permanent Representative on the importance of measuring performance. However, I have been following the Comprehensive Africa Agriculture Development Programme process and I have not heard one single time a reference to Agroecology. If the term “Agroecology” is not embedded within an agricultural policy, and then accompanied by a strategy, we can have a nice Symposium but nothing will follow after all. This is the reason why I strongly encourage FAO to continue preparing its report on “The Scaling up Agroecology initiative.” I suggest them to rely on a short-term database in order to design policies on Agroecology. Opportunities such as the UN Decades of Action on Nutrition and Family Farming are here to entrench such conclusions in Agroecology. On gender, we need to embed the Gender Action Plan into our development cooperation on Agroecology. What does it mean to have women empowerment in terms of decision-making if women do not have land? How is this misrepresentation of women in Agroecology linked to the Voluntary Guidelines on Tenure and to the principles on responsible agricultural investment? All of these questions could be addressed in a holistic way through the Gender Action Plan. On farmers’ participation, at farm level, we have the evidence of Agroecology’s positive impacts, but we need to empower farmers’ organizations to display such evidence. This delegation, our regional offices along with other pilot countries supporting Agroecology, need to be involved in an action plan with FAO to engage with the farmers and civil society sectors on the ground. We need to be close to where production takes place, so that this data is actually compiled.

4.3 CO-CREATION OF KNOWLEDGE AND INNOVATION

PANELLISTS

1. **Rachel Bezner Kerr**, Associate Professor, Cornell University, United States of America
2. **Peter Rosset**, Professor, El Colegio de la Frontera (ECOSUR), Mexico
3. **Jeffrey Campbell**, Manager, Forest and Farm Facility (FFF)
4. **Peter Kenmore**, Senior Advisor, Farmer Field Schools (FFS)
5. **Raffaele Maiorano**, Vice-Chair, Global Forum on Agricultural Research (GFAR)
6. **Ashlesha Khadse**, Coordinator, Amrita Bhoomi Center (ABC), India

FACILITATOR

Jane Maland Cady, International Programme Director, McKnight Foundation

The objective of this session was to share experiences on participatory processes implemented in the co-creation of agricultural innovations. The panellists addressed the following questions:

- a. How can we construct safe spaces for the co-creation of knowledge? How do we ensure that traditional knowledge is protected from misappropriation during the co-creation process?
- b. Given that Agroecology depends on locally adapted knowledge, how can rural education and extension systems be improved to support sharing of agroecological knowledge?
- c. What concrete actions should the FAO Scaling up Agroecology Initiative focus on to support the co-creation of knowledge and innovation?

The second part of the session consisted of an interaction with the audience to further identify gaps and actions that could be taken by FAO to support the strengthening of participatory approaches in agricultural research and development.

4.3.1 PRESENTATION BY RACHEL BEZNER KERR

Associate Professor, Cornell University

As was mentioned during a previous session at this Symposium, Agroecology can be referred to as a form of “democratization of agricultural production”. Agroecological approaches are in stark contrast with the industrial model of agriculture, as their starting point is very knowledge intensive, requires close observation and draws from local and indigenous knowledge. Consequently, it needs to rely on horizontal learning and respectful exchange as a core part of the approach.

Participatory research in Malawi, conducted by the organization Soils, Food and Healthy Communities, began with one of the biggest concerns for food insecure farmers in the northern part of the country: the removal, in the late 90s, of fertilizer subsidies after many years of having being promoted as key input for maize production.

Maize itself had been heavily promoted as primary food crop by both the colonial and post-colonial governments. This caused a loss of knowledge around alternatives to commercial fertilizers, following a process of degradation and denigration of the traditional knowledge, which had been for years set aside as backwards.

This participatory research model involved producers and their communities and the testing of different strategies to improve soil fertility that were chosen from a vast portfolio of possible agroecological practices.

Alongside farmer experimentation, the project worked with the local hospital to study the root-causes of the levels of child malnutrition. It emerged that production was only one aspect of a problem embedded within multiple scales of inequality where gender inequality was a central issue.

Once the relationship between gender equality and child malnutrition became evident, the topic became streamlined with the communities participating in the research. Consequently, improvement of farming practices was tackled alongside gender equality.

Given that conventional extension models are built on the transfer of technology and hierarchical systems and that educational systems in general are highly hierarchical and authoritarian, finding new creative ways of learning together, whether it is through dialogue or through theatre, can support the sharing of agroecological knowledge.

Using creativity in the search for opportunities for reflection, dialogue and experimentation can unveil ways to unlearn hierarchical modes of learning. In the academic world, opportunities should be created for scholars to publish together with farmers. Also, the access of farmers to panels and conferences should be facilitated so their voices can be incorporated into the scientific and policy debate.

4.3.2 PRESENTATION BY PETER ROSSET

Professor, El Colegio de la Frontera (ECOSUR), México

Social movements today are the principal source in the generation and production of new knowledge and theory.

The real focus should not be set on finding new technical ways of doing Agroecology, but rather on understanding how to build social processes to bring Agroecology to scale through social organizations. That is why *La Vía Campesina* and *El Colegio de La Frontera Sur* (ECOSUR) act in synergy in the quest for identifying factors that have made peasant organizations in some countries extremely successful in bringing Agroecology to scale.

La Vía Campesina is an international movement that brings together millions of peasants, small and medium sized farmers, landless people, rural women and youth, indigenous people, migrants and agricultural workers from around the world.

ECOSUR is a federal research institute in Mexico that involves the largest number of Agroecology PhD level staff and researchers from institutions worldwide and includes a research group on the massive scaling up of Agroecology.

These two organizations have succeeded to create safe spaces for the co-creation of knowledge through the *campesino-a-campesino* (farmer-to-farmer) methodologies. They are inherently farmers-centred social processes that gather the knowledge already present in a given territory on how to produce agroecologically.

Additionally, these two organizations ensure that traditional knowledge is protected from misappropriation during this co-creation process because peasant organizations are creating their own farmer-led processes.

Students, who are sons and daughters of farmers, are not only learning agroecological practices, they are getting politically mobilized to fight and to defend their territory against criminalization, land-grabbing, mining concessions and agribusinesses, which are destroying rural areas around the world. These people are building social processes to bring Agroecology to an ever-larger scale with the ultimate goal of building food sovereignty.

Peasants and social organizations are the cultural medium in which Agroecology grows. Any support to scaling up Agroecology should be focused on those key factors.

Another key factor to scaling up Agroecology processes is that youth and women must have leadership roles in those processes. The *Feminismo Campesino y Popular* (Popular and Peasant Feminism) has proven to be essential in almost every successful case of bringing Agroecology to scale.

It is critical to consciously strengthen women and young peasants' protagonist role within organizations. Agroecological processes need to continue capturing the imagination of peasant youth, engaging them into staying at the farm instead of migrating to cities. This programme is the perfect example of how women and youth are taking control of agroecological processes allowing them to defend their territory against land-grabbing, corporations and agribusiness.

Extension services can have a role in the farmer-to-farmer approach; however, careful attention should be paid to the power dynamics within co-creation processes and the need to reshape them into opportunities for change. For example, experiences fostering the farmer-to-farmer approach in Cuba suggest that an early involvement of extension staff may not be desirable, since farmers may not have enough self-confidence initially to invert the top-down power relationship and engage in true co-creation of knowledge.

These experiences show that the best results are obtained when extension staff join the horizontal dynamics after a number of years, once farmers have strengthened their analytical capacity and self-confidence. In such settings, power dynamics can be tremendously different, allowing farmers to make best use of the extension service as a tool to fill well-identified information gaps, for instance from libraries or the internet, to solve context-specific problems.

4.3.3 PRESENTATION BY JEFFREY CAMPBELL

Manager, The Forest and Farm Facility (FFF)

The FFF is a partnership among the International Institute for Environment and Development, the International Union for the Conservation of Nature, AGRICORD and FAO. FFF's work is aimed at strengthening forest and farm producers and indigenous peoples' organizations; enhancing their livelihood and leveraging the potential of an agroecological landscape approach within communities.

Agroecology implies a transformative change in perspectives and actions, acknowledging and valorizing the co-evolution between the people and their land. Co-creation should be interpreted as the synthesis between traditional and additional knowledge.

Agronomists, for instance, would suggest to eliminate vines or to clear the space around trees to favour stem and plant growth. For local communities, vines are instead a source of food and the space around trees, if left untouched, is a great breeding ground for edible mushrooms. To synthesize, sometimes opposed science systems, both among communities and scientists, should find a common ground for co-creation beginning from humility, which may imply changing prescriptions that are very often considered as dogmatic. For instance, practices that have been strongly rejected by governments and development agents as backward and harmful are now being reconsidered.

This is the case of shifting cultivation in Indonesia, which is now being viewed as an integrated territorial approach that looks at the complex interaction among forest and farms, moving beyond the conventional farm-forest dichotomy.

Building strong producer organizations is the key to creating pathways for self-realization, increasing the power of negotiation and eventually, unbalancing power equations that hinder co-creation of knowledge and knowledge transfer across and among different generations.

This partnership is a safe space in which co-creation is interpreted as the synthesis between traditional and additional knowledge. Indigenous people often describe practices that are opposed to those that would seem appropriate according to conventional science.

Also, Agroecological knowledge should be formulated in such a way that it is primarily readable in the fields and in the landscape, in those landscapes that have been de-created. It is also relevant to re-examine the notion that science is not biased. Forestry, for example, is not a feminine or feminist science. Many agricultural and agronomic schools of thought and the problems they are supposed to address are based on particular worldviews, which are inherently biased.

Understanding this may be a stimulus to change the way in which resources are allocated to research, favouring a shift towards co-creation. New indicators should be adopted to evaluate the validity of agroecological research, focusing on whether the knowledge generated has truly been co-created. This could imply having a larger presence of experienced farmers within expert panels, or creating methods for elders to peer-review conventional scientific research. The number of rural schools directly run by farmers, with external support from science and technology, is growing across the world.

However, these co-creation initiatives are not receiving enough funding because the entire economic system is focusing on value chains for single products, while new agronomic models should be developed and applied through landscape approaches focusing on a multitude of products being originated from a multidimensional landscape.

A serious reflection should be made on what economic systems could ensure so that co-creation of knowledge is put at the centre and that diversity, which is central to Agroecology, and becomes part of the knowledge system itself.

Horizontal learning is absolutely key, and South-South cooperation constitutes a unique opportunity for bringing new resources and funding to horizontal processes of learning among producer organizations, farmers, peers and women champions, who have the real potential for increasing peoples' innovative and traditional ideas.

4.3.4 PRESENTATION BY PETER KENMORE

Senior Advisor, Farmer Field Schools (FFS)

FFS, is a horizontal non-formal adult education approach largely inspired by the work of Paulo Freire. It became prominent in Asia upon the understanding that practices promoted by the Green Revolution generated a number of unpredicted ecological effects, which strengthened the need to identify locally adapted agricultural practices through alternative extension and education approaches. Field research conducted in the 80s following farmers' concerns about insects' proliferation proved that the cause was the use of those same pesticides, which, according to the proposed models, were originally intended as the solution to insect population control.

The initial response of governments was a reduction in the chemical pesticide subsidies, which generated a bigger problem for farmers since they were not presented with concrete alternative solutions.

The situation highlighted the need for creating alternatives to conventional extension approaches based on the co-creation of knowledge aimed at collectively finding locally adapted solutions to agricultural problems. Co-creation of knowledge is not only constructed through the interplay between farmers' knowledge and conventional knowledge, it can also emerge by combining the observation of different groups within the same community.

This statement is exemplified by an interesting FFS experience in Northern Tamil Nadu in the early 90s. The need to accommodate FFS work both for men and for women, who had incompatible working hours – women used to work averagely 50 percent more hours than men – implicated creating two different FFS groups for men and women conducting field work at different times of the day. The agroecosystem analysis between the two groups – co-creation between the men's and the women's knowledge – doubled the overall knowledge available on the agroecosystem. This example shows how co-creation can increase the understanding of complex systems in very concrete ways.

However, the transition towards these alternative extension and education approaches, as well as the agroecological transition, is often problematic because it challenges well-rooted dynamics both at institutional level and in the field. Experiences show that champions are needed at the government management level to identify spaces within the extension bureaucracy and transform extension approaches.

The work of Vijay Kumar, brilliant adaptive manager and policy advisor in the State Government of Andra Pradesh, is a virtuous example of how advocacy work of institutional staff can lead to the uptake and upscale at institutional level of agroecological practices through alternative extension models.

The removal of perverse subsidies for chemical inputs can also induce extension staff to find alternative solutions, making them more prone to engage in alternative problem-solving towards locally adapted agroecological solutions.

4.3.5 PRESENTATION BY RAFFAELE MAIORANO

Vice-Chair, Global Forum on Agricultural Research (GFAR)

The GFAR, hosted at FAO, is a multi-stakeholder platform that today involves 580 partners including farmers' organizations and universities. GFAR also acts as an incubator of ideas, monitoring the application of the knowledge shared among actors within projects to identify success and failure factors.

To ensure the protection of traditional knowledge during the co-creation process, GFAR has demonstrated that to effectively achieve the challenging goals of Agroecology, leadership between innovation knowledge members and traditional knowledge members must be shared.

The goal is to have an interplay between innovations and traditions because knowledge, including traditional knowledge, is not static. Such co-evolution and co-creation should be nurtured and controlled by networks of farmer organizations, research centres, universities and NGOs to bring the greatest benefits to its users and the community.

The FAO Scaling up initiative could promote alternative solutions to improving the discrepancy between agricultural research work and rural education based on farmers' concrete needs to support the co-creation of knowledge and innovation. As an example, GFAR has led an experiment in Burkina Faso since 2009 that entails adding an additional level of accountability in thesis writing, hereby moving beyond the conventional student-professor accountability to create a form of evaluation of students' work directly by farmers.

4.3.6 PRESENTATION BY ASHLESHA KHADSE

Coordinator, Amrita Bhoomi Center (ABC), India

ABC is a peasant Agroecology training center established by the Karnataka Farmers State Association, a farmers' movement and a member of *La Via Campesina*. The center offers training based on the *campesino-a-campesino* approach on a number of topics related to Agroecology, with a particular focus on rural youth.

Indeed, a large share of rural youth in India is migrating to cities, which is symptomatic of the deep agrarian and rural employment crises that are affecting the country. A number of additional problems render rural life growingly more precarious. These include the lack of regulation over intellectual property rights, land-grabbing, perverse subsidy systems and trade agreements.

ABC provides a safe space for the co-creation of knowledge through its long-term internship programmes on the center's campus, where trainees receive a piece of land, participate in the functioning of the organization and attend a variety of training activities.

The objective of the organization is to give youth the tools to become subjects who are able to transform their reality. Most of the students join different community organizations and farmers' movements and become activists who mobilize other people to transform their farms into agroecological farms.

The experience of ABC working in rural education for rural youth provides a number of lessons learned. One key lesson is that Agroecology education cannot solely focus on ecological concepts but needs to give also great attention of the social dimension.

ABC proposes the concept of critical agroecological education where equity becomes a central principle. Education needs to encompass issues about de-peasantization, capitalism, urban migration, land-grabbing, among others.

ABC's experience suggests that the scaling up of Agroecology and co-creation of knowledge can happen at a much faster rate when indigenous people, farmers, women, and youth have ownership over the processes. In addition, initiatives like ABC could thrive further if some of the funds would be diverted from mainstream universities to producer organizations and peasant schools.

Youth could also aspire to becoming scientists by working together with universities. Many of them have sufficient literacy skills, unlike farmers from older generations, to carry out scientific work.

EMERGING ISSUES FROM THE FLOOR

- » Agroecology has the potential to play a more radical role within co-creation and sharing of knowledge, as a response of one of the major problems of modernization; the abstraction of experience and the creation of dichotomies between production and consumption that have created a dependence on externally-based knowledge and technologies. We need to initiate an inclusive process of innovating practices that build upon traditional knowledge, and change the “us and them” dichotomy to “us and us”.
- » A participatory research project in East Africa has proven that farmers sharing audiovisual training materials between them is an effective and innovative way of engaging smallholders into adopting agroecological practices. FFS farmers’ experiences and innovative practices resonate much more with other farmers, than overwhelming practices and techniques suggested by researchers. These audiovisual guides allow the farmers to digest the content at their own pace and explore it more deeply during trainings.
- » The word “co-creation of knowledge” implies a dialogue of wisdoms between and with farmers and scientists. In certain regions that knowledge may be eroded, however, we still find farmers with important experiences and ensuring farmers and scientists dialogue is essential. From this dialogue emerges the principles of Agroecology; principles which may take different forms depending on where we are in the world.
- » The objective of co-creation of knowledge is to empower farmers to redesign their farms to be more resilient to climate, social and economic threats.
- » It is important to highlight and discuss one of the obstacles to co-creation of knowledge, namely the incorrect conviction that scientists and researchers have all the answers and solutions for farmers, instead of taking the time to learn from their traditional knowledge and innovative practices.
- » Lessons learned from several Agroecology trainings and knowledge exchanges projects around the world have proven that we must recognize the knowledge that peasants already possess. We cannot produce knowledge in a collective way if farmers are not involved and acknowledged. The majority of farmers in the world do not perceive themselves as important in the knowledge-creation process, and while this cannot be further from the truth, it is part of the image of ignorance that is widely promoted. Working with the dignity of people and recognizing their wisdom and skills is the necessary first step to start the collective production of knowledge.
- » It is also important to address the issue of how we protect information, for instance through common licenses for technologies, which implies the need to rethink intellectual property rights for knowledge systems.
- » Agroecology, as has been highlighted in this Symposium, is facing many challenges. We must continue to scale up Agroecology, focussing on rebuilding the connection between consumers and growers, question the notion of seeds as property rights, creating safe spaces for co-creation of knowledge, and stop operating in a system that fosters ownership of knowledge in a capitalistic way.

FINAL STATEMENTS BY PANELLISTS

Rachel Bezner Kerr, Cornell University

I agree with the statement that Agroecology is more radical than what we are laying out in this panel because of all the challenges that have been highlighted. I liked the idea that in order to scale up Agroecology, we have to focus on rebuilding the connection between eaters and growers and bringing into question the notion of owning seeds as property. Thus, another concrete action to scale up Agroecology and create safe spaces for co-creation of knowledge is to stop operating in a capitalist system that fosters ownership of knowledge in very problematic ways.

Raffaele Maiorano, GFAR

In regards to the co-creation of knowledge between scientists and farmers, I think it is feasible as long as the knowledge is open sourced and accessible to everyone, on both sides. On one hand, the fact that each farmer feels as the king of his own land makes it difficult for the rest of the stakeholders to speak a language that is common, finding a common ground in which both sides can be heard and understood is essential to move forward. On the other hand, scientists need to acknowledge the importance of listening to the advice of elders because they succeeded in overcoming challenges on their land and they need to accommodate specific ideas from them into the innovative knowledge that they are developing.

Peter Kenmore, FFS

As a follow-up to Raffaele's answer, is important to recognize that the co-creation of knowledge between scientists and elders is already happening and even though it is not enough, it is a starting point for the development of new ways of cooperation. The cases that I am thinking about had more to do with bringing university professors together with farmers who had been through field schools. Rural and innovative co-creation happens every time that farmers challenge university professors with their knowledge, and every time those professors realize that not only did the farmers have traditional knowledge but they also understood the working of the ecosystem in a language that professors use. Then scientists develop new research ideas. We have had major research publications that started with farmers' observations of unusual ecosystem behaviours that scientists had not accommodated into their research models.

Ashlesha Khadse, ABC

I would like to add to the comments about protecting traditional knowledge by removing international protection rights and seed laws for knowledge systems, that we should also remove unequitable traded agreements in agriculture, land-grabbing, high production costs for farmers and subsidies going to multilateral institutions and governments promoting the "modernization" of agriculture. Those are concrete actions to that need to be removed in order to move forward on supporting the co-creation of knowledge and innovation.

Peter Rosset, ECOSUR

I would just like to emphasize once again that social movements are the principal source in the generation and production of new knowledge and theory. There is no coexistence possible between popular and peasant knowledge and knowledge appropriated by transnational corporations and agribusiness. There is no coexistence possible in territories between peasant communities and agribusinesses or mining corporations that want to seize their land and remove their leaders. We have to reconsider this idea of multi-stakeholder dialogue with people who want to harm us. Instead, the dialogue between “us and us” is doable if we build alliances between popular sectors in the countryside (e.g. farmers, indigenous peoples, artisanal fishers, nomadic pastoralists) and popular sectors in the cities.

Jeffrey Campbell, FFF

In my opinion, the situation first revolve around what we think is the farm. We cannot have a complete grasp of the meaning if we do not include forest in it. In certain areas of the world like Indonesia, traditional elder farmers will refer to their shifting cultivation system as the management of the entire landscape, and in fact shifting cultivation was one of those traditional practices that were left out that now are being studied and researched. The practice of shifting cultivation has the potential to be a more agroecological way to deal with what we currently view as separate parts of the landscape, one being forest and the other being farm. Horizontal learning is absolutely key and I think we have a great opportunity in South-South Cooperation to bring new resources and funding, focusing on the cooperation between producers’ organizations, farmers, men and women champion. This will have more potential to build traditional knowledge while also bringing forth peoples’ innovative ideas.

4.4 INNOVATIVE MARKETS, FOOD SYSTEMS AND CITIES

PANELLISTS

1. **Joan Ribo**, Mayor, City of Valencia, Spain
2. **Ugo Biggeri**, President, Banca Etica, Italy
3. **Danielle Nierenberg**, President, Food Tank
4. **Fabio Brescacin**, President, NaturaSi, Italy

FACILITATOR

Enrique Yeves, Director, Office for Corporate Communications, FAO

This session featured relevant examples of social and institutional innovations that can concretely contribute to achieving more inclusive, equitable and sustainable agricultural systems through agroecology. The panellists addressed the following questions:

- a. Which innovations in food systems and markets are supporting the scaling up of Agroecology?
- b. How can cities and municipalities help transform food and agricultural systems to achieve the SDGs?
- c. How do we harness the power of the private sector to achieve change at scale? How can credit and investment be improved to support agroecological transition processes?

The second part of the session consisted of an interaction with the participants on the importance of rights-based approaches to food systems and access to land as well as on the role of the public and private sectors and their interplay.

4.4.1 PRESENTATION BY JOAN RIBO

Mayor, City of Valencia, Spain

Valencia holds a long lasting tradition in food production and exports making this one of its main economic sectors. In 2016, Valencia was the first Spanish city to sign an agreement with FAO for the elaboration of policies on sustainable food systems. In 2017, the city was chosen as the World Food Capital, bolstering fruitful work in terms of creating an enabling environment for the transition towards Agroecology.

The township has recently begun building a world centre on sustainable food, which will be a hub for research and knowledge sharing on sustainable agriculture and nutrition. It is fundamental that cities begin adopting a truly ecological perspective on food systems. Food systems can either contribute or be the solution to global environmental problems.

Around one-third of global greenhouse gas (GHG) emissions are produced by the agricultural sector, 70 percent of which are generated in the post-production part of the value chain. Proximity is therefore a key aspect in sustainable food systems, and cities should foster proximity markets and short supply chains.

In Valencia, the *Tira de Contar* is a section of the central agricultural markets where local producers can sell their freshly produced food directly to consumers.

Another important role of municipal administrations concerns education. Activities can range from education on nutrition to children and youth – with positive effects on their parents' awareness – to the creation of school gardens to bring education closer to food production processes.

Urban gardens can also be dedicated to therapeutic purposes for people with mental illness or disability. Cities can play an important part in promoting research towards Agroecology and sustainable food systems.

Agricultural and food systems research is still closely linked to the interest of international corporations, and the larger share of research investments go towards conventional agriculture rather than towards the identification of truly transformative sustainable agricultural practices. Very often farmers' advisors are at the same time sales agents of companies producing chemical inputs and conventional technologies.

A significant factor when supporting the agroecological transition is related to information and awareness raising regarding both the benefits of proximity food systems and the harmful effects of unhealthy diets associated with industrial agriculture.

The township of Valencia has been actively promoting the reduction in sugar – also through taxation – and fats, and in endorsing a reasonable reduction in meat consumption. Sustainable mobility, renewable energy, waste management, water and waste water management are part of a holistic management towards the agroecological transition.

Valencia has begun the selective collection of organic waste for compost production. Last century's farmers used to collect organic matter door to door to produce the compost they would use in their farms. The municipality reinterprets such tradition through the technological means available today.

Agroecology can also be a solution for an ageing agricultural sector. While most farmers in Valencia are over sixty, most producers involved in agroecological production are youths.

Municipalities need to actively ensure that land is allocated to rural projects, which can contribute to the agroecological transition. For example, the larger peri-urban area dedicated to Agroecology is land given in concession by the municipality to a labour union, which collaborates with the public university.

4.4.2 PRESENTATION BY UGO BIGGERI

President, Banca Etica, Italy

Banca Etica counts on over 20 years of experience in ethical banking. Working mainly in Italy and Spain, the mission of Banca Etica is to ensure full transparency to its clients over the investments and loans made by the bank, which are mostly directed to projects with a social-environmental connotation. Banca Etica has long been financing organic agricultural projects and aims at increasing work on Agroecology.

The institute is part of the Global Alliance for Banking on Values, which involves 50 countries spanning over Europe, Latin America, Asia and Africa. The group involves financial institutes whose purposes go beyond profits and include social and environmental objectives.

Most of Latin American and African partners are microcredit institutes largely working in the rural sector and the network is growingly trying to support agroecological transitions in these countries.

A key aspect of investing in Agroecology concerns its long-term investment character, which is in stark contrast with the short-term nature of the modern financial environment. Long-term agricultural projects need financial institutions interested in creating value in a territory and in establishing mutual trust relationships with and within local communities. This implies reducing the risk of the investment by ensuring that the community itself is an environment that supports the project; one where consumers and the private sector can ensure the economic sustainability of farming activities.

Cities can play a key role in building these types of social-economic fabric, for example by supporting local markets, reducing taxes for producers and investing in educational programmes.

Ethical banking, just like Agroecology, is about relationships and trust. A bank that manages to grant full disclosure over its operations and to be truly involved in community building can create a solid network of clients and partners. These conditions allow for more solid and resilient banks, which can obtain better figures than conventional, purely profit-oriented financial institutes.

4.4.3 PRESENTATION BY DANIELLE NIERENBERG

President, Food Tank

Food Tank is a research and advocacy organization with an aim to highlight stories of hope and success in food systems that contribute to alleviating hunger, obesity, poverty, and food waste while protecting the environment.

As a platform of dialogue around Agroecology, Food Tank has conducted research in over 70 countries, interviewing hundreds of farmers, policymakers, academics, researchers and scientists, chefs, youth, women and advocates.

Cities can play a fundamental role in fostering the agroecological transition, especially in the absence of national leadership on many of the issues concerning the sustainability of food systems. For instance, the USA federal government is not taking the lead in terms of climate change and food policy and the cities and towns will become increasingly important in the years to come.

Before scaling up, Agroecology needs to be scaled out, meaning that the practices and policies around Agroecology need not only to spread among farmers but also among policy-makers and businesses.

This would allow scaling up in a way that does not leave farmers behind.

Agroecology should not just get bigger, but also grow out and expand in different locally adapted ways. Investment in research needs to be re-examined and directed towards those activities that truly benefit society as a whole. This may imply diverting funds from unsustainable ones – such as biofuel and feed production – and direct them towards sustainable food production, such as Agroecology.

While public efforts should be directed towards making rural areas more engaging and stimulating for young people, urban centres can also play a role – through urban agriculture – in the provision of environmentally sound and affordable products.

Urban agriculture could dramatically increase access to food of people living in food deserts and create a number of benefits in terms of youth leadership, jobs and economic opportunities.

Modern farming produces a large number of externalities which are not accounted for neither in prices, nor in agricultural decision-making.

True-cost accounting implies taking into consideration the real costs and benefits of food production and consumption and allows for honouring the work of food-system stakeholders.

The work of such stakeholders addresses key issues such as good soil and water management, participatory research practices, transparency, recognition of women's contributions to agriculture, youth involvement, creation of markets for indigenous and traditional foods and other practices, which can be considered related to Agroecology both as a social movement, a science and a practice.

Similarly, it would allow penalizing practices that contribute to deforestation and soil degradation, exploitation of workers and women and that create diseases associated with unsustainable and unhealthy food systems.

In relation to this, the report on True-Cost Accounting in the Food System, to be released by the Economics of the Ecosystem Services and Biodiversity for Agriculture and Food (TEEB-Agrifood) on 5 June 2018, is going to present a comprehensive review on true costs and benefits of food production across the value chain.

4.4.4 PRESENTATION BY FABIO BRESCACIN

President, NaturaSi, Italy

EcorNaturaSi is an Italian company that for over 32 years has been working in the distribution of organic and biodynamic food in Italy and in a number of European countries including Poland, Slovenia and Croatia.

EcorNaturaSi has created a network of virtuous producers supplying food to a network of supermarkets across the Italian territory.

In a moment of historical transition in food systems, NaturaSi holds a uniquely advantageous position to observe the interplay and changing dynamics between production and consumption. Over 40 years of experience in the sector and a long pathway paved of trials and errors allowed building a solid agroecological community of farmers nationwide, which can count on a wealth of knowledge on agroecological practices.

A sustainably managed farm does not produce only food but rather generates a variety of societal and environmental benefits. Farms are interconnected units, which together build landscape mosaics, and their sustainable management has great impact on territories and their communities. Farms are inherently healthy and enriching places, which can provide additional services for the community such as agri-kindergardens or residencies.

In Italy, consumers are growingly more interested in and conscious of the importance of agroecologically produced food. However, in today's food systems perverse incentives and free trade agreements lead to overly competitive prices of conventionally produced and imported food products. These create a very harsh environment for virtuous producers who have to compete with products whose prices do not reflect the numerous externalities their production entails. These considerations express the need for building strong supportive communities around farmers, which would enable them to see their products receive the right price recognition. This would also allow farms to attract more investments that notably need to be long-term for the very nature of farming activities.

Building a sense of community among farmers, consumers and businesses is key to creating an enabling environment for Agroecology to thrive.

Education is an essential aspect to achieve agroecological transition. Formal education most often overlooks innovations in Agroecology and is still mostly focused on the conventional agriculture paradigm. To enable youth who are interested in becoming agroecological farmers, specific educational and practical training opportunities should be provided.

In 2016, EcorNaturaSi created a training centre for young farmers – Accademia Biodinamica – that provides a three-year free training programme alternating theoretical and practical training including internships in farms in Italy and Europe.

EMERGING ISSUES FROM THE FLOOR

- » When discussing Agroecology, adopting a human-rights perspective is essential. The access to healthy and nutritious food cannot depend on peoples' wealth, but should be everyone's right. The world food crisis is primarily related to food access and distribution. Therefore, to scale up Agroecology the market rules that reproduce capital but do not reproduce life must be challenged. In addition, the growing concentration of people in urban centres should be counteracted. Initiatives are needed to promote a return to the rural areas and to the countryside. This issue goes hand in hand with policies on the right to land tenure and access to land.
- » It is important to recall the role that governments – as buyers – could play in terms of creating markets to promote agroecological food production and consumption. Brazil's National School Feeding Programme is a good example because it requires municipalities to source at least 30 percent of food destined to school canteens from family farms, with additional incentives if the farms are agroecological. Similarly, international organizations such as WFP could play a key role in creating markets for family farms and agroecological products.
- » There is a need to acknowledge agroecological alternatives stemming from traditional production systems such as extensive livestock productions, olive orchards and vineyards productions that do not use pesticides and herbicides. Many farmers use sustainable agricultural approaches that produce healthier and more nutritious food. Over the past decades, farmers in Spain have done a tremendous effort to reduce the consumption of water and other inputs. For instance, with the support of institutions and administrations such as the Valencian Institute of Agricultural Research, farmers in Spain were able to develop a variety of oranges that do not need many agrochemicals.
- » Attention needs to be given to local economies, short distribution chains and a need for closer relationships between producers and consumers.

FINAL STATEMENTS FROM PANELLISTS

Joan Ribo, City of Valencia

In terms of large food distribution chains, in Valencia there is a transfer of large supermarkets to neighbourhood supermarkets. At the same time, alongside those large distribution chains, other stores are appearing such as vegetable and meat stores. Our institutional relationships with those chains are not bad. They are not perfect, but they are not bad. In regards to suggestions supporting urban populations, at this moment we are developing a "land bank", with the objective of aggregating parcels of land to young farmers who do not have land.

It is true that it is a project done in the municipality area around a big city, but we are also trying to scale up into the whole metropolitan area. With respect to the creation of markets by governments, we think that it is very important that public institutions encourage the expansion of markets selling agroecological products. For example, we have implemented measures to ensure that, once per week, children in schools have menus with some local agroecological products, and we can use the same concept in the canteens of hospitals. The idea is to gradually increase the demand of agroecological products to give producers time to adapt. Finally, regarding the strict use or not use of chemicals, I like the term “Agroecology”, as I understand it is not a total ban on the use of chemical fertilizers but it actually allows for an adaptable management. However, I would like to highlight one issue: I am deeply worried about the situations where people who inform farmers also have business that sell fertilizers and pesticides, because this often results in overuse and its associated problems. There is evidence in this respect in Valencia. We need a stronger commitment towards sustainable agriculture.

Danielle Nierenberg, Food Tank

I agree with the suggestion about addressing Agroecology through a rights-based approach. When we are talking about access and distribution to land or markets, affordability in the cost and production of agroecological systems etc., we are also talking about the human right to food. I also would like to emphasize this idea of youth empowerment through land access. Along with mentorship and leadership trainings, we have to make cities better for consumers, while also creating more simulative rural areas for young farmers to be financially independent in a sustainable manner.

Fabio Brescacin, NaturaSì

There is a vision on how to relate access to food with price. For example, producing wheat in central Italy has a different cost than producing wheat in the USA. However, it seems that consumers are paying roughly the same price for wheat produced in different regions of the world. Therefore, if we manage to create a community concept, in which consumers as well as producers pay different prices according to the products’ origin, we will increase access to food. Regarding access to land, on one side, we have to promote access to public land for youth farmers and on the other we have to promote providing land for free to who are willing to farm on the property, such as is the case in Germany and France.

Ugo Biggeri, Banca Etica

Discussing social issues is essential when considering Agroecology. Social and environmental impacts must be disclosed before the agroecological challenges raised in this discussion can be solved.

4.5 AGROECOLOGY FOR INCLUSIVE TERRITORIAL DEVELOPMENT

PANELLISTS

1. **Hassan Roba**, Pastoralist and Member, Christensen Fund
2. **Nicole Yanes**, Outreach Coordinator, International Indian Treaty Council (IITC)
3. **Bernadete Neves**, Natural Resources Officer, FAO
4. **Salvatore Basile**, President, International Network of Eco-Regions (INNER)
5. **Gora Ndjaye**, Director, Kaydara School Farm (KSC), Senegal
6. **Andrea Elena Pizarro**, Researcher Fisheries and Aquaculture, Brazilian Agricultural Research Corporation (EMBRAPA), Brazil

FACILITATOR

Bruno Losch, Co-director, Center for the Study of Governance Innovation (GovInn)

This session enabled an exchange of experiences on sustainable territorial development as a way to re-articulate integrated landscape management and the whole society, to reconnect the rural and urban dimensions, and to adequately address governance on different context-specific issues. It also featured examples on territorial development as an approach to involve stakeholders into global issues that are related to common challenges. The panellists addressed the following questions:

- a. What are the advantages and disadvantages of applying territorial approaches to scaling up Agroecology? How can Agroecology help territorial development?
- b. How can we ensure the inclusion of women, youth and other marginalized groups in efforts to scale up Agroecology? How to include local stakeholders?
- c. What is the most exciting governance or policy innovation that you have come across to scale up Agroecology? What about innovative approaches in terms of governance and policy frameworks?

The second part of the session consisted of an interaction with the audience on the key opportunities and challenges to strengthen synergies between agroecological approaches and sustainable territorial development.

4.5.1 PRESENTATION BY HASSAN ROBA

Pastoralist and Member, Christensen Fund

Pastoral Systems are extensive production systems that can be found in most parts of the world. They are low external input systems that utilize heterogeneous resources and are extremely versatile and well adapted to marginal environments.

Pastoralists own a wealth of knowledge about ecosystem functions, including vegetation knowledge, changes in seasonality, soil changes, livestock breed changes and climate change. Pastoralists around the world have helped to develop new breeds of livestock because of living in environments where no other activities are possible due to the harsh conditions.

Pastoral production systems are therefore highly flexible and adaptive systems and should be an integral part of the discussion on territorial development to scale up Agroecology.

Herders' movements are based on a very precise and in-depth knowledge of ecosystems. However, they face constraints associated with the large extensions of land needed, which often leads to conflicts. Although these production systems have been existing for generations, they have never been truly considered as important production systems for global food production.

Today, more than ever, it is time to include these marginalized groups in environmental policy discussions, in efforts to scaling up Agroecology. Land-grabbing and displacement from their land affect pastoralists because in arid lands priority is often given to farming over pastoralism.

Policy efforts in East Africa to support pastoral systems hardly translate into concrete actions. The FAO Voluntary Guidelines on the Governance of Pastoral land was an important step, however, great efforts still need to be made to truly recognize pastoral systems as important production systems and to give value to land that is often considered useless.

4.5.2 PRESENTATION BY NICOLE YANES

Outreach Coordinator, International Indian Treaty Council (IITC)

Agroecology includes, and is a large component of, re-establishing the ecosystem to its pristine state and reintroducing indigenous practices to reach the natural state of those ecosystems.

Free, Prior and Informed Consent should be central to territorial development. It represents the right of indigenous people and it is recognized in the UN Declaration on the Rights of Indigenous People and in several other treaties.

The Declaration (Art. 26) also states that indigenous peoples have the right to the lands, territories and resources that they have traditionally owned, occupied or otherwise used or acquired. On these grounds, it appears clear that the inclusion of indigenous people in multi-stakeholder discussions should not be a matter of consultation but rather of consent.

The most exciting governance or policy innovation that I have come across to scale up Agroecology was the 2002 Global Consultation of Indigenous Peoples on the Right to Food, in Atitlan, Guatemala. It led to a declaration mentioning that for indigenous people the right to land, water and territory, and self-determination are essential for the full realization of their food security and sovereignty. Indigenous rights, especially food sovereignty, as well as the central role of women and youth, are key aspects of Agroecology.

Women are the agents who disseminate knowledge across generations and youth are those who take up the task of perpetuating work on Agroecology. They should be included not only in the discussions but also in the control of resources, territories and social processes.

It is also important to recognize the ancestral practices of indigenous peoples, peasants, fisherfolk, pastoralists and their organizations, and strengthen their role in safeguarding, accessing and utilizing natural resources and territories.

Numerous international instruments, policies and laws already exist. Implementing them once and for all, would allow achieving true agroecological processes faster.

FAO should continue its work on Agroecology and work with the International Indigenous People Forum on Climate Change to develop the Traditional Knowledge Exchange Platform, and with a number of other UN bodies, which already work with the indigenous peoples.

4.5.3 PRESENTATION BY BERNADETE NEVES

Natural Resources Officer, FAO

Agroecology implies a holistic redesign of farms and landscapes. The Land and Water Division of FAO aims at creating the enabling conditions for the adoption of agroecological practices.

This implies identifying hindering factors that prevent farmers from adopting them and integrated solutions to support them. This approach departs from the fundamental understanding that for farmers to sustainably manage their territory such as engaging in forest or riparian conservation, or restoration of degraded land, they need to be provided a variety of means to improve productivity while reducing the opportunity-cost of conservation and restoration.

Truly integrated approaches to landscape management are often hindered by a lack of integration among different funding streams, which, if integrated could allow for greater coherence among programmes and projects.

Mapping development initiatives in a certain territory can unveil multiple opportunities for synergies among different agents, with the potential for merging resources and agendas and providing beneficiaries with more holistic packages.

FAO offers a tool to map different funding options such as funds for land degradation neutrality and restoration of degraded lands, conservation, subsidies for adopting or moving away from certain practices, green public procurement, agribusiness development and rural credit programmes.

Each funding opportunity alone may not necessarily include environmental criteria, but these will still be embedded in an integrated package of actions combining better policies with better voluntary incentives.

For over a decade, the Convention of Biological Diversity has been formally promoting integrated packages of action, meaning that a global requirement exists to adopt integrated and multidimensional approaches in biodiversity conservation.

The ambition of scaling up Agroecology – which is an inherently multidimensional task – could greatly rely on the combination of funding options available to build truly integrated territorial approaches.

4.5.4 PRESENTATION BY SALVATORE BASILE

President, International Network of Eco-Regions (INNER)

People do not live in sectors, they live in places. The bio-district is a living and attractive territory where a deal was made among producers, consumers, public administrations and the entirety of actors in the territory. The entire community participates in a bio-district.

Scaling up Agroecology implies working at different scales coordinating the local, national and international levels. The bio-district experience began in 2004 in the south of Italy and from the early stages farmers have been put at the centre.

The initial exploration of the area allowed identifying 400 farmers who held an organic certification. Further research allowed identifying other 4 000, who were not certified but still applied the same practices and principles.

The bio-district supports and coordinates all local farmers interested in engaging in the agroecological transition. Bio-districts, also called *Eco-Regions*, are initiatives at the local level inserted in a larger network at the national and international level such as the INNER which allows sharing knowledge, scaling out and scaling up virtuous experiences worldwide.

Eco-regions are the exemplification of how territorial approaches, which involve a great variety of actors in a territory, can greatly benefit the scaling up of Agroecology. Joint work among farmers, consumers and public administrations generate a number of opportunities including green public procurement providing healthy and nutritious food to school canteens and hospitals.

This allows leveraging the functional biodiversity and creating effective alternatives to industrial agriculture, in a view to achieve food sovereignty. The people in the territory decide what to produce applying agroecological principles.

Additional advantages are generated by shortening the supply chains, increasing the income of local producers, and facilitating the inclusion of disadvantaged people in production activities and their consequent social integration.

4.5.5 PRESENTATION BY GORA NDJAYE

Director, Kaydara School Farm (KSC), Senegal

The KSC was created in 2003 to respond to the problem of youth unemployment in Senegal, upon the understanding that agriculture could be the only alternative for integrating youth and women.

The first obstacle faced by the initiative concerned how to demonstrate the potential of the approach. The soil where the school was to be built – an abandoned football field – was extremely poor and characterized by minimal water retention capacity and extremely low organic matter content. The main challenge was therefore to restore soil fertility and show the local population that it was possible to live with dignity regardless the level of land degradation.

The only upside was the presence of water four to five meters below ground.

The process of the restoration of soil fertility began with the planting of coconut trees. The medium was appropriate for tree-growth and coconut trees would generate a favourable microclimate, thanks to a very dense root system, allow consolidating the soil, and increase its water retention capacity.

The addition of vetiver grass, a cultivar of *Chrysopogon Zizanioides*, compost and humus helped adding mineral salts and organic matter to the soil. After the third year, the microclimate and the soil had improved sufficiently to allow setting up the school farm and starting recruiting youth.

At the end of three years of training, the land had become an oasis. The experience began gathering local and national attention. The administration of a local municipality showed interest in replicating the experience at village level in an area comprising 52 villages.

The local government committed, in case of positive results and upon winning the forthcoming elections, to include Agroecology in the local development plan and to provide land for youth to produce agroecologically.

Twenty young people were trained by the KSC and began setting up agroecological farms in the villages involved in the project. The success of the project led to the mayor's election and the scale up of the experience at municipal level by allocating three hectares of land to each young trainee.

The positive results gained the attention of another municipality, and with FAO's stewardship, a partnership agreement was developed among a number of actors including the municipal and provincial administrations and the local chiefs.

These forms of recognition allowed land tenure to become a key aspect of rural development. Land in the area is extremely fragile, threatened by desertification and salinization, with soils growing poorer with only 30 hectares of arable land.

In order to create champions of Agroecology at village level, the municipal administration agreed with local chiefs to allocate one hectare of land in each village to agroecological demonstration farms.

The farm had to be managed by youth trained by KSC and provided with assets to engage in a business-oriented model that ensured economic viability. Farm activities include floriculture, seed production and breeding, livestock, plant and tree production, and horticulture.

In addition to creating viable and sustainable development hubs based on Agroecology, the project also carries benefits in terms of building social capital in and between villages and communes. The communes involved in the project are now organized and have created a network of villages and communes that are collaborating in the implementation of a collective local development plan.

An important lesson learned from the KSC experience is that it is important to begin with local elites, given that the underlying problem is a land tenure problem. While the local government can help by giving land to young people, elected officials are very careful about land tenure issues because people who occupy the land are their electoral basin.

For this reason, despite the legal right of the mayor to allocate land, it is important to begin working with local elites, because they are the ones who traditionally decide over land use.

It should also be remembered that not all youth is interested in agriculture, which is why we included a workshop for agricultural mechanics and a cooperative where food marketing, organization and transformation activities take place to supply hotels and restaurant activities.

4.5.6 PRESENTATION BY ANDREA ELENA PIZARRO

Researcher Fisheries and Aquaculture, Brazilian Agricultural Research Corporation (EMBRAPA), Brazil

In the last decade, in response to an increasing demand, aquaculture has recorded the most significant and rapid growth among the food producing sectors and has developed into a globally robust and vital industry.

Aquaculture is already a major form of fish production for human consumption, and just like fishing, it also has potential to cause significant environmental and socially adverse impacts.

Aquaculture systems often operate on coastlines or near inland rivers or ponds and they tend to disrupt natural habitats contributing to nitrogen pollution and to cause undue pressure on feeder fish stocks.

To face some of these constraints, FAO has developed the Ecosystem Approach to Aquaculture. It is a strategy for the integration of fish-farming activities within the wider ecosystem, in order to promote sustainable development, equity and resilience of interlinked social-ecological systems.

To achieve these objectives, the participation of stakeholders needs to be a central part of the strategy.

In Brazil, demand and production of farmed fish are increasing rapidly. Such productive changes need to be structured and oriented towards the benefits of lower income populations.

The work of the Embrapa division on Fisheries and Aquaculture aims at providing solutions to the development of these two sectors, including enhancing the potential for export. The main species that are produced in aquaculture in Brazil are tilapia and tambaqui, both at small and large scale. Most of the production relies on inland fresh-water aquaculture, while mariculture is less developed and primarily concerns shrimp production and a minor share of oysters.

Small-scale fish farms, especially in earthen ponds, are highly important for food security.

One of Embrapa's initiatives concerns the promotion of a system called *sisteminha*, or "little system" in English, through which a small tank with capacity of 30 kg of tilapia or tambaqui is integrated within small-scale agriculture. The system was originally conceived to diversify on-farm production and to improve food security and nutrition of farming communities. It is now being applied in rural communities, settlements and schools.

Embrapa also runs an initiative aimed at involving small-scale fishermen in the provision of locally produced fish to schools. The programme works with cooks in schools to create new recipes and introduce or increase the share of fish products in children's diets.

These initiatives, among others, can only thrive with the involvement of several stakeholders, including governments, donors, municipalities, extension services and civil society organizations.

Additionally, Embrapa supports fisherfolks who were forced to quit fishing activities due to dramatic fish stock depletion, by providing training on how to transition towards aquaculture.

The training is preceded by a process of participatory diagnoses, which on the one hand allows identifying opportunities, constraints and specific training needs, and on the other raises awareness within communities and increases the level of empowerment over the territory and its resources.

EMERGING ISSUES FROM THE FLOOR

- » Bio-cultural community protocols can help communities to emphasize their connection to land and governance systems, and also support responsible use of natural resources among communities, which are often a source of conflict because of lack of regulation. Unfortunately, the protocols do not always succeed in influencing policies and they remain an agreement at community level. Using community protocols to engage governments especially in stopping destructive extractive use of resources should be sought after.
- » Bio-districts have proved that it is possible to shift from a sectorial to a territorial approach. However, this is possible only if development strategies are designed at the local level with the support of public authorities and the private sector. One single bio-district has little negotiation power but 30 bio-districts working together has dramatically increased negotiation power and can influence policies for the development of Agroecology. For example, green public procurement in the bio-districts is very important to build short supply chains.
- » While some eco-regions face challenges in terms of lack of management at some levels of the terroir it is nevertheless essential to work first at the local level, then at national and finally at international level to be able to scale up Agroecology.
- » It is also important to reflect on how it is possible to give rural youth access to territorial development in countries, particularly in Africa, that may have problems in governmental policies, and where it is not just a matter of implementation of territorial development at the local level. In such situations, the starting point should be with local communities and its elected representatives, and helping to sensitize them to advocate for youth accessing land, also considering these are voters. However, this is not the only solution to tackling youth unemployment. Other activities that complement agriculture should be proposed because there are young people who are not interested in working the land. For instance, farm mechanics training workshops bring together young people interested in agriculture mechanics while also being a cooperative that brings together women and young producers. Other activities include feeding-belt systems where young people, who have been trained, plan crops throughout the region and where other external factors are involved, such as the value chains that transform the products, the markets, hotels and restaurants that are the consumers of such products.

FINAL STATEMENTS BY PANELLISTS

Nicole Yanes, IITC

Agroecology is a way of life and the territory is the fundamental pillar of Agroecology. There is no Agroecology without indigenous peoples and social organizations, peasants and pastoralists, women and youth. We need to review public policies, and legal and financial frameworks that promote sustainable food systems and that confront social and environmental problems. We need to review public policies in particular regarding climate change, and expand the active participation of organizations and movements of indigenous peoples and of small producers in these spaces of public policy dialogues.

Bernardete Neves, FAO

Eco-regions give power to farmers to change the territory in a sustainable way. Agroecology should not become another silo. Let us show the effects of Agroecology through integrated approaches.

Hassan Roba, Christensen Fund

We have an opportunity to rethink development paradigms including marginalization and colonization, reassessing how we connect different types of practices and cultures. It is important to include every type of production systems that we have neglected because of the promises of the Green Revolution and modern farming systems.

Gora Ndiaye, KSC

Agroecology is initiation to life. It is the ethic of life. We need to go back to our cultures, to our roots, decolonize the spirits, because before developing anything new, the spirits that have been constructed over centuries of colonization need to be deconstructed. This will give confidence to the African youth, who will assume their responsibility, who will stop identifying themselves in other cultures and allow them to begin setting roots of their own and be open to the world.

4.6 AGROECOLOGY, HEALTH AND NUTRITION

PANELLISTS

Emile Frison, Panel Member, International Panel of Experts on Sustainable Food Systems (IPES-Food)

Daphne Miller, Medical Doctor, University of California, San Francisco, United States of America

Rajdeep Kapoor, Chef, Slow Food India Chef's Alliance (SFCA), India

Hervé Petit, Programme Officer, Agronomes et Vétérinaires Sans Frontières (AVSF)

Florence Tartanac, Senior Officer, Nutrition and Food Systems Division, FAO

FACILITATOR

Anna Lartey, Director, Nutrition and Food Systems Division, FAO

Under the SDGs umbrella, in 2016 the UN General Assembly declared the International Decade of Action on Nutrition. This session enabled an exchange of experiences on the role of Agroecology in helping to achieve health and nutrition for all, in response to these global goals. In the first part of the session, the panellists answered the following questions:

- a. What are the interconnections between Agroecology, nutrition and health?
- b. How do culture and food traditions enhance or detract from the sustainability of food systems? What are some examples?
- c. What are the most effective levers of change within the food system? How can they enable agroecological transitions?

The second part of the session consisted of an interaction which allowed the participants to raise further issues, ask questions and share comments with the panel.

4.6.1 PRESENTATION BY EMILE FRISON

Panel Member, International Panel of Experts on Sustainable Food Systems (IPES-Food)

The International Panel of Experts on Sustainable Food Systems (IPES-Food) is an independent think tank aiming to support the transformation of the global food system towards a sustainable food system that can deliver on economic, environmental, nutritional, health, social equity, and cultural dimensions, as explained in the thematic report “From Uniformity to Diversity – A paradigm shift from industrial agriculture to diversified agroecological systems” (IPES, 2016).

IPES-Food strongly believes that Agroecology is a matter of harmony among people, the agricultural environment and the broader environment, and people and smallholder farmers are at the heart of Agroecology.

On one hand, it is common knowledge that industrial ways of doing agriculture is causing tremendous damage to the environment and to people’s health. Two-hundred thousand people die from pesticide poisoning every year, 99 percent of whom in developing countries, and hundreds of thousands suffer diseases because of poisoning, often lifelong handicaps. Pesticides are also considered endocrine disruptors and cause negative long-term health effects. These aspects are often overlooked but hold a tremendous health burden.

Agroecology is a solution to these problems with additional beneficial outcomes in terms of higher levels of antioxidants in plants that have not been treated with pesticides or higher content of omega-3 fatty acids in organic meat and milk. These dimensions need to be considered when assessing the state of food systems and the potential of Agroecology as a transformative approach. It is demonstrated that given the current production levels in developing countries, Agroecology can double production without the use of pesticides answering both to the health and nutrition crisis and the need to produce more where it is most needed.

On the other hand, the potential of traditional crops to deliver a diverse diet is nowadays most often neglected or underutilized. For example, Kenya’s traditional diets were in the past characterized by about 200 varieties of green leafy vegetables both wild and cultivated. These varieties, very important for the intake of key micronutrients indispensable for human development, progressively disappeared due to shifting diets to a point that until the early 2000s most of them were not found in cities like Nairobi.

To provide solutions to this issue, Bioversity International, in collaboration with a number of partners including women groups, NGOs and local restaurants, engaged in a project for reviving and reintroducing them into the Nairobi market. One of the main obstacles the initiative faced concerned the negative stigma these varieties had begun to have from the point of view of urban people. They were considered poor and unfashionable food as opposed to the seemingly modern and growingly popular junk food. Nutritional qualities were not part of the equation.

Therefore, besides working with local farmers in the context of agroecological diversification to bring back these species to the market, the project also engaged in the rehabilitation of their image. Chefs were involved in the elaboration of innovative recipes to be included in the most popular restaurants of the city, green leafy vegetables started to be served in the canteen of parliaments and parliamentarians began praising them on national television. As of today, these species have found their way back to markets and supermarkets and the demand is actually much higher than the supply.

An important consideration when approaching the topic of how culture and food traditions enhance or detract from the sustainability of food systems concerns its distorted interpretation. It is common in East and Southern Africa that farmers refer to maize as a traditional crop.

In reality, maize is a cereal crop that was introduced from the Latin America and became a major staple crop fairly recently at the expenses of more traditional cereal species such as sorghum and millet. It is important to unveil the difference between traditions and shifting diets associated with changes in agricultural systems, driven by the availability of technologies and by interests that go beyond real population's needs and demand.

In conclusion, health and nutrition is one of the key dimensions which needs to be taken into account when comparing agroecological diversified food systems with conventional and industrial ones, in order to account for the positive and negative externalities of both systems.

True cost accounting needs to become more prominent as a methodology to reward positive externalities of Agroecology and tax or penalize the negative ones of conventional agriculture.

The TEEB-AgriFood with the support of the Global Alliance for the Future of Food and the EU Commission, among others, elaborated a comprehensive framework to guide analyses and inform policymakers on the holistic evaluation of agricultural systems. This will allow identifying and quantifying positive and negative externalities and hopefully, influencing the policies in the direction of Agroecology.

The discourse on Agroecology has possibly given more attention to environmental aspects than to health and nutrition. Incorporating these two dimensions would allow further positioning of agroecological stances into the debate on how to transform food systems towards sustainability. Research and investments in Agroecology need to increase.

Today most agricultural investments are limited to a few staple cereals that are rich in energy but nutrient poor and are a major cause of global concern.

Fundamental contradictions exist in the development aid agenda: while Europe has recommended a daily intake of five fruits and vegetables a day, development research and projects are supporting essentially energy rich and nutrient-poor staples.

What is good for us should also be good in our development agenda.

4.6.2 PRESENTATION BY DAPHNE MILLER

Medical Doctor, University of California, San Francisco, United States of America

The majority of preventable chronic diseases on the planet, regardless the geographical area, can be traced back to our industrial system of agriculture. This partly relates to the food itself, however, it is also connected to a number of other factors, including air and water pollution, working conditions and deteriorating livelihoods.

The need for an alternative system is evident. Agroecology entails a number of elements including biodiversity, recycling of nutrients, protection of soils, preservation of genetic material, among others. Each one of these elements can be traced to a benefit in human health. By way of example, there is common agreement today that the healthiest kind of diet is a diverse one.

A growing body of research is demonstrating that diets should be diverse from the macro – seasonality and diversity of food – to the microscopic level – nutrients and microbes in the soil. Microbes, in fact, play a key role in “scavenging” nutrients in soil making them available to plants. It is also demonstrated that the emergence or intensification of infectious diseases worldwide such as Lyme Disease or Schistosomiasis have direct links with the diversity in food systems.

Agroecology produces a much greater diversity of food that is actually nourishing, as opposed to food full of calories. This is widely acknowledged although the amount of food produced globally is in surplus in terms of calories, but not in terms of nutrients. Half of the people on the planet has at least one nutrient deficiency, and usually more.

The government of the USA encourages the consumption of at least five portions of fruits or vegetables a day, having adopted a recommendation of WHO. Interestingly enough, the USA actual production is 20 percent lower than that required to provide five units of fruits and vegetables a day for the population.

Therefore, sufficient intake of nutrients by the USA population is highly dependent on imports and consequently the country is dramatically food insecure.

A concrete example on how Agroecology and food tradition enhance the sustainability of food systems is illustrated in the gardening method of the “Three Sisters” or *Tres Hermanas* in Spanish.

The Three Sisters method entails the synergistic combination of corn, squash and beans and dates back over 1 000 years in the Native American culture. The combination, besides being effective and efficient from an agronomic perspective, represents a highly healthy diet in terms of nutrient intake. These plants hold a strong symbolic and cultural value, which manifests itself in the rituals and ceremonies dedicated to them.

This is a clear example of the interlinkages between Agroecology, food traditions and culture, and human health.

The most effective levels of change within the food systems is to include enough fruit and vegetables in agricultural systems which contradicts dietary national and international recommendations on daily intake of these products.

Additional resources and effective policies are also needed in support of farmers who produce healthy and nutritious food. This should be done in combination with public and private efforts to change consumption patterns while promoting Agroecology.

The food systems need to also overcome multinational corporations that have gained tremendous power and have co-opted “organic” products into products that are not better than conventional ones. Intermediaries and corporate giants, which stand between the eaters and the growers, create a major bottleneck hindering the agroecological transition towards healthier diets and healthier societies.

The loss of genetic resources associated with the modern global food system constitutes an unprecedented crisis.

Three companies on the planet own most of the DNA that ends upon people’s plates. The species of chicken eaten have been reduced to one or two, and three kinds of food – maize, rice and wheat – represent the larger share of the world’s diets.

These are the dramatic problems that Agroecology can address and solve.

The World Health Organization (WHO) is spending USD 250 million a year on preventable chronic diseases. The total amount spent every year to cure the over 400 million type-2 diabetics worldwide reaches nearly USD 1 trillion. The causes of type-2 diabetes can be linked solely to diets and these are the numbers to be taken into consideration when faced with the choice on whether to engage in the agroecological transition.

4.6.3 PRESENTATION BY RAJDEEP KAPOOR

Chef, Slow Food India Chef's Alliance (SFCA), India

The SFCA aims at receiving good, clean and fair food, and at promoting the concept of slow food to all the young budding chefs. Being close to your roots, being traditional, being as close to nature as possible are the small steps that can lead to healthy living.

When a chef is cooking, he or she must be as close as possible to the farmers, must know what is being purchased, how the farmer has grown the product and what kind of inputs were used. Everything that has gone into the production of a produce must be knowledge of the chef.

Chefs must be both modern and traditional, revive local, seasonal traditional and forgotten food, and have great networks with farmers and fisherfolk to get their vision and knowledge of the environment and biodiversity.

Eventually, this knowledge needs to be utilized and interpreted through gastronomic skills. Most importantly, farmers must get their deals: the distance between the farmer and the consumer must be reduced to allow for the greater part of the produce value to remain where it belongs, in the incessant hard work of farmers in their land.

Wherever there is civilization, there is culture and there is tradition. Chefs, who are into the culinary field and are sharpening their gastronomic skills, must understand their local culture and traditions. This will help in promoting natural fauna and flora and enjoying the fruits of the land while maintaining biodiversity.

Traditional knowledge is in the process of re-emerging as a priority at the global level and is increasingly being recognized as a constituent of the tangible and intangible heritage of humanity.

However, the significance of traditional knowledge needs to be critically assessed against the backdrop of a complex modern world, shaped by the onset of globalization and the profound social and societal changes it entails. Local and global communities are experiencing a loss of traditional knowledge and values, which goes hand in hand with the decline in the cultural diversity and the dilution of a sense of community.

This process of impoverishment of traditions is represented in the present global food system and in the idea that local agriculture must serve the global market, transform food into a mere commodity and compel people to conform to a single way of producing and consuming food. In this scenario, cultural social and environmental costs are extremely high.

In order to counteract such a phenomenon, it is essential to undertake projects aimed at gathering, reinforcing, preserving and promoting traditional material and immaterial heritage, which must be perceived as the founding element of any community.

It is also vital to recognize the importance of combining the concept of biodiversity with ethno-diversity, the precious local heritage which distinguishes every human group and which can only be enriched through exchanges from traditions and culture.

Local food production must be appreciated as a form of both cultural and physical nourishment for any community and for this reason must be supported and promoted. Although women make an indispensable contribution to local food production, in many settings they are still the weakest link due to their lack of access to economic resources, education and health care.

In this regard, policies grounded on the recognition of women as a founding element of every community and as central in community, social, political and economic life must be developed.

Sustainability defends traditional knowledge as a source of wisdom and, knowing how this lies at the core of the technical and scientific learning if properly protected, can become a vital element in local economic systems to help spread environmentally friendly methods of food production and consumption.



Source: provided by authors/organization

4.6.4 PRESENTATION BY HERVÉ PETIT

Programme Officer, Agronomes et Vétérinaires Sans Frontières (AVSF)

Vétérinaires Sans Frontières is an international network of non-profit organizations working to support small-scale farmers all over the world with hundreds of projects in the field of agriculture and livestock production, animal health and animal welfare.

The network works in 30 countries in Africa, Asia and Latin America, conducting more than 180 projects and programmes funded on the principles of Agroecology and “one-health” to achieve food security, food sovereignty and food safety.

The one-health concept is a holistic approach, which emphasizes human, environmental and animal health.

Small-scale farmers have been selecting best locally adapted practices over generations and Agroecology recognizes and valorizes these invaluable efforts. The preservation of traditions can have key role in sustaining food systems and their loss could be deleterious for the peoples, for the economy and for the environment.

For generations the nomadic herders of Mongolia relied on a farming system built upon a wise balance of a variety of livestock species including sheep, goat, cattle, horses, and in the south, camels.

Because of the recent drastic changes in markets due to globalization, the fine balance among animals has been disrupted, in response the growing global demand for cashmere. Most herders groups began raising almost solely goats, leading to a major overgrazing crisis.

While this phenomenon exemplifies the potentially disruptive effects of a loss of tradition, the following one shows how at times tradition can be at the base of unsustainable practices. As an example, in many farming societies small-scale livestock such as poultry or pigs do not have a role in enhancing societal status and generally their management is the responsibility of women.

These traditional customs are, however, counterproductive because poultry farming needs minimal seed capital to become productive and has a quick turnover in production. A change in the imaginary ascribed to small livestock could contribute to increasing the productivity potential of these species.

4.6.5 PRESENTATION BY FLORENCE TARTANAC

Senior Officer, Nutrition and Food Systems Division, FAO

Our work focuses on how to improve both market access for small producers and access to healthy sustainable food for consumers. To be able to achieve such goal, the recent FAO/ Institut National de la Recherche Agronomique (INRA) publication “Constructing Markets for Agroecology – An analysis of diverse options for marketing products from Agroecology”, among others, investigates the definition of agroecological food through a number of case studies where consumers, producers, traders and intermediaries provided their interpretation of the term.

The resulting definition was that agroecological food is organic, healthy, safe, and produced without the use agrochemicals. Identifying the definition of agroecological food is a way to recognize that Agroecology is the solution for health improvement. The publication also acknowledges that agroecological markets bring an increase in the availability of more diverse food, especially of local varieties, that are linked to traditional diets. Therefore, consumers’ awareness should be increased on the importance of diet diversification and its effects on physical and mental health as well as on the positive impacts of sustainable, local and traditional consumption on the social, economic and environmental compartments.

The ongoing FAO project entitled “Biodiversity for Nutrition”, which is implemented in collaboration with Bioersivity International, is aimed at the study of underutilized crops with a special attention on their food composition and at their promotion in local markets. The project involves chefs, school meals programmes, traditional markets and festivals. FAO is also working on the study, preservation and support of indigenous food systems, which are inherently agroecological bringing together biodiversity and culture.

A key level of change to tackle agroecological transition concerns supply chains and markets. Agroecological value chains are characterized by a diverse basket of products generated by biodiverse farms and landscapes. When addressing markets and value chains for Agroecology the most appropriate approach is a territorial one.

Territorial approaches also imply stressing the interactions among different actors, which, in Agroecology are reciprocity, proximity and knowledge sharing, and valorization of food and farming traditions. These are key conditions to build stable, inclusive and long-lasting market relationships.

In agroecological value chains, community-based agriculture, farmers markets, eco-fairs, as well as restaurants and hotels can be linked to direct farmers’ supply. Voluntary, trust-based and participatory systems of certification, such as the PGS can play an important role in creating an enabling environment for agroecological markets to thrive.

Acknowledging that agroecological markets would benefit from a more nutrition-sensitive value chain, the Rome-based agencies (FAO, IFAD and WFP) are collaborating in developing value-chain approaches that address the multidimensional complexity of food systems to ensure the stable supply of diverse and nutritious food.

EMERGING ISSUES FROM THE FLOOR

- » For more than two decades, the world has consumed transgenic foods produced with an excess of chemical inputs, that did not comply with the promises made to increase productivity and quality, reduce pesticide use, or reduce deforestation. Transgenic foods together with pesticides and nitrogen pollution have negative effects on human health and the environment.
- » Hunger is not a technical issue but a political one that concerns access to land and water, and to food through dignified salaries. Technology alone will not be sufficient reduce hunger.
- » Attention should be paid to flavour and taste because there are healthier sustainable alternatives that can supplement modern food.
- » Diversity is a key part of Agroecology and it relies on seeds. There is a need to ensure the access and availability of unpolluted seeds.
- » With increased transparency of the price-setting systems, it would be clear that industrial agriculture will likely always be much more expensive than agroecological production. Likewise, healthy diets can be sustained within the same budget provided food habits are changed.
- » In regards to consumers' behaviour, for children under five, the steep obesity curve seen over the last ten years has started to flatten. One plausible explanation to this may be that children are being exposed to things like school gardens and eco-literacy, another that there have been some changes in food policies concerning school canteens. With small shifts in nutrition, there seems to be a change in body mass indexes and that is very hopeful.

FINAL STATEMENTS BY PANELLISTS

Florence Tartanac, FAO

As a recommendation, I would like to ask local and national governments to support more local and territorial markets and not to put so much emphasis on export. When we are doing projects, governments always want to look at exports but attention should be given to local markets.

Hervé Petit, AVSF

NGOs, international organizations and most of you, we have all been gathering experiences, piloting projects for many years, proving that Agroecology is suitable and brings good results. Unfortunately, this tends to remain unheard. There will be no proper scaling up without a strong will of governments and agricultural policies supporting Agroecology. Why is it so important to support Agroecology at large scale? Because Agroecology is the only concept that is suitable and capable to enhance productivity of small-scale farming.

Rajdeep Kapoor, SFCA

I want to call upon you to make a resolution today: the chefs and diners, when we cook and sit together for our meals, we should remember to thank the farmers and pray God to help them because they sustain ethical farming, sustain the nations through their hard work and dedication. We all wish each other a sustainable and harmonious future with nature.

Daphne Miller, University of California

The agroecological community should take a stance and put itself forward as the holistic solution to the chronic diseases which are afflicting the world.

Anna Lartey, FAO

All of the key principles of sustainable food systems are entailed in Agroecology. Today we need to tackle the problem of cheap unhealthy food. I come from a country where a bottle of sugar drink is 20 cents and a medium sized watermelon is two to three dollars. How do you convince a mother to give nutritious food to her children when she has to pay two to three dollars for a fruit? The other thing we did not talk very much about is infrastructure. If we want to help the small-scale farmers, how do we link them to markets when the road is bad? They produce the food but they cannot take it to the market. It is so crucial to teach our children to eat right, otherwise we are killing our children and ourselves. Agroecology is the solution if we really want to make a big dent in addressing malnutrition and health problems. Through the UN Decade of Action on Nutrition looking at SDGs, we have what it takes to do this. You are the advocates. You are the consumers. You demand the food. You should get healthy food. So, demand what you need to eat to remain in good health. No one can take that right from us!

Emile Frison, IPES-Food

Regarding the elitization of organic food and prices, if food habits are changed, we can have a healthy diet with the same budget. Copenhagen, for example, has moved to 90 percent organic in its public food procurement with the same budget just by being more seasonal and reducing the portions of meat. On the issue of seeds, diversity is a key part of Agroecology and it relies on seeds. I want to bring your attention to an initiative called “Seeds of Resilience” that is supported by the Global Alliance for the Future of Food and which is bringing together actors who want to work on the issue of seeds.





CHAPTER 5

PARTNERSHIPS FOR THE SCALING UP AGROECOLOGY INITIATIVE: TRANSFORMING FOOD AND AGRICULTURE IN SUPPORT OF THE SDGs

- JOINT PRESENTATION BY FAO AND UN PARTNERS OF THE SCALING UP AGROECOLOGY INITIATIVE
- MULTI-STAKEHOLDER DIALOGUE AND ENGAGEMENT
- PLENARY DISCUSSION WITH PERSPECTIVES FROM THE FLOOR

5.1 JOINT PRESENTATION BY FAO AND UN PARTNERS OF THE SCALING UP AGROECOLOGY INITIATIVE

PANELLISTS

1. **Hans Dreyer**, Director, Plant Production and Protection Division, FAO
2. **Mette Løyche Wilkie**, Director, Ecosystems Division, UN Environment Programme (UNEP)
3. **David Cooper**, Deputy Executive Secretary, Convention on Biological Diversity (CBD)
4. **Paul Winters**, Associate Vice-President, International Fund for Agricultural Development (IFAD)
5. **Stephanie Hochstetter**, Director, Rome-based agencies and Committee on World Food Security (CFS), World Food Programme (WFP)
6. **Phebo Karen Kgomotso**, Technical Advisor for Ecosystems and Biodiversity, UN Development Programme (UNDP)

FACILITATOR

Barbara Gemmill-Herren, Senior Associate, World Agroforestry Centre (ICRAF)

This session featured a joint presentation from FAO, UNEP, CBD, IFAD, WFP and UNDP of the Scaling up Agroecology Initiative. On behalf of their respective organizations, panellists expressed support to the Initiative and committed to engage in its adoption and implementation through increased partnerships and collaboration.

5.1.1 FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Hans Dreyer

Director, Plant Production and Protection Division
Food and Agriculture Organization of the United Nations

In his introductory remarks at the opening of this Symposium, the FAO Director-General mentioned that time has come to consolidate and to scale up Agroecology. The need to scale up is an important outcome of the regional multi-stakeholder dialogues held over the past three years in Latin America, Asia, Europe, Central Asia and Africa. We have heard about countless, concrete and successful experiences in many countries – and also during this Symposium – all having a great potential to be scaled up. An important outcome of this Symposium is the launch of a forward-looking and action-oriented Scaling up Agroecology Initiative.

The proposal for this Initiative has been developed together with UN partners, mainly the RBAs (FAO, IFAD, WFP), but also UNEP, CBD and UNDP. We are very happy that these agencies are here for this launching session. As you know, a background document on this Initiative has been published on the FAO website; it is a living, evolving document. Allow me to read out the mission statement of the Initiative: *“In the transformative spirit of the 2030 Agenda, we will work with food producers, governments and other stakeholders to strengthen Agroecology – as a promising approach – harnessing a range of sustainable practices and policies, knowledge, and alliances to achieve equitable and sustainable food systems in support of the SDGs”*.

Indeed, the Initiative addresses almost all of the SDGs, providing a framework for common action. Our efforts will focus on three areas of work. The first area is about knowledge and innovation. The second area is on policy processes for transformation of food and agricultural systems. The third focusses on building connections for transformative change.

FAO started to work on Agroecology in 2014 with the First International Symposium on Agroecology. Since then, FAO has convened seven regional multi-stakeholder seminars. The main outcomes of these regional dialogues were presented on the first day of this Symposium and were further discussed during different sessions. More recently, FAO has carried out an analysis of its 2018–2019 work plan to assess where we currently stand regarding Agroecology within the organization. We found that Agroecology accounts for eight percent of FAO’s planned results for 2018–2019 supporting transitions for sustainable food and agriculture involving 78 countries in all FAO regions. While there is much going on, there is still a great potential to shape a substantial part of results – at least 50 percent – in order to upscale Agroecology. However, this would require all partners to demonstrate their commitment and willingness to use Agroecology as one of the promising approaches to achieve sustainable food and agriculture systems.

In early 2017, FAO launched an Agroecology Knowledge Hub, a web-based platform for sharing best practices and policies on Agroecology, and for the past four years we have regularly brought Agroecology to the attention of our governing bodies such as COAG and the FAO Council. With their support, we have a mandate to strengthen our work on Agroecology at different levels. FAO will thus continue to reinforce Agroecology and is ready to scale it up in its own work programmes and projects. Yet, the complex task of scaling up Agroecology is not the work of FAO alone. In the UN, we approach this task with a network of other partner organizations dedicated to scale up Agroecology, and hopefully, more will join this Initiative. Governments, other public and private sector institutions, as well as civil society are also needed to promote this approach. Thus, partnership is key and needed more than ever as the 2030 Agenda calls for an integrated, holistic way of doing, recognizing the interdependencies between food and nutrition security, the interdependencies between sustainable agriculture, rural poverty, biodiversity and climate change.

The Initiative proposes three types of partnerships: (a) within UN agencies and bodies; (b) with governments; and (c) with non-state actors. All this is detailed in the document. So this Initiative is really looking forward, and FAO is convinced that a wide cooperation among partners and a wide range of actors and institutions is necessary to scale up Agroecology. The best way to engage with partners will be discussed with partners during the preparation of the joint programme of work on Agroecology. This agenda is very challenging, and a lot still needs to be done, we are very well aware of that.

There is a need for increased recognition of the important role of Agroecology for sustainable food and agricultural systems by all major UN partners. We all also know that scaling up Agroecology will only be possible if we are successful in mobilizing resources. Hence, scaling up Agroecology means scaling up partnerships, cooperation and resource mobilization.

5.1.2 UN ENVIRONMENT PROGRAMME

Mette Løyche Wilkie

Director, Ecosystems Division
UN Environment Programme (UNEP)

UNEP is delighted to join FAO and other sister agencies of the UN in a partnership to support scaling up Agroecology. This Symposium and the Initiative have highlighted the urgent need to transform our agricultural and food production systems. The past two days have demonstrated the vast experience that exists around the world to enable us to make this transition through the upscaling of Agroecology. As mentioned in the Chair's Summary, the time to act is now.

What can UNEP bring to the table? First, our role of advocacy for the environment at large, giving voice to the planet we live on and the biodiversity it contains by keeping the environment under review and by persuading governments, NGOs, the private sector and individuals to act. Let me give you just one example. Every two years, we host all the governments of the world and other stakeholders in what we call the UN Environment Assembly. The last one was held in December 2017 and resulted in a series of negotiated resolutions to beat pollution off the air we breathe, the water we drink and the soil we use to grow our food. I would urge you to have a look at those resolutions and to use them to help promote Agroecology. Second, we need to reflect the full cost and benefits of our food systems. We are currently finalizing a major study on the economics of ecosystems and biodiversity of agriculture and food, also known by its acronym TEEB-AGRIFOOD. This study aims to shed light on the complexity of today's food systems and the hidden costs and benefits of the choices we make. As an example, if Senegal were to change all its irrigated lowland rice systems to water saving production systems, society would save about USD 11 million in water related health and environmental costs annually, while at the same time increasing yields and farm income.

The business case for Agroecology is clear. What we need are willing investors, which brings me to the third and last point. We at UNEP have heard the calls for investments to facilitate the scaling up of Agroecology and we have entered into partnerships with two major banks: BNP Paribas and Rabobank, which are some of the major lenders for agriculture. They have agreed to set aside USD 11 billion to support sustainable agriculture and land use options. Together with the World Agroforestry Centre and the United States Agency for International Development (USAID) we have set up a sustainable landscape finance facility in Indonesia. The first deal for about USD 95 million has already been signed. I am very pleased to let you know that we aim to launch the second one in Andhra Pradesh, India, in early June to support the scaling up of Zero Budget Natural Farming, the system that Vijay Kumar described yesterday, in order to scale it up to six million small-scale farmers covering eight million hectares of land within the next few years. FAO is a partner in this and it is providing technical support to this initiative. We hope that this will be the beginning of a beautiful friendship, and that Andhra Pradesh will be an innovative and tangible example of how to scale up Agroecology and that will serve as an inspiration for other governments, investors and small-scale farmers on how to revolutionize the way in which we produce and consume our food for the benefit of both the people and the planet.

5.1.3 CONVENTION ON BIOLOGICAL DIVERSITY

David Cooper

Deputy Executive Secretary
Convention on Biological Diversity (CBD)

We have heard over the last few days about the importance of transformational change. Governments have already agreed on the 2030 Agenda and the SDGs, and on the fact that we need transformational change including of the agricultural and food systems. At CBD we look both at how we can scale up and advance progress towards existing Aichi biodiversity targets and how we can begin to consider the framework that will be needed for the post-2020 period. It is clear that the way we manage agriculture and food systems is probably the single most important issue for the future of biodiversity.

We know from scenario analyses that have been done by various bodies under the Convention, the sort of changes that need to happen at an aggregated, global level. The challenge is how we nurture those changes in a democratic, participatory way, building upon the skills and experiences of the 570 million farmers on this planet. We heard over the last few days some very engaging and hopeful examples of how farmers and communities are working to improve the way we manage agriculture. We believe that the Scaling up Agroecology Initiative can be a major effort to help us move forward in this way. We are very happy, along with the other organizations represented here, to be part of this Initiative.

The recent Conference of the Parties (COP) 13 held in Cancun acknowledged the role of Agroecology. In fact, the CBD and FAO have been cooperating with other partners for a long time on closely related issues, starting with the programme of work on agricultural biodiversity that was adopted under the Convention in 1996. This programme of work was co-designed by FAO and CBD. It includes some important initiatives on which we are working very closely with FAO, including pollinators and building upon the IPBES assessment on biodiversity and ecosystem services, which emphasizes the value of pollinators and pollination services for agriculture, human health and nutrition. Likewise, we are working with FAO on the issue of soil biodiversity.

Within the Convention, we will have opportunities both in terms of policy processes through the discussions that will take place at the COP and subsidiary bodies of the Convention, and also in terms of working with countries and parties to look at how these approaches can be integrated into national biodiversity strategies and action plans over the coming years. We are very happy to join this Initiative.

5.1.4 INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT

Paul Winters

Associate Vice-President

International Fund for Agricultural Development (IFAD)

We need to bring interventions to scale to transform food and agricultural systems. At IFAD we invest in rural people. Our average IFAD loan is between 30 and 35 million dollars. Such spending has implications on the food system, and the way we spend it matters. Historically, a significant focus has been put on promoting mono-cropping systems. This may have been appropriate at one time, but rural economies are transforming and the climate is changing. Therefore, we must alter our approach to recognize this new context. Towards this end, we have reviewed our focus and have paid greater attention to the context in which we operate. We work in value chains investing to expand the opportunities for family farmers and to promote a more diverse set of crops. We facilitate adaptation to climate change through our Adaptation for Smallholder Agriculture Programme which promotes farm-level investment to improve the natural resource base. What we need to do now is go beyond that, and invest in transformed food systems that embrace the underlying principles of diversity and environmental sustainability found in agroecology.

IFAD has a long history of scaling up. In each of our programmes, we describe how our interventions can be scaled up in the future. This is key because: to scale up, you need to start considering the possibility before you invest. You have to consider if it going to be possible to scale in the future, and if there will be evidence to ensure that it can be scaled up. We want to scale up successes, not failures. We need to build a broad evidence base. Another area in which IFAD will work – and where we welcome your contributions – is in building that evidence base. We need to conduct broad-context research to understand the situation well enough to get a sense of where we should be investing. We also need to monitor what we do; we need to build evidence during our projects so when they conclude we have a sense of their success and their scalability. You should make sure that you have strong evidence that suggests that what you are doing is likely to be successful at a broader scale. Those are the two areas we will focus on: making sure investment is building towards transformed food systems, and making sure we generate the evidence base together with researchers to inform that investment, so that we invest in the right places.

5.1.5 WORLD FOOD PROGRAMME

Stephanie Hochstetter

Director, Rome-based agencies and Committee on World Food Security (CFS)
World Food Programme (WFP)

WFP welcomes the concepts, principles and general approaches contained in the Scaling up Agroecology Initiative. We believe that it will be added value to the efforts of the RBAs in helping the countries to achieve the SDGs, especially with regards to enhancing resilience, inclusiveness, efficiency and sustainability of agricultural and food systems.

Under its 2017–2021 Strategic Plan, WFP continues its twin track to respond to immediate food and nutrition needs of those affected by conflict and other emergencies while laying out the foundation to address the root causes of hunger, in line with the 2030 Agenda. Of particular relevance is our Strategic Objective 3 “Achieve food security”, which includes targets of food security and nutrition levels of smallholders and of enhancing the sustainability of food systems, which are often flawed or disrupted. Under strategic result 4 of its Strategic Plan, WFP commits to making food systems sustainable and to utilizing resilient practices to help maintain ecosystems, strengthen capital capacities for adaptation to climate change, extreme weather and disasters and progressively improve land and soil quality. Various elements of the Initiative have been embraced by WFP’s recent corporate strategies and policies, including the pro-smallholder food assistance strategy, environment policy, climate change policy and disaster risk reduction and management policy, which aim at addressing many of the sustainability-related issues facing smallholders and food systems.

WFP’s portfolio of initiatives for smallholders facing food assistance has been developed progressively over many years. It is now wide and deep, covering the bulk of WFP’s countries of operation. These initiatives are implemented in an increasingly integrated manner and have been proven to be very effective in promoting the economic, social and environmental sustainability and livelihoods of family and smallholder farmers. For example, WFP leverages its procurement reach, deep field presence and expertise in market for staples, logistics and post-harvest handling to help increase smallholder farmers’ crop production, sales and encourages agricultural markets development. This is done through the flagship Purchase for Progress (P4P) programme.

WFP has contributed to increased market opportunities for local, national and regional producers and traders in procuring food and specialized nutritious products for them. Through the P4P partnership, WFP supports governments seeking to link smallholders to public demand for institutional programmes such as school meals, hospitals and food reserves. WFP also works with partners to improve livelihoods and resilience building, food security and nutrition, climate change adaptation, etc. Main constraints and gaps exist, mainly involving lack of resources, awareness and capacities at institutional and farm levels, as well as in and partnerships and synergies. A good emerging example to illustrate how these challenges can be overcome is the food assistance framework and P4P projects in the Democratic Republic of Congo. It is also essential, to further articulate the concept, scope and methodology of the Scaling up Agroecology Initiative, including the development of practical tools, guidelines and efforts to empower governments to own the Initiative. Strengthening the capacities of all stakeholders will be key to the Initiative.

5.1.6 UN DEVELOPMENT PROGRAMME

Phemo Karen Kgomotso

Regional Technical Advisor for Ecosystems and Biodiversity
UN Development Programme (UNDP)

UNDP welcomes this Initiative as we recognize the relevance of Agroecology to achieve the 2030 Agenda and the SDGs, which demands the need for adopting integrated solutions to tackle issues related to inefficient agricultural practices, food insecurity and waste and the needs of smallholder farmers, particularly women farmers, who continue to be the most marginalized in society and remain the most vulnerable to climate change and food insecurity.

Under its Strategic Plan for 2018–2021, UNDP supports countries to achieve SDGs by eradicating poverty in all its forms and dimensions, accelerating structural transformation for sustainable development and building resilience against crises and shocks. In this Strategic Plan, we organize our work around six signature solutions, of which I will highlight two. First, keeping people out of poverty. Agriculture and Agroecology will be a tremendous contribution to this. Second, promoting nature-based solutions for a sustainable planet. This is particularly aligned with the work FAO promotes on this Initiative. The thinking behind these signature solutions is that it will be critical to address finance, tenure, water and land rights with a clear understanding of the differentiated impacts, access and contributions of women and men, indigenous people and communities in achieving these sustainable solutions through nature-based solutions.

We recognize the different development contexts in which we will have to work. In some cases, it is a context of countries in transition, in other cases it is a post-crisis or post-conflict settings. We see that in many of these contexts we will have to apply different approaches to achieve solutions. In some cases, we will have to strengthen ecosystem management and nature-based solutions that can actually help people achieve food and water security for sustainable livelihoods. In others, we need to help governments to identify and access new financing initiatives and opportunities to promote policy coherence on natural resource management and help the transition of their economies towards greener approaches. In post-crisis and conflict settings, it is about promoting sustainable recovery efforts to protect natural resources, biodiversity and ecosystems, which lie at the centre of creating livelihoods that are not only sustainable for the communities but also promote the health of ecosystems to ensure the access to livelihood opportunities.

We already work with a number of partners around this table in promoting solutions at country level, through projects and through financing, as several financing institutions were created to help implement the Rio Convention. In particular, we have more than 25 years of partnership with the Global Environment Facility (GEF), and we recently strengthened our work regarding climate change mitigation and adaptation, in particular through the Green Climate Fund (GCF). We helped many countries to access financial resources to promote solutions at country level.

5.2 MULTI-STAKEHOLDER DIALOGUE AND ENGAGEMENT

PANELLISTS

1. **Ann Tutwiler**, Director General, Bioversity International
2. **Philippe Mauguin**, President, Institut National de la Recherche Agronomique (INRA), France
3. **Daniel Moss**, Executive Director, AgroEcology Fund
4. **Mohamed Bakarr**, Senior Environmental Specialist, Global Environment Facility (GEF)
5. **Peggy Miars**, President, IFOAM – Organics International
6. **Leonard Mizzi**, Director General for International Cooperation and Development, European Commission
7. **Michele Pisante**, Deputy Institutional Relationships, Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria, Italia
8. **Gao Shangbin**, Vice-Director, Rural Energy & Environment Agency, Ministry of Agriculture, China
9. **María Noel Salgado**, Coordinator South Cone Region, Movimiento Agroecológico de América Latina y el Caribe (MAELA)
10. **Dennis Garrity**, Distinguished Senior Fellow, World Agroforestry Centre (ICRAF)
11. **Beatrice Ayuru**, Founder, Lira Integrated School, Uganda
12. **Dino Scanavino**, President, Confederazione Italiana Agricoltori, Italy
13. **Bongiwe N. Njobe**, Chair, Global Forum on Agricultural Research (GFAR)
14. **Gabriele Giulietti**, Commercial Director, Banca Etica, Italy
15. **Emile Frison**, Panel Member, International Panel of Experts on Sustainable Food Systems (IPES-Food)

FACILITATOR

Roberto Ridolfi, Special Adviser Strategy and Financing Development, FAO

This session featured participation from a diverse range of organizations in the framework of the Scaling up Agroecology Initiative. Panellists described how their organization supports Agroecology and addressed the following questions:

- a. In what way is your organization engaged in scaling up Agroecology?
- b. What do you see as a priority action to scale up Agroecology?
- c. How can your organization collaborate to support the implementation of the Scaling up Agroecology Initiative?

SUMMARY OF PRESENTATIONS

The facilitator highlighted a few of the main issues arising from the presentations in terms of main challenges, opportunities and needs to scale up Agroecology: (i) Agroecology must reach scale in multiple contexts; (ii) the biodiversity index should be given due consideration; (iii) scientific evidence and farmers' networks need to be promoted; (iv) it is key to cooperate to increase funding, along with changing the narrative to embed agroecological principles in agricultural financing options, including financing systems that are close to smallholders; (v) linkages between farmers and consumers are crucial, from the soil to the table; (vi) engaging the private sector is key in terms of financial aspects, ensuring access to technology, innovation and business opportunities for farmers; (vii) the EU is launching a knowledge centre for tracking agroecological transition processes; (viii) policy processes for food systems at EU level need to be further incorporated in the research agenda; (ix) there are opportunities for cooperation based on the experience of the EU CAP framework; (x) Agroecology is not starting from scratch, there are examples, stories and successful cases; (xi) women must be part of scaling up Agroecology; (xii) it is very difficult to combine normal agribusiness with Agroecology; (xiii) links with children and education need to be emphasized; (xiv) very little money is invested into agroecological research, and that must change; (xv) new consensus building approaches are being built by GFAR, including new metrics that go beyond yields and productivity to capture other aspects; (xvi) soil coverage, soil organic matter and soil protection were also mentioned as possible strong driving forces for agricultural businesses; (xvii) the link with territories, environmental associations, NGOs and farmers is important for the adoption of protocols to make Agroecology become part of the daily activities.

On behalf of their respective organizations (Bioversity International, INRA, AgroEcology Fund, GEF, IFOAM Organics International, European Commission, CREA, Ministry of Agriculture of China, MAELA, ICRAF, Lira Integrated School, CIA, GFAR, Banca Etica and IPES-Food), panellists expressed support to the Scaling up Agroecology Initiative and committed to engage in its adoption and implementation through increased partnerships and collaboration.

5.2.1 BIOVERSITY INTERNATIONAL

Ann Tutwiler

Director General

Bioversity International looks at Agroecology through the lens of agro-biodiversity, which we consider to be a foundation for evidence-based agroecological practices. Without agro-biodiversity, a food system cannot be sustainable. In order to scale up Agroecology, we need to scale up the use of agro-biodiversity. Bioversity International seeks evidence-based solutions on how we can use agro-biodiversity to build up sustainable, resilient and adapted production systems. We also look at how to use agricultural biodiversity to improve diets, in order to create demand for the production that is coming off the farms, and how to ensure that farmers have access to a diversity of seeds so they can build more sustainable, resilient and adapted production systems. I would like to share some points before I address the questions on innovations and collaboration.

First, we have to acknowledge that there are many pathways to reaching more agroecological approaches: there is not a one-size-fits-all solution. We need to acknowledge the efforts of all parts, all scales of the agro-food system which are moving along these pathways. We must acknowledge that many funding partners, for many years, have embraced linear solutions that appear to deliver concrete results on a very narrow list of criteria. We welcome funding partners that are investing in more systemic approaches that can deliver across multiple objectives embodied in the SDGs. We also need to reach all actors in the food chain, including conventional farming systems. We need change on a large scale. We cannot succeed if we only reach smallholder farmers in this transition. We must demonstrate that these approaches work at multiple scales and in multiple contexts. Lastly, we must set goals and targets for incorporating agro-biodiversity into our farming systems. We cannot manage agricultural biodiversity if we cannot measure it. Before Bioversity International began to develop the Agro-biodiversity Index, there was no consistent way for governments, the private sector and other decision makers to assess and track agro-biodiversity in sustainable food systems.

With support from the European Commission, and lately from the government of Italy, Bioversity has created an actionable, long-term tool to measure and manage agro-biodiversity across diets, markets, production, ecosystems and genetic resources. We have been working and engaging with a number of actors, including GEF, CBD, UNDP, FAO, the World Bank and many others in developing this Index. It is intended to be used by governments, companies, development banks and financial institutions to change the way we farm and to increase the use of agro-biodiversity across production systems.

Bioversity is strongly positioned to deliver evidence-based solutions and innovations. Our research incorporates many of the elements that have been discussed through the last couple of days across the agroecological spectrum, including enhancing soil quality, pest and disease management, pollination and other ecosystem services, and increasing and stabilizing yields. We work with partners around the world, civil society, NGOs, governments, international organizations, farmers' organizations, businesses and research institutions. Bioversity, as a global research organization, stands ready to play a leading role in building the evidence, finding solutions and support the Scaling up Agroecology Initiative.

5.2.2 INSTITUT NATIONAL DE LA RECHERCHE AGRONOMIQUE, FRANCE

Philippe Mauguin

President

INRA has been involved in agroecological methods for many years. About half of INRA's 10 000 researchers, engineers and technical experts are working in the area of agroecology covering agriculture; food systems and production; biodiversity; climate-related issues; and nutrition and diversification of food products to improve nutrition and health. We encourage interdisciplinary research programs as well as international partnerships such as those recently concluded with colleagues from China and India to create International Associated Laboratories (LIA) with a focus on agroecology.

In terms of the priorities to scale up agroecology, we see that there are three major levers operating at three different scales. The first lever is to promote a network of innovative farms engaged in agroecology with the support of researchers and scientists. The second lever, which we are working on in France, as well as in America and Asia, relates to mobilizing different stakeholders (researchers, farmers, civil society and others) in projects related to diversification of agricultural production through "Living Labs"; an experimental open-innovation hub. The third lever to scale up agroecology is the development of open collaborative platforms, such as online platforms, to share knowledge and practices, as well as support the development of knowledge and science in collaboration with the various partners involved, such as researchers, practitioners and farmers.

INRA would be pleased to technically support the development of such a collaborative platform, along with FAO and other interested stakeholders. This platform could also complement FAO's Knowledge Hub on Agroecology. All partners, beyond research organizations, would be strongly encouraged to participate and contribute to the collaborative platform. A second area in which INRA can make progress, is to champion the development of "Living Labs". We are already working on a pilot project in India and we are also following with great interest the established Living Lab located in Andhra Pradesh in southern India. The approach of using innovative approaches, such as the Living Labs, as open science tools, could also be replicated widely, adapted to local contexts, in contribution to the scaling up of Agroecology in different countries.

To conclude, I appeal to the international scientific community to join us and FAO in supporting this important Initiative.

5.2.3 AGROECOLOGY FUND

Daniel Moss

Executive Director

We are a consortium, a network of donors, working to support the scaling up of Agroecology. Scaling up Agroecology is well served by collaboration among donors and we thank you for the opportunity to report on a series of conversations that we have had here at the Symposium and during a related side event today. Our goal throughout these conversations is to deepen relationships and collaborations among donors to increase the volume and quality of funding for Agroecology. We know that not all funding for Agroecology is helpful. It can often fail to support a systemic food system approach as it seeks very narrow outcomes. It can exacerbate power imbalances between grant makers and grant seekers. Our funders' network is built on a series of values, including renewability, health, equity, resilience, diversity and interconnectedness. We seek to debate, reach consensus and join in advancing these values just as we pursue our relationships with the organizations to which we fund.

We represent the AgroEcology Fund, the Global Alliance for the Future of Food and the McKnight Foundation. We represent private foundations. Our work departs from the knowledge that there is no replacement for public financing to effectively scale up Agroecology. Public resources and public commitment are critical, but at the same time, we are convinced that philanthropic support can be an essential compliment and a catalyst for public support. For example, farmer organizations supported by our network can exert pressure on governments, and bilateral and multilateral donors, to increase funding for Agroecology. Philanthropic support can also help create an enabling environment for Agroecology, when those same grantees pressure representatives to shift subsidy schemes away from chemical inputs or turn back unfair seed laws. Coordination among philanthropists is essential to offer adequate support while not overburdening grantees. Much learning can occur among donors and grantees to make support more effective. To enhance that learning in joint funding, the AgroEcology Fund was organized five years ago by four founders, to pool resources to support agroecological practices and policies.

The Fund aims to support viable food systems to promote the economic well-being and human rights of small farmers and their communities and mitigate climate change through low-input agriculture featuring sustainable soil and water use. We seek to link organizations and movements to advance agroecological solutions, locally, regionally and globally. Today, the AgroEcology Fund brings together 21 donors from USA, Europe and Asia, working in close dialogue with eight grassroots advisers, who themselves are embedded in social movements.

We seek to support four strategic directions to: (i) shift and leverage significant financial resources for Agroecology; (ii) strengthen an enabling environment for Agroecology; (iii) change the narrative and use communication strategies, so that solutions to global hunger and climate change are really embedded in agroecological solutions; (iv) co-create and share agroecological knowledge and practices.

We work closely with the Global Alliance for the Future of Food, which is a strategic alliance of philanthropic foundations working together and with others to transform global food systems now and for future generations. The Alliance leverages resources and networks to get sustainable food systems on the political, economic and social agenda. They recently commissioned work studies on seeds and resilience and a compendium on agroecological biodiversity, and are pursuing the development of a shared action framework.

We recognize that much more funding and coordination is needed and we seek to collaborate with a widening circle of funders, public and private, to scale up Agroecology. We are excited and grateful to FAO for bringing us all together to have this conversation and we look forward to seeing more donors being present in future Agroecology forums to continue supporting the scaling up of Agroecology.

5.2.4 GLOBAL ENVIRONMENT FACILITY

Mohamed Bakarr

Lead Environmental Specialist

The GEF is a financial mechanism of several multi-lateral environmental agreements, including the three Rio Conventions (the Convention on Biological Diversity, which is represented at this meeting; the UN Framework Convention on Climate Change; and the UN Convention to Combat Desertification). The GEF serves the Conventions by providing funds to recipient countries for projects that help them meet their obligations based on decisions taken at the Conference of the Parties. We also serve the Chemicals Conventions, which is the latest one. Our financing is intended to generate global environmental benefits and is essentially incremental: the investment we provide, must be embedded within the development framework of eligible countries.

How do we engage with agriculture and with Agroecology in particular? Our mandate is to help influence the environmental challenges associated with each of the development sectors that countries are seeking to advance. Agriculture, even though is a major driver of environmental degradation, is also an opportunity. We support countries to embrace innovations and practices that help promote sustainability in the sector. Agroecology is obviously of interest to us in that respect. Our priority as a financial mechanism, is to provide financing to countries to help deliver environmental benefits, which constitutes a priority cutting across all development agendas that we target. We also promote innovation, as we realize that countries need access to knowledge, tools and practices. They also need to learn from each other.

Partnerships are a key component of our work, and we are very proud to be associated with 18 agencies, including FAO and IFAD, based in Rome. We also engage with the regional development banks and other UN agencies, including the UN Industrial Development Organization (UNIDO), UN Environment and the UN Development Programme (UNDP). All serve as mechanisms to work with countries to design projects that we fund. We strongly believe in coalitions. In addition to the national governments and 18 agencies, we also recognize and value the role of private sector entities in those sectors where we need to generate global environmental benefits.

We also work with civil society, where Agroecology presents an opportunity to collectively work towards influencing innovative financing mechanisms, incentivizing business opportunities for farmers, promoting policies and enabling environments that will help land users to embrace innovation. Supporting evidence-based approaches is key, as these are very knowledge-intensive systems and we need to promote knowledge generation to further advance the evidence. Another area we are very interested in, is related to private sector financing, an issue I am glad to see coming out of this Symposium.

5.2.5 IFOAM – ORGANICS INTERNATIONAL

Peggy Miars

President

The landmark document developed by IFOAM - Organics International and the Sustainable Organic Agriculture Action Network (SOAAN), with inputs from many individuals, organizations and the global organic movement is called “Organic 3.0”. This is because it builds on the work of the organic pioneers of the early 20th century, which we call “organic 1.0”, and the standards and regulatory environment that we are currently in, which we call “organic 2.0”. The goal of “Organic 3.0” is to increase the uptake of truly sustainable farming systems and markets. The core of “Organic 3.0” is the relationship between farmers and consumers. As we know, Agroecology puts people at the centre of policies and practices. “Organic 3.0” is comprised of six features, and I believe that all six are in alignment with the Scaling up Agroecology Initiative:

- i. A culture of innovation: this is in line with the Initiative’s Area of Work 1 “Knowledge and innovation for sustainable food and agricultural systems”.
- ii. Continuous improvement towards best practices: organic standards and guidelines identify the minimum requirements for certification. It is essential that farmers include diversity in their systems undergoing continuous improvement.
- iii. Diverse ways to ensure transparent integrity: by being transparent and having integrity, we gain consumers’ trust, which helps sustainable production grow.
- iv. The inclusion of wider sustainability interests: we hope to work with like-minded movements such as Agroecology in order to increase the amount of land-farmed sustainably, based on the organic principles of health, ecology, fairness and care.
- v. Empowerment from the farmer to the final consumer: we promote farmers as drivers of change. The principles of fairness and care mandate that “Organic 3.0” actively addresses gender equity. This relates to Initiative Area of Work 3 “Building connections for transformative change”.
- vi. True value and cost accounting: we must fairly account for, and communicate, the cost and benefits to the environment, biodiversity, human health and society so that people understand the true cost of their food.

“Organic 3.0” includes a call to action for governments to review their agricultural policies and to adopt the new strategy to support sustainable agriculture. This relates to Initiative Area of Work 2 “Policy processes for transformation of food and agricultural systems”.

The Scaling up Agroecology Initiative calls on everyone to be agents of change, and not coincidentally, IFOAM Organics International is called the change agent for organic. I noted that the Initiative calls on civil society to implement activities at local, national, regional and international levels. With affiliates in 120 countries and self-organized groups at national and regional level, as well as IFOAM itself at international level, we are well-positioned to implement activities at all of those levels. “Organic 3.0” positions organic agriculture as a solution to the current environmental and social issues we face, such as climate change, water pollution and soil degradation among others. “Organic 3.0” is outcome-based and continuously adaptable to local contexts. Delivering on ambitious activities, such as the ones included in the document, requires further scaling up as discussed this week. I believe that the current and future work of IFOAM - Organics International is clearly in line with the Scaling up Agroecology Initiative and we look forward to continuing to work with the Agroecology movement.

5.2.6 EUROPEAN COMMISSION

Leonard Mizzi

Head of Unit, Directorate General for International Cooperation and Development

If we want to scale up Agroecology, we need a methodology on how we track scaling up efforts. Within the European Commission services, we use tracking tools known as “climate change Rio markers” as proxies to determine whether programmes are integrating climate and sustainability dimensions in their design. In fact, most of the agricultural practices that we promote within the Cooperation and Development Directorate contribute to not only climate change adaptation and mitigation but also to improve soil fertility, divert land degradation and enhance biodiversity. We can, therefore, cautiously confirm that the share of development cooperation support to food and nutrition security and sustainable agriculture that has been tagged as climate relevant is also addressing environmental sustainability. The share jumped from about 13 percent in 2007–2013 to 38 percent in 2014–2016, with a significant leap up to 47 percent in the latest figures we have available for 2016. In the near future, we will launch, in collaboration with our Joint Research Centre, a Knowledge Centre for Global Food and Nutrition Security which will focus on tracking, among others, Agroecology in our portfolio. It will also propose new actions for the post-2020 programming and for the agriculture and research for development portfolio, which stems from the Paris Agreement.

Concrete examples of how we tackle the environmental dimension of agricultural sustainability include: (i) in East Timor we have a partnership for sustainable agroforestry for EUR 30.7 million, which aims to develop sustainable, market-oriented, competitive and prosperous agroforestry in order to restore the capacity of ecosystems to absorb the effects of climate change and to increase employment and income in rural areas; (ii) in Liberia a EUR 30 million programme focuses on sustainably increasing productivity, income and access to markets for agricultural smallholders and fisheries communities, by developing a nutrition sensitive production system and promoting climate resilient agriculture; (iii) in Angola, there is project for EUR 68 million to strengthen the resilience of family farming production in the context of climate change and environmental degradation through the adoption and use of technologies, practices and innovative solutions to reduce vulnerability and to increase productivity with specific focus on water and soil conservation.

I am happy to see a clear consensus on the need to drastically change the way in which we produce our food, to revert environmental degradation, tackle climate change and ensure healthy food for all. Nevertheless, we must be aware of the challenges that scaling up Agroecology entails. I would like to share five key messages:

- i. agroecological transitions require an enabling environment to provide positive incentives to farmers and help them overcome the transition period required to transform the systems and make them sustainable and profitable;
- ii. policies are needed to promote research priorities to support Agroecology and other sustainable agricultural approaches;
- iii. in order to scale up Agroecology, rural education and extension systems need to evolve from a focus on single disciplines, increasing yields of single commodities and top-down technology transfer to co-creation of knowledge based on combining scientific and farmers' knowledge;
- iv. a diversity of markets that emphasize local and regional production and consumption need to be strengthened to encourage diversified agroecological production, focused on short-supply circuits;
- v. Agroecological transitions require greater integration across sectors, disciplines and actors to achieve multiple objectives across different scales. In particular, they demand governance solutions that can coordinate actions at landscape and territorial levels.

5.2.7 CONSIGLIO PER LA RICERCA IN AGRICOLTURA E L'ANALISI DELL'ECONOMIA AGRARIA, ITALY

Michele Pisante

Deputy of Institutional Relationships

The CREA is Italy's largest public entity with general scientific competence in the sectors of agriculture, agricultural food production and industry, fisheries, forestry, food and nutrition, and agricultural economics. CREA's mission focuses on the following areas: (i) research and technology solutions with a view to enhancing the protection and preservation of natural resources and biodiversity of agricultural, forestry and fisheries ecosystems as well as the profitability and competitiveness of agriculture, agro-food and forestry activities, in a context of sustainability and health of production; (ii) promoting the goals of competition among the agricultural food and industry systems for "Made in Italy" products; (iii) promoting and developing relations with public, private, national and international research institutes; (iv) promoting debate on scientific topics of interest with regard to Italian and European agriculture; (v) certification, testing and accreditation in relevant sectors.

CREA is structured in 12 Research Centres (six Centres on cross-cutting subjects and six Centres based on "value chains") distributed throughout the national territory and operating in conjunction with central administrations, local and regional institutions, companies and various trade, industrial and legal associations.

With regards to the Scaling up Agroecology Initiative, CREA is engaged in agroecology by working in the following topics: (i) soil health sustainability; (ii) climate change adaptation; (iii) impact of agro-ecological practices on productivity; (iv) agri-environmental indicators. In terms of the priority actions to scale up Agroecology, we can mention the advancement of agroecological farmers' knowledge of methodologies for sustainable intensification; the explanation of agroecological farming (with case studies) and the enhancement of natural resource capital: soil, biodiversity, water and ecosystem functionality.

CREA can support the implementation of the Scaling up Agroecology Initiative by promoting innovative knowledge and solutions for local problems and policy processes for transformation of food and agricultural systems.

5.2.8 MINISTRY OF AGRICULTURE, CHINA

Gao Shangbin

Vice-Director, Rural Energy and Environment Agency

China has made big progress on the development of Agroecology, which we call “ecological agriculture”. In recent years, China has been investing in environmental eco-agriculture, and the Ministry of Agriculture has been enhancing resource efficiency, decreasing agricultural inputs, reducing pollution and production costs, and promoting the reuse of agricultural waste.

Since the 1980s, the Ministry of Agriculture – together with other relevant Ministries – has established two budgets for national-level demonstration counties. The first is called “ecological demonstration counties” and we currently have over 100 of these. The second involves demonstration areas of crop-rotation and fallows which has reached already 800 000 hectares, with this year’s target aiming at 30 million hectares under crop rotation. I want to emphasize our belief that Agroecology has a big future in China. There is no doubt that China has a very strong political will to tackle environmental problems: water, air, soil and biodiversity, among others.

I would like to make four recommendations in the context of the Symposium: (i) we have to exchange policies with other countries. For instance, the CAP provides policy-change support to green payment or carbon payment. We want to learn from you about the lessons learned because change is happening so fast for Chinese farmers that we need to learn from your experiences; (ii) in order to promote technical change, we need criteria to establish indicators and assessment approaches; (iii) we need to conduct key studies. We need the help from countries, professors and agencies to evaluate studies from different regions so we can improve our policies; (iv) we need to establish a partnership for the private sector. In China, the increase in middle-class income has created a huge market for green and sustainable products. I would recommend that the private sector, FAO and other agencies establish a platform for farmers to share their experiences, especially on the technical, policy and market aspects.

5.2.9 MOVIMIENTO AGROECOLÓGICO DE AMÉRICA LATINA Y EL CARIBE – MAELA

Maria Noel Salgado

Coordinator South Cone Region

First of all, I celebrate the fact that there seems to be many people and partners who are now interested in working and collaborating on Agroecology. I am speaking on behalf of organizations of small-scale food producers: family farmers, fisherfolk, peasants, indigenous people, pastoralists and women associations that live off agriculture in our territories. We are Agroecology in the territory. Only a few years ago, we were the only ones working on Agroecology, transforming our societies through our territories, working towards greater food sovereignty. That is why we celebrate FAO's initiative to bring together the many actors present here today, so we can jointly develop Agroecology.

What is needed to scale up and develop Agroecology? First of all, there needs to be a clear understanding from those new actors who are entering the area of Agroecology. A clear understanding of the fact that Agroecology is not simply reorganizing our inputs and tools or continuing to be part of the same system that reproduces capital, not life. Agroecology is a paradigm change. Food is not a commodity. Agroecology does not have to pass an exam to prove its viability. We have already proven that many years ago and we have done it under very adverse conditions. We have accumulated experience and knowledge, and we, the small-scale food producers, have demonstrated that knowledge – local knowledge – is the way to scale up Agroecology. We are not starting from scratch, we are starting from the basis of what we have developed, and we are doing so in the associations and in many territories throughout the world.

There is a need for transition so that other smallholder food producers will join us in Agroecology. We also need a transition path for the transformation of public policy decision makers. It has to involve family farmers and peasants, not simply being a technical transition. We also need to ensure that knowledge development is not only the result of academic or research institutions, but rather the fruit of a dialogue between different forms of knowledge, using also the knowledge developed by indigenous people, small-scale producers, youth and women who have been working and living through Agroecology.

We, women, have been the soul of Agroecology from the very beginning, and there cannot be scaling up of Agroecology if women are not part of it and are not taken fully into account. Public policies need to respect the heterogeneity and autonomous development present in different territories and among different instruments and approaches that have been developed by the associations to support and enhance Agroecology.



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It is simply impossible to think of the coexistence of models. You cannot have Agroecology in the same areas where agribusiness is flourishing. When you think of policies to support Agroecology, some people tend to think that there is a need for large amounts of resources. We think that there is a simpler approach; if we were to shift the resources from agribusinesses, we would certainly have more than enough resources to develop Agroecology.

Finally, we cannot imagine public policies in Agroecology without the involvement of those who practice Agroecology: us, the small-scale food producers. It is only with us that there will be Agroecology.

5.2.10 WORLD AGROFORESTRY CENTRE

Dennis Garrity

Distinguished Senior Fellow

I chair a partnership to create an evergreen agriculture, which is a global virtual alliance of the major development NGOs, working on the scaling up of evergreen practices – essentially agroforestry – with smallholders around the world. The partnership has mobilized a vast number of national NGOs as well as sub-national and local NGOs, along with their government extension agencies, policymakers, and research and development actors working on the scaling up of these practices. Our vision is nothing less than the gradual perennialization of agricultural systems, which is a fundamental aspect of a true agroecological farming system. We aim to achieve a massive scaling up of these systems and, therefore, contribute to the overall agenda that we share in Agroecology. We are building on the knowledge and experience of farmers, and our latest scaling up programme is funded by the European Commission and it represents the kind of vision that we are achieving.

We are involved in scaling up evergreen agriculture practices among 500 000 farm households across eight countries in the drylands of Africa. This is a big effort – but is only the beginning of a journey – with a vision to reach 50 million of farmers in the coming years.

When looking at what needs to be done, the first thing is to share the evidence base of the success in many countries through the adoption of these practices by millions of farmers. An iconic example is the transformation of farming in Niger, where last year the USA Geological Survey mapped the spread of farmer-managed natural regeneration of trees on farmers' fields to restore the health of their land, livestock, fodder, fuel wood, biofertilizers, honey, timber, etc. As a result, over seven million hectares were transformed in the poorest country in the world. The practices have gone viral in Malawi and are expanding in many other countries in Africa and Asia.

Second, we need to combine our efforts and work together as partners with each other, with governments and with investors.

Third, we need to spread the knowledge that tree cover in agricultural land is actually spreading rapidly around the world. By continuing to accelerate this process in the coming years, agroforestry could be the enabling point to become emission-neutral in agriculture by 2050. In other words, to achieve the Paris Agreement for the neutrality of agricultural emissions, I offer you the provocative proposition that the spread of tree-cover, and the acceleration of that spread for all the benefits that farmers would see when supported in doing so, is the key to emissions neutrality in agriculture. The EverGreen Agriculture Partnership can thus make an enormous contribution to the scaling up of Agroecology and we look forward to working together with you in helping to energize this great effort.

5.2.11 LIRA INTEGRATED SCHOOL, UGANDA

Beatrice Ayuru

Founder

The Lira Integrated School was established in Uganda in the year 2000. Our vision is to provide quality and affordable education to our learners, and to make sure that we integrate entrepreneurship and informal skills into our formal education, so when they finish their education they do not have to look for jobs. They are going to be job creators thanks to the holistic education we provided them with. We have 750 children from nursery to primary and secondary school. I am glad I am one of the advocates for child education because of what I have been through. At the same time, the war we suffered in the last 20 years related to the Lord's Resistance Army gave me a conviction: I realized we had children and teenagers who were neglected, suffering and abandoned, including orphans and especially teenagers. Therefore, the school is engaged in providing 100 percent support to these children who are in need. In addition, we have the regular children who pay school fees.

The only way we can keep the school running is through agriculture. When we came up with the idea that agriculture should support the maintenance of the institution, it was marvellous. Unfortunately, we practiced monoculture. It was just one crop being cultivated over and over until we reached a crossroad. There were no positive results, I had a loan and the bank was chasing after me, threatening to sell-off my property. It was being advertised in all the papers. I was devastated. At the same time, my marriage was not right and I was challenged with divorce. I had my six biological children and other 700 looking up to me to be fed. It was not easy. At that crossroad, I am grateful that in 2014 FAO came on board and I did not have to sell the school. I was glad that for the first time somebody had called me and said 'sweetheart'. That was Ana Menes, who said 'Beatrice, there is hope'.

I am glad that FAO supported not only me, but also the farmers. We were mainly trained, mainly in aquaculture, but we also integrated other crops as we were taking care of many children. I am glad that FAO came to support through agriculture and integrated farming. We introduced not only fish farming but we have in place apiculture, horticulture, banana plantation, beans, soy and other vegetables. Our children are well-fed thanks to the nutritious food. They are smiling and they are more intelligent compared to other schools, which are failing to make it as their children are not well-fed. Some say that we did a miracle in changing the intelligence of these children. Is not a miracle, it is about feeding them. Thanks to FAO's intervention, we are sharing this information. We were supported with farming kits and equipment and today we process and sell fish. Seventy percent of our budget comes from selling our farm products while 25 percent is collected from regular students who pay the fees.

All this has changed my life significantly. The women in the community are well-supported. When you support women farmers, you are feeding a nation. I am a woman who stood, and my success is being able to sustain the project. At the same time, I am proud that the children are well fed. Thank you to FAO for changing our lives.

5.2.12 CONFEDERAZIONE ITALIANA AGRICOLTORI, ITALY

Dino Scanavino

President

To overcome the huge challenges of our time and to respond to consumers' need in a world that will soon have eight billion people, we must focus attention on food security, on the environment and on a fairer distribution of resources. We should also invest in good agricultural practices. In this context, the 2030 Sustainable Development Agenda, with its 17 Goals, sets out the path to follow.

The path will not be easy, and is based on a complex strategy in which agriculture and farmers play a crucial role. Agroecology, in the framework of the main goals, is the paradigm of choice to ensure food security and sovereignty in all territories. Today, we must promote once again agricultural production processes that combine productivity, sustainability and competition. To do so, we must have innovation, a link with the territory and supply chains that are central to modern agriculture. Agroecology involves promoting integrated production systems linked with climatic, physical and cultural characteristics of the territories to promote biodiversity, ensure good microbiological health and structure of soils and its long-term fertility. Integrated agricultural systems also significantly contribute to mitigating climate change. Today, agriculture is considered responsible, particularly in developed countries, for around seven percent of GHG emissions, due primarily to livestock farming and nitrogen-based fertilizers. However, agriculture and forestry can be large carbon-sinks with biomass production, good soil management, plant coverage, crop rotations, efficient use of irrigation, maintaining and increasing soil organic matter and so on, as recognized in COP 21 in Paris.

Innovation can also be applied to production processes by implementing biological and information technologies and robotics. For example, using networks and satellites, will allow to reduce costs and the use of phytosanitary products. All these innovations should provide better links between agriculture, territories and the communities which work to protect and promote rural landscapes.

CIA is committed to promote sustainable soil management, irrigation water management and improved ecosystem services in agriculture. CIA, in collaboration with Legambiente, various research centres and local authorities, has launched a project called "Life for soil". We are working throughout Italy to promote FAO's Voluntary Guidelines for Sustainable Soil Management and we expect to involve not less than 5 000 agricultural businesses in adopting good and innovative processes for sustainable soil management. It is in rural areas that we will see most of the challenges of the 2030 Agenda play out. Farmers will be the main actors in the achievement of the 17 Goals. CIA will be directly involved in achieving these Goals in Italy, in Europe and at international level.

5.2.13 GLOBAL FORUM ON AGRICULTURAL RESEARCH

Bongiwe N. Njobe

Chair

GFAR is a dynamic, multi-stakeholder platform of voluntary membership that has reached 500 organizations. Earlier, Hans Dreyer spoke about the need for a wide range of players. In line with this, I believe there should be also multiple convening spaces to collaborate, discuss and debate. These collaborative spaces should be supported by information sharing and two-way communication to enable us to ultimately apply Agroecology within its required context.

Responding to the three questions that were put forwards at the beginning, GFAR, by its very nature, is able to contribute and reframe the debates around the positions of parallelism of Agroecology as a radical alternative to the Green Revolution. Reframing the debate around those positions and around the challenges and opportunities within Agroecology, entails transforming the processes through which consensus is reached and collective action is implemented. To this effect, GFAR helps by setting up enabling environment that allow its members to determine among themselves the character, the value and the applicability of agroecological views and actions to be implemented for placing smallholders in the driving seat of innovation dynamics. GFAR facilitates a fair balance and transparent dialogue that is context-specific.

Priority actions to scale up Agroecology should be, in our view, related to continued open and inclusive dialogue that contributes to collective foresight exercises and open up new scenarios and alternative options for the future of agriculture. Also, it is important to include the role of innovation, provide lessons learned as well as operational evaluation criteria to assess the quality of research partnerships that are conducive to pro-poor innovation.

How can GFAR contribute to scaling up the implementation of the Agroecology Initiative? We already started to facilitate the afore-mentioned initiatives of foresight and evaluation. We are also involved in valuing and recognizing the ground, farmer-led experimentation and research dynamics in several domains, giving full dignity to smallholders as producers of knowledge. That includes pre-existing agroecological solutions with specific reference to forgotten crops and farmers' seeds. Secondly, we are involved in the transformation of universities and their curricula to favour the emergence of new professional profiles endowed with the soft skills needed for the co-creation of knowledge with farmers. Third, we are involved in developing new metrics to introduce alternative indicators, criteria and incentives to appreciate the performance of agroecological production systems beyond yields, thus bringing together different organizations involved in definition and application of metrics.

We are also involved in empowering smallholder farmers, markets and small and medium enterprise development. In the framework of the UN Decade of Family Farming 2019–2028, and in partnership with the World Rural Forum and other partners, we are launching an initiative aimed at unleashing the potential of farmer-led participatory research for family farming while we look forward to developing new initiatives addressing the growing consumer demand for healthy diets.

5.2.14 BANCA ETICA, ITALY

Gabriele Giulietti

Commercial Director

Banca Etica works on the land confiscated to mafia. There are two laws in Italy that state that all grounds confiscated to mafia should be given by the government to social cooperatives that work with people who are disabled or who come from difficult backgrounds. So, the government has confiscated at least 1 000 hectares in southern Italy. We, as a bank, support these kinds of cooperatives.

We started 30 years ago working in microfinance activities in Palestine, Africa and Latin America in connection with fair trade. In 2002, we started giving loans to cooperatives working on the land confiscated to mafia. Today, thanks to our successful results, we have a portfolio of activities for around EUR 1 billion, of which 20 percent are activities on Agroecology in Palestine, Latin America, Africa and Eastern Europe. We belong to a network of banks based on values (the Global Alliance for Banking on Values) that works with those considered “unbankable”.

If I am here talking about a history of 30 years, it means these people are in fact “bankable”. In Italy, we have a portfolio of 50 percent of people who have been refused by other banks. When I talk about Corleone, San Giuseppe Jato and other small villages, we work with those who make an effort to promote a different world. I am a member of the board of *Libera Terra Mediterraneo*, a consortium grouping all the cooperatives that work on these confiscated lands. In a nutshell: we do organic farming on the land confiscated to mafia and the excellent Italian products are sold internationally.

Our main activity is to give loans. The future for us is about working in Palestine, in Eastern Europe, Africa and Latin America to scale up microfinance activities. We are very proud of our work and we think that we can create a better world also through finance and access to finance, because this is as a human right. That means reaching people in Africa, in Mali, in Palestine. Reaching people with other smallholder-oriented banks is our future as well as what we have been doing for the last 30 years.

5.2.15 INTERNATIONAL PANEL OF EXPERTS ON SUSTAINABLE FOOD SYSTEMS

Emile Frison

Panel Member

IPES-Food is an independent think tank that aims at supporting the transformation of our food systems into sustainable food systems that can deliver on economic, environmental, nutritional, health, social equity and cultural aspects. We started our activities a few years ago, and we have produced a number of reports. The first one, which is very relevant to this meeting, was called *From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems*. A more recent report looks into the health aspects and is entitled *Unravelling the food-health nexus. Addressing practices, political economy and power relations to build healthier food systems*. Also last year, we published the report *Too big to feed. Exploring the impact of mega-mergers, consolidation and concentration of power in the agri-food sector*.

We are also engaged in a number of initiatives. First, in Europe, we are pushing towards a Common Food Policy to have an evolution from a CAP, which essentially still looks at productivity, towards a true integrated food policy that looks at all the dimensions mentioned before. Second, we have an initiative in West Africa that looks at agroecological alternatives to the current mode of production, where we work with farmers' organizations and support them to mainstream agroecological practices in the region.

Coming to the second question about the priorities, being a researcher myself, I cannot avoid the temptation to make a strong call to invest on agroecological research. So far, most countries and most development portfolios have less than one percent invested in agroecological research. I think that has to drastically change. At international level, there is no centre dedicated to agroecological research and I must say that I regret that at CGIAR level, Agroecology has not received the attention that it should have received. Therefore, I call on donors to invest together in participatory research programs on Agroecology. Certainly, Bioversity International would be well placed, building on its agro-biodiversity experience to host such a program. I was very pleased to hear Ms Anne Tutwiler to express her willingness to take on that role if support is provided.

With regards to further contributions in the future, IPES-Food will continue to provide policy briefs and information that contributes to changing the narrative and the policies towards sustainable food systems and Agroecology in various ways. That includes the continuation of the effort towards agroecological alternatives in Africa beyond West Africa and – funding permitted – in other regions.

Finally, I sincerely hope that this Symposium will be a landmark that will unleash a groundswell of efforts in transforming our food systems and mainstreaming Agroecology. I really look forward to working with all of you and to join efforts in making the Scaling up Agroecology Initiative a success.

5.3 PLENARY DISCUSSION WITH PERSPECTIVES FROM THE FLOOR

This session enabled contributions from Symposium participants in the format of a plenary discussion on how to enhance collaborations and partnerships and how to move forward with the Scaling up Agroecology Initiative.

FACILITATORS

1. **Roberto Ridolfi**, Special Adviser on Strategy and Financing Development, FAO
2. **Barbara Gemmill-Herren**, Senior Associate, World Agroforestry Centre (ICRAF)

CHAIR

Braulio Ferreira de Souza Dias, Vice Chair, Bioversity International Board of Trustees and Symposium Chair

SUMMARY OF PLENARY DISCUSSION

Participants provided their views and contributions in terms of challenges, gaps and special opportunities which should be taken into account in the framework of the Scaling up Agroecology Initiative, including: (i) a set of mandatory indications should be implemented in a multidisciplinary way by different governments; (ii) genetically modified products, the use of agro-toxic substances and land-grabbing should be taken into account; (iii) the principles and the definition of Agroecology should be clear; (iv) it is crucial to involve youth; (v) research should reach people outside of education systems (local communities and indigenous people); (vi) the research community is aware of the need to move away from the high-input paradigms of the past; (vii) research should ensure an environmental approach to agriculture; (viii) subsidies, policy incentives and regulation in favour of industrial food systems should be discontinued; (ix) UN and its Members States should work proactively to eliminate the extremely hazardous pesticides alongside with the intensification of Agroecology; (x) funds for Agroecology should be adapted to reach farmers, their organizations and communities directly; (xi) consumer awareness and education along with alternative market systems should be promoted; (xii) good agroecological examples can serve as a basis to set principles for scaling up; (xiii) European Commission's thematic hubs can be used for agroecological co-innovation; (xiv) a set of tools should be developed to measure variables that go beyond yields (including the revision of indicators that account for the performance of family farms).

Participants expressed support to the Scaling up Agroecology Initiative and committed to engage in its adoption and implementation through increased partnerships and collaboration.

PLENARY DISCUSSION

Mercedes López Martínez, Vía Orgánica

For us to be able to engage in the Initiative, it is essential to have a set of mandatory indications that would be implemented in a multidisciplinary way by different governments. This could be a list of very practical points based on the main elements that have emerged during the past three days. For instance: (i) all agroecological projects must involve indigenous and farmer communities; (ii) the work of women must be visible and recognized; (iii) agroecological projects should also involve migrant populations; (iv) laws, legislation and treaties applying to international trade should protect and promote Agroecology. Furthermore, the issue of genetically modified products and the use of agro-toxic substances is an area that should be taken into account. This list of principles should be essential for countries and, as has been said repeatedly, we do not have much time left.

Patrice Burger, CARI

We have the impression that Agroecology does have friends. However, the challenges are still before us. Everyone is committed to going along this path and we should not lose sight of the reality of Agroecology and what makes it a strong force for the future. We need to keep this pioneering mind-set of Agroecology and we need to engage people who believe in it.

Emile Frison, IPES-Food

It is good to take stock of what is already happening, of what organizations are already doing. However, I would like to caution against the temptation of counting things that are marginally relevant to our agenda today and take that as an excuse not to make the bold transformation that is necessary.

Clara Nicholls, SOCLA

I would like to support the contributions coming from the civil society organizations. SOCLA, which has more than 1 200 members, was set up with the idea of working specifically with smallholder farmers in the areas of research, education and training in particular of youth in Agroecology. We support the initiatives that have been presented by civil society. We are willing to support FAO on the provision that the principles and the definition of Agroecology are clear and do not include or co-opt other definitions such as smart agriculture or sustainable intensification or other terms that are simply a way to deal with issues of agribusiness. If we share the same vision, the vision we have in the civil society and the researchers/scientists working with smallholders, we stand ready to collaborate.

Lucie Attikpa Epouse Tetegan, West African Association of Small-scale Fisheries

We need to undertake actions in relation to young people, especially children. We need to promote actions such as school feeding and school meals. In order to achieve transformation and behavioural change, we need to work with children. We have the example of school meals and school feeding programs that use local products. We need to look at research and we need to see how we can involve people who, for instance, never went to school but do have a lot of knowledge. We need to reach out to those people. We cannot neglect research, but we need to make sure that research takes into account the indigenous knowledge of local communities. Regarding FAO's responsibility, I would like to have clarity on FAO's responsibility when agribusiness comes into our countries. Thus, FAO's responsibility is very important in relation to the pressure that can be brought to States in order to change.

Isabel Andreoni, Montevideo Rural

Agroecology challenges the economic model with its values, its practices and ethics. It poses a number of different questions. First, the privatization of land, productive resources, knowledge and technology. We need to discuss and understand that food is not a commodity, food is a basic need. We need to challenge the paradigm of urban living and look at rural living. We have to consider this paradigm imposed by the dominant culture, and we have to challenge the hegemonic concept of development.

Rodney Cooke, ILRI Board of Trustees

CGIAR's mission statement is "A world free of poverty, hunger and environmental degradation". Its portfolio has changed considerably in the last 7–8 years and it asserts "We cannot continue our current trajectory of consuming too little, too much, or the wrong types of food at an unsustainable cost to natural resources, the environment and human health". When you look at crosscutting programs of which there are 15, at least 5 of those concern agroecological issues. The research portfolio and the research community at large is very well aware of the need to move away from the high input, high natural resource use paradigms of the past.

Daisy Liliana, ASOPECAM

It is really important that we look very carefully at the protection of the common goods in every country. For instance, in Colombia, mining concessions are given at times without any consultation with local communities, leading to the privatization of water. We have natural reserves such as the Páramo Santurbán that are being exploited under open sky mining without taking into account the need to protect water, using mercury with the communities being deprived of clean water, etc. There is a need for research to ensure that we have a natural approach to agriculture as our ancestors have always done in a traditional way. It is also essential that we involve women, youth and children, considering the generational turnover.

Zainal Arifin Fuad, Peasants' Union Indonesia

Agroecology is a way of transforming our paradigm from agribusiness, free trade, neoliberalism and export-orientation. We need to change towards solidarity economy. We are worried of what happened with free-trade agreements with the World Trade Organization and many investment programs. Also, regarding territories and the scaling up of Agroecology, we need to be careful with land concession and land-grabbing, as happened in Indonesia. We have big conflicts caused by land-grabbing related to climate change projects. Another link with the territory: Agroecology is about distribution in short and medium distances, not long distances. Why, then, export orientation? Even with organic products, we find more and more from abroad. Finally, a comment about previous intervention of ethic banking: they work in Africa, Latin America, but not in Asia. They need to expand in Asia.

Stefano Prato, Society for International Development

As we move forward with the Scaling up Agroecology Initiative, it is important to be very clear of where FAO stands: it stands with peasants and their communities, the actors of Agroecology. This means that when we speak about activities to do and resources to be found, the first question, rather than thinking of what to do, is to think of what to stop doing. Particularly, stop the subsidies, policy incentives and policy regulation in favour of the industrial food system. In that respect, the resource question that some of the panellist posed this morning is wrongly articulated. Is not a matter of generating new resources, it is a matter of stopping placing them in the wrong places. The end result of this will be a net effect. It is important to start by deciding what to stop, what to discontinue.

Diene Ndeye Maimouna, Pesticide Action Network Africa

I am speaking on behalf of Pesticide Action Network International, a network of farmers, especially women farmers, who are the most exposed to chemicals products. In some countries in Asia, it has been proven that more than 70 percent of farmers or family members have had symptoms due to poisoning from these products. In Africa, the agrochemical industry is powerful and they are bringing hazardous, poisonous products that are used by our often semi-illiterate farmers. Agroecology is a solution for us, a powerful solution. It is a response to the major agricultural and health issues related to the use of very dangerous substances. Agroecology offers a real chance for social and political transformation of our food and agricultural systems. It can ensure a fair future for food producers, in particular farm households, women and youth. FAO is currently working with countries to eliminate the most hazardous pesticides. However, in the recent international use of chemical products it has been said that to deal with very dangerous pesticides, there has to be a strong emphasis on Agroecology. We need very close cooperation between these two areas. Therefore, I would like to highlight FAO's efforts to encourage scaling up of Agroecology in UN as an approach to be mainstreamed in all programs and policies. We ask to UN and its Members States to work proactively to eliminate the extremely hazardous pesticides alongside with the intensification of Agroecology. This will contribute to a real transformation of our food systems to a green system.

Pierfrancesco Sacco, Permanent Representation of Italy to FAO, IFAD and WFP

Italy welcomes the energizing results of this Symposium and we applaud FAO for organizing it and for its leadership. We believe that a crucial strategic role is to be played by the Member States of FAO and other Rome-based agencies. The Friends of Agroecology group, which was mentioned by the Director-General, will certainly play its part. We would like the extraordinary success of this Symposium to be duly reflected in FAO's governing bodies. We looking forward to our future work as Member State of FAO.

Stephen Sherwood, Groundswell International

We are not acknowledging certain realities with regard to what has happened to food, families, markets and the environment across the planet over the last half century. In particular, regarding the state-led modernization of agriculture and food. We need to note that there is a fundamental difference between ecological agriculture and Agroecology. While ecological agriculture can be organized by a family or an industry, what is essential in Agroecology is that it is based on the single largest institution in the planet: the family. I am concerned that we are not necessarily understanding that. There is no Agroecology in the absence of the family. When I speak of family, I refer to peasants' families, but also to urban families, rich and poor, north and south. Agroecology is necessarily the product of a radical form of democracy and cannot be abstract. It is basically food for the people, of the people, by the people. Fortunately, scientists, people within the State also live in families and eat. They can be part of this, but not in abstraction. They must be part of this in practice. That must be achieved by a direct form, not a representational form of democracy, where people who eat take control and responsibility for nurturing the vitality of their food. Agroecology is fundamentally a self-organizing, living, collective embodiment of agriculture, food and life when it is enabled to practice. My concern is that we suggest that this needs to be intermediated through the State or scientific bodies.

María Rosa Mosquera Losada, European Agroforestry Federation

There are some initiatives in the EU that should be taken into account in this Agroecology Initiative. For instance, the thematic networks, which relate to funds given by the European Commission to push researchers to work with farmers, which is important and quite innovative, to develop innovations based on traditional knowledge and on research findings. I am the coordinator of the affiliate project, which is the Agroforestry Innovation Network for the European Commission. Within these thematic networks, we will create a hub, which can be very positive for the Agroecology Hub created in FAO. We also work with a network of stakeholders. A survey has been done in 12 countries in the EU on the use of agroforestry by farmers. Among the answers, they especially asked for more education, not only for them, but for the consumers. Urban people do not know what the situation in agricultural lands is, which is a problem for producers when they try to do things in a different way and cannot sell at the same price as products coming from

intensive systems. Additionally, they ask for policies that are better suited for the implementation of agroecological and agroforestry systems. One example of demanded issues are maps of best practices, as they want to know solutions close to their farms.

Sonia Cárdenas, Asociación de Mujeres Organizadas de Yolombó

I have two concerns. One is linked to financing and the second one to research. I believe that we have enough information that has been widely shared during this Symposium, available on databases and virtual platforms. Information that proves that the Green Revolution has come to its end and that to maintain it could lead to the end of life on our planet. I do not think there is need for any more evidence as Agroecology has also given sufficient evidence. However, there is a need for more resources for research, but to sustain Agroecology, not to prove that is viable. There is a wealth of evidence that Agroecology is viable and it is a way to reverse what could otherwise be a civilization disaster. Public funds should not be used to maintain a system alive which is not leading us anywhere. These funds should be invested to protect life, they should be used for a life-oriented form of agriculture, which is Agroecology. Furthermore, there needs to be ample resources to ensure that Agroecology is a practice that leads to the empowerment of women and that women are not simply an instrument for the success of Agroecology. Women are often marginalized when it come to having access to resources or resources of their own. Therefore, this has to be considered and be at the heart of the decision-making, not only in policy and research, but also regarding the allocation of resources. We have conventions and treaties, often without the necessary resources or to the needed extent. Agro-industries need to be transformed, but with their own resources, not at the expense of public resources. Agribusinesses are very powerful lobbies and can sway governments.

Maria Goss, Practical Action

From the activities we have been conducting in Agroecology, it is apparent that we cannot take agroecological approaches as 'one size fits all'. We need to look at the norms and culture; we need to build on the traditional, indigenous knowledge systems within a given geographic area. This is something we have to emphasize. Women in those communities are already working on Agroecology, we need to build upon their initiatives and recognize their voices and efforts.

Pierre Marie Bosch, CIRAD

To change and up-scale, we need to be able to measure what is happening, to measure men, women, family farmers at the very heart of agricultural production on a global scale. We have to do that using measuring systems, indicators that are adapted and that can give us a precise idea of how many family farms there are. Also, we need a set of tools to enable the measuring of variables that are not only the yields but go over and beyond that. I support the proposal of GFAR that has called for a review of the indicators that account for the performance of family farms.

It is essential to recognize that the current information systems that we have on agriculture and on family farms do not allow us to account them appropriately. We need to make them visible, we need an observatory to bring out and to give visibility to those aspects that are largely invisible on a global scale.

Tauntin Bernard, ActionAid

It is generally agreed that smallholder farmers are at the centre of Agroecology at all levels. We need to ensure that funds reach the smallholder farmers and their movements. Most of times, funding guidelines have very strict and high standards and the requirements are such that smallholders cannot assess those funds. Therefore, they need people to assess and work on their behalf and many times the funds do not really get to them. In order to scale up Agroecology, it is very important to consider the funding guidelines and the standards that come with them, to see how they can be adapted to ensure that smallholder farmers and their movements can access directly the funds to promote Agroecology among farmers and their communities.

Miguel Altieri, University of California

It is important to understand that we are discussing about Agroecology here thanks to the practice of peasants and indigenous peoples on Agroecology for centuries. Also, there are people from NGOs, especially from Latin America, that started this work about 40 years ago and some of us in the academia. I support the interventions of SOCLA and other women regarding Agroecology as part of a life strategy. Agroecology is a new paradigm of development that cannot be institutionalized. The few resources that are available for the scaling up cannot go through the usual institutions. There are new institutions such as farmers' movements, organizations and scientific societies supporting Agroecology. There is an initiative on reviving traditional systems started by Parviz Koohafkan, called the GIAHS, which has identified systems that have withstood the pass of time and are true resilient examples to be revived. Second, identification of successful examples of farmers throughout Latin America and Africa. Some of them were put forward here and are already successful. We call them "lighthouses", from which we can derive principles on how to scale up. There is a project in SOCLA that will bring farmers from the Caribbean Islands that suffered hurricanes, Haiti and Puerto Rico, to visit resilient farms in Cuba, where farmers have been able to design their farms in a successful way. Resources should go to this type of experiences. We need to invest in formal and informal education. We are talking about Agroecology while all universities, including mine, are teaching Green Revolution approaches. We need new people formed as the scientists of the future in Agroecology. There is no curricula on Agroecology, or very few. Some of us, researchers, are supporting IALAS, new schools that Via Campesina supports around the world to train farmers on Agroecology. We are doing so as universities are not responding to our needs. Regarding transforming the global food system, we need to think about a by-pass. We cannot continue thinking under the market-logic. We need to come up with alternative market systems and there are plenty of examples where alliances

between consumers, poor consumers, and poor farmers which are leading to food sovereignty. In terms of policies we have examples in Brazil, Ecuador, but there is a big gap between their rhetoric and the actions. We need to get to action.

Johannes Goudjanou, Premium Horts

I would like to thank you for speaking about youth. It is important for us today to support the work done by youth in innovation in digital areas, innovation in the management of agroecological farms and businesses. There is much innovation today in Africa, but it is often not visible. It is essential that all actors here have youth clearly in mind. There is conventional agriculture that has lot of strategy, research, management, etc. However, if we want our agricultural products to be competitive on the same market, how can we make it happen, especially when consumers are influenced by advertising and marketing? Those aspects are not always taken into account by producers. We need to have an idea of agroecological farms and businesses. This is key for us to scale up. Youth, and African youth in particular and the youth of the rest of the world as a whole, is a promising resource for the future. I am aware of this and I believe deeply that together we can take up the challenge.

Idil Akdos, Norwegian University of Life Sciences

It is very sad to see so few young people and students here, as well as universities. Where are they? We have been talking about how research is necessary and how we want to co-create knowledge between farmers and researchers. I consider universities the primary home for research and I do not see many of them here. We all said that we have to empower youth. Please include us in your processes. We want to meet you and we want to be involved.

Nori Ignacio, Sea Rice

We appreciate FAO's initiative to convene this Symposium and the very rich discussions. They showed a renewed energy and attention given to Agroecology. Many presentations were impressive favouring a concrete articulation on the importance of Agroecology, including the basic principles and key elements of Agroecology. The question remains how we can favour concrete actions and support Agroecology. It is a great challenge to scale up Agroecology in an era where global trade dictates the kind of food systems that we should have. While we all agree there is a need to transform agricultural systems, we cannot ignore the fact that countries are under a lot of pressure to develop new legislations and to amend existing ones to accommodate corporate interests, often pushed through various trade agreements. Currently, a lot of countries – at least in Asia – are in the process of amending their legislations towards stronger intellectual property rights on agricultural innovations such as seeds, making it more restrictive for farmers to continue their traditional practice of seed exchanges. This effectively excludes farmers' seeds from the market. In the last two days we also heard about the need to convince farmers to transform their agricultural practices to Agroecology. We believe farmers are not the ones who

need convincing. In our experience working with several farming communities in at least eight countries in Asia, smallholder farmers in most cases are left with no choice. In some cases, they are forced to abandon farming. We need to be very clear on who actually needs convincing and who can bring real change and genuine transformation. Smallholder farmers can only continue their noble task of feeding the world if we make the commitment to provide genuine support to Agroecology.

Paul Desmarais, Kasisi Agricultural Training Centre

Governments and institutions should stop funding systems that promote and subsidize industrial agriculture. NGOs and civil society need funding. We are often the ones promoting Agroecology, we struggle to stay alive, to pay, salaries, research and offer training for small-scale farmers.





CHAPTER 6

HIGH LEVEL SEGMENT AND FINAL PLENARY SESSION

- PLENARY SYNTHESIS AND WAY FORWARD: SCALING UP AGROECOLOGY INITIATIVE AND DRAFT "CHAIR'S SUMMARY"
- DECLARATION FROM CIVIL SOCIETY ORGANIZATIONS
- HIGH LEVEL PANEL ON THE FUTURE OF AGROECOLOGY

6.1. PLENARY SYNTHESIS AND WAY FORWARD: SCALING UP AGROECOLOGY INITIATIVE AND DRAFT “CHAIR’S SUMMARY”

The Symposium Chair provided a presentation on the draft structure and main content of the Chair’s Summary¹³ (hereafter “Summary”), which had been elaborated taking into consideration the rich discussions and the contributions from 768 participants representing all sectors including: 72 representatives from governments, 350 from non-state actor organizations including CSOs, academia and research organizations, cooperatives and producer organizations, and the private sector, as well as representatives from six UN organizations. The Summary also included inputs received from the FAO Regional Meetings on Agroecology and the key elements from the Scaling up Agroecology Initiative.

The Summary outlines the main conclusions and agreements reached during the Symposium discussions, and refers to the current challenges and opportunities to make agriculture more sustainable: reducing the impact on the environment, soil and water; increasing biodiversity; reducing natural resources depletion; and building resilience to climate change. The Summary indicates how agroecological principles and practices can be a way forward to promote sustainable agriculture all over the world, as a means to achieve the 2030 Agenda for Sustainable Development, in particular SDG 2 “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”, and many other SDGs.

The Summary recognizes the importance of bringing together the community of agroecological practitioners as well as the role that FAO has played in this regard over the last three and a half years. It also identifies possible ways forward, including opportunities and needs to be addressed with partner governments and UN agencies, in particular with IFAD, WFP, CBD, UNEP among others, to better coordinate actions and support further progress in the Scaling up Agroecology Initiative. The way forward also refers to the opportunities provided by the UN Decade on Family Farming 2019–2028 and the UN Decade of Action on Nutrition 2016–2025, to promote Agroecology in partnership with the WHO.

¹³ This Summary represents an attempt by the Chair to capture the richness of the contributions presented during the Symposium by different stakeholders and experts, and does not necessarily reflect the opinions and views of each individual participant or of each of the Member States that participated in the Symposium. The full Chair’s Summary is included in Appendix C and available online at <http://www.fao.org/3/CA0346EN/ca0346en.pdf>



The important role of non-state actors in promoting Agroecology was also highlighted in the document, including CSOs, academia and research organizations, foundations and funding agencies, as well as the CFS and its High Level Panel of Experts on Food Security and Nutrition.

The Summary contains an Annex that lists most of the specific issues, approaches and actions which were proposed during the various Symposium sessions, grouped in five major clusters.

Following introductory comments, Symposium participants had the opportunity to make specific contributions to the Summary through a plenary discussion. After a rich and thorough dialogue, the Chair informed that such contributions would be incorporated into the Summary in order to reflect the main concerns, challenges and elements arising from the debate. The Summary would also provide elements for the elaboration of a discussion paper to be submitted to COAG.

6.2 DECLARATION FROM CIVIL SOCIETY ORGANIZATIONS

Mariam Sow

Director, Environnement et Développement du Tiers Monde (ENDA Pronat)

On behalf of the Civil Society Organizations

We are delegates of different organizations and social movements of small-scale food producers. We are peasants, fisherfolk and fish workers, indigenous and traditional peoples, pastoralists and nomads, agricultural and food workers, the landless, urban and peri-urban communities living in poverty and food insecurity, consumers, youth, women and NGOs.

Agroecology cannot be understood as a simple set of techniques and productive practices. Agroecology is a way of life of our peoples, in harmony with the language of nature. It is a paradigm shift in the social, political, productive and economic relations in our territories, to transform the way we produce and consume food and to restore a socio-cultural reality devastated by industrial food production. Agroecology generates local knowledge, builds social justice, promotes identity and culture and strengthens the economic viability of rural and urban areas.

This vision, and these principles and common values of agroecology, agreed upon at the International Forum on Agroecology in Nyéléni in 2015, have been continuously enriched, innovated, adapted, multiplied, implemented in different ways according to our varied realities and respecting our worldviews, cultures, economies and local food systems, based on the real production of agroecological food.

Our peoples and organizations are historical subjects who, through their ancestral production systems and struggles, have moved forward in the construction of agroecology and food sovereignty. In other words, it is not something new, it is the fruit of the wisdom of original peoples that is strengthened today with the recovery of traditional practices together with new peasant innovations, caring for Mother Earth and producing abundant healthy food to feed our peoples.

We women among us are not objects of policies that want to empower us, but rather we are active subjects of agroecology and guardians of biodiversity. We want our central role in food production and in the reproduction of life, as well as in the economy of our families and communities, to be visible and recognized. Agroecology means that our rights as women are protected and realized, not just as mothers and caregivers of our homes. Agroecology implies our full participation in the social and political life of our communities, ensuring our access to land, water, seeds and means of production with autonomy and freedom. Our equal participation in decision-making spaces is essential. Our peoples and organizations have broadened and deepened their knowledge through collective building and alliances, through dialogues of knowledges between different sectors and generations.

For us, scaling up agroecology means having more and more small producers moving forward, and the central ingredient is social organization in our territories. That is to say, our own processes of our organizations of women and men producers, workers and consumers that, build the social, political, economic and cultural fabric that will allow us to advance in the transformation of a failed and harmful industrial agro-food system that damages the environment and the health of our peoples. Any public policy that seeks to support and/or promote agroecology must be constructed and implemented with the participation of its central subjects, we small-scale food producers and our organizational, productive and training processes.

Agroecology cannot be just another tool for the expansion of the industrial agri-food production model. Due to the lack of differentiated public policies for rural youth, young people represent one of the sectors most affected by the agrarian crisis, land-grabbing and migration to the cities. Agroecology, on the other hand, is emerging as a tool for transformation and social justice to guarantee the rights of youth, ensuring their access to decent living conditions in rural areas.

To guarantee all the above, and considering that small-scale producers are a fundamental pillar of agroecology, it is crucial to guarantee the collective rights of the peoples who feed the world, to protect our access to and control over seeds, biodiversity, land and territories, water, knowledge, culture and the commons.

We salute the fact that this Symposium has taken a step forward in the recognition and promotion of agroecology. Faced with the urgency brought about by asymmetries, protracted crises, land-grabbing, conflicts, occupations and wars, as well as the alarming wave of criminalization and violent repression of defenders of territories and small-scale producers, we call for the implementation of Human Rights based processes, the cornerstone of the UN and in particular of FAO, citing, among others, the Right to Food, the Tenure Guidelines, the Small-Scale Fisheries Guidelines, the International Labor Organization (ILO) Convention 169, the Free Prior and Informed Consultation, the Committee on the Elimination of Discrimination against Woman and its General Recommendation 34, and the process of the UN Declaration on the Rights of Peasants and other people working in rural areas.

We welcome the fact that this Symposium is a new step in the recognition and promotion of agroecology by intergovernmental institutions, governments, universities and research centers. FAO and other UN agencies must continue to strengthen their work in agroecology. This requires their governance bodies to take appropriate measures to implement differentiated market policies, like public procurement, and other policies for training, financing and technical assistance, among others, that support small-scale producer organizations and own processes at the local, national, regional and international levels.

Without the protection of our rights, there is no agroecology. Without feminism, there is no agroecology. Without our peoples, there is no agroecology.

6.3 HIGH LEVEL PANEL ON THE FUTURE OF AGROECOLOGY

PANELLISTS

1. **Paula Francisco Coelho**, Minister of Environment, Angola
2. **Batio Bassiere**, Minister of Environment, Climate change and Green Economy, Burkina Faso
3. **Luis Felipe Arauz Cavallini**, Minister of Agriculture and Livestock, Costa Rica
4. **Stéphane Travers**, Minister of Agriculture, Agrifood and Forestry, France
5. **Katalin Tóth**, Deputy State Secretary, Ministry of Agriculture, Hungary
6. **Niu Dun**, Permanent Representative of China to FAO, IFAD and WFP
7. **Mohammad Hossein Emadi**, Permanent Representative of Iran to FAO, IFAD and WFP
8. **Silvano Maria Tomasi**, Archbishop, Holy See

FACILITATOR

Braulio Ferreira de Souza Dias, Vice Chair, Bioversity International Board of Trustees and Symposium Chair

6.3.1 STATEMENT BY PAULA FRANCISCO COHELLO

Minister of Environment, Angola

Angola faces many challenges. The Ministry of Environment focuses its work on climate change interventions within the country, which has 57.5 million hectares of arable land to produce agricultural crops (47 percent of Angola's land).

The country is currently in the process of preparing a national policy to mainstream Agroecology. In this process, existing documents and platforms are taken into consideration such as: (i) the National Development Plan 2018–2022; (ii) the National Action Plan to Fight Against Desertification; (iii) National Commissions and Steering Committees which bring together most of Ministries that work with Agroecology; (iv) a Technical Commission for Biodiversity, Climate Change and Desertification; (v) the National Adaptation Programme of Action, a medium-term strategic programme for the agrarian sector (2018–2022); (vi) the Country Programming Framework between Angola and FAO.

An “agroecological approach” has been developed, which deals with resilience of local populations, agro-biodiversity, sustainability, socio-cultural dimensions for environmental protection and conservation, food security and economy generation. The approach considers policies, guidelines, procedures and standards. It was created with the participation and contribution of lessons learned and best practices from smallholder farmers.

Angola faces many challenges for Agroecology such as soil erosion, declining biomass productivity, degradation of soil properties, land-tenure uses, over exploitation of natural resources, weak technical and institutional capacities, food insecurity and poverty in rural areas, and the impact of climate change at different levels mainly linked to adaptation. Angola is rich in natural resources and Agroecology is a way forward to engage small farmers and civil society. The increased pressure on natural resources and the impact of agriculture is one of the mayor bases for economic desertification. Therefore, technical capacities and legal frameworks need to be reinforced for sustainable land management and pest management, using an agroecological approach and considering environmental, social, cultural, productive and economic dimensions.

The FFS methodology – implemented in 2006 in the central plateau – is incorporating agroecological approaches, and the Terra Programme – created in the 1990s with FAO's support – has been strengthening capacities to improve sustainable land management and agroecological principles among farmers and institutions.

In Angola, there are several programmes and actions related to sustainable agroecological approaches: (i) the RETESA programme focuses on land rehabilitation and rangeland management of small agro-pastoral production systems in southern and eastern Angola from 2014 to 2018;

(ii) the national policy on sustainable land management, which integrates agroecological principles, has been developed through a participatory process and is ready for submission; (iii) a project that uses the FFS approach to integrate climate change resilience into agriculture and agro-pastoral production system through soil fertility management in key productive and vulnerable areas. As a result of this project, 115 000 farmers adopted climate change adaptation and sustainable land-management practices, as well as the integration of environmental and agricultural policies and programmes, at national and decentralized levels.

There are two projects developed recently which focus on: (i) sustainable land management in targeted landscapes in the southern-east part of Angola, which recognizes integrated planning of agroecological zoning for rehabilitation and economic and financial purposes, aligned with the SDGs; (ii) sustainable land management that integrates climate change adaptation and sustainable land management with governance, capacity building and institutional strengthening.

There is a need to integrate different actors under a holistic approach, including Ministries of Environment, Agriculture and Forestry, Social Action, Women and Family, Commerce, Land, local and provincial governments, NGOs, traditional authorities, and the media. Lessons learned from the implementation of agroecological approaches in southern Angola can be used to scale up Agroecology at national levels. Agroecology could represent an integrated cross-cutting agenda that involves CSOs working in agriculture, fisheries and wetlands. Issues related to the use of chemicals, bio-safety and soil management could also be considered.

The government of Angola is collaborating with the private sector and with CSOs to continue strengthening policies and open dialogue to identify ways forward. Rural communities have a substantial dependency on natural resources, which are under additional pressure due to the need to diversify the Angolan economy. Agroecology could represent a way forward to develop the agrarian sector, by strengthening technical and institutional capacities in strategic planning and sharing best practices that are not yet well streamered. Angola counts on FAO and all partners including CSOs to strengthen capacities and bring together adopted good practices to mainstream Agroecology and sustainable land management in line with the SDGs.

6.3.2 STATEMENT BY BATIO BASSIERE

Minister of Environment, Climate change and Green Economy, Burkina Faso

Burkina Faso is in the centre of West Africa, with a population of nine million inhabitants, 52 percent of which are women. Burkina Faso's ecosystem is quite fragile and it is subject to the actions of man and climate change. From the working population, 70 percent works in agriculture, which is the sector responsible for 30 percent of the country's gross domestic product. Family farming would benefit from better yields and improved productivity, which is why there is a need to find solutions and to continue promoting Agroecology.

In Burkina Faso, Agroecology has been around for decades and was introduced in the country during the 1980s. It grew exponentially thanks to Thomas Sankara's election, who promoted the dynamism of the agricultural sector and called upon farmers to rely on themselves and be self-sufficient. The promotion of Agroecology will not only allow Burkina Faso to promote jobs, but to encourage self-sufficient production of food. Sankara's administration implemented a national strategy to scale up Agroecology throughout the country, which allowed the country to reach food self-sufficiency after three years, supporting also neighbouring countries. The integration of Agroecology in Burkina Faso continued with the creation of training centres, to build capacities of farmers in this new way of farming, to demonstrate how a dry country can act, and be able to produce food in a simpler and efficient way.

Today there are around a 100 000 farmers, mainly located in the east of the country, practicing Agroecology and taking care of the environment. Agroecology in Burkina Faso is supported by good practices, which can be used to raise awareness on the use of organic fertilizers, agro-forestry, micro-land management, and be integrated into Burkina Faso's vision stressing the fact that Agroecology means coming back to basics.

With the arrival of President Roch Marc Kabore in 2015, came the conviction that Burkina Faso needed to rely on its own strengths, including agriculture. This is why the country is transitioning towards a green economy, which requires the sustainable management of natural resources, an increased productivity, equality, sustainable consumption, consideration of future generations and avoiding negative impact for the future. In this regard, 200 eco-villages have been created, which are in line with the standards of sustainable development, in the framework of four national strategies (environment, food security, good governance, renewable energy). This approach ensures the well-being of communities especially in rural areas and prevents urban migration. In this regard, Burkina Faso adopted a national strategy on green economy, which also aims at increasing productivity through Agroecology and other issues related to the environment.

With an estimated population of nine billion people in 2050, we need to increase productivity by 110 percent. In order to do this, we need to make sure that we are able to produce enough food in our own countries. In Burkina Faso – given the experience that we have had since 1980 – we believe that Agroecology is effective and possible from an agro-economic point of view. It can be a productive and sustainable model for the future, resolving food issues while respecting the environment and natural resources.

In conclusion, Agroecology for us is not one of the answers for the challenges of food sovereignty; it is the only answer. We need to understand that there are some challenges and sub-challenges. We need to understand the notion of Agroecology and reach an agreement on a common definition for all countries that want to pursue it.

Furthermore, we need to fight desertification and deal with the issue of water scarcity. Burkina Faso has been working on this issue since 1980s through an agroecological approach. We believe that we can achieve this vision while respecting and looking after natural resources.

Future generations will look back at us and ask, “What have they done?” And they will take us up on this.

6.3.3 STATEMENT BY LUIS FELIPE ARAUZ CAVALLINI

Minister of Agriculture and Livestock, Costa Rica

Agroecology holds the solution for the pressing problems in agriculture, such as loss of biological diversity, desertification, pollution and climate change. This is why we need to scale up Agroecology: to achieve sustainable development and to move from sustainable agriculture to sustainable food systems.

There are 17 SDGs that are interdependent: for example, goal 3 (good health and well-being) depends on goal 2 (zero hunger), 4 (quality education), 6 (clean water and sanitation), 8 (decent work and economic growth) and others. Therefore, to achieve sustainable food systems, we need to focus not only on responsible consumption but on responsible production (SDG 12) and sustainable agriculture, especially in the context of climate change.

When we think about food security, agriculture and climate change, we need to think about an interactive process among the three.

Agriculture and climate change have a complex three-fold relationship: (i) agriculture is a victim of climate change because of the effect of temperature and precipitation changes; (ii) agriculture can be regarded as responsible for climate change because 10–15 percent of GHG are produced by agricultural practices; (iii) agriculture is part of the solution to climate change because it can contribute to the reduction of GHG.

The links between agriculture and food security go beyond the production of food, because food security has to do with availability, access, consumption and biological utilization of food, all of which are affected by climate change, and therefore are related to agriculture.

Agriculture can feed the world and help the environment at the same time, if fundamental changes are in place. There are different approaches linked to climate-smart agriculture: (i) a simplistic silver-bullet approach to reduce the climate impact of agriculture; (ii) a more complex approach based on agroecological knowledge and knowledge-based agriculture. We believe in the second approach in which climate-smart agriculture addresses productivity, adaptation and mitigation through eco-competitiveness. To achieve this, we need to understand the underlying agroecological processes that can help us achieve real climate-smart agriculture.

The following is a conceptual framework to address mitigation and adaptation to climate change, in a complementary matter, applying an agroecological approach:

- i.** Mitigation strategies can improve adaptation to climate change.
 - » Water management is clearly an adaptation strategy but also a mitigation strategy, an efficient way to use water can define the aerobic or anaerobic conditions in the soil.
 - » Microclimate modification, like shade in pastures, is an adaptation measure that reduces temperatures and livestock thermal stress; this increase in shade provided by planting trees in pastures also helps with one of the most important functions of the ecosystem: carbon capture.
 - » Nutrient management promotes more uptake and less waste that it produces GHG.
 - » Promoting the use of soil organic matter is an adaptation strategy that improves root health and the ability of the plant to absorb water and nutrients, while helping to capture carbon in the soil.
- ii.** GHG production in agriculture results from system inefficiencies. The efficient use of nitrogen in agriculture can help produce protein which enhances productivity; but its misuse can derive in other environmental fates. For example, Nitrous oxide is one of the main GHG produced by agriculture, representing nitrogen that did not contribute to productivity, which enhances climate change. Therefore, reducing GHG can increase efficiency by lowering costs and increasing productivity, but in order to do that, knowledge of the agroecosystem is fundamental.
- iii.** Agricultural systems provide opportunities for carbon sequestration in trees and soils.

We have put together a low-carbon livestock program, in which the main components are live fences, rational grazing, improved pastures and improved fertilization. The programme showed intermediate effects such as increased animal density and productivity, more efficient pasture use and space, increased number of trees and shade, healthier pastures and improved diets, increased productivity and production rates, reduced GHG emissions in pastures, increased capture of CO₂ in the soil and reduced emissions of methane from fermentation in cattle. Other benefits relate to biodiversity conservation, improved soil quality, increased milk production, improved landscape connectivity and improved water quality. In cattle, we have seen benefits both in productivity and sustainability by using ecological principles to design systems that are better adapted to climate change.

In the coffee sector, we have carbon neutral farms due to working with agroforestry systems and good fertilization practices to reduce N₂O emission by 35 percent without losing productivity. We have installed residual water treatment systems at the mills and we have moved from oxidation ponds to irrigation of nearby pastures with residual water. In the case of solid waste management, and in collaboration with the University of Costa Rica, we have moved from composting with worms (which was producing a lot of GHG) to gasification to produce energy for the mill and reduce GHG.

In order to scale up and scale out Agroecology we need to learn from nature at the field level and at higher levels. If we look at natural processes in agroecosystems, we know that diversity brings low vulnerability, connectivity, resilience and co-evolution. The efficient use of resources brings energy utilization, recycling and self-maintenance, and all of these bring sustainability. We need to enhance biodiversity and scale it up from the farm level to a landscape or regional-wide level. Increasing biodiversity will enhance biological control and allow to produce bio fertilizers, both by microorganisms and by green manure, while also increasing connectivity. In addition, the efficient use of natural resources, for instance recycling, helps to produce fertilizers and compost in the context of transition to a green economy (using and adding value to the bio-products).

There are many examples of innovations and new entrepreneurs which bring two or more industries together through agroecological principles, moving from agro-chains to agro-industrial ecosystems. For instance, the pineapple industry produces residues which pollute the environment. They can be put to good use. For example:

- i. Pineapple fiber and wood chips can be used to produce agglomerates;
- ii. Combining shrimp shells, which contain protein and chitin, with bromelin from pineapple, we can reduce protein and produce amino acid and pure chitin, which have high value in the agriculture and pharmacological business.

In conclusion, Agroecology can help solve the pressing problems of agriculture, including climate change, achieving sustainability and productivity. Scaling up and out agroecological principles is necessary to create area-wide resilience, less dependence on artificial inputs and create new business opportunities. Knowledge is a key element to enhance the contribution of Agroecology to the SDGs.

6.3.4 STATEMENT BY STÉPHANE TRAVERT

Minister of Agriculture, Agrifood and Forestry, France

I would like to reassure France's strong commitment to the agroecological transformation at a national and international level. This commitment is based on the understanding that food and agriculture are facing great challenges such as climate change, food insecurity, loss of biodiversity, soil infertility and the need to offer healthy products and healthy food for consumers.

Today, we must not only meet these challenges but also allow farmers to live in a dignified way based on their work. We cannot continue to apply the same methods to old recipes; we cannot continue to function in a silo approach and consider topics such as climate, food security, biodiversity and economic implication separately. Quite the opposite, today we must work together to develop new innovative approaches, integrated approaches. We need to develop food and agricultural systems that are economically profitable but also beneficial from a social and health point of view.

Agroecology is the answer to these challenges, as it is based on biological regulations, and it makes it possible to promote the closing of these negative cycles. Carbon sequestration of soils and biodiversity both improve soil fertility and moisture retention, which are essential for high productivity. Agroecology offers farmers more autonomy and reduces their dependence on inputs. It enhances resilience against climate change and the economic and health-related challenges. For this reason, in 2012 the French Ministry of Agriculture engaged in a project for the development of Agroecology, and in 2014 the Law for the Future of Agriculture, Agri-food and Forest was adopted.

This law set a very high and ambitious target: most French farms were to be engaged on agroecological practices by a certain date. With President Macron, this target was recently relaunched and reaffirmed. Value should be created along with a fair distribution, enabling farmers to live on their farms with dignity, receive a fair price for their products, meet the expectations and needs of consumers, and prioritize healthy, sustainable and accessible food for all.

More than 700 stakeholders (including agricultural communities, industries, restaurants, consumers, distributors, social partners and NGOs) met and recognized the need for the food and agricultural system to meet economic, social, environmental and health-related targets. Now we are planning a transformation in 2018–2022 through ambitious sectorial plans to incorporate a production approach that respects the environment and meets the growing need for organic products. To achieve this plan, we have to rely on the leaders in this process: the farmers. Together they can influence strategies to be implemented and have negotiation power with those who buy their produce and help ensure they receive fair compensation and remuneration. To support this transition, it is important that we deepen and diversify the action that had been initiated in the project "Agroecology for France". Agroecology is also a social approach, based on collective wisdom, on knowledge, on exchanges and innovation.

People say that agroecological practices are something of the past and obsolete. Quite the contrary, Agroecology is extremely modern and very agile, and by coupling the appropriate technological, or even digital solutions, with the implementation of agroecological principles our farmers will be able to meet the challenges of the ecological transition.

Farmers are familiar with the production contexts in this quest for innovation and adoption of solutions, which are deeply rooted in their territory. Without their personal investment and their commitment, nothing will be possible. Some of these farmers had the opportunity to present their approaches in this Symposium but we need to help and engage them more in this discussion, because together with them we can develop solutions for the future.

France recognizes and supports the grouping of economic and environmental interests. There are 500 groups composed of more than 7 500 farmers committed to a multi-year agroecological transition project. There are 3 000 farms (challenge farms) with hundreds of different groups developing phytosanitary products, which help increase economic benefits. These farms provide evidence to the fact that it is possible to reduce the use of pesticides without degrading the economic viability. Our hope is that through the Ecophyto 2 Plan we will multiply the number of farms engaged in Agroecology by ten (i.e. farms using very low levels of phytosanitary products).

Innovation requires the involvement of public research, agricultural technical institutes, chambers of commerce and other training centres. There needs to be continuity from research, to training, to advisory services and extension. In this regard, France, has a plan inside our education system called “producing differently”, intended to help students in agricultural high schools to be informed and to build capacities in this area. It is important to have research and to evaluate the practices to understand how they can best meet the needs of farmers, in particularly those who are facing technical difficulties. It is also important to enlighten policymakers on what needs to be done to adopt new approaches. This is where I would like to pay tribute to the research organizations of France: INRA, CIRAD, IRD and Agreenium, which are all represented here today. I would like to thank them for their hard work and their contribution to FAO in supporting this transition in France and all over the world.

In transitioning to a performative approach, it is imperative that we have an approach that involves the whole supply chain. This means involving not only the institutional architecture but also all partners upstream and downstream. To change scale, we have to involve the entire supply chain. This solution can be applied to small farms of a few hectares and to farms which have hundreds of hectares. We need agricultural food systems that are productive, and are intensive enough to produce the food we need; and France believes that Agroecology is 100 percent compatible with this objective. In this spirit, I pledge to you that in the agricultural plan for 2020 we support the initiatives that will best compensate the farmers for the agro-environmental services that they provide.

The latest inter-ministerial meeting for international cooperation considered that support to family farming was essential and an agroecological intensification is considered to be one of the priorities for the French development cooperation with the south of the world.

Let me conclude by saying that we are all committed to meeting the challenges of the 21st century in the framework of the 2030 Agenda and the Paris Agreement within agriculture, livestock, fisheries and forestry. These are all sectors that can offer solutions to the challenges on the condition that we are all committed to working towards the very necessary transition. International dialogue is necessary for us to move forward at the needed pace. The time we have available to tackle climate change is limited. In the last few years, FAO and its Director-General have done much to promote Agroecology. I would like to thank the Director-General for the support given in 2014 through the organization of the First International Symposium on Agroecology and for having convened us all here together once again. Together we must continue along the path. France will be involved in the “4 pour 1 000” Initiative on agricultural soils for food security and climate change and in different initiatives related to land and water which attempt to improve fertility by enhancing carbon organic matter in the soil. It is essential also that the CFS focuses on these subjects in 2019. We need fruitful constructive dialogue with all the stakeholders because the necessary scaling up to meet the challenges we face will require the commitment of us all: farmers, researchers, government, private sector businesses, citizens and consumers.

Once again, I would like to present tribute to INRA, CIRAD, IRD and Agreenium.

To be successful in the agroecological transition, we need FAO more than ever, and we are looking at FAO to be the driver of the change and innovation that we need. As you know, FAO has a unique role in collecting data, distributing information and making use of research. We look forward to FAO promoting Agroecology and further supporting countries in defining and shaping their policies. FAO is essential for promoting dialogue, and we look forward to continuing dialogues with the other Rome-based agencies. FAO also has a crucial role in disseminating good practices and we are looking forward to that too. I am pleased to see that this Symposium launched the Scaling up Agroecology Initiative. You may rely on France’s strong support to promote Agroecology side by side with FAO. Together, we are preparing for the future and the generations that will follow us, and they will scrutinize what we have done.

6.3.5 STATEMENT BY KATALIN TÓTH

Deputy State Secretary, Ministry of Agriculture, Hungary

Convening the 2nd International Symposium on Agroecology is highly relevant and appropriate. Hungary has been constructively involved in its preparations by contributing to the work of the Friends of Agroecology Group of Permanent Representatives here in Rome. More importantly, Hungary was honored to host FAO's Regional Symposium on Agroecology for Sustainable Agriculture and Food Systems in Europe and Central Asia in November 2017 in Budapest¹⁴. Furthermore, there was a High-level side event on Agroecology successfully organized during the 23rd Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC) in Borne.

The main outcomes of the Regional Symposium, which focused on the role of Agroecology in reducing CO₂ emissions and mitigating the impacts of climate change, were presented during the opening of this Symposium. Many of those key findings resurface here.

Agriculture has a very rich history in Hungary and has always played a significant role in its economy and culture. Hungarian agriculture is quite diverse and places strong emphasis on small-scale and family farms. The variability of rural areas and preservation of landscapes and rural livelihoods have high importance in our policies and practices. Traditional rural knowledge is abundant in the country, but the country is also well known for applying results of innovative agricultural techniques and high-level research with the exception of the cultivation of GMOs which is not compatible with the principles of Agroecology. Indeed, Hungary clearly declares that no GMOs can be cultivated within our borders.

Hungary is committed to rely on traditional agricultural knowledge combined with innovative techniques and practices to make agriculture more sustainable and profitable at the same time. Thus, Hungary has shown great interest from the very beginning in a holistic agricultural approach. We also agree that Agroecology should be linked to other relevant and important areas such as the GIAHS. In this regard, Hungary is currently developing a proposal to qualify a traditional and sustainable herding systems as GIAHS.

Other possible ways of promoting Agroecology in our region concern the reform of the common agriculture policy of the EU, which is currently ongoing. Sustainability requirements will receive a higher priority hereby contributing to the SDGs and to the 2030 Agenda.

Agroecology could play an important role in making future European agriculture more sustainable. In this regard, I would like to underline the strong European commitment towards the transition from vertical food systems to circular ones to reduce carbon and ecological footprint of agriculture. Agroecology incorporates the cultural and economic approach, therefore it becomes an efficient method in the transition process.

¹⁴ <http://www.fao.org/europe/events/detail-events/en/c/429132/>

Considering FAO's extensive knowledge on Agroecology we wish to encourage the Organization to actively engage in relevant dialogue with European Member States and EU Institutions and with the UN Economic and Social Council (ECOSOC). I would also encourage discussions with the ILO because preserving and creating sustainable attractive jobs in rural areas is an extremely important element that can put Agroecology into practice. When talking about improving rural employment, special focus should be given to women and youth, and to providing decent livelihoods in these areas. It is also important to include bilateral and triangular cooperation as regards to principles and best practices on Agroecology. South-south cooperation is an excellent tool for promoting this agricultural approach. Hungary has an ongoing cooperation with the UN Office for South-South cooperation. We have been participating since 2015 in a joint development programme for improving food security, bringing new research results and traditional agricultural knowledge in other rural areas of the world.

Agroecology, with its multi-stakeholder and trans-disciplinary approach, places great emphasis on traditional knowledge as well as modern research. While agricultural research frameworks are mostly developed in all countries of the world; self-managed, research and farmer, innovations often lack professional background and support. Therefore, we call upon FAO as well as the responsible national and international institutions to strengthen farmers' extension service networks for research and horizontal spread of agricultural innovations, to strengthen capacities of farmers and citizens, to facilitate inter-disciplinary innovations that bridge different knowledge systems and give farmers enough financial security to engage and participate in the whole research cycle including the evaluation of research programmes and institutes. Hungary welcomes the Scaling up Agroecology Initiative, which builds upon new or improved existing policies to create supportive legal environments for Agroecology. In this process, it is also important to identify, quantify and qualify policies that work against Agroecology.

Furthermore, by promoting Agroecology and broadening its scope, we must keep in mind how to make this process economically viable. Agroecological transfer requires a great amount of investments and financial and institutional background varies from country to country. By levelling the field of competition, we can create a supportive environment for farmers' transitions to more sustainable agricultural practices. In this regard, I would like to emphasize the importance of using true cost accounting when formulating policies for agricultural transitions. As it was pointed out by many speakers during this event, positive and negative externalities (including environmental and social dimensions) of different agricultural food systems should be included in relevant decision-making processes. From this perspective, Agroecology is a way towards making food systems environmentally sustainable, socially inclusive and, at the same time, economically viable. From this perspective, Agroecology is a way towards making food systems environmentally sustainable, socially inclusive and, at the same time, economically viable.



We strongly encourage FAO to use its technical expertise to be involved in a true cost calculation and actively engage in elaborating the appropriate methodology together with sustainability indicators in order to pave the way for Agroecology to be scaled up. The Scaling up Agroecology Initiative proposed by FAO is very robust and ambitious. We welcome FAO to channel Agroecology into other UN initiatives and strategic programmes and we are very pleased to note that Agroecology has become a mainstream topic.

In conclusion, Hungary has been supporting the cooperation with FAO in promoting Agroecology and we look forward to continuing our work together. The topic will remain a priority for Hungary as the fundamental requirements for a successful agroecological transition are already present in the country. Hungary will continue its cooperation with the three RBAS and with its partners to promote Agroecology and assist partner countries with our existing knowledge, so we can all enjoy the fruit of more sustainable food systems in line with the 2030 Agenda.

6.3.6 STATEMENT BY NIU DUN

Ambassador, Permanent Representative of China to FAO, IFAD and WFP, China

China has 14 percent of the country covered by arable land, which is very important for the agricultural system and is also the basis for the national food security.

Thanks to better production measures and agricultural technologies, productivity continues to increase in agriculture, but the mass use of fertilizers and pesticides have a negative effect on agricultural land productivity and on the ecosystems.

In this context, the Chinese government adopted a whole series of measures to protect and promote Agroecology, particularly in the area of legislation, policies and international cooperation. In terms of legislation, the new law on the protection of the environment came into effect in China on January 2015. This law stipulates clearly that the governments at all levels must strengthen environmental protection in agriculture using agricultural technologies that respect the environment, strengthening monitoring, and promoting the prevention and treatment of agricultural pests and diseases. This required many agencies to change the livestock and agricultural production areas to use fertilizers and other agricultural inputs in a sustainable way, making sure that agricultural films and products are used to reduce agricultural damage.

In the area of policies, over the past five years the Chinese government has worked on developing a green economy. In recent years, we have created and improved a system for ecology evaluation and performance, compensating villages that produce in an ecological way. Since 2011, over 1 000 cities have been certified as ecological villages that offer countryside tourism, which is becoming popular. The certified ecological villages are growing in number and are becoming the number one destination for town-based families.

In the area of international cooperation, particularly within the framework of FAO, China is a member of the Friends of Agroecology group, which is working on the creation of its secretariat. China supports the GIAHS forum within FAO, which is also a way to promote Agroecology. The history of Agroecology starts thousands of years ago, with farmers adapting to and integrating themselves into the environment to reach harmony with nature, which is the fruit of ancestral knowledge of agriculture, and the notion of environmental protection. China also shares experiences with many countries. In March 2018, China, France and Italy organized a side event on Agroecology and GIAHS in FAO to enhance cooperation in this area and undertake advocacy projects.

As for the importance of Agroecology in China, the future villages will be able to benefit from public services and from a healthy environment. Rural areas will become a rare resource attracting people from the cities. In the future, the Chinese agricultural policy will focus on supplying structural reform, developing recreational countryside tourism, while protecting natural resources, improving the environment, and making sure that the population can have a better life. This will produce economic and social benefits. We need to create a system towards Agroecology, where agricultural production is in perfect harmony with the capacity of the environment.

We need to make sure that underground water is sustainably managed, and to sustainably use pesticides and reuse agricultural residues. This will make agriculture sustainable while enabling farmers to become more wealthy and ensure that the countryside becomes a place where it is good to live.

As per cooperation in the future, I would like to propose that multilateral cooperation within the UN becomes the main platform for the participation and support of all countries. We hope that more and more members will be interested in joining the Friends of Agroecology group. We would like FAO to be the framework in which countries are able to discuss the important issue of scaling up Agroecology.

We need to enhance South-South, Triangular and North-South cooperation, in order to strengthen the development of infrastructure in rural areas, build capacities among farmers and country dwellers, and promote new technologies. We need a stronger link between GIAHS and Agroecology.

I hope that one day everyone here today will be able to visit a GIAHS site to see with their own eyes a concrete image of an agricultural civilization and to taste high-quality agricultural products. I am convinced that you will have more hope in the future of Agroecology.

6.3.7 STATEMENT BY MOHAMMAD HOSSEIN EMADI

Ambassador, Permanent Representative to FAO, IFAD and WFP,
Islamic Republic of Iran

Today I will try to address why Agroecology is important to us in Iran; how Agroecology has evolved across time in Iran; and what the major lessons learned to scale up Agroecology are. The first factor which accelerated Agroecology's evolution in Iran is the environmental challenge. Agroecology in Iran is mostly developed based on real demands, needs, challenges and problems. The problems and challenges that we face are the main reason for developing Agroecology. One of the main challenges that Agroecology addresses is a severe water scarcity. It is not only an agricultural or an environmental issue, but a national security issue, provoking social crisis, conflicts and desertification. Due to the growing issue of water scarcity, Iran is facing low agricultural productivity, migration, social conflict and poverty.

The second major factor is the long history of agriculture in Iran. For 12 000 years Iranians have practiced agriculture with limited water resources in diverse contexts. This has led to rich indigenous knowledge and agroecological diversity among farmers, particularly in terms of sustainable water management systems. Qanat is one of the best examples of water management and resilience among farmers, and is recognized by FAO as a GIAHS. It is an agriculture full of skills and of the art of working with water harvesting and sophisticated irrigation technologies and skills. The high level of diversity in nature, culture and religion is considered a great opportunity to develop Agroecology. This gives us a comprehensive conceptual framework to include all aspects of Agroecology.

The third major element which facilitates Agroecology in Iran is the human and social aspect. Family farming systems are a dominant social phenomenon in Iran. Another factor is the food and agricultural chains in Iran, which are not affected by globalization. Food chains and supply markets have not been dominated by international companies yet, and there is potential to include the emerging agroecological products, which can be easily and freely distributed. There are some active CSOs, NGOs and community-based organizations (CBOs) that have initiated many innovative agroecological projects in Iran. Some of them have presented their experiences at this Symposium and in previous regional meetings.

Major changes at institutional levels have also facilitated agroecological movements in Iran. Several researchers have studied pilot cases and large-scale agroecological activities that have been conducted in Iran with the support of the government. Some of these initiatives were also supported by national and international organizations, as well as NGOs, CBOs, CSOs. These initiatives can be described as follows:

1. "Putting farmers first" approaches: After the revolution in 1979, the State paid more attention to farmers, rural people and their priorities. Under these approaches and group of activities, the objective was to listen to the farmers and work with them instead of working for them. These activities can be divided into five subgroups: (i) establishment of rural councils

- and farmers' councils to engage them in decision-making processes, (ii) integrated pest management for sustainable production and markets (started 25–30 years ago); (iii) FFS approaches, which started in Iran about 25 years ago; (iv) organic agriculture as a strategy to improve smallholder farmers' livelihood in the country; (v) systems of rice intensification that also include people in the fields in the process of change for agricultural development. These activities mainly focused on farmers and farmers' role in changing farming systems instead of focusing on technological issues.
2. "Promotion of conservative agricultural activities": Environmental resources, particularly soil, water, forests and pastures, have been degrading at alarming levels in the last decades. Awareness about food safety and healthy food has increased over the last three decades in Iran, widely based on conservative measures and regulations. Therefore, new environmentally-friendly initiatives began to take place with Agroecology being one of them.
 3. "Knowledge generation and public awareness": This area focuses on valuable "indigenous knowledge" of farmers and includes the following activities: (i) document, report and protect Nationally Important Agricultural Heritage Systems (started in 2001); (ii) creation of PhD and master programmes in Agroecology in two major universities, with numerous masters and PhD students in the field of Agroecology who are now the engine to improve the knowledge generation on Agroecology in the academic arena.

To address the challenges ahead at a global level, I would like to mention some of the lessons learned through these activities.

1. Agroecology is a "new paradigm" in the way of doing agriculture and is an evolving and growing concept. Agroecology goes beyond methodology and technical solutions to strengthen socio-ecological systems.
2. Agroecology is an umbrella that includes a wide range of pathways depending on the local contexts. This has been done in Iran through different types of agroecological models and experiences. However, this is not sufficient; we need to scale it up and put the experiences together. Therefore, effective change must be done at local, national and international levels in an integrated manner. People should be put at the centre of focus. It is a major lesson that if we do not work with people, Agroecology and all its related changes will not happen. We need to put the farmer first if we are looking for any kind of change and innovation through a participatory approach for Agroecology to be successful. This bottom-up approach needs the people and farmers to own the system and control the process.
3. Agroecology relates to change and transition and it is not a written "blueprint". It is still in an evolution and "check and balance" phase. What we need is to be updated regularly and promote networking among farmers.

4. Agroecology needs a wide range of support and interventions. Based on our experience, we have identified four major areas of support: (i) supporting policies; (ii) dissemination of new agroecological activities and experiences; (iii) financial and market development mechanisms; (iv) enhancement of innovation, technical and professional support to generate knowledge on Agroecology, especially in terms of capacity building and networking. One of the most important things that FAO can do is to appreciate and award successful agroecological practices and policies, as it can be a very successful tool along with information, capacity building and networking.

We have thousands of successful experiences of Agroecology around the world. The role of international organizations such as FAO is to connect them, build networks through technology, upscale them and give them a better and more powerful role in the future.

We know now that Agroecology is about hundreds of millions of family farmers, pastoralists, fisherfolks, indigenous people, women and men, who produce not just food, but also co-create local culture and cuisine, agricultural biodiversity and economic prosperity. In the framework of the upcoming UN Decade on Family Farming 2019–2028, Agroecology can be a supportive component. It is essential for FAO to establish a system to support Agroecology.

Social mobilization is a key factor in facilitating the potential of Agroecology. Networks of actors and experience-sharing platforms are emerging in all regions to support and engage producers, consumers, civil society and researchers. It is time to create a network of policymakers along with the producers to join this movement.

The Friends of Agroecology Group in FAO can work as a supporting policy system. The government's role is fundamental in creating an enabling environment for Agroecology, and for reviewing policies and legal and financial frameworks, which is an urgent task to promote agroecological transitions. The regional dialogues on Agroecology in Tunisia and Thailand showed that the main features of public policies for Agroecology are the comprehensive nature, the participatory and targeted approaches and the inter-disciplinary and transformative direction.

To conclude, we need to focus on four major areas: (a) policy and political support; (b) market and financial mechanisms; (c) institutional building and development; (d) facilitation of innovation and knowledge generation.

Without FAO's support, none of these can happen either at national, regional and international level. I would like to thank the Director-General for supporting the scaling up of Agroecology.

6.3.8 STATEMENT BY SILVANO MARIA TOMASI

Archbishop, Holy See

The Holy See highlights the moral ethical dimension of the Nations in making ecologist demands to agriculture. The ecological approach seems necessary because the main goal of agriculture is the production of sufficient food for the human families and the responsibilities linked to this process. The right of people to adequate food calls for cooperative action and this can be effective if natural creation is respected.

Therefore, family farms and industrial agriculture must channel their work towards efficient production models. In the long run, production is efficient if ecology is respected. All agriculture should move in the direction of becoming agroecological. Scaling up and scaling out makes sense in such a context.

Pope Francis' encyclical *Laudato Si* addresses the fact that everything is linked together in this interconnectedness. In the case of agriculture, this applies to the relations between man and nature; between production and the market; between food production and the whole society.

The perspective of interconnectedness keeps humans as the point of reference of all activities, as the centre of all concerns. It helps to implement the SDGs because respecting the link "nature-agriculture-food" is the path towards reducing hunger in the world, towards having fairer access to the food market and towards the responsible stewardship of the resources of nature.

The 2030 Agenda for Sustainable Development launched in 2016 includes some transformations and shifts in terms of how development is understood by the international community. The 17 SDGs and the 169 targets sit at the heart of the 2030 Agenda. They cover a broad range of issues, including sustainable agriculture. Goal 2 is about ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture.

Nevertheless, this goal must not be seen in isolation, but rather alongside other commitments of the Agenda such as inclusive education, health care, social protection, migration, peace, injustice, oceans, forest, climate change, decent jobs and economic development.

Everything is interconnected. We must not leave anyone behind. We need to commit to produce and to feed humanity through Agroecology.

SDG 8 affirms that the international community must endeavour to promote economic growth and employment without damaging the environment.



SDG 9 sets that we need to support developing countries to strengthen their scientific and technological capacities including the transfer of environmentally sound technologies.

Ecological advances in agriculture cannot remain exclusive to some but should be shared in order to promote sustainability. This is what the *Laudato Si* says in paragraph 131.

Potable water and food have to be available to everyone, not only because it is a human solidarity requirement, but also to avoid social disruption and the risk of war. New forms of cooperation are needed in order to forge Agroecology, to defend small producers and local ecosystems from destruction. As Pope Francis remarks in the *Laudato Si*, truly much needs to be done, but it can be done by working together.

6.4 CLOSING REMARKS BY JOSÉ GRAZIANO DA SILVA

Director-General, FAO

This event has had a great level of attendance, with 768 participants against the 400 originally expected, including representatives from 72 governments, from 350 non-state actor organizations and from six UN organizations.

This Symposium has paved the way to work together with all actors – including governments, CSOs, private sector, cooperatives and producer organizations, academia and research organizations, consumers' organizations and UN organizations, including the Rome-based Agencies – in the scaling up of Agroecology. In the framework of the Symposium, there were over 500 articles published online, more than 30 000 likes on the FAO website and 7500 posts on social media, reaching about 24 million people over these three days. This attests to the success of this event. I would like to thank you all, as it is the result of our work together over the last three and a half years.

Now is time to scale up the implementation of Agroecology and we have important documents to guide us such as the Chair's Summary and the Declaration of Civil Society Organizations as well as the contribution from Ministers and Ambassadors. The FAO Secretariat will take all of this in consideration when preparing a document to be submitted to the upcoming session of the Committee on Agriculture (COAG) and to the FAO Conference.

Looking forward, there are many recommendations from different actors arising from the speeches and documents discussed during the symposium. I have identified three recommendations specifically addressed to FAO: (i) prepare a discussion document to be submitted to COAG and to FAO Conference, aiming at introducing Agroecology into FAO's work; (ii) use the Scaling Up Agroecology Initiative as an instrument to implement Agroecology; (iii) introduce agroecological principles in FAO projects and programmes at local, national, regional and global levels, as Agroecology is a cross-cutting approach. With these recommendations, we will strengthen Agroecology in FAO's work.

FAO, in partnership with the World Future Council, will identify and award in 2018 legal frameworks and policies that create enabling environments for Agroecology. This award will be launched during the World Food Week in October 2018.

There are many elements that need to be strengthened. When we speak about Agroecology, we are not speaking about technical aspects alone. Agroecology particularly involves the social dimension. In order to strengthen Agroecology in FAO's work, we need to reinforce the role of family farmers, peasants, fisherfolk, indigenous and traditional peoples, pastoralists and, especially, women and youth. We cannot implement an Agroecology programme if those social actors are not present; they are fundamental.

In order to do this, we will tap into the ongoing work for the United Nations Decade of Family Farming (2019–2028) and for the United Nations Decade of Action on Nutrition (2016–2025), which will help us to reach the 2030 Agenda and the SDGs, so as not to leave anyone behind. It is not an easy task and this is why we need support from different actors and sectors and we need to strengthen collaborations.

I would like to stress a critical point for Agroecology to be further recognized and scaled up. There is a need to foster more participatory and horizontal research and extension systems, going beyond the traditional approach of generating and transferring technology from top to bottom. We need to have a process that includes users and practitioners of such technologies, so they can contribute to also incorporate available local knowledge. In this regard, I wish to make a special recognition to France, for implementing the principles of Agroecology integrally and not in isolation, for instance as done by INRA in its research and extension programmes. France's support has been fundamental for FAO to be able to set up its Agroecology team and to move forward on Agroecology in these past three and a half years since the First symposium.

I also wish to acknowledge the dedication of the FAO Agroecology Team, which doubled their efforts for the organization of this symposium. In this regard, I wish to recognize the leadership of Maria Helena Semedo, Deputy Director-General of Climate and Natural Resources of FAO.

Finally, I would like to express my gratitude for the generosity of the governments of France, Switzerland and the Netherlands, as well as the McKnight Foundation, for their financial support, which allowed us to organize this Symposium.

I believe we have fulfilled the aim of going from dialogue to a concrete programme of work and goals to be achieved in the coming years with a very strong support.

In this regard, I would like to thank the CSOs and the governments who made this Symposium possible. We count on you to move forward as FAO cannot do it alone. I would like to thank you all for exercising SDG 17, which calls for working together and strengthening partnerships.

Last, a special note of appreciation to Braulio Ferreira de Souza Dias, Adjunct professor of the University of Brasilia, for his commitment and excellent work in chairing this symposium.



CHAPTER 7

AGROECOLOGY IN ACTION: SUCCESSFUL EXPERIENCES AND INNOVATIONS

THE EXPERIENCES CONTAINED IN THIS CHAPTER WERE DISPLAYED THROUGH POSTERS DURING THE SYMPOSIUM AND DEMONSTRATE SUCCESSFUL AGROECOLOGICAL SYSTEMS THAT DELIVER VIABLE AND LOCALLY-ADAPTED SOLUTIONS TO IMPROVE THE LIVELIHOODS OF PEOPLE ALL AROUND THE WORLD.



Source: provided by authors/organization

ARGENTINA INNOVATIONS IN AGROECOLOGY

COMMUNITY LIVESTOCK ENCLOSURES

The community livestock enclosure is an innovative strategy to defend the land for communal use, deployed by peasants, whose occupation areas are territories disputed by the agribusiness in the context of processes of expansion of the agricultural frontier in Santiago del Estero.

DESCRIPTION OF THE INNOVATION

It is a socio-organizational and productive livestock-oriented design that involves sustainable management of the forest for community use and the use of livestock resources available to farmers.

It consists mainly of the following aspects:

- » enclosure with perimeter fence of a total area of ten thousand hectares of communal use among forty peasant families
- » the delimitation of three common grazing lots intended for the rearing of cattle
- » adaptation of silvopastoral management practices in the farming systems of the Chaco-semiarid region
- » the formulation of agreements between the peasants for the management of the forest (extraction of firewood, charcoal, poles) and for the organization of collective work in relation to livestock activity.



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

This innovation is based on the use of endogenous resources and the deployment of the local knowledge of family farmers around the exploitation of timber species and fruits of the Chaco-Santiagueño woods, as well as the practice of raising livestock under these agro-ecological conditions in permanent dialogue with the technical knowledge of extension agents and researchers from state agencies.



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

- » Strengthening the governance of land and other resources of common use to avoid possible evictions in the context of conflicts over land.
- » Access, fair and efficient use of surface and groundwater.

- » Genetic improvement, forage, health and productive infrastructure.
- » Expansion of the social capital of the peasant communities through the deployment of a wide network of social relations between people and institutions in the territory.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

- » Optimization of indexes of production.
- » Construction and control of new markets based on short commercialization circuits.
- » Diversification, expansion, preservation and reproduction of their common goods.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

Learning:

This experience allowed solving problems of land tenure in large territories and ordering the territory in a less conflictive manner than an agrarian reform, responding to the dynamics of the peasants and their culture and local knowledge, thus orienting production to meet the nutritional needs of local communities.

Recommendations:

Promote the added value in origin via livestock production chains that include farmers raising calves in rainfed areas for fattening and sale of steers in the irrigation area.

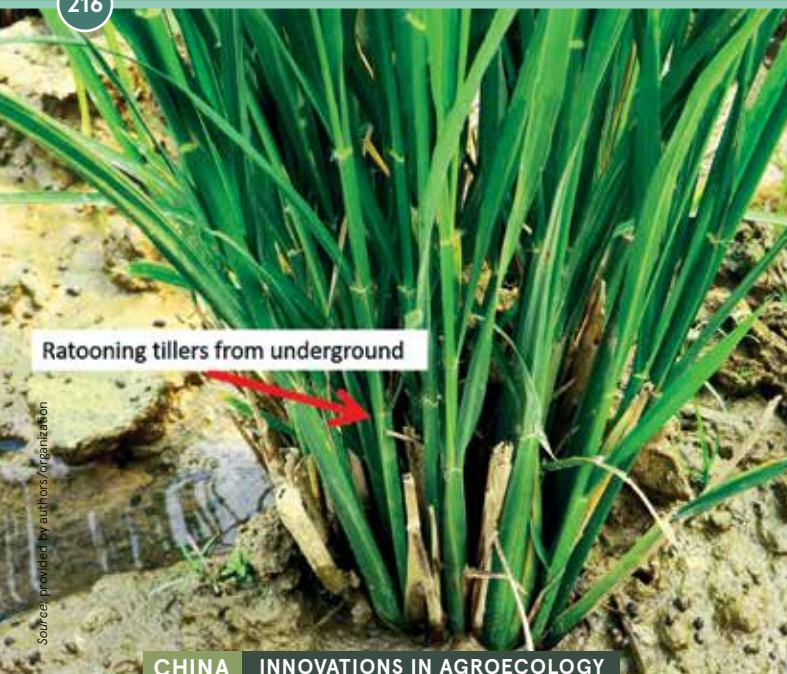
Promote the participation of farmers in the institutionalization of quality standards, price and marketing channels for their production.

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CHINA INNOVATIONS IN AGROECOLOGY

PERENNIAL RICE: SUSTAINABLE RICE PRODUCTION SYSTEM

Two serious problems in rice production should be solved, not only in China, but also all over the world. First, environmental problems need to be addressed, such as soil erosion caused by annual rice production systems, especially upland rice production, although yields are high. Second, with economic development, labour shortages in rural regions are becoming increasingly severe. To solve these issues, the idea of developing and using a perennial rice production system was proposed in 1989.

DESCRIPTION OF THE INNOVATION

Perennial Rice, as its name implies, is rice that can be harvested many years without reseeding, due to the regeneration of rhizome. *Oryza longistaminata*, is a perennial wild rice species from the same genus as cultivated rice, such as *Oryza sativa*.

It is considered to be the ideal perennality donor for perennial rice, as it has strong rhizome (vegetative propagation), and the same AA genome as *Oryza sativa*.

In 1997, RD23 and *Oryza longistaminata* were crossed, resulting in an F1 individual with strong rhizomes. Breeding and selection, including molecular, marker-assisted selection (MAS), were carried out for many years.

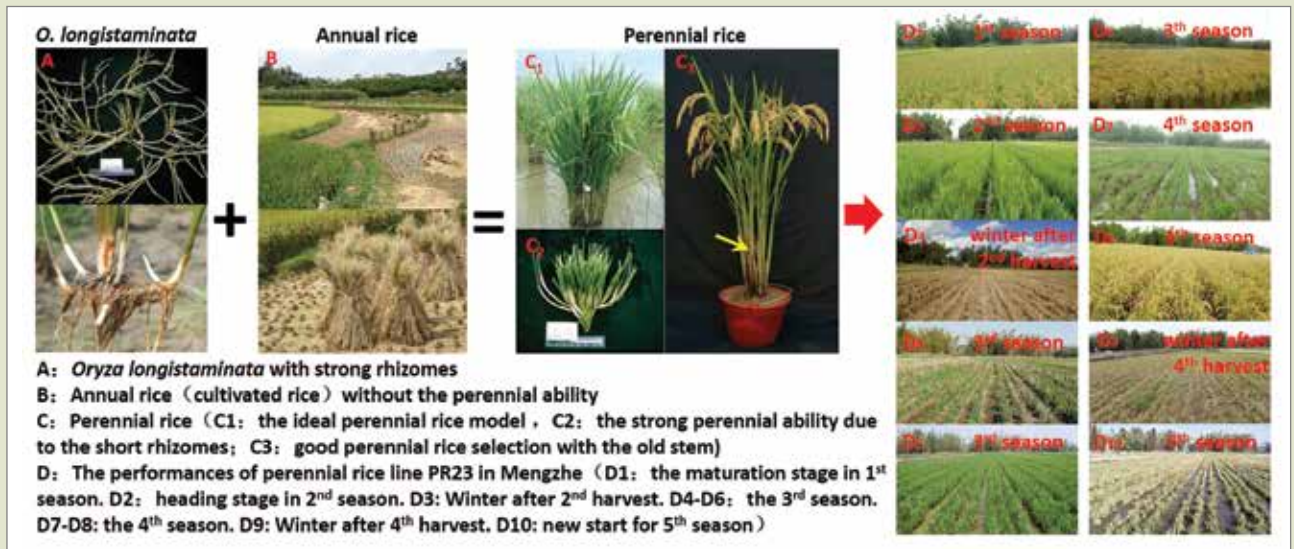
DESIGN AND SHARING OF THE INNOVATION

So far, four good selections have been bred: PR23, PR24, PR25 and PR107. Of these, PR23 has been used in nine provinces in southern China, and four countries in South and Southeast Asia, such as Laos, Myanmar, Cambodia, and Thailand. The applied area size was more than 100 hectares in Yunnan province, and it has been tested for more than three years for perennial ability and yield.

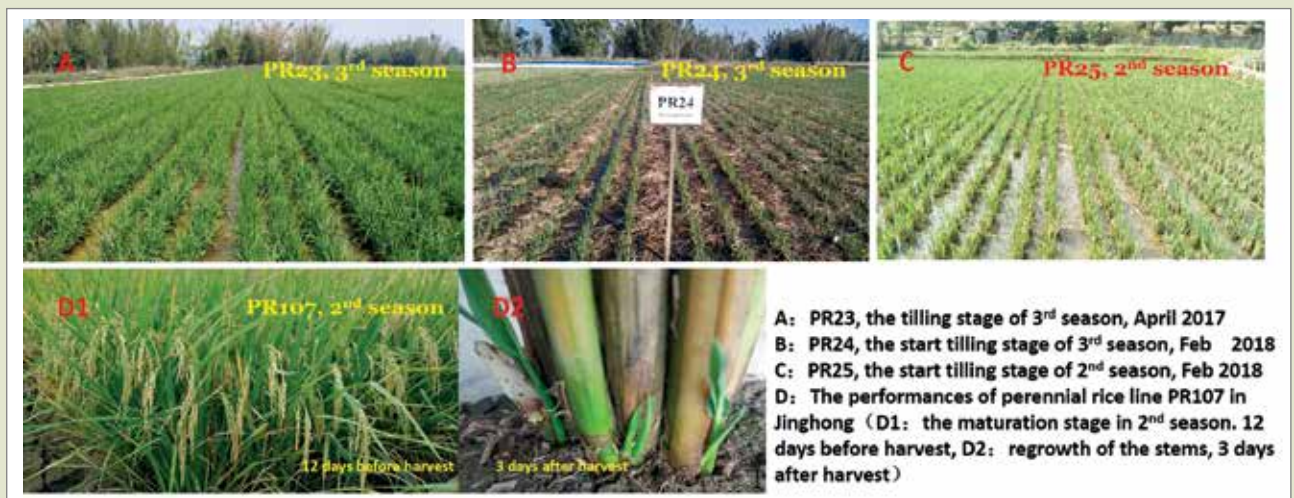
The results show that the regrowth rate was over 85 percent, at least after the sixth harvest, and the average yield was maintained at 15 tonnes/ha per year. PR23 is now ready to be released in Yunnan.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Perennial rice technology is a green and sustainable agricultural technology, as it has many benefits for farmers and rice production. Compared with traditional rice production, the perennial rice production process saves production costs (50 percent from the second season), with less use of chemical fertilizer, irrigation water and crop management input; perennial rice production also requires less labour input and reduced labour intensity.



Source: provided by authors/organization



Source: provided by authors/organization

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

Perennial rice technology is a simplified, green and sustainable agricultural technology, which has significant social, economic and environmental impacts.

Perennial rice production reduces soil erosion for rice fields or upland, as it does not require tillage after the first transplant. At the same time, perennial rice yields are as high as traditional rice yields.

Perennial rice is a good solution for rice production nowadays. It will change the way rice is produced, and achieve balance among environmental protection, economic development and food security.



Source: provided by authors/organization



MEXICO INNOVATIONS IN AGROECOLOGY

SOILS! THE UNDERWORLD

In the field of agroecology, the problematics of innovation are not just about technology: the obstacles of sustainable production also stem from ignorance and the lack of a common language. It is urgent to innovate in communication strategies in order to create reciprocal links between farmers, scientists, consumers, and decision makers. *Soils!* is a daring venture into this difficult task.

INNOVATION DESCRIPTION

Soils! is a puppet show created by DeMano, a project for rural food security. It explains the relationship between soil conservation practices, family nutrition, and family health. It is based on an eight-year-long experience working in a rural subsistence community in Mexico's southern area. The creators of the show have staged a depiction of rural life thanks to their experience in the fields, cohabiting with farmers, performing scientific investigations, and collecting information from farmers.



SPREADING AND DESIGNING INNOVATION

With only three suitcases and two puppeteers, *Suelos* has reached even the most remote rural audiences. As soon as the suitcases open, the limits of the puppet show techniques are put to the test. The show uses wood as its prime material, and includes characters based on soil organisms, plants, and members of the agricultural family.

The stage of *Soils!* is divided in two halves: one aboveground, lit by white light, and another belowground, lit by black light. Its design and the use of puppets are an innovative technique to bring to life the indispensable lives that dwell in the soil.



Source: provided by authors/organization

BENEFITS FOR FARMING FAMILIES AND FOR FOOD AND NUTRITION SECURITY

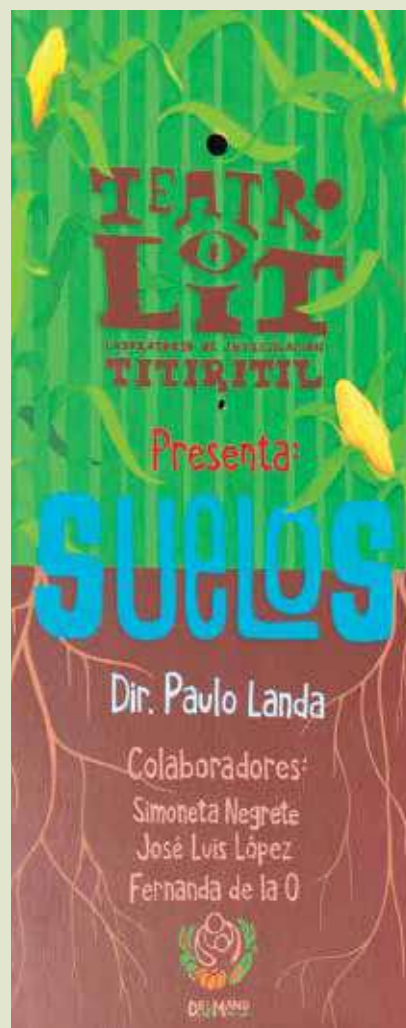
Soils! benefits farmers and their families by taking the theater into their communities to address their problematics and create a synthesis of the possible solutions proposed by the multi-disciplinary project. It encourages collective experimentation through mutual-aid groups. It focuses on taking care of the living organisms of the soil so it can produce nourishment for entire families.

By implementing community work, it allows the transformation of agricultural practices without putting food availability at risk. It empowers women as the main caretakers of the soil and the health of their families, and it explores the concept of fair trade so that life in rural areas can be feasible for young people.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

Soils! reflects upon the complexity of the food security problems. All the actors in the problem go on stage not to propose magical solutions, but to talk about how necessary it is to take good care of the soil, our food, our family relationships, our education, our communities, and our solidarity.

We show the great potential of integrating science and tradition in order to collectively face large-scale challenges such as soil deterioration, male migration, chronic malnourishment, and market inequity. The DeMano project has treaded both rough and easy paths filled with obstacles and success. *Soils!* depicts our story while endorsing shared responsibility.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

We have proven that puppet shows have a great power to sensitize everyone involved in the sustainable food security challenge: scientists, farmers, consumers, and authorities. It particularly appeals to audiences with low literacy levels and great empirical knowledge, a profile found in rural

Mexico and several other places around the globe.

We have experienced the vast convening power of the theater and puppet shows, much greater than any conference, workshop, or lecture. Farmers come to the show thinking it will be great for their kids, and leave the show as enriched and filled with ideas as their children.



Source: provided by authors/organization

COLOMBIAN AMAZONIAN REGION INNOVATIONS IN AGROECOLOGY

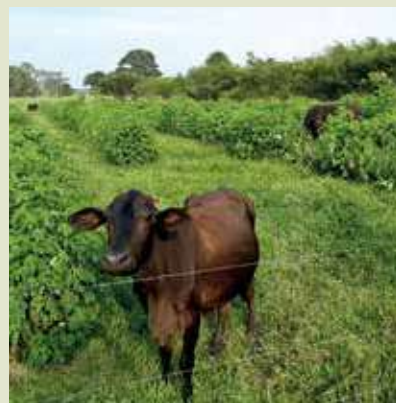
PARTNERSHIP AGREEMENT FOR SUSTAINABLE CATTLE RANCHING DEVELOPMENT

The ground-breaking Caquetá Pact is a public-private alliance for zero deforestation and cattle ranching reconciliation in the Amazon region of Colombia. It brings together farmers, led by the Caquetá's Regional Committee of Cattle Ranchers, with government ministries, food processors, NGOs, and research & development agencies, in the (now common) purpose of controlling deforestation, protect water and save the threatened biodiversity of the territory.

DESCRIPTION OF THE INNOVATION

Caquetá Pact, has consolidated a value chain model from producer to consumer, where all adopt a common framework to develop and implement livestock conversion actions. It provides a protocol a protocol for declaring as "Natural Reserve of Civil Society" (a recognition of the Colombian state as a special area of environmental protection), and adopting silvopastoral systems to improve efficiency and mitigate CO₂

emissions. 100% of pilot farms have released land areas back to the forest due to a better use of natural resources. The Protected Designation of Origin and the collective mark "Caquetá Cheese" was consolidated, with which the processing industries adopt the agreement and follow protocols and rules, with the support of agencies such as GIZ, USAID, The Nature Conservancy, UN, EU, etc.



Source: provided by authors/organization



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

It has been developed by local stakeholders, recognizing the main threats to continue the livestock activity without control. A significant number of national and international agencies have been involved through a systematic approach that covers most elements of sustainability (bio diversity, natural resource use, market business oriented, and social impact). All major local institutional bodies are presented in this Pact.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

The early evaluation of on-farm implementations incidence, evidences important increase in the indicators battery of productive efficiency, derived mainly from the immediate improvement of the management conditions and pastures nutritional quality, mainly increasing the production of milk per cow and hectare, the reproductive behavior of the cows (percentage of birth) and the compositional quality of the milk.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

Promote the design and implementation of strategies for mitigation and adaptation to climate change, stimulate productivity, generate financial/economic incentives and specific lines of credits, design payment strategies for environmental services, foster associativity and promote access to markets/trade, promote integrated territorial development processes, where agro-climatic zoning is the axis to better plan production, and generate solid business plans around bio-trade products.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

This agreement can be a pilot program for demonstrating that natural resource use and livestock production can find a balance, by adopting sustainable practices, involving all stakeholders and applying a value chain approach.



Source: provided by authors/organization

FRANCE INNOVATIONS IN AGROECOLOGY

CO-DESIGN OF CULTIVAR MIXTURES

A better use of crop genetic diversity is recognized as an essential leverage for agroecology, as it promotes various ecosystem services, in a context of increasing environmental stochasticity caused by global change. Increasing within field diversity through the use of cultivar mixtures is a timely option, as testified by past major “success stories”, and recent bibliographic reviews. Yet, cultivar mixtures are still poorly developed worldwide, even if their use is in strong progression for wheat crop in France.

DESCRIPTION OF THE INNOVATION

The innovation is a participatory ideotyping exercise allowing the co-design of cultivar mixtures to customize the genetic and trait structure of crops and adapt it to innovative cropping systems delivering

groups of agroecosystem services. It is based on workshops between farmers, extension services, scientists and other stakeholders of the value chain, allowing to design blending rules. These rules are then used by

farmers or agricultural advisors to choose varieties to mix in order to improve the economic and environmental performance of their cropping system.

DESIGN AND SHARING OF THE INNOVATION

The mixtures co-design is based on a transdisciplinary approach, the blending rules being co-designed by farmers, extension services and scientists. These rules are integrated in a multi-criteria evaluation tool allowing a knowledge-based selection of crop genetic diversity that farmers want to implement in their fields.

Developed during the Wheatamix project, this tool was used for three years, providing a high diversity of cultivar mixtures adapted to each farmer context.



Source: provided by authors/organization

WHEAT CULTIVAR MIXTURES CONTRIBUTE TO VARIOUS ECOSYSTEM SERVICES



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Mixing cultivars within the same field, and thus mobilizing the intra-specific diversity, is a nature-based solution with demonstrated benefits for the regulation of diseases, and considered as an insurance strategy for the farmers (thereby avoiding to put all their eggs in one basket). It is based on registered varieties having known performance in the agrosystem, and the blending strategy is co-designed with farmers to respond to their local needs.

IMPACTS ON SOCIAL, ECONOMIC AND ENVIRONMENTAL LEVEL

This innovation contributes to the development of innovative cropping systems with improved adaptation and resilience capacity to climate change and the necessary reduction in chemical inputs. Besides, mixtures are generally already used by farmers with low-input agricultural practices (often organic farming), in part as a precautionary principle.

LESSONS LEARNED AND RECOMMENDATIONS

Cultivar mixtures co-design provides a smart way for farmers to tune crop genetic structure to their innovative agroecological practices, and to buffer the risks associated to variety choice and environmental variability and heterogeneity.



Source: provided by author's organization

COLOMBIA INNOVATIONS IN AGROECOLOGY

CONSERVATION OF HIGH MOUNTAIN ECOSYSTEMS THROUGH THE RECOVERY OF NATIVE SEEDS

AN INNOVATION THAT IMPACTS THE GASTRONOMY, THE MARKET AND THE PEASANT WELL-BEING.

One of the main problems of the *páramo* ecosystem (altitudinal belt of the tropical mountain between 3 000m and 4 000m) is conventional potato production. The use of agrochemicals in food production is degrading the ecosystem and polluting the water that reach more than 8 million inhabitants of the city of Bogotá, capital city of Colombia.

DESCRIPTION OF THE INNOVATION

Our innovation is based on linking networks of farmers, universities, professionals in graphic and industrial design, restaurants and gastronomy schools to manage the ecological production of innovative foods,

including the native colored potatoes, as well as their aggregation of value and finally its commercialization in order to strengthen local food systems, protect the *páramo* ecosystem, obtain scientific data on

agroecological production and soil management, as well as obtain data on the ecological footprint of native potato production.



Source: provided by authors/organization



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

We formulated a project jointly with 10 farmers and the Faculty of Agrarian Sciences of the National University of Colombia that we presented to local and national public institutions in order to increase the diversity of varieties of native potatoes, improve their yield, thus generating a study of its nutritional properties, develop by-products with great added value and measure the carbon footprint of production in

10 farms at 3 250 meters above sea level. Our objective is to increase the number of producers in networks of maximum 30 families.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

- » Protection of high mountain ecosystems and their environmental services.
- » Improvement in the family's income.
- » Diversification of the productive systems of potatoes and Andean crops.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

- » It is estimated that each family can receive up to USD \$ 925 per month, 35 percent of fresh potatoes and 65 percent of chip chips.
- » The cultivated area is reduced (only one hectare is required in rotation of 4 lots of 2 500 m²)
- » Less greenhouse gases are generated (6 050 Kg / Ht vs. 9 219 Kg / Ht of conventional production).



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

- » Diversity and networks are two of the most important factors to be a sustainable food systems
- » Added value strategy and systemic thinking allows the growth and sustainability of smallholders and agroecological producers, likewise the recovery of native seeds and traditional foods.



Source: provided by authors/organization

SPAIN INNOVATIONS IN AGROECOLOGY

CONNECT-e SHARING TRADITIONAL ECOLOGICAL KNOWLEDGE

International treaties and conventions encourage national governments to recognize, protect, and promote traditional knowledge, including traditional agroecological knowledge. Following this mandate, a multidisciplinary team of Spanish scientists from 7 universities and research centers have worked together with the Spanish seed network 'Red de Semillas: Resembrando e Intercambiando' to develop CONECT-e.

DESCRIPTION OF THE INNOVATION

CONNECT-e (www.conecte.es) is a citizen-science platform which aims to facilitate that citizens record and share traditional ecological knowledge with other citizens and with scientists. CONECT-e has a section specifically dedicated to landraces, whose goal

is to create a dynamic inventory of landraces and associated traditional knowledge. CONECT-e users can enter information on landraces' local names, description, management practices, food preparation, etc. Users can also upload pictures and information

on the seed banks that keep the landraces. CONECT-e is creating a community of users that can interact with one another through the platform, and beyond, thus promoting the live sharing and transmission of traditional agroecological knowledge.

DESIGN AND SHARING OF THE INNOVATION

CONNECT-e contributes to the sharing and documentation of traditional agroecological knowledge in two innovative ways. First, CONNECT-e helps complementing the information recorded in national databases at the same time that promotes exchanges of landrace information among an extended community of potential users that are not necessarily physically linked. Second, CONNECT-e protects from misappropriation traditional agroecological knowledge posted in the platform through a copyleft license which guarantees that knowledge can be freely reproduced and exchanged provided that sharing is done without excluding other users (i.e., by patenting or registering the content).



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

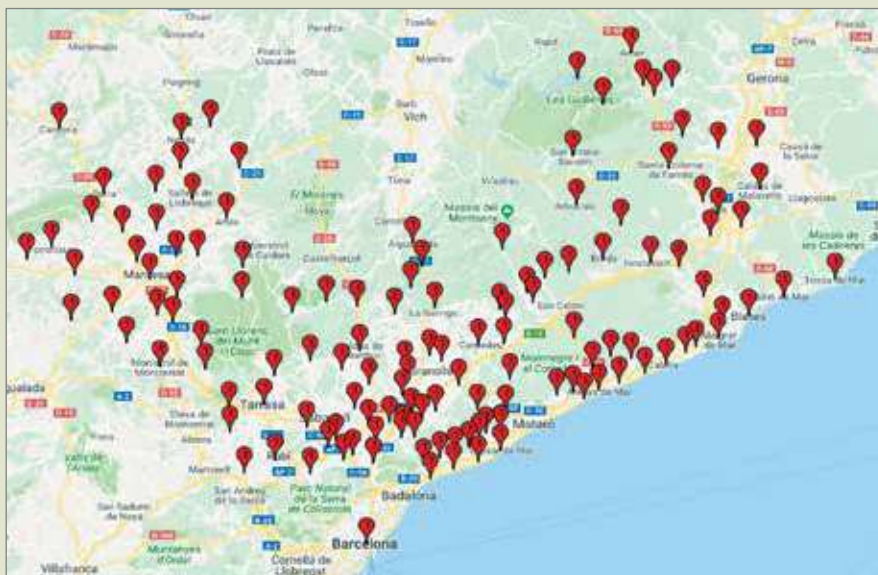
CONNECT-e benefits small-scale farmers by protecting landrace names and associated knowledge from misappropriation. For example, by creating a dynamic inventory of landrace names, CONNECT-e prevents the registration of improved varieties with landrace names. Moreover, CONNECT-e contributes to disseminate culturally

and environmentally landrace-based adapted foods, and thus to autonomy and food sovereignty.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

In less than one year, more than 400 landraces have been registered in CONNECT-e by more than 450 users. The platform is becoming a tool

for community seed banks, organic farmers, and artisanal producers of seeds and seedlings. Therefore, the platform can be used to assess the impact of landraces in small scale agriculture. At the environmental level, the platform halts biocultural erosion by promoting the exchange of knowledge and seeds.



LESSONS LEARNED AND RECOMMENDATIONS

CONNECT-e constitutes an exceptional example of ways to document, protect and promote the use of traditional agroecological knowledge based in distributed efforts and public engagement.

'Mongeta del ganxet' (catalan bean landrace) cultivation sites map likewise the recovery of native seeds and traditional foods.

Source: provided by authors/organization



FINLAND INNOVATIONS IN AGROECOLOGY

AGROECOLOGICAL SYMBIOSIS

Agroecological symbiosis (AES) is a new, transformative model for adaptive and resilient localized food production and consumption. An AES is formed by farms, small and medium-scale food processors, and bioenergy producers working as one system, in close proximity to each other. The physical proximity is dictated by the ecological necessity of the logistics of the recycling bioeconomy. Multiple AESs have the potential to form regional networks, composing a bioregional, ecologically and socially sustainable food system, boosting rural livelihoods and enriching food cultures.

DESCRIPTION OF THE INNOVATION

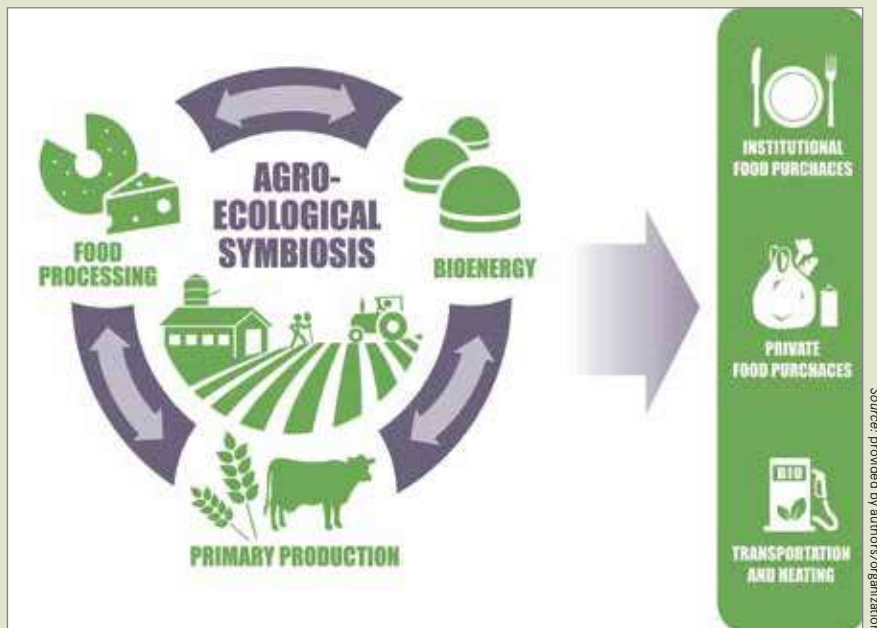
The first documented AES is forming in Palopuro village, in Finland. This AES is comprised of an arable farm, a vegetable farm, a hen house, a bakery (all organic), and a biogas plant. The biogas plant has a central

role: instead of conventional green manuring, nitrogen fixing lays of the arable rotations are used for biogas production. The wastes from the farms and food processing are fed to the biogas plant, and the digestate is

returned to the fields as fertilizer. Biogas production exceeds the energy needs of the AES. This turns AES into a net energy producer, rather than consumer, in contrast to conventional food production systems.

DESIGN AND SHARING OF THE INNOVATION

The development of AES draws on the knowledge of the agricultural practitioners in the local community, and university researchers, to come up with workable and liveable solutions for the countryside. The development of the AES model has been tracked in popular media, academic publications, and governmental reports. The process of implementation has been transparent and new incarnations of the model have been encouraged and supported.



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

In the AES model, farms produce food for local and regional markets. Food production is based on utilizing and recycling local resources, which creates a more sustainable, localized agricultural system. AES increases nutrient and energy self-sufficiency in food production, and thus promotes food security. Diversifying food

production systems brings new job opportunities, and offers an alternative to expanding farm size for family farms.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

- » Sustainable farming, food processing and bioenergy
- » Dramatically reduced GHG emissions and increased nutrient recycling

- » Improved rural livelihoods and increased social capital
- » Bolstered regional economics and increased food sovereignty
- » Improved farmer income and independence from centralized, corporate-ruled food chains



Source: provided by author s/organization

LESSONS LEARNED AND RECOMMENDATIONS

The preliminary biophysical results from the first working AES in Palopuro show the potential and demand for AES. The social dimension of the system is also productive, and the social component of the countryside is vital to consider when innovating holistically sustainable, local food systems.



Source: provided by authors/organization

CAMBODIA INNOVATIONS IN AGROECOLOGY

WOMEN-LED AGRICULTURE SERVICE TEAM IN INCLUSIVE FOOD SYSTEM PROGRAMME

In Cambodia, small-scale farmers are facing the issue of low economic returns from their rice farming because of low productivity and high input costs. The system of rice intensification (SRI) allows farmers to use less inputs. In dry areas, SRI could result in an average yield of 3.6 tonnes/ha, while under similar circumstances, the yield with traditional practices is only 2.4 tonnes/ha. Another critical issue that farmers are facing is labour shortage, as the country's economic conditions continue to force many men to migrate to towns and cities for work.

DESCRIPTION OF THE INNOVATION

Oxfam, together with partner organizations, has been piloting work with groups of landless women, who are trained in agricultural techniques and skills, especially the SRI, to provide local technical services for

farming, including land levelling, land preparation, transplanting, harvesting, fertilizing, weeding, and so on. These groups are called the Women-Led Agriculture Service (WLAS) Team. WLAS is also currently

providing a diversity of technical services, including rice production, vegetable cropping, animal husbandry and aquaculture.

DESIGN AND SHARING OF THE INNOVATION

The WLAS team is initiated to service the SRI farmers in their local community. The innovation focuses on small-scale farmers who receive little or no agricultural extension support, grow rice using traditional methods, such as broadcasting seeds, and tend towards excessive use of chemical fertilizers and pesticides in their farming. This practice leads to low productivity, environmental pollution, and even toxicity in rice production, which impacts negatively on their health. Oxfam has been supporting small-scale farmers to increase yields and reduce the use of fertilizers and pesticides.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Since its inception in 2015, WLAS has participated in reducing migration and improving livelihoods for both service team members and their clients. The teams have helped farmers to maximize the benefits of their land, and improve their own livelihoods and incomes. So far, ten teams of 257 farmers (89 percent are female) have evolved into successful businesses, especially in the production of rice. It was reported that their rice yield increased up to 50 percent.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

The programme supports small-scale farmers in improving rice production, particularly with cultivation techniques applying the SRI methodology. With this innovation, the programme has been working with the group of Women-Led Agriculture Service (WLAS) to provide credible, agricultural services to small-scale farmers, and to fill the local labour shortage in the sector, while increasing women agriculture extension workers, and improving the livelihoods of the members, who are mostly poor.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

The WLAS innovation is a low-cost and sustainably innovative solution for small-scale farmers. Mass-market support would enable the programme to improve service quality and promote SRI application through education delivery, technical labour replacement, and advisory services to farmers in agricultural extension.



ESTADO PLURINACIONAL DE BOLIVIA INNOVATIONS IN AGROECOLOGY

MODELO YAPUCHIRI

Por muchos años, el desarrollo agrícola en Bolivia se caracterizó por un modelo de transferencia tecnológico, burocrático y vertical: de los investigadores académicos, a los extensionistas y finalmente a los agricultores. Años después surgieron diferentes enfoques, pregonando una participación más activa de los agricultores en la extensión e innovación, como las escuelas de campo, los comités de investigación local, etc. En esta misma línea de trabajo, en el año 2004, PROSUCO y FUNAPA promueven una innovación social basada en el fortalecimiento y autonomía de las capacidades de “expertos agricultores locales” llamados a sí mismos yapuchiris.

DESCRIPCIÓN DE LA INNOVACIÓN

El Modelo Yapuchiri, busca el reconocimiento y la autovaloración del “agricultor” y un mecanismo que les permita desarrollar investigaciones e innovaciones basados en la complementariedad de conocimientos “ancestrales y modernos” adaptados a sus propios contextos productivos. Este proceso de construcción social, permite formar y fortalecer sus habilidades y capacidades de investigador, innovador y difusor; a través de una serie organizada de cinco pasos institucionalizados en el tiempo. Los cuales son: (1) Aprender – Yatiqawi, “intercambio de saberes y haceres”; (2) Probar o experimentar - Yant’awi; (3) Mostrar y demostrar - Uñast’awi; (4) Enseñar – Yatichawi, brindar asistencia técnica; (5) Relacionarse o articularse - Unt’awi.

DISEÑO Y DISTRIBUCIÓN DE LA INNOVACIÓN

Para el modelo Yapuchiri, los cinco pasos, se constituyen en el núcleo de la innovación, sustentado en el enfoque de desarrollo agroecológico que les permite reducir la incertidumbre de los agricultores respecto a los resultados del proceso de investigación, innovación y difusión, como las formas de llegar a ser un “mejor agricultor”. Bajo este modelo se trabaja en 5 departamentos del Estado Plurinacional de Bolivia: La Paz, Oruro, Potosí, Cochabamba y Chuquisaca.



Source: provided by authors/organization

BENEFICIOS PARA LOS AGRICULTORES, EN LA NUTRICIÓN Y SEGURIDAD ALIMENTARIA

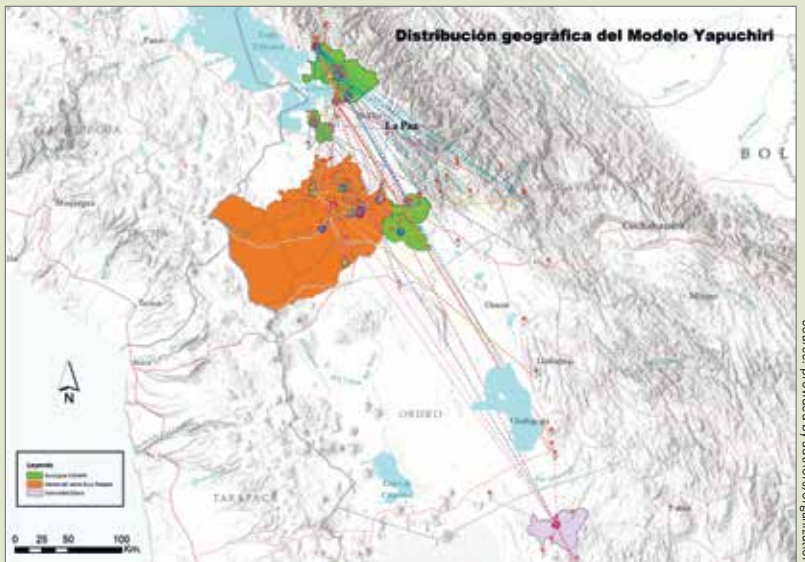
La capacidad de poder tomar decisiones informadas para la implementación de nuevos conocimientos, tecnologías y prácticas, son los beneficios más importantes. Permitiéndoles de esa forma retornar hacia una agricultura caracterizada por el cuidado de la madre tierra, basada en el enfoque agroecológico, derivando, no solo en el incremento de sus rendimientos, sino en la mejora de la calidad y sanidad de sus productos y por ende de sus alimentos de origen agrícola y ganadero.



Source: provided by authors/organization

IMPACTOS SOBRE NIVEL SOCIAL, ECONÓMICO Y AMBIENTAL

Social, el reconocimiento y valoración del modelo Yapuchiri, ha generado un incremento de la autoestima; promoviendo el dialogo e intercambio de saberes a través de la conformación de Redes de Agricultores, Investigadores, Observadores Agroclimáticos y de Asistencia Técnica. Económico, transitaron de una economía de seguridad alimentaria a una economía de mercado. Ambiental, recuperación y conservación de los recursos, suelos, agua, semillas, elaboración de insumos naturales por contexto.



Source: provided by authors/organization



Source: provided by authors/organization

LECCIONES APRENDIDAS Y RECOMENDACIONES

Sostenibilidad del modelo a través de la certificación (Ministerio de Educación) y acreditación por sus organizaciones matrices.

Los técnicos e instituciones externas, debemos trabajar en los quiebres paradigmáticos del asistencialismo y la negación del conocimiento local.



Source: provided by authors/organization



PARAGUAY INNOVATIONS IN AGROECOLOGY

SISTEMA INTEGRADO DE PRODUCCIÓN AGROECOLÓGICA PARA MUJERES RURALES

La innovación consiste en la implementación de un sistema integrado que contempla la utilización de tecnologías y técnicas agroecológicas para la producción de hortalizas por parte de mujeres campesinas. Este sistema fue implementado a través del proyecto “Producción Hortícola Sostenible PY-212”, ejecutado por Tierra Nueva y financiado por la Fundación Interamericana.

DESCRIPCIÓN DE LA INNOVACIÓN

El Sistema consiste en un conjunto de técnicas y tecnologías agroecológicas orientadas a la producción de rubros intensivos diseñados para su manejo y mantenimiento por las mujeres con apoyo de su familia. Tiene como punto central un biodigestor que se utiliza para el tratamiento de las excretas de los animales y la producción de biogás y biol. Asimismo, los rubros cuentan con captación de agua de lluvia (en casos de no haber fuentes de agua) junto a un sistema de riego por goteo,

vallado, sombreado y un pequeño invernadero para la germinación y producción hortícola fuera de temporada. Las mujeres llevan a cabo la producción con técnicas agroecológicas como la asociación de cultivos, una alta diversidad de especies, cobertura del suelo y control orgánico de plagas por medio de la incorporación de especies medicinales dentro de la huerta.



DISEÑO Y DISTRIBUCIÓN DE LA INNOVACIÓN

La innovación fue generada a partir de la implementación del sistema y un constante intercambio y ajuste a las necesidades de las mujeres mediante un acompañamiento cercano de las técnicas del proyecto. Que dichas técnicas sean también mujeres asegura una relación más cercana.

BENEFICIOS PARA LOS AGRICULTORES, EN LA NUTRICIÓN Y SEGURIDAD ALIMENTARIA

La implementación del Sistema ha permitido a las mujeres intensificar de manera sostenible sus huertos tradicionales y con esto, aumentar la cantidad de alimentos producidos, mejorando así el acceso y la disponibilidad. Esto permite que en muchos casos la mujeres prefieren no comercializar sus excedentes y conservar estos alimentos, pues anteriormente tenían dificultades para adquirir verduras frescas.



Source: provided by authors/organization

IMPACTOS SOBRE NIVEL SOCIAL, ECONÓMICO Y AMBIENTAL

El impacto social consiste en el fortalecimiento de la seguridad alimentaria y la disminución de las

desigualdades, ya que permite a las mujeres poseer sus propios ingresos. En lo económico, ha permitido la autonomía de las mujeres a través del empoderamiento por medio de la venta

de los excedentes generados. Y en lo ambiental, ha disminuido el impacto de la producción agropecuaria y ha permitido la intensificación agrícola sin poner en riesgo la sostenibilidad.



Source: provided by authors/organization

LECCIONES APRENDIDAS Y RECOMENDACIONES

La primera lección es que para trabajar con mujeres es crucial diseñar sistemas productivos que no generan una sobre carga laboral y permitan una mejor conciliación familiar. La segunda es que tener mujeres al cargo de las acciones facilita el éxito del proyecto.



Source: provided by authors/organization

INDONESIA INNOVATIONS IN AGROECOLOGY

SUSTAINABLE SMALLHOLDER COCOA FARMING THROUGH 4R NUTRIENT MANAGEMENT

Cocoa is a key crop for many Indonesian smallholder farmers, who own over 90 percent of the country's cocoa production land. However, cocoa bean yields have fallen from around 750 kg/ha in the 1980s to below 400 kg/ha over the last two decades, with ageing trees, pests, diseases, poor soil health and nutrient depletion.

Despite producing 65 percent of Indonesia's output, smallholders in Sulawesi lack access to relevant cocoa farming knowledge and farm inputs, such as fertilizers and finance. Many of these farmers are in a downward spiral of poverty, with some ready to give up growing cocoa entirely, despite increasing global demand.

DESCRIPTION OF THE INNOVATION

In 2014, the International Plant Nutrition Institute (IPNI) teamed up with the local sustainability programme Cocoa Care to raise the living standards and productivity of cocoa farmers in Sulawesi. The aim was to show how best management practices (BMPs) alongside balanced fertilization could improve cocoa bean yields and quality.

The principles of 4R Nutrient Stewardship, developed by the International Fertilizer Association (IFA), were central to the project: using the right source of fertilizer, at the right

rate, at the right time, and in the right place.

Farming families were trained in BMPs and nutrient management for cocoa, such as soil nutrition, pest management and pruning. They also received access to farm tools, fertilizer, compost, high-quality cocoa tree seedlings, and business management training.

Highly trained, lead local farmers called Cocoa Carers then worked with farmers to conduct trials on their own farms over a two-year period to measure the effects of BMPs and fertilizers.



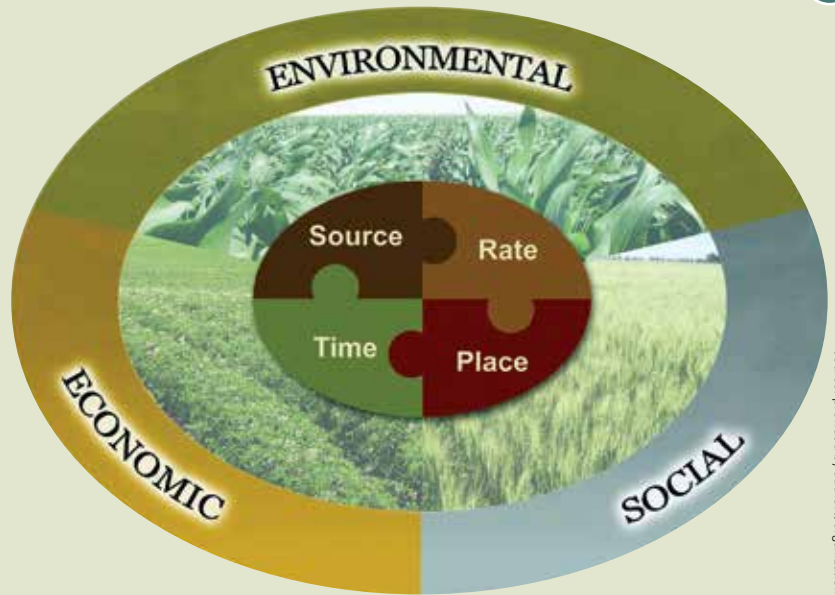
Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

The project was designed to produce rapid yield improvements so that smallholder farmers could see benefits and work with the local community to organically spread successful practices.

Farmers from 74 farms took part in trials over a two-year period, with farms split into 100 tree plots to test BMPs, and BMPs plus IPNI fertilizer treatment.

Cocoa Carers monitored and recorded the trials on portable tablets, ensuring information was rapidly available online. Alongside Cocoa Monitors (extension agents with academic backgrounds), they also regularly met with participating and neighbouring farmers to discuss progress.



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

BMPs and balanced fertilization increased both the yield and quality of cocoa, ensuring a sustainable income for smallholder families.

BMPs created improvements within three months. Adding fertilizers produced average yields of over 1 000 kg/ha, more than twice the regional average of 500 kg/ha.

With most cocoa traditionally harvested in Sulawesi between June and August,

limited income usually restricts farmers' ability to invest in inputs for the rest of the year.

Participating farmers, however, could produce crops regularly throughout the year, ensuring a continuous cash flow to reinvest or spend on food.

SOCIAL, ENVIRONMENTAL AND ECONOMIC IMPACTS

Producing high yields of quality cocoa beans has benefitted smallholder farmers, their families and the surrounding rural area economically.

There has been a snowball effect on surrounding, non-participating farmers in terms of technical knowledge and motivational support, as participating farmers share their new-found knowledge.

By teaching farmers 4R Nutrient Stewardship and soil health best practices, the project also helps protect the environment by ensuring minimal nutrient losses, improving soil health, and increasing water and carbon storage.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

Peer learning between farmers, coupled with strong markets for quality cocoa, is leading to a rapid adoption of improved, intensive management.

The project has identified the most appropriate fertilizer formulations and BMPs to increase cocoa yields in Sulawesi.

To ensure critical nutrient supply, IPNI is currently working to make new formulations commercially available, and is developing farmer-owned agri-input kiosks, alongside Cocoa Care.



Source: provided by authors/organization

BURKINA FASO INNOVATIONS IN AGROECOLOGY

AGROECOLOGICAL SYSTEMS OF MANURE PRODUCTION

In western Burkina Faso, on-farm manure production has long been confined to the edges of houses and cattle pens. With increasing land pressure and the remoteness of fields, manure production was hampered by transport constraints, and a large proportion of raw material needed in manure production, such as crop residues and faeces, were lost. On-farm manure production remained insufficient for soil fertility renewal.

DESCRIPTION OF THE INNOVATION

In order to increase farm manure production in quantity and quality, and to renew soil fertility in an agroecological way, researchers from dP Asap (Cirad, Cirdes), stakeholders and producers (UPPC-Tuy, INADES) worked together, from 2008 to 2012 on the Fertipartenaires project to design and support the production of manure directly in the field, with low inputs.

In 2015, an impact assessment was carried out with the Impress method.

The innovation in manure production is based on:

- » Establishing pits in the fields to limit the transport of crop residues;
- » Composting cotton stems, usually burnt, with animal faeces, in a mix of 80 percent stems to 20 percent faeces;
- » Starting production at the beginning of the rainy season, and harvesting the manure one year later;
- » Limiting human intervention during the process (no hashing, no watering, no turning).

DESIGN AND SHARING OF THE INNOVATION

Co-design “step by step” is based on a formalized partnership between producers, stakeholders and researchers.

The co-design process starts with an analysis of the initial situation (baseline study), followed by the exploration of possible solutions (training, inter-farmer visits), then on-farm experiments and adaptations of innovative techniques, and ends with a participative impact assessment.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

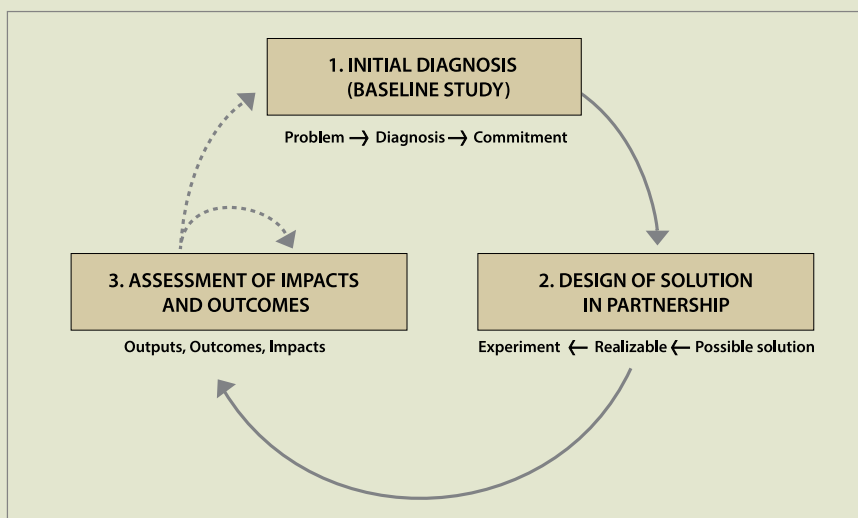
The co-design of innovation has led to the acquisition of knowledge in manure production and changes in manure production and management practices, with visible impacts continuing after the cessation of research. Among farmers who participated in the co-design process, manure production has increased by 7 tonnes per farm; and food security at farm level has been reinforced by a 786 kg/ha increase in maize yields.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

Soil fertility was enhanced with 677 kg/ha manure dose increases applied on fields; and farm income benefits from the best yields and inputs saved, were XOF 40 (approximately USD 0.076) per hectare for cotton. Thanks to the networks established during the co-design phase, impacts increased among farmers who did not directly participate in the co-design process.



Photos: Manior manure pit at home and in the field | © Blanchard/CIRAD



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

Partnership formalization among farmers, stakeholders, and researchers, and the pursuit of research in the long term, enables the co-design of innovation, and accompanies the agroecological transition by changing farmers’ practices and producing lasting impacts for the experimenters and beyond, via the networks created.



Source: provided by authors/organization

BENIN INNOVATIONS IN AGROECOLOGY

PREMIUM HORTUS

Like many African countries, Benin has had a rapid increase in its urban population, with high demand for garden produce, such as fruits and vegetables. Large quantities of fertilizer and chemical inputs are used, and the distribution system remains very traditional, and lacking in modern agricultural technology. This causes significant water and soil pollution, biodiversity loss, and low productivity, while increasing population vulnerability to climate change, and price spikes.

Food insecurity affects 33.6 percent of households, while acute malnutrition affects 16 percent of children under 5, and chronic malnutrition affects 44.6 percent of children in the same age group.

DESCRIPTION OF THE INNOVATION

PREMIUM HORTUS is an agroecology technology platform in Africa, specializing in the e-commerce of agroecological products, organic production and producer support.

Available as a web, mobile platform and payment card, "Premium Hortus" allows you to subscribe, choose, order, and pay online, so as to get home-delivered fruits, vegetables, and

organic products safely. In this way, users can control their consumption, reduce waste, donate or transfer food, and receive a food insurance credit.

With its organic horticulture, PREMIUM HORTUS allows producers to access specific biofertilizers, natural seeds, technical frameworks, and green business training, using agricultural technologies and communications.



Source: provided by authors/organization



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

PREMIUM HORTUS is an open and collaborative innovation model for strong sustainable impacts, which conforms with the Sustainable Development Goals (SDGs), agroecology principles, and intellectual property standards. Since 2016, PREMIUM HORTUS and its partners have been operational in Benin: an experimentation and organic horticulture site; prototypes of web platforms; and mobile, credit card and crypto-currencies dedicated to agroecology. Considering its experience, PREMIUM HORTUS has good implementation prospects in Africa and UN Countries.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

PREMIUM HORTUS is an agroecological innovation that strengthens the resilience of family farmers, increasing access for all to healthy foods, in a healthy environment.

Many young and women family farmers can access technical support, optimize their agricultural productivity and reduce post-harvest losses of up to 50 percent. They benefit from a short circuit, and market their small quantities of products more easily. Thus, the population can enjoy low-cost organic food, at steady prices, and improve their nutritional security.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

In line with SDGs (1, 2, 6, 11, 12, 13 and 15), PREMIUM HORTUS enhances professionalization, facilitates climate change adaptation, and empowers farmers from all backgrounds.

Through responsible production and consumption, PREMIUM HORTUS reduces greenhouse gas emissions, and preserves the soil, water, biodiversity and health of more than 400 000 African households.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

Local agroecological practices and innovations can be scaled up to achieve the SDGs. PREMIUM HORTUS is a profitable, replicable Green Technology based on the principles of agroecology, which can be supported by organizations, state and non-state actors, and investors.



Source: provided by au. info@organization

KENYA INNOVATIONS IN AGROECOLOGY

ENHANCING FOOD SECURITY AND MARKET ACCESS FOR LAND CONSTRAINED WOMEN FARMERS

Agriculture is the mainstay of the Kenyan economy and contributes over 45 percent of government revenue. The agricultural sector is the largest employer, representing 60 percent of total employment. Overall, approximately 80 percent of rural women are employed in agriculture. However, the percentage of agricultural land held by women remains unclear. Diminishing land size, as a result of land subdivisions and a growing population, poses an additional challenge for women farmers and their families, especially in rural areas like Khwisero District in Kakamega County. This is contributing to food insecurity, as production of sufficient food on small pieces of land becomes untenable. Innovative measures to sustain food production to meet the needs of the community are therefore urgently required.

DESCRIPTION OF THE INNOVATION

ActionAid applied the Human Rights Based Approach and Climate Resilient Sustainable Agriculture (CRSA) Framework to this programme. Women smallholder farmers who led in the design and actions of the project were provided training on their rights and leadership skills. Out of this training, the Khwisero District Farmers Network was formed, with the aim of resolving issues faced by farmers. ActionAid

trained the group on tissue culture banana and other agroecological practices related to soil fertility, production systems management and the development of select value chains to enhance food security. This led to a complex production system encompassing cereal, legumes, fruits, vegetables, tubers, poultry, dairy and cropping systems, which served as biological control of diseases,

enhancing resilience and sustainable food systems. Farms were planned to incorporate forests, grazing lands and artificial swamps in their dryland farms. Raw materials from one system became an input in the other production system. The group opened its factory to add value to three commodities to enhance returns to farmers.



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

The design of the innovation had three strategic thrusts: (1) on farm modelling, technology application and upscaling with the support of farmer-to-farmer extension services; (2) pro-women, pro-poor budget and policy advocacy to ensure government funding and priority investments favour women (women-controlled value chains and agro-processing); and (3) farmer movement building in favour of CRSA practice. Through these actions, women developed faith in the practice of CRSA, and the confidence to engage governments through collective actions in pursuit of their entitlement, with the numbers in the farmer movement providing the political clout for influence.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

The system enabled women to use small plots of land to diversify their food production (beans, maize, banana, arrowroot, sweet potatoes, poultry and dairy cattle), thereby enhancing family access to nutritious foods. The introduction and promotion of Napier grass as an effective biological control of Striga reduced maize crop losses. The Napier also served to improve milk production. The initiative supported the farmers to set up their own factory (KEBUK) to add value to bananas and arrowroots, reducing post-harvest losses. Extra income helped reduce the sale of food commodities; incomes from banana bunches tripled from USD 2.5 to USD 7.5. Further advocacy efforts of the group ensured that issues of food security were prioritized by county government.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

The project has made numerous contributions: (1) increased food production; (2) better land-use planning and reduced land degradation; (3) increased soil fertility; (4) better organizing of women farmers; and (5) secured access to markets and better incomes for women. More women are participating in other spaces convened by development stakeholders in the county, and women farmers are part of the raw material supply chain of the county government.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

The collectivization of women farmers through training empowers them to effectively engage governments to deliver on their priorities. Local-level modelling, which blends modern techniques with locally adaptable agriculture, enables governments to effectively respond to farmers' priorities, and improves the prospects of realizing food security in an area.



Source: provided by authors/organization

INDIA INNOVATIONS IN AGROECOLOGY

LAND TO LAB APPROACH FOR DEVELOPING AND DISSEMINATING LOCATION SPECIFIC INNOVATIONS

The needs of rural and high-risk areas are diverse and location specific. As the market is limited, the private sector is not interested in developing technologies for high-risk areas, and the government sector often bypasses or ignores their needs. Identifying area-specific needs and developing specific solutions are key for sustainability. Farmers' innovations are based on specific local needs, local resources, local knowledge and technology. However, farmers' abilities to develop location-specific innovations and adaptations to maximize their local resources have been largely unrecognized, underestimated and underutilized.

DESCRIPTION OF THE INNOVATION

The Land to Lab programme is a novel approach, initiated by the core scientists of Peermade Development Society, for the documentation, development and dissemination of farmer innovations and indigenous knowledge, with the partnership of various stakeholders.

Farmers' innovations from different parts of Kerala have been documented, and have provided support to farmer innovators to develop their innovations, and have also facilitated the dissemination of these innovations

by establishing local enterprises. The disseminated farmer innovations include plant varieties, farm implements, farm machineries, cultivation practices, and pest and disease management practices.

DESIGN AND SHARING OF THE INNOVATION

Land to Lab approach for developing and disseminating location-specific innovations:

Documentation

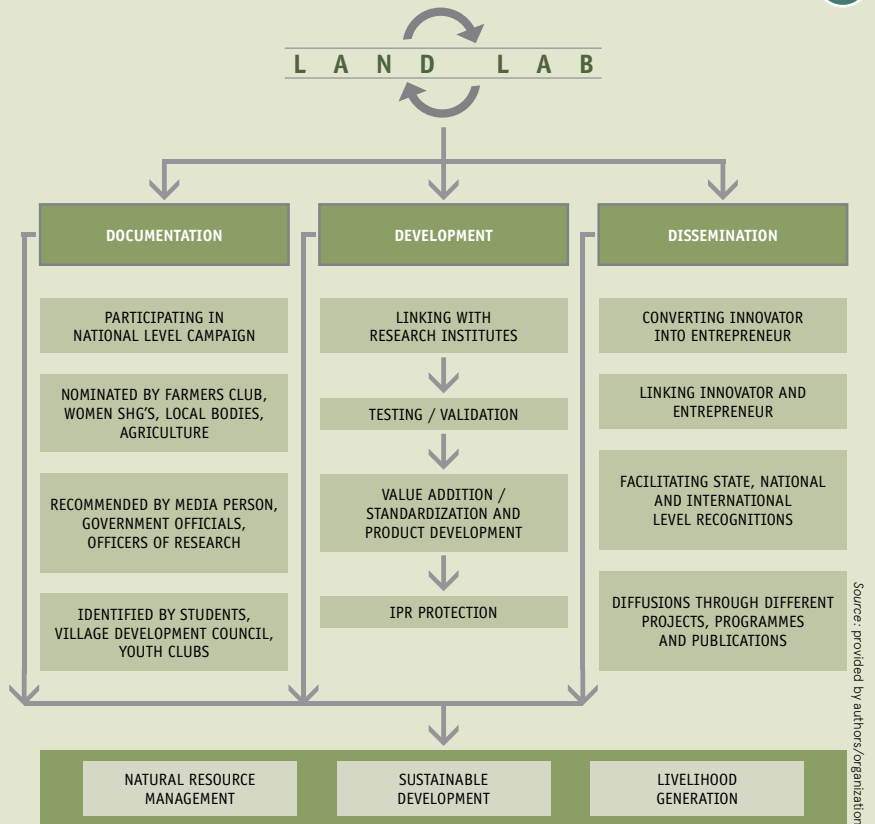
- » Strategies for scouting innovations include organizing campaigns, competitions and melas; and identifying innovative farmers by nomination or recommendation by farmers' clubs, women's self-help groups, media personnel, government officials, innovators, and so on.
- » The documentation process involves collecting technical details, specialties of farmer innovations and scientific comments.

Development

- » We partnered with various R&D institutes and other stakeholders to test, refine, improve and develop innovations.

Dissemination

- » Facilitating the dissemination of innovations through various strategies;
- » Helping rural innovators to convert their innovations into enterprises;
- » Linking rural entrepreneurs and rural innovators to start village-level enterprises;
- » Diffusing and disseminating farmer innovations through various projects, programmes and local publications.



OUR PARTNERS

National Innovation Foundation, Government of India, Science & Society Division
Department of Science & Technology, Honey Bee Network, ITPGRFA –FAO,
CEE-UNDP, NABARD

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Farmer innovations have been revived and propagated through women's self-help groups to ensure food, nutritional and livelihood security. Farmers have also identified and propagated drought resistant cassava, yam, vegetables, cowpea, pepper, cardamom and nutmeg varieties. Moreover, the capacity building of women's groups helps make value added products and recipes from local and farmer developed varieties.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

Many farmer innovators and their innovations have been recognized and supported, with fifty-four farmer innovators receiving national awards.

Rural enterprises based on farmer innovation have been established, contributing to sustainable conservation, livelihood promotion, employment generation, and food security – 11 innovators converted their innovations into enterprises.

Rural enterprises by rural entrepreneurs have been established based on farmer-developed varieties: nine rural entrepreneurs started enterprises based on farmer innovations and benefit mechanisms between innovative farmers and entrepreneurs. Materials and seeds for farmer-developed varieties have been made available. All of the above have served to inculcate entrepreneurial culture and spirit in farmers.

LESSONS LEARNED AND RECOMMENDATIONS

Multi-stakeholder involvement and participation play a key role in the various processes of the Land to lab approach.





Source: provided by authors/organization

GHANA INNOVATIONS IN AGROECOLOGY

FARMER-LED AGROECOLOGY EXTENSION SERVICES: THE FEMALE EXTENSION VOLUNTEER PROGRAMME

The government agriculture extension system in Ghana is in crisis, with the ratio of one agriculture extension agent to over six thousand farmers in some parts of the country. The situation is worse for women farmers, as socio-cultural factors further limit their ability to access extension services. Private sector extension providers take advantage of this crisis by promoting the use of agrochemicals and hybrids among climate vulnerable communities. ActionAid piloted this farmer-led, community-based extension service programme to ensure women farmers' access to extension services, and to promote agroecology among smallholder farmers and their transition to Climate Resilient Sustainable Agriculture (CRSA).

DESCRIPTION OF THE INNOVATION

The Female Extension Volunteer (FEVs) programme resulted from ActionAid's support for communities through participatory reflection processes. In these processes, a farmer-led extension support programme was

identified as a way of bridging the extension gap. Selected female farmers identified as natural leaders in their communities were trained in agroecology practices and basic extension delivery methods. The FEVs

were also supported with simple tools and logistics to enhance their work. The main focus of the FEVs is to promote agroecology and support smallholder farmers' transition to CRSA.

DESIGN AND SHARING OF THE INNOVATION

The design is to bridge the extension gap for women farmers. It ensures the involvement of government agriculture extension agents (AEAs) in the training organized by ActionAid. This enables the FEVs to network with the AEAs. The FEVs then link up with the AEAs to provide extension services to women farmers in their communities. They also use field demonstrations, farmer field schools and half-yearly review meetings supported by ActionAid to share the innovations. An advocacy component ensures the mobilization of women farmers to gain government support for agroecology.



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Local smallholder farmers are gaining back control over their agricultural production and food sovereignty. Smallholder women farmers are experiencing increased agricultural production through agroecology practices with less dependence on external inputs; they are also more connected to government agriculture extension services and other support programmes.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

Through the programme, women farmers are preserving and multiplying local seeds, which are adapted to local conditions, making them readily available for production with reduced dependence on expensive hybrid seeds. Smallholder farmers are increasingly using crop residues to prepare compost, which improves soil fertility, reduces burning and prevents environmental degradation.



Source: provided by authors/organization



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

This simple innovation has contributed to increased access to agroecology extension services and other government support programmes by women farmers in Ghana. Government policy on agriculture extension services which promote and support farmer-led agroecology extension is recommended.



Source: provided by authors/organization

CHINA INNOVATIONS IN AGROECOLOGY

RICE-FISH CO-CULTURE SYSTEM

Rice-fish co-culture in southern China dates back more than 1000 years. The rice-fish co-culture system in Qingtian, Zhejiang Province is one of FAO's Globally Important Agricultural Heritage Systems (GIAHS). Co-culture rice with fish provides both rice grain and aquatic protein. Rice-fish farming systems have tremendous potential for increasing food security and alleviating poverty in rural areas; they also use the same land resource efficiently to produce both carbohydrates and animal protein. In rice-fish farming systems, water can be used to simultaneously produce the two basic foods.

DESCRIPTION OF THE INNOVATION

The technical package includes the following components: (1) installation of temporary physical structures, such as trenches and pits to protect the fish during field operations, and to prevent

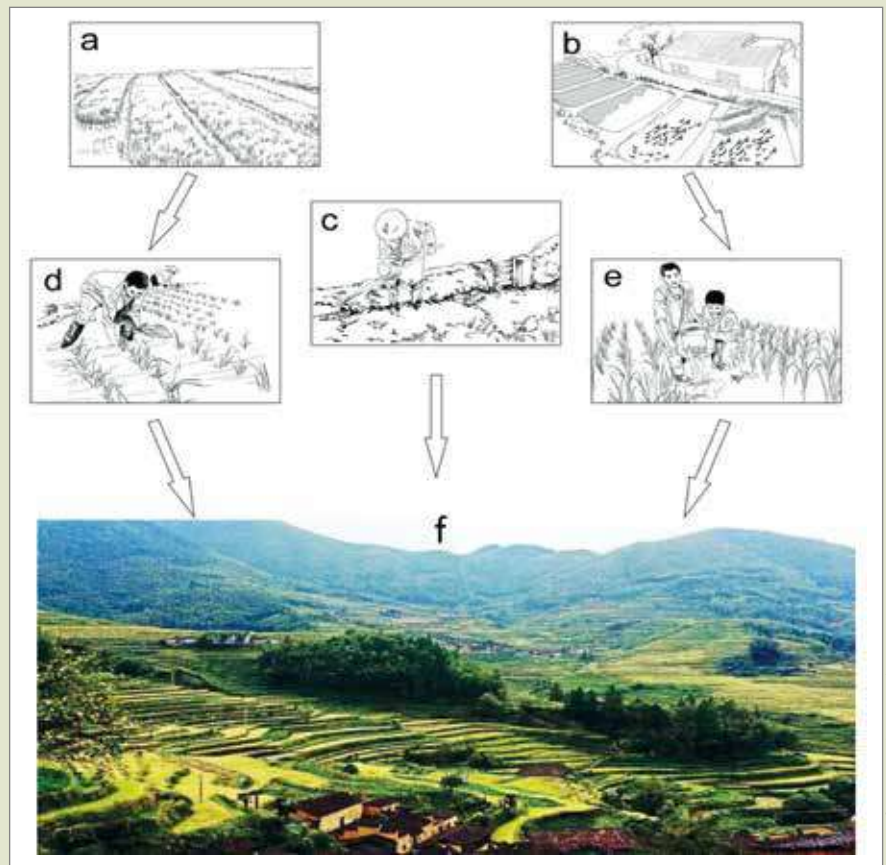
them from escaping; (2) rice and fish varieties which are more adapted to rice-fish co-culture systems, including rice varieties adapted to deeper water than in rice monoculture, and fish

varieties adapted to shallower water than in fish monoculture; and (3) daily field management procedures, including the coordination of irrigation, fertilization, pest control, and fish feeding.

DESIGN AND SHARING OF THE INNOVATION

Rice-fish system processes in a hilly area:

- a. rice seedling breeding;
- b. carp fry breeding;
- c. field preparation that includes field configuration for rice culture and fish, and water outlet and inlet;
- d. rice transplanting;
- e. fry releasing into rice field;
- f. a setup rice-fish co-culture system



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Raising fish in rice fields can improve the stability of rice yields, and increase rice yields up to 5 percent in most cases. Rice-fish co-culture usually reduces or eliminates chemical inputs; thus, the rice products can be

certified as organic food or green food, and can be sold at a higher price in the market. Fish produced in the system can reach an average level of 970 kg/ha, at which the gross income of fish is much more than that of rice in monoculture. Moreover, fish production can effectively increase family farmers' protein supply, thereby improving their nutrition.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

- » High economic returns can help to recover abandoned rice fields in the region.
- » Non-point source pollution is reduced compared with rice monoculture.
- » Water consumption is decreased compared with fish monoculture.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

Rice-fish co-culture systems can also be used in plain areas, such as the picture showed below, in Deqing County, Zhejiang Province. A well-designed refuge, with a trench and pit, is important. Machines, such as those used for transplanting and harvesting, can be used in rice-fish co-culture systems in plain areas.



Source: provided by authors/organization

INDIA INNOVATIONS IN AGROECOLOGY

ENGINEERING TRANSFORMATION THROUGH ZERO BUDGET NATURAL FARMING (ZBNF)

The Government of Andhra Pradesh (AP) adopted an innovative, climate change resilient, zero budget natural farming (ZBNF) intervention in 2015. The purpose was to cover 500 000 farmers by 2020, ensuring farmer welfare, consumer welfare, and most importantly, food security for present and future generations.

Currently, farmers are in deep distress on account of poor soils, ever increasing cultivation costs, and increasing risks. Climate change is further exacerbating risks.

Zero budget natural farming, pioneered by Subhash Palekar, enables farmers to improve soil fertility, drastically reduce costs and risks, reduce irrigation requirements, and increase yields. ZBNF farmers also provide consumers with chemical-free, nutritious foods. Food security is ensured through continuously increasing soil organic matter, water-holding capacity, and biodiversity. At present, 160 000 ZBNF farmers are on board in Andhra Pradesh.

ZBNF best-practitioner farmers are playing a central role in taking the programme to other farmers, thus propelling the ZBNF to scale up exponentially. Their success in knowledge dissemination is phenomenal. With their leadership, the vision is to convert all 6 million farmers in Andhra Pradesh into ZBNF farmers by 2024; it is the future of farming, rooted in Indian tradition.

DESCRIPTION OF THE INNOVATION

ZBNF leverages the power of photosynthesis to close the carbon cycle, and build soil health, crop resilience and nutrient density. It is a radical paradigm shift from mainstream, chemical input based

agriculture. ZBNF promotes poly cultures to keep the ground covered with biomass at all times. It also improves soil microbiome, through indigenous cow urine and dung-based bio-inoculants. Soil microbiome

convert nutrients in the soil from 'locked' to 'bio-available' forms, and thus create a sustainable nutrient exchange system between plants, microbes and soil.



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

Scaling-up ZBNF is founded on farmer-to-farmer extension. Our model is built around farmer-to-farmer knowledge dissemination by best-practitioner ZBNF farmers, through customized models, farmers' collectives, Farmer Field Schools

and human-mediated videos. The number of these champion farmers has now reached 1 000, and will go up to 30 000 to facilitate reaching out to 6 million farmers. The State Department of Agriculture has internalized ZBNF, thus ensuring the long-term sustainability of the innovation.

Critical partnerships have been forged with the Government of India, Azim Premji Philanthropic Initiatives, UNEP, FAO and CGIAR institutions, for financial resources, scientific validation, and technical support in scale-up.



Source: provided by authors/organization

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

ZBNF enhances social equity, as the smallest and poorest farmers benefit immensely from it.

Farmers benefit economically from the very first season. Crop Cutting Experiments (1 614) conducted in 2017 indicated that 100 percent of the farmers reduced their cultivation costs, and 88 percent had higher yields in the first season itself.

There are also immense ecosystem benefits through increased soil organic matter, water retention, and biodiversity; air and water pollution, as well as greenhouse gas emissions are reduced.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Farmers gain a profitable livelihood through agriculture. Crop Cutting Experiments at this stage offer additional benefits of USD 340/ha per season for farmers. Yields are increasing across crops, and food grown is chemical-free, nutritious, and tasty, all of which ensure food and nutrition security.

LESSONS LEARNED AND RECOMMENDATIONS

ZBNF works on a large scale in multiple agro-climatic zones. Farmers benefit with each season and it ensures food security for present and future generations. Based on universal principles, ZBNF helps reclaim planetary boundaries, making the farmer-led ZBNF approach eminently scalable.

Zero Budget Natural Farming is a highly cost-effective intervention. A farmer accrues an additional USD 13 for every dollar spent on the transformation process. All in all, ZBNF makes a vital contribution to society.



BURKINA FASO | MALI | SENEGAL INNOVATIONS IN AGROECOLOGY

AGROECOLOGY PLUS SIX (AE+6)

More than 12 million small-scale farmers and their families in the risk-prone, dryland areas of the Western Sahel have become chronically vulnerable to food and nutrition insecurity. This growing crisis is due to a constellation of factors, including the collapse of soil fertility and climate change. Agroecology Plus Six (AE+6) is a low cost, systems-approach of agroecology and resilience strategies, which can spread and be adapted to meet the needs of millions of smallholder farming families.

DESCRIPTION OF THE INNOVATION

Most current agroecological practices in the Sahel have significant weaknesses. The AE+6 is an innovative approach which can strengthen agroecology: (1) increasing the innovation and expansion of agroecological practices, such as agroforestry, soil and water conservation, through mass farmer-to-farmer learning and community organizations; (2) integrating women's empowerment, equity and nutrition; (3) increasing resilience, both as an improved "process" by which actors better coordinate for synergy across sectors, and as strengthened capacities for the absorption of

shocks, adaptation to stresses, and transformation of farming and socio-ecological systems; (4) advancing action-research to adapt foundational principles and practices to specific agroecological and institutional contexts; (5) linking practice to "tailored" policy advocacy at local and national levels through existing networks; and (6) scaling out a process to progressively transform the dryland farming system, as a radical alternative to the conventional top-down, transfer of technology, which is often focused on maximizing the yields of one crop.



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

In 2015, our Collaborative won a USD 1 million grant from the Global Resilience Program to pilot AE+6. Over the past two years, we have developed a “proof of concept” that AE+6 supports the transformation of social, agro-ecosystems, as it builds resilience to climate change and other shocks, regenerates natural resources and improves food security, nutrition, and well-being.



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Agroecological “foundational” innovations have been adopted by 2 308 farm families in six communes in three countries. In particular, Farmer Managed Natural Regeneration (FMNR) of trees and soil, and water conservation, have made farming systems more productive, diversified, and resilient. In addition,

women’s savings and credit groups, rotating animal loans, ‘warrantage’ (grain storage system) and dry season gardening, have improved dietary diversity and nutrition, and reduced debt for the poorest households. By cultivating moringa and baobab as shrubs in home gardens, families ensure year-round harvesting and consume nutritious leaves.



Source: provided by authors/organization

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

Over 94 women’s savings and credit groups were established in 45 villages. These households recovered their soils and natural resources, adapted to climate change, and diversified their farming systems. Municipal governments are increasingly integrating agroecology and resilience strategies into their plans and budgets.



Source: provided by authors/organization



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

With its cascading approach, farmer-to-farmer training efficiently allows for a transition to agroecological intensification. Convening local stakeholders at municipal levels improves local governance for resilience. Women’s savings and credit groups enable women from more vulnerable households to generate income and assets.



Source: provided by authors/organization

SÉNÉGAL INNOVATIONS IN AGROECOLOGY

FERME ÉCOLE AGROÉCOLOGIQUE DE KAYDARA

Érosion, désertification, salinisation, à Fimela, delta du Saloum, 30 % seulement des terres agricoles restent cultivables. C'est la cause du bradage des terres et de l'exode rural vers les villes ou vers l'étranger. Pour y remédier, l'ambition de Jardins d'Afrique est de former des jeunes à la pratique d'une autre agriculture, économe, maîtrisable, respectueuse de l'environnement, qui permette d'accéder à une vie décente et de créer des emplois.

DESCRIPTION DE L'INNOVATION

Dans la Ferme École agroécologique de Kaydara, des jeunes sont formés à toutes les étapes des techniques agroécologiques végétales et animales. C'est un engagement conjoint avec les municipalités. Le Maire et ses conseillers

municipaux engagent les Comités de Développement Villageois à choisir un jeune parmi les candidats. Au cours de la formation les éléments de capital nécessaires à leur installation leur sont fournis: capital foncier, capital végétal (arbres

fruitiers, arbres de forêt, fourrage), capital animal (volaille, lapins ou ânes), capital semencier, savoir agroécologique et technologique et un capital financier alimenté par la vente de la production du stagiaire durant l'année.



Source: provided by authors/organization

PARTAGE DE L'INNOVATION

La devise est former et transmettre. Les jeunes sont appelés à devenir leader de développement de leur village et apprennent pour transmettre. Le fonctionnement de la Ferme est un modèle d'inclusion sociale. Il repose sur l'essaimage de pratiques qui respectent des valeurs ancestrales présentes dans la symbolique du conte « Kaydara », où le Savoir prévaut sur l'Avoir et le Pouvoir. Les visites de la Ferme école permettent la diffusion.

AVANTAGES POUR L'AGRICULTURE FAMILIALE ET LA SÉCURITÉ ALIMENTAIRE

La municipalité a doté d'1 ha de terre chaque jeune fermier formé. Cet engagement conjoint avec les municipalités permet de former les jeunes du territoire et de les accompagner dans le développement de fermes productives: 12 fermettes sont en cours d'installation dans les villages de la commune visant ainsi à réaliser une ceinture nourricière autour de Fimela.

L'accès facilité aux produits frais locaux favorise une meilleure alimentation pour la population. Les coûts de

l'alimentation sont réduits grâce à la vente locale à la ferme ou en kiosque.

IMPACTS SOCIAL, ÉCONOMIQUE ET ENVIRONNEMENTAL

Réduction du flux migratoire, créations d'emplois et retour de jeunes migrants de la ville.

Créations de boutiques de villages et relocalisation de l'économie du terroir.

Agroécologie dans les fermettes et reboisement intensif des fonciers communaux autour de celles-ci ce qui contribue à la restauration de la biodiversité et à la régénération des sols.



Source: provided by authors/organization

LEÇONS RETENUES ET RECOMMANDATIONS

L'engagement des élus locaux et des agents techniques est primordial pour la réussite d'un projet, et pour l'effet d'entraînement des communes voisines, voire des régions éloignées (visites des élus territoriaux de la Région Nord du Sénégal).

Le développement économique, social et la régénération de l'environnement naturel doivent être associés pour garantir un système de gestion durable qui valorise les agrosystèmes et optimise la production.



Source: provided by authors/organization

TANZANIA INNOVATIONS IN AGROECOLOGY

PRODUCING MACHINES FOR ORGANIC AND SMALL-SCALE FARMING SYSTEMS

UNACMA is the only association, at a national level, representing traders and repairers of agricultural machinery, and of machinery for the maintenance of green areas. It is associated with CONFCOMMERCIO MOBILITA and carries forward its objectives mainly in institutions at regional, national and European level. It carries out training and information activities about regulations and technical aspects. It collaborates, within the chain of national agricultural mechanization, with builders and users, for the development and dissemination of innovation in agriculture.

DESCRIPTION OF THE INNOVATION

The aim of UNACMA is to create and manage two mechanical workshops for the repair of agricultural machinery. This will allow the repair of non-functioning machines, and teach the mechanical profession to the highest

possible number of young local people. Thanks to our experience, we are sure that this is the first step to be taken and supported to encourage and spread agricultural mechanization, starting from medium

and medium-small mechanization, suitable for family-level agriculture. The new mechanics can guarantee repair and maintenance services directly in their villages.

DESIGN AND SHARING OF THE INNOVATION

UNACMA, thanks to the certainty that its members, and the whole category, have the best skills, abilities and experience, in the field of technical services for agricultural mechanization, has decided to use these qualities by making them available for the realization of a project supporting the development of sustainable agriculture in developing countries. The current destination of this first experience is Tanzania, in collaboration with the Dioceses of Dodoma and Same.



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

We all know that food security in developing countries can only be achieved by increasing agricultural production. This increase is mainly achieved through the increase in cultivated areas, which requires agricultural machinery, especially for farm families or small businesses.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

An increase in family agricultural production and family income allows better schooling for children, and the reduction of the heaviest jobs for women. The marketing of part of the production exceeding family needs contributes to the development of trade, and a greater food availability for the entire population.



Source: provided by authors/organization



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

One of the many shortcomings that international cooperation has been reporting for some time, is the excessive dependence of rural populations on the use of hoe or animal traction tools, for the cultivation of land. We ourselves have been able to see directly how in sub-Saharan Africa, the already existing few machines are in fact almost totally unusable, due to the lack of mechanics and spare parts that would allow them to work for a long time.



Source: provided by authors/organization

INDIA INNOVATIONS IN AGROECOLOGY

GRAPE MUNDO: AN ECOSYSTEM FOR GRAPEFARMING

“Grape Mundo” is a technology ecosystem that guides grape farmers to do precision and sustainable grape farming to produce high-quality grapes using minimum chemicals, thus lowering the cost. This ecosystem also helps grape farmers sell export quality and residue-free grapes across a huge PAN India market, without any involvement of intermediaries, via India’s first unique selling platform called BestGrapes™. Our innovation is developed to guide and empower marginal farmers with low-cost grape farming techniques, and create a market to sell their produce.

DESCRIPTION OF THE INNOVATION

Our innovation is an ecosystem for grape farmers to adopt precision and sustainable farming practices, along with a channel for them to sell their quality and residue-free grapes directly to end consumers without using traditional selling chains and intermediaries. It has been developed to help farmers identify problems, such as crop residue precaution, prevent pre-harvest and post-harvest losses, estimate yields, and calculate and enhance grape farm productivity. It illustrates the basic and main key points in the local language (Marathi), and is easy to understand for grape

farmers (scientific language is only used when necessary). It covers the many aspects of grape farming to achieve the individual farmer’s desired target of high-quality, residue-free grapes.

DESIGN AND SHARING OF THE INNOVATION

“Together” is the key to our innovation. We adopt the “Identify, Develop, Test and Train” approach. We have travelled more than 40 000 km across various regions in India to identify farmer’s challenges. During our journey, we visited and observed family farmers, and attended weekly meetings and seminars. This groundwork resulted in gathering valuable and important information for us, while developing the application. Our innovation is used by grape farmers through a mobile application for precision farming, and an e-commerce platform for selling grapes.

IT FOR FARMERS

A mobile app that ensures grapes are neither sour nor unsafe

How this has made it easier for growers in India's Grape Capital to produce export-quality fruit

PARTHA SARATHI BISWAS
NASHIK (MAHARASHTRA), APRIL 12

2016-17 TURNED out exceptionally good for Dinkar Kamble. During the financial year just gone by, this grape farmer from Kone village in Nashik district's Tithobak taluka sent out 180 tonnes out of the 300 odd tonnes produce from his 26-acre vineyard to European markets, mainly the United Kingdom. In the past, the maximum he could clock in any year was 80 tonnes.

While favourable weather helped – there were no untimely pre- or post-harvest sales/hail during February-March both this time and in 2016, unlike the previous two years – Kamble credits his good run to Grape Mundi, an Android mobile application developed by Rta Technologies Pvt Ltd, a Nashik-based software consultancy firm. “It enabled me to maintain the right schedule for applying pesticides, fertilisers and micronutrients. The precise timing and quantum of input application ensure that the chemical residues in my produce were well within the prescribed maximum limits to

quality for exports,” says Kamble.

Farmers realise an average Rs 150 per kg on export consignments to Europe, as against Rs 70 for local domestic sales. “Our first preference is obviously for export. An acre of grapes shaped to Europe fetches Rs 8 lakh, more than twice what we get by selling in the domestic market”, Kamble points out. However, the strict rules governing agricultural product exports – especially meeting the maximum residual limits (MRL) for pesticides – often result in failed consignments. Before the start of the harvesting season from early-February, Kamble, like many other growers in this ‘Grape Capital of India’, sends samples of his produce to one of the three plant quarantine facilities at Nashik for testing of MRL levels. Failure to meet European country limits forces diversion to either non-European or domestic markets, both comparatively less remunerative.

Grape Mundi, an open source app freely downloadable on Google Play Store, helps farmers chalk out a schedule for application of inputs, based on best practices followed by progressive growers in the Nashik belt. The schedule prescribes the quantum and



Grape grower Dinkar Kamble (centre) with Rta Technologies Director Samir Pandit (right).

application date of each input, specified in terms of ‘pre-harvest interval or PHI days’. “Every chemical or pesticide has a PHI, which is the period after an application when the residues still remain on the crop or fruit. The app tracks these intervals so that each

spray is done at the right time, after the PHI for the previous chemical has lapsed,” explains Samir Pandit, director of Rta Technologies. Grape Mundi is an interactive app, which also ensures that farmers adhere to the prescribed schedule. “Alerts have been

set up at the start date of each application and an instant alarm keeps on ringing until the farmer attends to it. The only way to silence the alarm is to tick one of the three options: ‘Completed’, ‘Cancelled’ or ‘Postponed,’” he adds.

“My experience with the app confirms that if the prescribed schedule is followed, the final produce will actually be residue-free,” claims Kamble. In the pre-app days, he would have to jot down the application schedules on a physical diary and carry it to the field. There would invariably be misses, more so in large vineyard holdings such as his. Even a day’s wrong timing increased the probability of export samples falling the MRL test by 25 per cent. The usual practice, therefore, was to divide the vineyard into smaller plots and select just a few of them to produce exportable grapes. “In 2016-17, thanks to the app and the regular application alerts on my mobile phone, I could grow export-quality fruits on almost 50 per cent of my vineyard. This year, I plan to reserve more than 70 per cent of my holding for exports,” notes Kamble.

The grape cycle in the Nashik region begins with the pruning of trees in April, after harvest of the fruit from the previous crop. In this first pruning, everything is awed, leaving the main stems and roots. Farmers, then, apply fertilisers, micronutrients and fungicides on the roots to allow the trees to regenerate and produce fresh foliage by shoots and

foliage with the monsoon rains. This is followed by a second round of pruning in September-October, to prevent excessive growth that leads to poor air circulation and promotes fungal diseases. Flowering starts just after the second pruning, which sets the stage for subsequent fruit development and harvesting from end-January to mid-April. All through, the vines have to be administered insecticides (imidacloprid, thiamethoxam, monocrotophos, etc.) based on a rigorous application schedule that ensures both crop protection as well as acceptable MRLs.

Last year, the Grape Mundi app was used by around 40 grape growers in and around Nashik for tracking and managing input applications in their vineyards. The app has already recorded more than 4,000 downloads. “Our next aim is to use data analysis to help growers similarly plan their harvesting cycle better. Right now, they mostly harvest their grapes in March, resulting in market glut and price collapse. The app could have a feature allowing the farmer to log in his individual grape plots and estimate the tentative yields and dates of harvest. Our users can refer to these data points to schedule their pruning and harvesting cycles, with a view to escape gluts,” observes Pandit.

Source: provided by authors/organization

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

- » Increased income and decreased farming expenses.
- » Easier market access resulting in better rates for yields.
- » Minimized pre-post harvest losses.
- » Efficient and controlled use of natural resources.
- » Reduced agrochemical pollution.
- » Improved farming practices through co-learning.



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Grape family farmers have been using traditional methods for farming. Our innovation has connected them to efficient, low-cost techniques, resulting in high-quality produce which get

better rates. This quality product is directly sold to end consumers so that farmers get full value for their efforts. Family farmers are the people who hold the tools to practice agroecology. They are the real keepers of knowledge and wisdom.



Source: provided by authors/organization



Communication with Farmers training, weekly seminars, broadcasting, group meetings.

Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

The percentage of educated youths is increasing in grape farming. If their knowledge is properly guided with the help of digital technology, then it will increase chances of optimizing and stabilizing yields. Educated youths are the real keepers of knowledge and wisdom, and local contexts need to be taken into consideration: region, language, environment, and so on.



Source: provided by authors/organization

TANZANIA/SWITZERLAND INNOVATIONS IN AGROECOLOGY

MACHO SAUTI: AN ICT4 AGROECOLOGY PLATFORM FOR FARMERS

The project *Macho Sauti* (*Eyes and voice* in Kiswahili) is an innovative collaboration between scientific research institutions and civil society in the development context. By merging agroecological methodologies that promote forms of reciprocal exchange of knowledge with the interactive potential of ICTs, *Macho Sauti* fosters rich communication between small-scale farmers engaged in agroecological practices and scientific researchers.

DESCRIPTION OF THE INNOVATION

Macho Sauti originated from the pilot project *Sauti ya wakulima* (The voice of the farmers), started in 2011 by researchers from ETH (Zurich, Switzerland) in which a group of small-scale farmers in Bagamoyo, Tanzania, shared smartphones to document and post their agricultural practices using pictures and voice recordings, thus creating a shared online repository. *Sauti ya wakulima* was retooled by the farmers, subsequently evolving into

a network for the mutual exchange of knowledge. Based on the lessons learned from *Sauti ya wakulima*, *Macho Sauti* is currently scaling out the ICT tools and sociotechnical methodologies to reach a larger network of farmers in different regions of the country, who are currently taking up agroecological techniques under the supervision of SWISSAID Tanzania and Sustainable Agriculture Tanzania (SAT).



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

The ICT platform used in Macho Sauti consists of open source mobile and web applications, designed for the collaborative creation of multimedia documents. Its implementation and optimization is coordinated by SWISSAID Tanzania, by reaching out and training farmers from partner associations. The implementation methodology includes human moderation of contents posted by farmers, as well as face-to-face interaction through regular meetings. Macho Sauti is becoming an established channel of communication between farmers and scientists at local and international institutions.



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

The reciprocal exchange of knowledge between small-scale farmers, and between farmers and researchers, can encourage the uptake of novel agroecological practices and foster farmer-driven innovation. *Macho Sauti* allows farmer-to-farmer and farmer-to-researcher communication to call for assistance and solutions for agricultural problems in the field. Such communication becomes critical to ensure food security in the face of multifaceted challenges, such as climate change or unstable markets.



Source: provided by authors/organization

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

The expected impacts of Macho Sauti are many: (1) empowerment of farmers through the ownership of an ICT platform;

(2) improved interaction between farmers, researchers and expert practitioners; (3) effective uptake of proven agroecological practices that can increase the income of

farmer households; and (4) a better understanding of local environmental conditions through farmer-led documentation.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

While still in the early implementation phase, it is recommended that tools and methodologies in ICT4Agroecology must be designed and improved in close collaboration with farmers; and online platforms should be integrated and complemented with face-to-face interaction between stakeholders.



Source: provided by authors/organization

INDIA INNOVATIONS IN AGROECOLOGY

SEEDS OF HOPE: ORGANIC FARMING, FOOD SOVEREIGNTY AND CLIMATE RESILIENCE FOR SMALL FARMERS

The Seeds of Hope project improves climate change resilience, food security and sovereignty and autonomy of small farmer communities in North India. It relies on the recognition of women's traditional knowledge. The project is led in partnership with the association Navdanya, founded by Dr Vandana Shiva. Direct beneficiaries include 745 farmers and their families in 31 villages.

DESCRIPTION OF THE INNOVATION

The activities developed benefit more than 700 farmers, 95 percent of whom are women, in 31 villages and their communities, with more than 20 000 people. Benefits are achieved through the development of a sustainable plan for ecological and economic security, including the identification and multiplication of climate resilient local seeds, training in agroecology, and

income generating activities for women – 26 self-help groups have been formed, and more than 100 women have been trained in food processing.

The capacities of marginalized farmer communities are reinforced through sensitization on climate change and biodiversity preservation for more than 200 children and 20 000 people.



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

By focusing on women, their role in their communities has been reinforced and recognized. The project was awarded the Climate and Gender Prize 2017 by the Climate Gender Constituency of UNFCCC during COP23 in Bonn, for the significant progress made on the recognition of women's role in their communities.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

The project promotes the key role that women play in subsistence farming and family nutrition in rural India. As owners of knowledge, natural resource conservation actors and seed keepers, as well as trainers in agroecology and micro-savings, women have gained a local political role, with improved living conditions and financial autonomy.

The purchase of external seeds and vegetables has decreased by at least 50 percent. In addition, their production is more diversified: the production of vegetables in the zone went from 3 to 4 varieties to 27, ensuring more diverse and nutritious food for their families.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

The project promotes an inclusive definition of organic farming which favours the recognition of its social, economic and environmental aspects. In addition to strengthening farmers' livelihoods, the project addresses both mitigation and adaptation: agroecology reinforces soil fertility and moisture (organic matter contents increased by 25 percent between 2011 and 2015); while seed conservation and reproduction ensure biodiversity rehabilitation and food sovereignty. Yields have improved by 20 percent, dependence on the purchase of seeds has lowered by 50 percent, and the quality and quantity of the food supply are progressing.



Source: provided by authors/organization



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

The project's durability is ensured by a 10-year partnership between SOL and Navdanya. Its model builds on the communities' autonomy, from seed reproduction to short-circuit sale, and is easily replicable. By placing women at the core of our actions, the project allows the preservation of local biodiversity so that farmers can work with nature and not against it.



Source: provided by authors/organization

FRANCE INNOVATIONS IN AGROECOLOGY

L'ATELIER PAYSAN: A NETWORK FOR FARMER-DRIVEN TECHNOLOGIES AND PRACTICES

Small-scale agroecological and organic farming systems require appropriate machinery and technologies, and a change of paradigm in the way they are conceived, produced, sold and patented. The mainstream agricultural model has led to machines that are getting increasingly bigger and more expensive and complicated, and thus inaccessible for many farmers who must choose between autonomy and over-investment, resilience and dependency.

DESCRIPTION OF THE INNOVATION

L'Atelier Paysan is a French-speaking collective of small-scale farmers who gathered together in 2014 as a cooperative to work on appropriate technologies for agroecology, such as farming and processing tools, and farm buildings. It is a collective toolbox

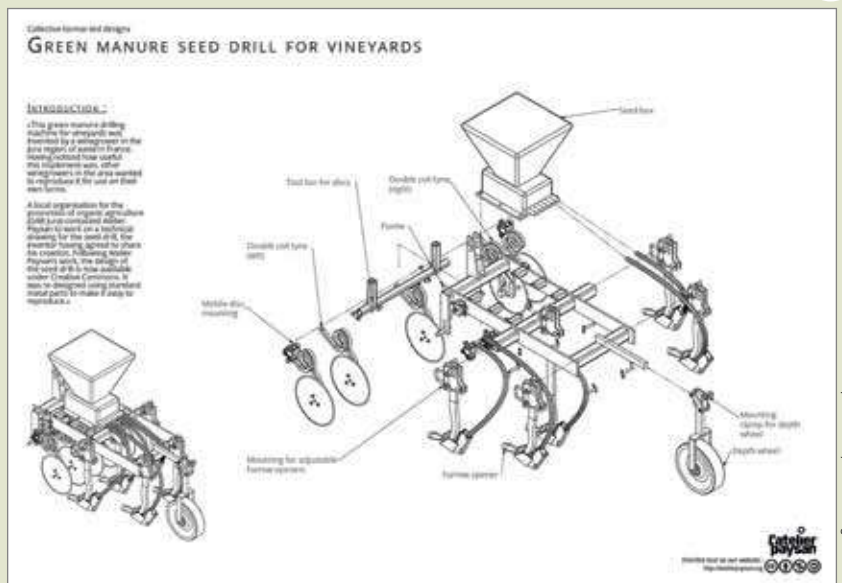
of farmer-driven technologies and practices, based on farmers as innovators, and the principle that technological practices need to be made with, by and for farmers: innovation is in the process, more than in its product.

L'Atelier Paysan is innovative on several levels: the organization offers a framework upon which farmers access appropriate technologies, the participatory processes to co-conceive tools with farmers, and the tools (and buildings) themselves.

DESIGN AND SHARING OF THE INNOVATION

We do it by:

1. accompanying farmers' collectives for designing tools or buildings they need;
2. identifying and documenting on-farm innovations in France and neighbouring countries (800 factsheets, videos);
3. spreading open source (CC-BY-NC-SA) technical drawings and tutorials (52 tools/buildings); and
4. leading on-farm workshops to empower farmers with the skills they need for self-building and (re)appropriating their tools (such as metal work).



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

At farmer level, we see open source tools designed for agroecology as landraces, with the same benefits: freely exchangeable in respect of the rights of use defined by the collectives that make them live; diverse by nature allowing them to evolve and adapt; reproducible by the farmer; and selected and multiplied with methods the final grower can manage.

Building tools also means knowing how to adapt and fix them, making machinery less expensive. It simply means more technical and financial autonomy, for empowered and skilled farmers in agroecological systems.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

At agricultural and food system level, there cannot be food sovereignty

without technological sovereignty. These collective processes also have a strong impact locally, supporting small-scale models more focused on labour than on capital, and building strong socio-technical networks of farmers, related to consumers and the local economy.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

This cooperative was founded in France, in answer to farmers' needs for appropriate technologies in the French context. There is a need to imagine forms for other countries, and to translate all contents for appropriation.



Source: provided by authors/organization

ZAMBIA INNOVATIONS IN AGROECOLOGY

THE ZAMBIA FOOD CHANGE LAB

Maize is the predominant crop in Zambia, both in terms of production and consumption, and levels of crop diversity on Zambian farms tend to be very low. The country's maize-centric food system contributes to poverty, malnutrition, and vulnerability to drought, pests and diseases. Growing a wider variety of nutritious crops is needed in order to improve rural livelihoods, diversify diets, maintain soil fertility and to make farmers more resilient to climate change. The question is how to get farmers and all the other relevant actors on board.

DESCRIPTION OF THE INNOVATION

The Zambian Food Change Lab is an inclusive multi-stakeholder process in which women and men in the Zambian food system – including farmers and farmers' organisations, policy-makers, youth, the private sector,

civil society and the media – jointly analyse problems, build coalitions of stakeholders, generate ideas for change, and test these innovations on the ground. Informed by and based on local knowledge and

needs, the main orientation of the Zambian Food Change Lab is to define and co-create strategies for the diversification of agriculture, moving away from maize monocropping.

DESIGN AND SHARING OF THE INNOVATION

Change Labs are ideally suited to addressing complex issues which encompass a myriad of actors and policies. One of the most powerful aspects of the Change Lab process is that it works on multiple levels. While it is underpinned by the latest information and analysis on the Zambian food system, participants are also asked to listen and respond not just with their heads, but also emotionally and intuitively. After all, fomenting change cannot be done with data alone.



Source: provided by authors/organization

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Smallholder farmers and farmers' organisations are actively participating in the Change Lab meetings, and play a key role in the Lab's working groups. Strategies and concrete policy recommendations on how to diversify agriculture are being developed: in particular, strategies for how smallholder farmers can be supported to produce more diverse and nutritious food, benefiting their own and the country's food security.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

Working groups that arose in the Change Lab are actively contributing towards the goal of agricultural diversification. The youth group is developing learning centres for food production by young people and conducting lobbying and advocacy around sustainable diets. A second group organised a two-day national symposium on agriculture in September 2017, which brought smallholder

farmers and farmers' organisations together with the Ministry of Agriculture and other key stakeholders. Agricultural diversification has been enshrined as a key pillar of Zambia's 7th National Development Plan (2017-2021), and platforms such as this one enable farmers to give feedback to the government on its implementation.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

Clearly, the process of diversifying agriculture and alleviating malnutrition in Zambia is a complicated and lengthy process. Nonetheless, the Change Lab methodology can help make food governance more inclusive and effective, providing a strong impetus and inspiration while initiating durable coalitions for change. It is recommended that sub-national governments also hold such inclusive stakeholder dialogues for more effective food policy-making.



Source: provided by authors/organization

UNITED STATES INNOVATIONS IN AGROECOLOGY

YAHARA PRIDE FARMS CONSERVATION BOARD

The city of Madison, Wisconsin is built on an isthmus between two lakes fed from largely agricultural lands. Water quality, affected by excess phosphorus (P) in particular in this area, is a significant concern for urban, recreational, and environmental stakeholders. The entire community needed a mechanism through which land management and conservation practices could be taught, coordinated, and incentivized on watershed-scale level.

DESCRIPTION OF THE INNOVATION

Yahara Pride Farms (YPF) is a farmer-led, not-for-profit organization, founded in 2011 in partnership with the Clean Lakes Alliance, working to improve soil and water quality. It advances practices and technology that balance water quality with farm sustainability and profitability. It was created by a group of local farmers,

agronomists, and business people to develop a self-regulated, self-recognized, and self-incentivized organization to improve and protect the land and waterways around the city of Madison. YPF runs a cost-share programme to provide farms with products, services, and equipment that keeps phosphorus

on fields and out of waterways, so it can be utilized by the crops. A key partner is the Madison Metropolitan Sewerage District, which funds farm practices that prevent the need for more burdensome capital investments in water treatment.



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

YPF strives to (1) create mechanisms to recognize farmer-led environmental sustainability, reward farmers for good stewardship, track collective progress in conservation and demonstrate water quality progress; (2) help inform the agricultural community of new water quality rules, laws and concerns; and (3) earn the trust and respect of farmers, citizens and government by engaging them in projects that demonstrate how the agricultural community is committed to doing its fair share to improve the watershed.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Farmers in the Yahara watershed do an excellent job producing nutritious food for their communities and the global market. YPF helps its members protect the natural resources that allow farmers to continue producing high-quality food and provide economic security and stability for their families. This is achieved while reducing the risk of environmental degradation and minimizing conflict with community stakeholders. Both public perception of agriculture and the threat of regulatory burden are significantly improved.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

YPF is a long-term project and its impacts are still maturing. In 2017, YPF co-funded conservation practices on nearly 25 percent of the farmland in the watershed, and significantly reduced phosphorus (> 5 000 kg) and soil loss through erosion into surface waters. It is cheaper for Madison to fund conservation than water treatment, and both urban and rural communities benefit from water security and environmental and quality-of-life improvements.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

Successful integration of stakeholders from multiple sectors beyond agriculture was necessary to launch and sustain the YPF project. The board has also learned that, to keep and grow its gains, YPF must reward longevity to ensure farmers maintain conservation practices over many years.



UNITED STATES INNOVATIONS IN AGROECOLOGY

FarmOS: FREE AND OPEN SOURCE FARM MANAGEMENT SOFTWARE PLATFORM AND DEVELOPMENT COMMUNITY

Scaling soil health and biologically based landscape restoration is knowledge rather than input limited. The FarmOS system leverages existing global, open-source hardware and software communities to provide tools to all scales and production systems. It is free to download, use and modify. Farmers control their own secure data to choose how to share knowledge with other farmers, researchers, businesses and the general public.

The interface supports mobile phone access and entry of all records anywhere, even in limited connectivity environments, and enables location-specific decision tools driven by farm records and soil and weather data.

AN OPEN AGRICULTURAL ARCHITECTURE FOR KNOWLEDGE EXCHANGE

FarmOS uses low-cost, open-source technology to link producers with other producers, researchers, businesses and the public, using a common format that leverages existing tools and enables the exchange of agricultural information and inspiration across geographies, production systems and cultural boundaries.



GLOBAL KNOWLEDGE ~ LOCAL ADAPTATION

A global network of engineers, designers, roboticists, researchers and farmers partner to build collaborative development platforms, like Farm Hack and FarmOS, which democratize access to environmental monitoring to improve soil health, and agricultural production.



Source: provided by authors/organization

FARMER ENTERS DATA ONCE TO UNLOCK POWERFUL KNOWLEDGE-BASED TOOLS

Farm specific information, once gathered, provides access to data-driven, location-specific recommendations. Every Farm becomes its own farmer-driven research and education farm, and provides the foundation for outcome-based ecosystem services markets.

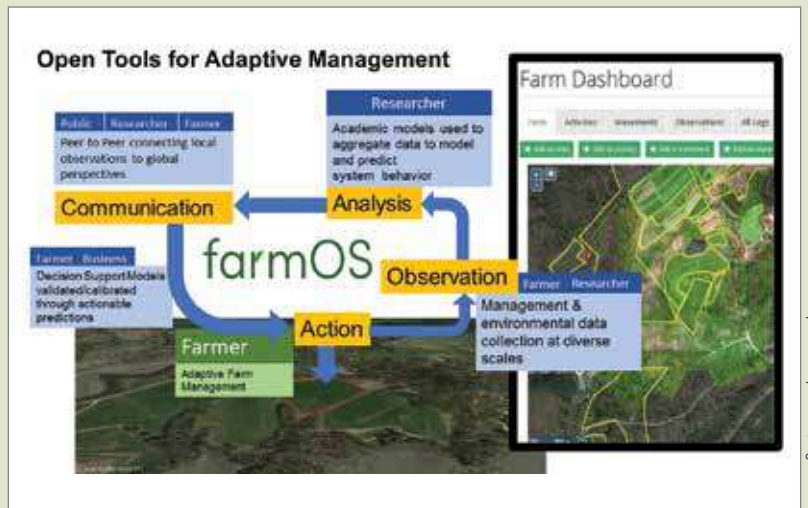
Example tool modules include:

- » soil health monitoring and recommendations;
- » food safety, supply chain and organic certification records;
- » farmer-driven crop trial management;
- » equipment records and Farm Hack tool library;
- » Internet of Things (IoT) farm automation and sensor-based alerts;
- » adaptive nutrient and GHG management; and
- » Cover Crop Decision Support Suite.

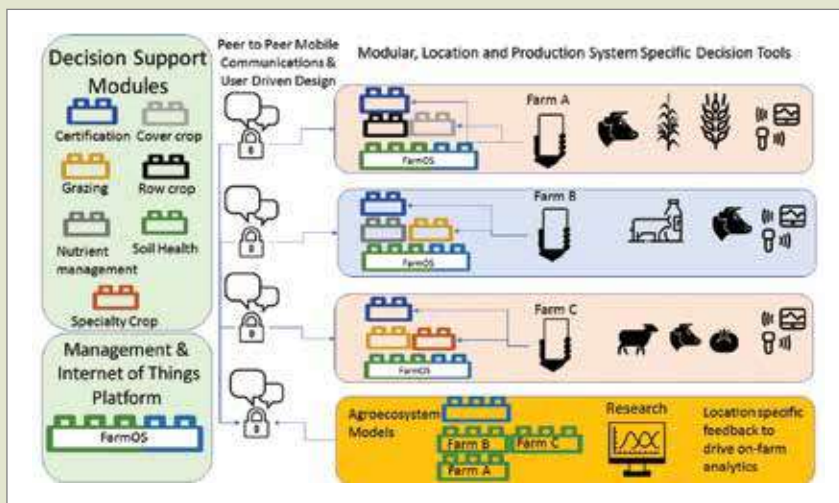
DEMOCRATIZE ACCESS TO AGRICULTURAL KNOWLEDGE

FarmOS creates a “pre-competitive” platform, which encourages local

adaptation and the creation of innovative local enterprises with access to global agricultural knowledge.



Source: provided by authors/organization



Source: provided by authors/organization

A SHARED HUMAN ENDEAVOR

New distributed tools enable the exchange of agricultural knowledge on a global scale, driven by farmer trust and local innovation.



Source: provided by authors/organization

HAITI INNOVATIONS IN AGROECOLOGY

'GWROUPMAN' IN HAITI BUILDING LOCAL FOOD MICRO-ENTERPRISES

Haiti's rural farming communities have been historically marginalized and disenfranchised, without appropriate support from the State for rural development. In this context, peasant farmers must resort to self organization to develop and spread sustainable farming innovations. Similarly, in order to sustainably grow local economies, they need to reduce dependence on intermediaries and address the growing consumption of cheap, imported, processed foods.

DESCRIPTION OF THE INNOVATION

Since 2009, Partenariat pour le Développement Local (PDL), as a member of the Groundswell International network, has supported smallholder farmers through a process of reflection and action, to form self-led solidarity groups of 8

to 15 members called gwoupman. By forming coordination structures within and across communities, 16 peasant associations with some 20 000 members have been established. They lead activities including farmer experimentation and farmer-to-

farmer extension of agroecology, complemented by savings and credit cooperatives, seed banks and grain banks. Since 2016, gwoupman have established 13 micro-enterprises to process their agricultural produce for sale to local consumers.



Source: provided by authors/organization

DESIGN AND SHARING OF THE INNOVATION

Farmers mobilize and invest their own savings, complemented by PDL financing and training, to purchase equipment such as mills, and minimally process local crops such as cassava, peanut, sugarcane, rice, maize, and cashew nuts. Farmers have established a local label promoting their agroecological products, and sell them across rural communities, in municipal markets, and to an emerging network of churches and schools in Haiti's capital, Port-au-Prince.

BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY

Family farmers are incentivized to scale agroecological farming practices, as they create outlets to process and sell their local produce. This allows them to keep more income, escape dependence on intermediaries, and prevent spoiling of their harvest due to lack of access to basic processing. Organized smallholder farmers are owners of all steps, from production to processing to marketing. Food and nutrition security of farmers as well local consumers is enhanced.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

Approximately 10 000 farmers have established agroecological 'model' farms, regenerating over 1 000 hectares of degraded land. Thirteen micro-enterprises are allowing some of them to increase income from processing and sale of their products. Peasant associations, which lead holistic local development processes, are strengthened. They are fostering a circular economy based on agroecology, social solidarity and local food culture.



Source: provided by authors/organization

LESSONS LEARNED AND RECOMMENDATIONS

Social organization, in the form of *gwoupman* and peasant associations, is essential for agroecological innovation, extension, and development of local food economies. Farmers and consumers must build alliances to create a web of dozens of these food micro-enterprises, and incentivize local production.



Source: provided by authors/organization

HUNGARY NATIONAL STUDY

AGROECOLOGICAL WEED MANAGEMENT FOR ORGANIC FARMERS

Agronomic practices and management decisions can have a significant impact on the type and number of weeds on a farm. Understanding this relationship can help organic producers manage weeds through avoidance, and various cultural management practices.

The most important steps of non-chemical weed management are prevention, diagnosis, and a number of control methods. Effective weed management depends also on the thorough understanding of the biology and growth habit of weed species.

BIOLOGICAL CONTROL

The biological control agent, normally a fungus or insect, reduces the vigour and competitive ability of the weeds.

AGROTECHNICAL METHODS

Different agrotechnical methods, such as crop rotations, false seedbed techniques, crop density, harvesting time of the cultivated crop, nutrient supply, covering or mulching the soil

surface, or solarization are used for weed control purposes. However, these do not only help to destroy weeds, but have a positive effects on the development of the crop.



Source: provided by authors/organization

PHYSICAL WEED CONTROL

Physical weed control is our most commonly known tool in weed management.

Within this category we use the mechanical effects of mechanical weed control against weeds, which can be cutting, or uprooting. Mechanical weed control in organic agriculture starts already in the stubble of the forecrop, in the course of the basic soil cultivation in the produced crop.

The equipment of physical weed management is various: for soil tillage, farmers can use winter ploughs, discs or rotary tillers, different cultivators which cut the roots of weeds and cover the germinating weeds with soil. As for harrowing there are chain, weed, tooth or power harrow.

Thermal weed control use thermal effect against weeds. Different methods of thermal weed control are used in practice, the most widely

known is weed flaming with an effectiveness of ~ 80-90 percent. However, due to its high energy-costs, its application is acceptable only in horticulture.

PRECISION AGRICULTURE

Precision technology is the future of the weed management in the agriculture. In the picture below the farmer is setting the solar powered automatic weed killer.



Source: provided by authors/organization

SUMMARY

Management of weeds in organic systems is a long and complex process, requiring a high level of management. To ensure the success of the organic farm, it is critical to know what types of weeds are present and understand effective management techniques. It is also important to realize there may be some weeds that cannot be managed or tolerated in an organic system, and these should be avoided. An organic system that is diverse and well managed can be highly productive and in harmony with the surrounding areas.

It is the Hungarian way for the agroecological weed control in organic farms promoted by the Association for Hungarian Organic Farming (MÖGÉRT/AHOF).



Source: provided by authors/organization

MEXICO NATIONAL STUDY

AGROECOLOGÍA PARA LA VIDA SEMBRANDO AGROECOLOGÍA, COSECHANDO JUSTICIA

La agroecología no solamente es una ciencia o una técnica, es un modo de vida, en donde debemos poner la sostenibilidad de la vida en el centro. Para ello es necesario descolonizar los procesos productivos, los modos de vida, los hábitos de consumo y las relaciones comerciales. Es necesario crear un nuevo entramado de interacciones invisibles como nuestra reconexión con la tierra, con nuestro pasado, con nuestras identidades y con otras comunidades. Es por ello que la agroecología es un proceso de lucha colectiva y constante en donde buscamos que exista justicia social, ambiental, alimentaria, de género y económica.

EL CONTEXTO

Los municipios cafetaleros en el Estado de Veracruz, México se caracterizan por su baja productividad e ingresos reducidos debido a una acentuada

oscilación de precios en el mercado internacional. Por otro lado, los recursos alimenticios, medicinales, forestales y leñables presentes en los

cafetales habían disminuido al punto de estar en peligro de desaparición y como consecuencia problemas de desnutrición y bajos niveles de escolaridad.

EL PROCESO

Durante los últimos 28 años, en VIDA AC hemos pasado por diversas etapas: La lucha social que transformó la pasividad en participación comunitaria organizada, la valoración de la salud familiar y comunitaria que tuvo como resultado el rescate de la medicina herbolaria, la diversificación agroecológica que permitió incorporar cultivos para generación de ingresos; la transición de la producción convencional de café a producción agroecológica, en donde se incorporaron prácticas agroecológicas, procesos

de transformación agroindustrial y mejoramiento de la calidad y creación de esquemas comerciales como AgroEco® que humaniza la cadena comercial y permite un pago justo y transparente a las familias; el diseño de estrategias de seguridad alimentaria, porque entendimos que para vivir, se necesita primero estar bien alimentados. Y en todo, en éste proceso fue necesario reconocer que la lucha es inter y tras generacional, es decir, es necesaria la valoración del legado de los abuelos, la participación equitativa de hombres y mujeres y el liderazgo juvenil. Y también

que es necesaria la construcción de una nueva forma de ver y vivir la vida que nos de felicidad y nos genere autonomía.

Actualmente VIDA AC se integra por 890 familias de tres municipios de la zona centro del Estado de Veracruz, con una superficie cultivada en producción agroecológica de 1527 hectáreas. El café AgroEco® con certificación orgánica lo producen 157 familias.

LA JUSTICIA

No se puede hablar de agroecología sin pensar en las desigualdades estructurales que vivimos por diferencias de raza, clase y género. Por ello creemos que Agroecología es un movimiento para la vida que incluye la lucha por la justicia

alimentaria, porque cuando hay comida, se puede pensar; también incluye la lucha por justicia ambiental para que reconozcamos que los impactos de la degradación ambiental nos afectan de manera diferenciada, la justicia económica en donde pongamos el valor a la vida y

no solo a la generación de ingresos, la justicia de género porque es necesario reconocer que el trabajo de cuidado es estructural pero no únicamente corresponde a las mujeres, sino que debemos construir una sociedad no solo pensemos en nosotros, sino en los otros.



Source: provided by authors/organization



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NICARAGUA NATIONAL STUDY

AGROECOLOGY AND LOCAL SEEDS, KEYS FOR SUSTAINABLE AND RESILIENT FAMILY FARMS

LOCAL SEEDS AS COLLECTIVE PATRIMONY TO ACHIEVE FOOD SAFETY AND BIODIVERSITY WITH AGROECOLOGICAL PRACTICES: A CASE OF SOVEREIGNTY

SWISSAID y Alianza Semillas de Identidad, conformada por 6 Redes y Movimientos campesinos nacionales, están implementando el modelo Agroecológico con más de 35 000 familias campesinas con énfasis en el estudio, conservación, mejoramiento y uso de semillas criollas con prácticas agroecológicas. El 85 percent del área de granos es sembrada con semillas criollas, de allí su importancia.

EXPERIENCIAS A PRESENTAR

» Estudio de 5 años que evalúa comportamiento y características de 85 variedades criollas de frijol y maíz con manejo agroecológico en 180 fincas campesinas de 45 comunidades

en 5 municipios de Matagalpa con diferentes características agroclimáticas.
» Funcionamiento de 420 Bancos Comunitarios de semillas criollas, y su rol en la defensa del patrimonio

genético colectivo, su libre intercambio, resguardo y mejoramiento de la calidad de las semillas y el abastecimiento oportuno a productores/as.

RESULTADOS

- » Productores/as con mayor conocimiento de sus semillas criollas y sus características y potencialidades en función de la adaptación al cambio climático en cada territorio: comportamiento, adaptabilidad, rendimiento con manejo agroecológico integral (fertilización, manejo de suelos, plagas, enfermedades y arvenses).
- » Identificación de 40 percent de variedades criollas de frijol y 35 percent de maíz con mayores rendimientos que los promedios nacionales en diferentes condiciones agroclimáticas. Frijol: rendimientos hasta un 100 percent mayor al promedio nacional; Maíz hasta un 66 percent mayor. Certeza de

variedades que deben utilizarse en cada territorio.

- » Mejoramiento genético por campesinos por primera vez en el país a 29 variedades, mejorando características.
- » Conservación de más de 100 variedades en 40 Centros de resguardo, 420 Bancos de semillas y 140 Guardianes de semillas (53 percent mujeres).
- » Análisis nutricional identifica variedades con más alto contenido de hierro y calcio que semillas certificadas.
- » Identificadas 135 variedades de maíz, 147 de frijol, 39 de sorgo y millón y otras variedades de arroz y leguminosas.
- » 420 Bancos de semillas abastecen 9 000 familias campesinas en 430 comunidades. 4 Redes territoriales.



Source: provided by authors/organization

SCALING UP

- » Experiencias multi sectorial y con multi actores: Movimientos campesinos con cobertura nacional, ONGs, cooperativas, Universidades. Con al menos 50 organismo
- » Plataforma de coordinación e intercambio de saberes y retos entre organizaciones e instituciones de diferentes territorios. Alianza con Universidades.

- » Bancos de semillas autosostenibles gestionados por comunidades son ejemplos para multiplicar formación de nuevos bancos. Son referentes para instituciones públicas (INTA y Gobiernos municipales) y ONGs.
- » 14 Gobiernos municipales con Ordenanzas/Leyes para promover semillas criollas.
- » Brinda información y know how a instituciones encargadas de políticas

públicas para utilizar variedades promisorias en diferentes territorios y crear bancos con semillas criollas en Programas nacionales. Coordinación con Alcaldías e INTA en promoción de Agroecología en municipios y otras estrategias relacionadas. Se demuestra que no se requiere de semillas transgénicas.



Source: provided by authors/organization

SDG 2: ZERO HUNGER

Experiencias están ligadas al SDG 2: Seguridad alimentaria, nutrición y agricultura sostenible. Semillas con capacidad de adaptación, evolución y resiliencia al CC garantizan alimentación estable en condiciones adversas y preservan la cultura campesina e indígena ancestral.



Source: provided by authors/organization

LEBANON NATIONAL STUDY

ECO KHALLEH: EDUCATIONAL/TRAINING CENTER ON AGROECOLOGY/ORGANIC FARMING

Agronomic practices and management decisions can have a significant impact on the type and number of weeds on a farm. Understanding this relationship can help organic producers manage weeds through avoidance, and various cultural management practices.

The most important steps of non-chemical weed management are prevention, diagnosis, and a number of control methods. Effective weed management depends also on the thorough understanding of the biology and growth habit of weed species.

SUMMARY OF THE EXPERIENCE

Eco Khalleh is an agroecology/organic agriculture training/educational center in Lebanon. The center is a multifunctional showcase consisting of an eco-farm including integrated animal and crop units, animal welfare unit, composting/vermiculture unit,

alternative energy unit, eco-processing unit, eco-cultural unit, and rural tourism unit. The center, while economically feasible, displays best practices and appropriate technologies that are optimal for agriculture in Mediterranean

mountain ecosystems. Training activities target technical students, farmers and casual Syrian labourers. The center also receives school visits and is open to the public for general awareness.



Source: provided by authors/organization

ACHIEVING THE SDGs

This initiative corresponds to sustainability in its economic, social and environmental facets. By encouraging agroecology/organic agriculture and green energy use, it promotes food security and good health and decreases environmental and climate threats hence responding to

SDG2 (zero hunger), SDG3 (good health and well-being), SDG7 (affordable and clean energy), and SDG13 (climate action). In addition, it promotes development of rural communities, including farmers, women, youth, and Syrian refugees, hence responding to SDG5 (gender equality) and SDG10 (reduced inequalities).

This initiative would promote poverty alleviation (SDG1, no poverty) by offering rural communities alternative sustainable solutions and best practices.

SCALING-OUT THE EXPERIENCE

The center develops participatory training programmes involving farmer-to-farmer transmission of knowledge, hence reaching more farmers and scaling out sustainable practices. Trainees at the center are provided with ToTs opportunities in cooperation with the governmental extension units.

SCALING-UP THE EXPERIENCE

Eco Khalleh is under the umbrella of a network of sustainable resilient communities, the EcoMENA initiative which is a network of self-generative eco-communities based on indigenous knowledge and appropriate green technologies established through a multi-faceted/multi-sectorial approach. Eco Khalleh

will also be exposed at the regional level through the Karianet network (<http://www.karianet.org>), an online regional platform managed by ESDU for knowledge management and knowledge sharing in the MENA region. The center is affiliated with the Environment and Sustainable Development Unit at the American University of Beirut.



SENEGAL | NIGER | MALI NATIONAL STUDY

TERRE ET PAIX PROMOTING ACCESS TO PRODUCTIVE LAND BY YOUNG PEOPLE AS CONFLICT PREVENTION

Terre et Paix is an EU funded project which has been implemented since February 2015 by the Italian NGO COSPE in partnership with the three national farmers' platforms of Senegal, Mali and Niger, (CNCR, CNOP and PFPN), under the auspices of ROPPA (Réseau des organisations paysannes et de producteurs de l'Afrique de l'Ouest).

PRACTICES IMPLEMENTED

Thanks to the project, 60 youths from Senegal, Mali and Niger were trained in the following three agroecology training centers: the Nyéléni Centre in Mali, the Agroecology Farm of Kayadara in Senegal, and the Winditan Agroecology training center in Niger, managed by CNOP, CNCR and PFPN respectively. These young people, both males and females, were

trained to lead agricultural projects in their villages, and address social, environmental and economic challenges through an agroecological approach.

The training centers promote and disseminate a holistic set of practices of integrated soil fertility management, sustainable small-scale animal husbandry and efficient use of water resources.

The integration of such practices will play a critical role in enhancing the economic, social and environmental sustainability of West-African farming systems. The idea of agroecological terroir has thus emerged, supported by peasant movements, ROPPA and the Global Convergence for Land, Water and Seeds.

RESULTS

Thanks to the Terre et Paix Project, more than 40 hectares of farmland were legally assigned by local administrative and traditional authorities to the 60 youths, to carry out individual or collective projects with an agroecological approach. In each one of the six rural communities in Casamance (Senegal), Tahoua (Niger), and Niore Sahel (Mali) targeted by the project, several plots are now managed using agroecological practices.

In December 2016, the 60 young farmers took part in the Symposium Forum +1 year: "Generation Agroecology: Multi-stakeholder approaches for the development of agroecology in West Africa".

During the symposium, the young farmers had the opportunity to meet other farmers, researchers, NGO's officers, policy-makers

and become personally involved in the dynamic scenario of Agroecology promoters in West Africa and Europe. The young farmers held poster presentations of their projects and have been acknowledged as key actors of the Task Force for Agroecology, a growing movement in West Africa.

Back in their communities, all the 60 youths started individual or collective projects, and are now committed to showing that through agroecology it is possible to reach a greater economical and social integration of marginalized people, thus fostering a more efficient and environmentally friendly use of land and other natural resources.



Source: provided by authors/organization



Source: provided by authors/organization



Source: provided by authors/organization

INDIA NATIONAL STUDY

FARM TO SYSTEMS

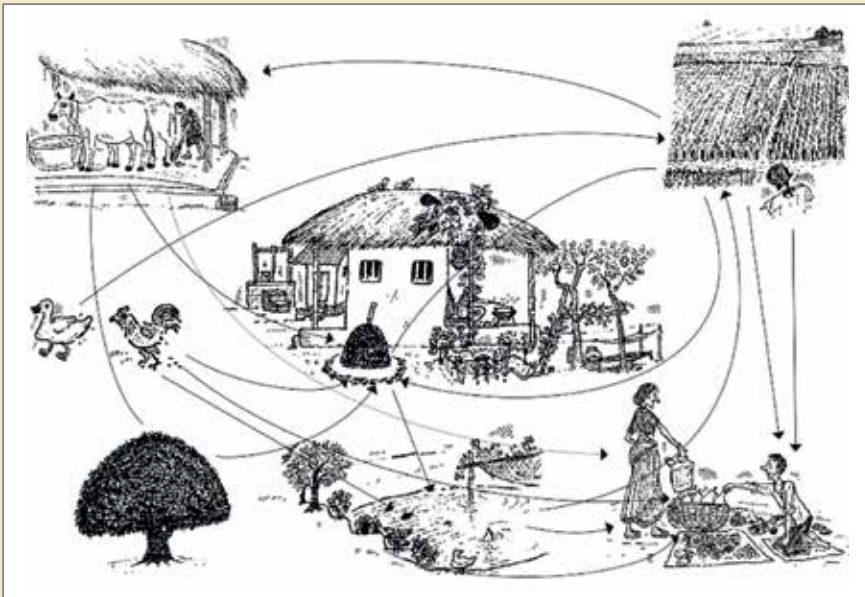
SUSTAINABLE INTEGRATED FARMING SYSTEMS: AN AGROECOLOGICAL APPROACH TO IMPROVE PRODUCTION AND MARKET ACCESS FOR SMALL AND MARGINAL FAMILY FARMERS

In small and remote villages in South Asia, our rich agricultural crop/breed diversity and associated knowledge is slowly getting wiped out and is being replaced by a handful of `high yielding` and `improved` crops/breeds. Rampant use of chemicals has led to the death of soil and is poisoning our food and ecosystem. The small and marginal farmers, the majority of the developing world's population, who often own less than an acre of land are getting further marginalized - they neither have resources to invest, nor can they earn any significant amount of profit. Sustainable Integrated Farming System – SIFS, tries to look deeper into this agrarian crisis.

SIFS is an improved version of mixed cropping, which tries to imitate nature's principles, where not only crops but, varied types of plants, animals, birds, fish and other aquatic flora and fauna are utilized for production. These are combined in such a way and proportion that each element helps the other; the waste of one is recycled as resource for the other.

STRATEGY

Enhancing diversity and recycling linkages between various components of a farm system



Source: provided by authors/organization

- Reduce disaster risk
 - Reduce climate hazard risk
 - Reduce health risk
 - Reduce market dependency
-
- Improve soil health
 - Improve farmer's health
 - Improve livestock health
 - Improve market link
 - Improve energy flow within the system
 - Improve fuel availability
-
- Diversify income source
 - Diversify farm output
 - Diversify time of harvest
 - Diversify diet
 - Diversify job option

RESULTS

- » At the farm level, overall production, income and nutrition – both food and fodder, is enhanced and diversified both in terms of quantity and quality; incidence of risk is reduced. Cost of production reduces and self-sufficiency increases as the system becomes energy efficient as a whole.
- » In the process, the farmers became innovative, self reliant, analytic and technologically sound to assess their own resources, strengths and stresses, and SIFS design their own farm.
- » The programme has developed 150 farmer trainers, who can train other

farmers. It worked with 10 000 families (over a 5 500 Hectare), to transform 650 ha of barren fallow land to cultivable land, and double 850 ha of single crop land.

- » During baseline, 77 percent of the farms had only 1 crop in the cropland; homestead land were hardly used. Now, about 49 percent grows 2 crops and 33 percent grows 3 crops and 7 percent grows more than 3 crops. Whereas 75 percent of farms are stabilized to 5-7 types of vegetables to improve dietary diversity.
- » 40 percent of farmers in the rainy season are getting 52-68 percent of

their required input by recycling wastes, which is about 38 percent in winter.

- » About 69 percent of farmers on an average shown productivity which is more than the average productivity of the area in baseline.
- » 88 percent of farmers recorded increased net income (52 percent have doubled their net income). For all the farms, About 50 percent of the cash needs come from selling farm products after meeting the subsistence needs.



Source: provided by authors/organization



COSTA RICA NATIONAL STUDY

ORGANIZACIONES PRODUCTORES TRABAJANDO BAJO UNA AGRICULTURA ORGÁNICA Y SOSTENIBLE

La subregión Sarapiquí del Ministerio de Agricultura y Ganadería (MAG), se ubica en zona norte de Costa Rica, que representa el 80 percent del territorio de la provincia de Heredia, cuenta con una gran biodiversidad, humedales, ríos, montañas, áreas protegidas de gran importancia a nivel mundial y combinado con diferentes tipos de producción, debido a las características ecológicas y productivas, se trabaja con metodologías de extensión basadas en una agricultura de conservación sostenible. Tomando como base las estadísticas de uso de agroquímico, Costa Rica es uno de los países de América Latina que utiliza una gran cantidad de agroquímicos, por ende el objetivo fue disminuir el uso de estos en la actividad productivas, generar una producción ecológicamente equilibrada, producción más sana para el productor, familias y consumidores.

RESULTADOS

Se han capacitado alrededor de 80 productores, técnicos entre hombres, jóvenes y mujeres, siendo esta experiencia replicable para otras regiones del país donde las fincas produzcan alimentos sanos y en armonía con el medio.

Por lo tanto se busca que los productores o las organizaciones

realmente sean capaces de generar una producción orgánica elaborando sus propios insumos orgánicos, entendiendo la biodiversidad, es de gran importancia para preservación de nuestro planeta protegiendo la salud de la familia, aplicando el concepto del enfoque eco sistémico en cada unidad productiva, y en las región donde se encuentren.

Para dejarles un futuro mas prometedor a nuestras futuras generaciones y una mejor calidad de vida que ellos y nosotros nos merecemos.

ESTRATEGIA

Esto busca ampliar más el concepto de fincas integrales autosuficientes y lograr la conservación de la biodiversidad del territorio de la subregión de Sarapiquí.

Estos procesos son parte de las políticas del gobierno de Costa Rica que es la implementación de técnicas orgánicas, sostenibles para una producción ecológicamente equilibrada.



Source: provided by authors/organization

ACTORES CLAVES

Participaron en el proceso de planificación y ejecución los productores, familias, consumidores, además de agricultores orgánicos y eco turísticos de Paraíso La Virgen Sarapiquí (ASOAREPAS) los cuales cuentan con certificación orgánica participativa, grupo de jóvenes de asociación de productores de Pimienta (APROPISA).

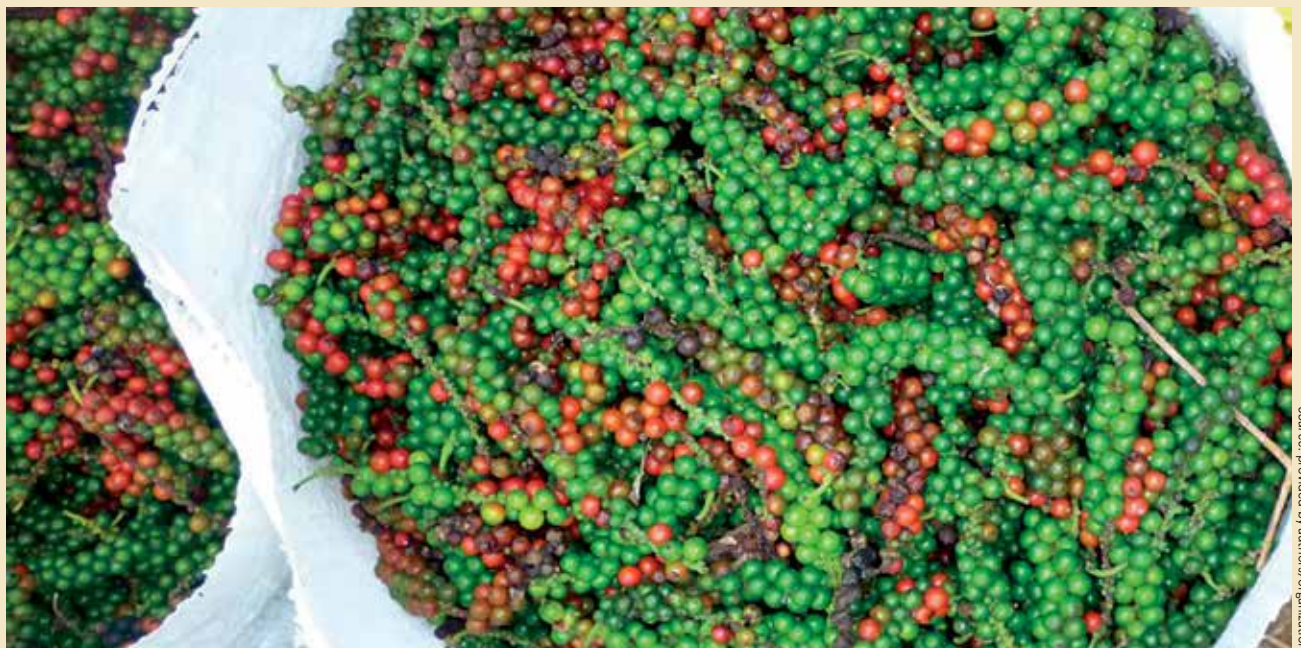
EXPERIENCIA A DIFERENTES ESCALAS

Estos procesos se han desarrollado en dos escalas:

Escala vertical de la experiencia, desarrollando despleables con técnicas en producción orgánica, para que otros extensionistas de otras regiones de Costa Rica, puedan compartir la información y la experiencia con otros productores, también talleres enfocados en la elaboración de insumos orgánicos y comprensión del concepto de la

conservación sostenible, biodiversidad, dirigidos a técnicos y productores.

Escala horizontal, desarrollando talleres y demostración de métodos, para organizaciones y productores de la región, donde el productor conceptualiza la importancia de la conservación y uso sostenible de recursos a través de una agricultura orgánica implementada en las unidades productivas o en las organizaciones como tal, donde estos han replicado hacia otros productores interesados en este tipo de producción.



Source: provided by authors/organization



Source: provided by authors/organization

ITALY NATIONAL STUDY

AGRO-ECOLOGY TRAININGS THROUGH PERMACULTURE

PERMACULTURE FOR AGROECOLOGY IN URBAN ENVIRONMENTS

Permaculture is a holistic approach to agriculture that provides for human needs—high-quality food, fiber, fuel, medicine and building materials—while enhancing the ecosystems and communities from which these derive; it offers a set of ethics and principles and a means of integrating social and ecological processes in a way that is grounded in the local context. The chief tenets are: Care of the Earth; Care of People; and Fair Share of the Surplus. This ethos guides the Laboratorio di Permacultura Urbana as it strives to to be a leading facility in the south of Italy that catalyzes change through leading by example.

THE MODEL

Our model is a hands-on experience on how to design urban ecosystem projects, in order to:

» Build climate resilience while achieving food, water, and energy security;

» Enhance ecosystem services that support agro-ecosystem resilience, namely functional biodiversity;

» Engage and inspire trainees to adapt the methodologies and techniques to their local contexts,

several of them experimented and developed at the “Laboratorio”;

» Help citizens be versed in the skills that leverage ecological functionality in rural landscapes and urban settings.

THE EDUCATION CENTER

The “Laboratorio” is an educational center based in Catanzaro (south-Italy), a part of the Permaculture Laboratory Network (PLN), a network for hands on training and member of the World Permaculture Association. The “Laboratorio” showcases biodynamic urban vegetable gardens, fruit trees, berry bushes, hedges of

ornamental plants and medicinal plants. We use different methods to convert domestic food waste and agricultural waste into compost. The supply of electricity is via a 6-kW photovoltaic system. We also designed innovative solutions (rocket stove heaters, warm compost, collection of rainwater) for energy and water management.



Source: provided by authors/organization

SOME KEY INFORMATION

- » 70 students trained (10 groups);
- » 2 interns (30 years old) in collaboration with the “University G. Marconi” (Rome) and the training company “Keplero Servizi” (Bologna);
- » social activities with people with mental illness in collaboration with a network of organizations lead by “Associazione Don Pellicanò”, funded by Fondazione con il Sud;
- » partnering with 15 local not-for-profit organizations and with local authorities (Provincia di Catanzaro);

- » students from Italy, the USA, The Netherlands, Germany, Portugal, Denmark, Egypt, Greece, India, South Africa, Bangladesh, and Peru;
- » 30 students from the Agricultural School, “Istituto Tecnico Agrario Vittorio Emanuele II di Catanzaro”; and
- » visits by farmers, scientists and experts in botany, ecology, agriculture, permaculture.



Source: provided by authors/organization



Source: provided by authors/organization



BRAZIL NATIONAL STUDY

PRODUCTION OF ON-FARM FERTILIZERS: A PRACTICAL CASE IN THE MIDWEST

Producing on-farm fertilizers based on local organic residues is an empowering action for family farmers. For this reason, we conducted the project “Development of alternative fertilizers to support the agroecological management of family-based agriculture production systems in Goiás, Midwest Brazil”, from June 2014 to May 2017, aimed at developing and validating on-farm organic fertilizers in order to (1) help farmers to produce their own organic fertilizer by recycling local residues, and, by using these fertilizers, to (2) improve soil quality at low cost.

IMPLEMENTATION

We worked in a participatory approach, along with two associations of small farmers, the G-Vida group (from the rural area of a city called Orizona), and the COOMAFAB farmers’ cooperative (from the rural area of a town called Buritizinho). Together

with each group, we started the project through a survey of the most common and “easy to find” organic residues, which were: dairy cattle manure, grasses and banana leaves. From these materials, we worked on formulations of organic

composts that would reach a final carbon:nitrogen ratio between 25:1 and 35:1. The farmers organized their groups to produce the composts, which were ready for use in 90 days.

TESTS AND RESULTS

Tests were conducted in the farmers' areas, comparing the new fertilizers with the sources they normally used (or not) prior to the project (no-composted dairy cattle manure or no fertilizer at all). The composts were used to cultivate beans, rice and sugarcane, obtaining good grain yields (beans and rice) and biomass (sugarcane to feed animals).

We collected samples of the fertilizers and of the soil where these fertilizers were applied, to verify, by laboratory analysis, chemical, physical and biological quality. The costs of the fertilizers production on the farms were close to zero, as the only cost was the farmers' own labour. The multiplication and dissemination of knowledge occurred not only at the end of the project, as usual in conventional (non-participatory) research, but throughout the execution of the project, as farmers

were the "multipliers" themselves. For this, some workshops were carried out during the project in both rural areas, involving the neighbourhood.



Source: provided by authors/organization

CONSIDERATIONS

As a principle in Agroecology, local characteristics should be taken into account. Available organic residues vary over short distances, but any place in the world will have its own

local/regional residues that are often wasted or underutilized. Our experience shows that it is possible to produce good quality on-farm organic fertilizers, starting with a survey of local organic waste and especially bringing together

engaged people (farmers, researchers and agricultural technicians) to achieve the same goal. In addition, our approach is successful because the farmers representing each community are decision-makers.

LINK TO THE SDGs

Strengthening family farmers and promoting their independence are crucial: to ending poverty (SDG 1) and achieving zero hunger (SDG 2); good health and well-being; (SDG 3) (70 percent of hungry people live in rural areas of developing countries); creating decent work in rural areas and generating local economic growth (SDG 8); and, consequently, reducing inequalities (SDG 10).



Source: provided by authors/organization

Brazilian Agricultural Research Corporation (EMBRAPA)

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Pricila V. Rizzo, Glays R. Matos, Cynthia T. T. Machado, Elísio Pinheiro, Lourenço S. Mesquita and Oriçanga Bastos Jr.

Project partners: G-Vida Group of Family Farmers | COOMAFAB Cooperative of Family Farmers and Emater-GO | Rural Innovation Agency



Source: provided by authors/organization

ITALY NATIONAL STUDY

SCHOLA CAMPESINA BIO-DISTRETTO DELLA VIA AMERINA E DELLE FORRE, VITERBO

Schola Campesina is a training and participatory research centre seeking to strengthen producers' organizations in their struggle for food sovereignty through knowledge valorization and sharing. Based on the Nyéléni International Forum for Agroecology (2015), and on the principles of Dialogo de saberes, Schola Campesina seeks to boost the sharing of peasant, academic and activist knowledge. Through trainings and events, Schola Campesina provides specific information related to the global governance of food and agriculture to producers' organizations, strengthening their position within the Rome process.

Schola Campesina seeks to strengthen the network of agroecology schools and training initiatives around the world from a South-South Cooperation perspective. It seeks to gather good practices that can be replicated, and valuable knowledge to disseminate among small-scale farmers around the world.

FOOD GLOBAL GOVERNANCE

Schola Campesina disseminates information on global governance and decision-making processes

related to food and agriculture at the global level among farmers' organizations. It seeks to highlight

the structure, logic and power relations that characterize the current corporate food system.

PARTICIPATORY ACTION RESEARCH

Schola Campesina seeks to mobilize relevant and valuable knowledge from peasants and their organizations, from academics and their institutions, and from activists and their organizations. This knowledge is documented and disseminated following the needs of the practitioners.

KNOWLEDGE: THE CORE OF AGROECOLOGY

Knowledge is at the core of the peasant model of production. It is their heritage, their most valuable tool, and their strength. The transition towards the agroecological model of production will need to recover, develop and valorize peasant knowledge, as it is the basis of biodiversity, territoriality and sustainability.

DIALOGO DE SABERES

The “Dialogo de saberes” (a dialogue of “ways of knowing”), is a crucial concept for the promotion of horizontal knowledge transmission and sharing between researchers, farmers, social movements, NGOs, and so on.

Schola Campesina seeks to stimulate the co-production of knowledge through constructive dialogue among agroecology and food sovereignty allies.

TRAINING EXPERIENCE

The first training of Schola Campesina took place from 25 September 2017 to 7 October 2017. It brought together 15 members of peasants’ organizations (LVC members) from around the world to share experiences and discuss issues related to the following: the global governance of food and agriculture; peasants’ knowledge; peasants’ autonomy; agroecological practices; peasants’ global struggles; local and global food policies; and women’s empowerment. It took place on a partner farm in the Biodistrict of Viterbo Province, and in Rome next to all UN bodies related to food and agriculture, which allowed the participants to benefit from peasant and activist knowledge from all around the world. This first edition was funded by FAO/OPCP and Associazione Tulipano Bianco/Confeyuro.

Training is not a one-off event, but encourages experience sharing far beyond the physical meeting. The collection of interesting experiences

that can be replicated, and daily dialogue among the participants through social media continue to speed up efforts to scale out agroecology.



Source: provided by authors/organization



Source: provided by authors/organization

CHILE | CHINA NATIONAL STUDY

GLOBALLY IMPORTANT AGRICULTURAL HERITAGE SYSTEMS (GIAHS)

SUPPORTING KNOWLEDGE INTENSIVE SYSTEMS FOR SUSTAINABLE FOOD PRODUCTION: PRESENTATION OF TWO GIAHS SITES THAT RELY ON AGROECOLOGY

Traditional Chiloé island agriculture is a highly integrated and self-sufficient system. It relies on the agrobiodiversity supported by traditional agricultural practices to efficiently use natural resources from the sea, forest and livestock for soil health improvement and for integrated pest management.

The Zhejiang Huzhou system includes traditional and agroecological knowledge through the cultivation of mulberry trees, silkworm rearing, and fish cultivation, based on a complex irrigation system. This system allows farmers to meet their needs, while protecting biodiversity and the landscape.



Source: provided by authors/organization

CHILOÉ ISLAND AGRICULTURE, CHILE

Traditional Chiloé agriculture is a highly integrated and self-sufficient system. It relies on the agrobiodiversity supported by traditional agricultural practices to efficiently use natural resources from the sea, forest and livestock for soil health improvement and for integrated pest management. The ancestral practices of farmers date back to the domestication of wild native crops and have contributed to shaping the landscape.

HOW DOES THE CHILOÉ SYSTEM WORK?

Being extremely rich in agrobiodiversity, the system has many native varieties and crops, such as quinoa, garlic and over 200 varieties of indigenous potatoes, which are resistant to *Phytophthora infestans* disease.

The system makes use of many ecosystem services: seaweed as bio-fertilizer and fungal disease control; cattle and sheep manure for soil nutrient management; and medicinal and aromatic plants as insect control agents, and pollination promoters from the forests.

A SUCCESSFUL GIAHS STORY

Since its GIAHS designation, an increase in knowledge of Chiloé Island's preciousness has increased the pride of farmers. A germplasm bank was established to conserve native varieties, accompanied by a growing demand for local garlic and native potatoes. By sharing agroecological practices, farmers have received technical support to increase their yields without harming the environment.

Lastly, the creation of the Chiloé SIPAM label is helping to promote agro-tourism and gourmet-markets tourism to attract more people and ensure the livelihoods of farmers.

CHINESE SILKWORM-MULBERRY-FISH SYSTEM

The Zhejiang Huzhou system originated more than 2 500 years ago. It includes traditional and agroecological knowledge through the cultivation of mulberry trees, silkworm rearing, and fish cultivation, based on a complex irrigation system. This system allows farmers to meet their needs, while protecting biodiversity and the landscape.

HOW DOES THE HUZHOU SYSTEM WORK?

This system integrates symbiotic relationships at several scales. Various species of fish are bred in the same pond and farmers manage to contain the spread of insect larvae, thus preventing the fields from being infested. An eco-cycle of resource providers is established: mulberry leaves are fed to beneficial worms; worm faeces is fed to fish; and fish faeces is used as fertilizer for mulberry trees. This virtuous balance is a closed cycle. In addition, water sources have been shaped to minimize the impact of flooding and regulate the regional microclimate.

A SUCCESSFUL GIAHS STORY

Since its designation in 2017, a professional body has been established to manage, develop and promote the dynamic conservation of the site. In addition, it has attracted financial support from different departments, such as reform, water conservancy, agriculture and forestry, concentrating many financial resources on the construction of the GIAHS reserve. Lastly, the consciousness of preserving such a precious site is enhanced through displays, sales activities, multi-channel dissemination and communications in farmers' newspapers and other network platforms.



Source: provided by authors/organization



Source: provided by authors/organization



Source: provided by authors/organization

MAROC NATIONAL STUDY

CAS NATIONAL SUR L'AGROÉCOLOGIE

L'UTILISATION DE L'AGROÉCOLOGIE POUR ATTEINDRE LA SÉCURITÉ ALIMENTAIRE ET LES OBJECTIFS DE DÉVELOPPEMENT DURABLES AU MAROC: UN CAS PRATIQUE

Les agriculteurs-trices des zones rurales de montagne au Maroc sont confrontés à de nombreux défis parmi lesquels la pauvreté, la dureté des conditions de vie et la dégradation de l'environnement suite au changement climatique. Le projet d'agro-écologie au Sud du Maroc a été lancé en 2015 par l'Organisation Non Gouvernementale «MIGRATIONS & DEVELOPPEMENT» une en réponse à ces problématiques. L'Organisation a été créée en 1986 par des migrants, qui mènent des actions de développement dans les villages de leurs régions d'origine, l'Atlas et l'Anti-Atlas marocains. Ce projet a pour but de développer et diffuser les pratiques de l'agroécologie.

CONSISTANCE DU PROJET

Sur la base de la mise en place de 3 parcelles pilotes dans les communes rurales d'Assaïs, Askaoun et Arbâa Sahel, plus de 60 agriculteurs et agricultrices originaires de ces communes bénéficient d'une formation adaptée à leurs

besoins et aux réalités vécues sur leurs territoires. Ces parcelles pilotes servent à la fois de terrain de formation et d'expérimentation. Par la suite, elles serviront à transmettre les pratiques agro-écologiques à d'autres agriculteurs et agricultrices de la région.

Les paysans apprennent à produire leur propre compost, à fabriquer des fertilisants et insecticides naturels, la rotation des cultures, des techniques de taille et de greffage...



Source: provided by authors/organization

OBJECTIFS

Dans un contexte où le modèle de l'agriculture conventionnelle montre des limites considérables, notre démarche est la suivante: lier sauvegarde des zones montagneuses au Sud du Maroc et protection de l'environnement par la construction d'alternatives basées sur une relation renouvelée de l'homme avec sa terre et la nature, en favorisant le développement des modes de vie écologiques.

- » Objectif (1): Former au moins 60 agriculteurs aux pratiques de l'agro-écologie pour qu'ils les mettent en pratique dans leurs exploitations.
- » Objectif (2): Sensibiliser au moins 120 autres agriculteurs-trices aux pratiques de l'agro-écologie mettant en valeur le savoir, le savoir-faire et les activités agricoles ancestrales.
- » Objectif (3): Mettre en place 3 parcelles pilotes en système de production agro-écologique.

RÉSULTATS ATTENDUS

- » 9 modules de 2 jours de formation sont mis en place sur chacun des 3 sites d'interventions, plus de 60 agriculteurs sont formés;
- » Les agriculteurs formés réutilisent les techniques sur leurs propres parcelles;
- » Au moins 120 agriculteurs des villages environnants sont sensibilisés aux pratiques agro-écologiques;
- » 3 parcelles pilotes sont mises en place.



Source: provided by authors/organization

IRAQ NATIONAL STUDY

INITIATIVE OF THE SYSTEM OF RICE INTENSIFICATION

In 2005, we began experimenting with SRI methods at Al-Mishkhab Rice Research Station (MRRS) in Najaf. With SRI practices, roots grow larger and deeper and do not degenerate for lack of oxygen in the soil as occurs when rice fields are kept continuously flooded. SRI is considered as a methodology rather than as a technology.

SRI PRINCIPLES

Early transplanting of seedlings.

- » One seedling per hill.
- » Wide spacing between seedlings.
- » Moist the soil using intervals irrigation.
- » Weeding using rotary hoe or hand not use chemical herbicide to reduce the pollution of the environment, and

» Using organic manure to restoring the soil fertility.

With SRI practices, roots grow larger and deeper and do not degenerate for lack of oxygen in the soil as occurs when rice fields are kept continuously flooded. SRI is considered as a methodology rather than as a technology.



Source: provided by authors/organization

IRAQ'S CHALLENGE

There are several characteristic challenges regarding the implementation of SRI in Iraq:

» Usually, the conventional method of irrigated rice production involves continuous submergence, maintaining a layer of 10cm deep water during the growing season

- » Cropping rice in alternation with wheat is common. This cropping system has frequently exhausted the soil
- » Generally, seed is directly spread onto ploughed soil, using large amounts of seed

Therefore, a new strategy is needed to maintain high rice productivity using less water and resources, including seeds.



Source: provided by authors/organization

IMPLEMENTING SRI IN IRAQ

In 2005, we began experimenting with SRI methods at AL-Mishkhab Rice Research Station (MRRS) in Najaf. A year later, in 2006, we decided to extend the evaluation of this method into the provinces of Basrah, Messan and Thi-Qar. After obtaining very promising results, the SRI methods were further introduced

in 5 additional trial sites. By 2008, we decided to expand SRI methods as part of a general strategy of soil improvement that same year, an expansion that confirmed that SRI practices can improve both plant performance and yields under Iraqi conditions while reducing water use, saving seed and lowering costs of production.

In 2009-2013, we implemented SRI method on a large-scale in three provinces. In 2011, the Ministry of Agriculture agreed to establish an SRI ministerial committee for planning and managing the SRI system in Iraq to preserve natural resources, water, soil and reduce the pollution to the environment while maintaining and increasing rice yields.

SRI DEVELOPMENT IN IRAQ DURING THE PAST 13 YEARS

Year	SRI System		SRI with MT		SRI with Clover		SRI Researches at MRRS increase (%)	Average yield
	Hectares	Farmers	Hectares	Farmers	Hectares	Farmers		
2005	0.25	1	-	-	0.25	1	-	18
2006	2.0	8	-	-	1.5	8	1	18
2007	11.0	16	-	-	3.25	16	5	21
2008	16.0	4	-	-	12.0	60	2	51
2009	9.25	12	9.0	10	16.5	40	-	22
2010	2.0	4	17.0	22	15.0	38	3	18
2011	2.0	8	6.0	12	15.0	43	1	36
2012	22.0	16	3.5	7	19.5	63	2	14
2013	20.0	4	1.0	2	30.0	78	-	15
2014	3.0	12	2.0	4	20.0	80	-	25
2015	-	-	1.0	2	30.0	55	1	9
2016	-	-	2.0	8	22.0	45	1	12
2017	3.0	12	1.0	2	7.0	30	-	20
Total	90.5	97	42.5	69	192	557	16	21



Source: provided by authors/organization

BOLIVIA NATIONAL STUDY

THE DYNAMIC AGROFORESTRY METHOD

The “dynamic agroforestry” method (DAF) is an innovative progression of agricultural cultivation combined with agroforestry. The method is based on the knowledge of the indigenous peoples of Latin America structured and combined with agriculture by the Swiss Ernst Götsch in the 1980s and 1990s. In the 90s, the Deutscher Entwicklungsdienst (DED) in Bolivia among others promoted its development. In the last 5-10 years, several research projects started and a growing interest in that method.

DAF constructs natural forest-like systems with high biomass production and which supply as side effect a large variety of products for humans. DAF specifically uses cutting of the plants to keep the forest system at a youthful state and thus to promote increased biomass production.

DEVELOPING THE DAF METHOD

Research began in 2005 to discover this method. First results showed that the DAF method uses certain natural mechanisms that have been used in agriculture: diversity, density, intersection, etc. In February 2017, a study concluded that maize grows

better when mycorrhiza are present in the soil. This result makes it clear that there are synergy effects between plants which have not been considered in conventional cultivation but have great potential to make cultivation more sustainable and more profitable

than other methods. Another advantage of DAF is that the method can be used in almost any kind of soil in every climate zone. Degraded soils can be made fertile again with DAF in a comparatively short time.

See photos on the following page

POTENTIAL OF DYNAMIC AGROFORESTRY

DAF has great potential in the following areas:

1. To improve the living conditions of many small-scale farmers;
2. Restore natural habitats and build natural buffers around protected areas, and
3. Adapting to the consequences of climate change such as changes in rainy season, longer drying phase or exceptional storms.

In addition, DAF has the potential to store carbon in the soil for a long time (up to 1 000 years and more) thanks to the high biomass of the system combined with the use of biochar in the soil, while the humus content and thus the soil fertility increase. This makes DAF not only one of the best answers to the aforementioned challenges, but could be one of the key factors to slow down or even reverse climate change.



Source: provided by authors/organization

SCALING AND SPREADING DAF

Since 2011, Naturefund uses DAF very successfully in various projects in different countries and ecosystems: Honduras, Nicaragua, Madagascar, Bolivia and various locations in Europe. This method is the best reforestation method that we have thus far found, as it offers farmers stable revenues, improves the soil and creates a system of diverse plants. These forests are usually “close to nature” and offer a habitat to numerous species. Naturefund set its sights to informing people about this method, building up a database for the existing knowledge and implementing dynamic agroforestry worldwide in its various reforestation projects. Additionally, we planned a simple DIY kit that should enable smallholder farmers as well as non-governmental organisations working in the same area to introduce dynamic agroforestry on their lands.



Source: provided by authors/organization



Source: provided by authors/organization

CANADA NATIONAL STUDY

AGROECOLOGY RESEARCH BY AGRICULTURE AND AGRI-FOOD IMPACTS OF STREAM DREDGING AND RIPARIAN ZONE CLEARING

In many regions of Canada, the footprint of agriculture is increasing. This often results in excessive losses of wildlife habitat and biodiversity, increases in GHG emissions and carbon losses, and degradation of water quality and soil resources. This project aims at conserving, protecting and valuing natural features, such as riparian zones, wetlands, woodlots and vegetated fence lines, in order to make agro-ecosystems more resilient to environmental and anthropogenic changes.

PROBLEM

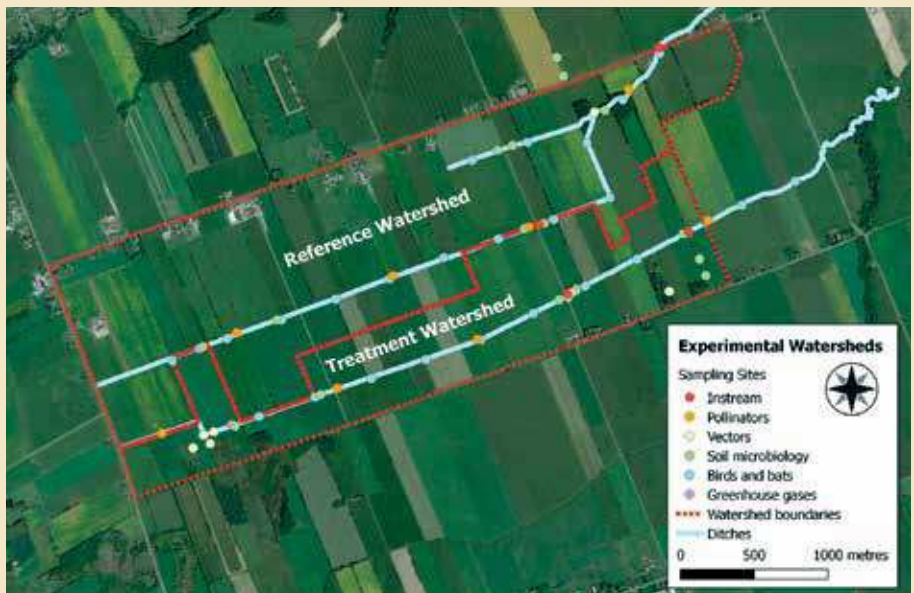
In many regions of Canada, the footprint of agriculture is increasing. This often results in excessive losses of wildlife habitat and biodiversity, increases in GHG emissions and carbon losses, and degradation of water quality and soil resources. For an agro-ecosystem to be resilient to environmental and anthropogenic changes, natural features, such as riparian zones, wetlands, woodlots and vegetated fence lines should be conserved, protected and valued for the services they provide both the agricultural sector and receptors of ecological concern.



Source: provided by authors/organization

EXPERIMENTAL WATERSHEDS

- » South Nation river basin: eastern Ontario, Canada
- » Paired experimental watersheds; livestock cropping
- » BACI experimental design: 2-4 years before-treatment monitoring; 5-8 post treatment monitoring
- » Treatment watershed: clear/dredge linear riparian features
- » Sub-sites shaded and not shaded by trees



Paired experimental watersheds.
Source: provided by authors/organization

WATERSHED MONITORING

- » Water monitoring of nitrogen, carbon, phosphorous, pesticides, pathogens, total suspended solids, aquatic invertebrates and vertebrates and hydrology
- » Beneficial insect trapping, bird and bat monitoring
- » Carbon store characterization and vegetation diversity
- » Mosquito sampling and habitat monitoring

CURRENT AND PROJECTED FINDINGS

The recovery timeline for a selection of environmental and agronomic targets:

- » Less than 3 years after intervention
 - Recovery of natural pollinators and beneficial insects
- » Between 3 and 10 years after intervention:
 - Pesticide dissipation in the stream
 - Nutrient transport abatement
 - Partial recovery of aquatic invertebrates

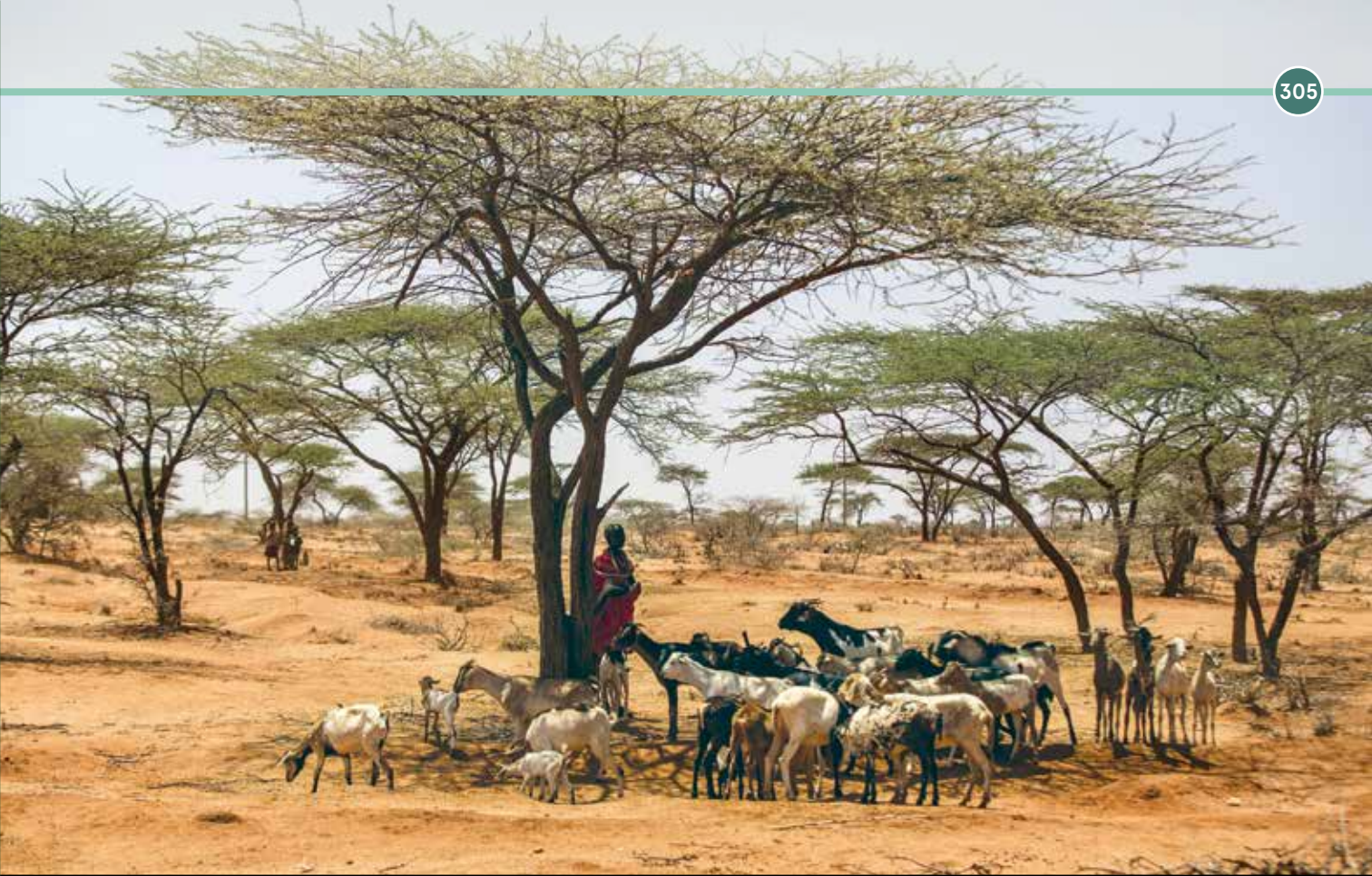
- Reduced waterborne pathogen exposure to livestock
- Reduction of sediment and soil loss
- Control of instream flood
- » After 10 years after intervention
 - Partial recovery of terrestrial vertebrates
 - Recovery of woody carbon and carbon storage
 - Recovery of shelterbelt services
 - Increase of GHG emissions



Source: provided by authors/organization

Agriculture and Agri-Food Canada (AAFC)





APPENDICES

- **APPENDIX A** - THE SCALING UP AGROECOLOGY INITIATIVE
- **APPENDIX B** - 10 ELEMENTS OF AGROECOLOGY
- **APPENDIX C** - CHAIR'S SUMMARY
- **APPENDIX D** - SIDE EVENTS

APPENDIX A

THE SCALING UP AGROECOLOGY INITIATIVE

TRANSFORMING FOOD AND AGRICULTURAL SYSTEMS IN SUPPORT OF THE SDGs
A proposal prepared for the International Symposium on Agroecology
3–5 April 2018

MISSION OF THE INITIATIVE

In the transformative spirit of the 2030 Agenda, we will work with food producers, governments and other stakeholders to strengthen Agroecology – as a promising approach –, harnessing a range of sustainable practices and policies, knowledge and alliances to achieve equitable and sustainable food systems in support of the SDGs.

This document presents the *Scaling up Agroecology Initiative*, a vision to bring Agroecology to scale and transform food and agricultural systems to achieve the SDGs. The document responds to four key questions: “What is the **potential of Agroecology** to contribute to the 2030 Agenda?” (*Section 1*); “What are the key **challenges and opportunities** to scale up Agroecology?” (*Section 2*); “Which **core areas of work** should the *Scaling up Agroecology Initiative* focus on?” (*Section 3*); and “What is the **way forward** for the *Scaling up Agroecology Initiative*?” (*Section 4*).

FAO, as the lead agency, will be inviting UN agencies and other partner organizations to discuss and join the Initiative. It is intended to be presented and launched at the “Second International Symposium on Agroecology: Scaling up Agroecology to achieve the SDGs” in April 2018 in Rome.

SECTION 1

AGROECOLOGY AND THE SUSTAINABLE DEVELOPMENT GOALS

The 2030 Agenda for Sustainable Development calls for a transformation in food and agricultural systems. The Agenda is a framework for achieving integrated sustainable development in its three dimensions – environmental, social and economic. It calls for all people to be critical agents of change in the process.

Agroecology is key to transforming food and agricultural systems. Growing scientific evidence and local experiences demonstrate how Agroecology facilitates and contributes to transition to food and agricultural systems that are environmentally sustainable, economically fair, viable and socially equitable.

Agroecology embraces the spirit of the 2030 Agenda:

- » **Agroecology helps to achieve multiple objectives through integrated practices, supported by coherent cross-sectoral policies.** Agroecology addresses the environmental, economic and social dimensions of agri-food systems. It seeks innovative and holistic solutions to the complex and interrelated challenges of poverty, hunger and malnutrition, rural abandonment, environmental degradation and climate change.
- » **Agroecology places people at the centre.** Agroecology empowers people to be critical agents of change in the transformation of their food systems. It recognizes and brings together knowledge and experiences of diverse actors – including, women, youth, food producers, traders, consumers, policymakers, scientists and citizens.
- » **Agroecology contributes directly to multiple SDGs.** The eradication of poverty (1) and hunger (2), ensuring quality education (4), achieving gender equality (5), increasing water-use efficiency (6), promoting decent jobs (8), ensuring sustainable consumption and production (12), building climate resilience (13), securing sustainable use of marine resources (14) and halting the loss of biodiversity (15) (see Annex 1).

Scaling up Agroecology matches the transformative ambitions of the 2030 Agenda and will support countries to meet their commitments. Transitions require innovations in policies, rural institutions and partnerships, as well as in the production, processing, marketing and consumption of nutritious food, leading to sustainability and equity throughout the entire food and agricultural system. Scaling up Agroecology requires overcoming key challenges while harnessing emerging opportunities. Transitions require putting in place long-term processes that must start urgently.

SECTION 2

CHALLENGES AND OPPORTUNITIES TO SCALE UP AGROECOLOGY

Many successful examples of Agroecology exist at local and national levels and are based on traditions and local knowledge, on innovative solutions and recent scientific information. In certain cases, they have been scaled up with the support of public policies and networks of knowledge exchange, and by strengthening rural institutions and improving access to markets. Based on the results of the international and regional symposia on Agroecology¹ organized by FAO, and based on the salient features of Agroecology (see Annex IV), key challenges have been identified that are holding back wide-scale agroecological transitions, as well as opportunities for action. From this analysis, the proposed core areas of work of the Scaling up Agroecology Initiative are described below:

CHALLENGES

- » **Lack of awareness of Agroecology among policymakers.** Despite many successful agroecological experiences in all regions of the world, there is a lack of awareness among key decision makers of the potential of Agroecology to tackle to multiple challenges and contribute to achieving the SDGs.
- » **Agroecological transitions require an enabling environment.** Food producers who wish to transition to a more sustainable path face constraints and risks. An enabling environment is necessary to provide positive incentives and buffers for food producers while they transform their systems, which takes time to realize the full benefit.
- » **Political and economic support needs to prioritize sustainable approaches.** There is a need to catalyse national policies in support of more sustainable food systems through innovative and integrative approaches – such as Agroecology and ecosystem based resources management– that respond to multiple social, environmental and economic challenges. High-input, resource-intensive agricultural production systems have increased productivity but incur heavy costs, such as environmental degradation and negative social impacts, which are borne by today's society and future generations. The policies that promote these agricultural

¹ First International Symposium on Agroecology for Food Security and Nutrition (September 2014); Regional Seminar on Agroecology in Latin America and the Caribbean (June 2015); Regional Meeting on Agroecology in Sub-Saharan Africa (November 2015); Multi-stakeholder Consultation on Agroecology for Asia and the Pacific (November 2015); International Symposium on Agroecology for Sustainable Agriculture and Food Systems in China (August 2016); Regional Symposium on Agroecology for Sustainable Agriculture and Food Systems in Europe and Central Asia (November 2016); Regional Consultation on Agroecology: adapting to climate change in semi-arid areas for sustainable agricultural development (November 2017).

production systems, including current research priorities, need to be redirected to create a level playing field for Agroecology and other sustainable agricultural approaches that take into consideration the externalities of food systems.

» **Research, education and extension systems do not sufficiently respond to the needs of Agroecology as an approach to effectively transform food and agricultural systems.**

Agroecological systems are diverse, maximising the synergies between different components (e.g. soil, water, crops, livestock, trees, aquatic plants and animals, human processes) to deliver greater resource-use efficiency and resilience. Managing these interactions depends on *locally adapted knowledge*. Despite growing calls for change, in many cases, current research, education and extension systems focus on single disciplines, increasing yields of single commodities and top-down technology transfer models. To scale up Agroecology, rural education and extension systems need to be strengthened and a different modality of knowledge *co-creation* which combines scientific knowledge with the knowledge of food producers needs to be promoted.

» **Current market systems are not responding to agroecological approaches.** Markets that are developed as vertical value chains for single products do not match the needs of diversified agroecological production systems or the needs of consumers for diversified and healthy diets, particularly those of small-scale food producers and poor urban consumers. In recent years, policies have focused on strengthening global value chains, ignoring the important role of local and regional markets. Putting more emphasis on local/regional markets is needed to encourage diversified production and improve access to healthy food for improved diets. Successful models which re-connect producers and consumers, rural and urban areas (such as community-supported agriculture schemes, public procurement programmes, e-commerce and participatory guarantee schemes) need to be strengthened, and agroecological producers need improved access to these market opportunities.

» **Lack of coordinated action and collaboration in policy and governance.** Agroecological transitions require greater integration among sectors, disciplines and actors to achieve multiple objectives. Policies need to be integrated across scales (local, national and international) and sectors (from agriculture, fisheries and forestry to economic, social and environmental sectors) to achieve coherence through a territorial approach. In particular, agroecological systems require a governance system that coordinates actions at the landscape and territorial scale. Worldwide, the tendency has been towards sector-specific policy-making lacking global and national governance mechanisms, regulatory systems for monitoring and accountability.

OPPORTUNITIES

- » **There is widespread recognition that agricultural models based on high-input, resource-intensive production systems have reached their limit.** Key actors from governments, international institutions, civil society and organizations of food producers have demonstrated their commitment to shift to a new paradigm based on Agroecology. *“High-input, resource-intensive farming systems, which have caused massive deforestation, water scarcities, soil depletion and high levels of greenhouse gas emissions, cannot deliver sustainable food and agricultural production. Needed are Innovative systems that protect and enhance the natural resource base while increasing productivity. Needed is a transformative process towards ‘holistic’ approaches (such as Agroecology”²).*
- » **Agroecological solutions already exist – in policies and in practice.** A multitude of agroecological systems exist throughout all regions of the world, spread across landscapes and seascapes, and in different food production sectors, often rooted in family farming and other small-scale production systems. In a number of cases, public policy support has played a key role in the up-scaling of Agroecology. For example, in aquatic systems the ecosystem approach to fisheries has had traction at national level and has been supported by the Plan of Implementation of the World Summit on Sustainable Development. These experiences serve as an invaluable resource for understanding the essential links between communities, knowledge, culture, biodiversity, landscapes, economy and governance. Transition processes will be strengthened by drawing from successful agroecological experiences.
- » **Scientific knowledge of Agroecology is rapidly increasing, and organizations of food producers and civil society hold significant practical, traditional and local agroecological knowledge.** Combining scientific and experiential knowledge is the key to unlocking agroecological innovations.
- » **Network connections can enhance sharing of knowledge and solutions between actors.** Modern society is increasingly connected, including rural areas that were previously isolated. This presents new opportunities for exchanging knowledge, sharing experiences and expressing solidarity in the face of common challenges, between various state- and non-state actors. The Agroecology Knowledge Hub managed by FAO is one such example of a platform for knowledge exchange. South-south cooperation is a particularly promising modality to support the up-scaling of Agroecology.
- » **Agroecology addresses climate change adaptation and mitigation.** Agroecological strategies including diversification and crop-livestock-tree integration increase resource-use efficiency and resilience to climate change. At the same time, agroforestry and improved agricultural production practices maintain and improve the capacity of soils to sequester carbon. Agroecology can therefore provide options for balancing trade offs between adaptation and mitigation.

² FAO (2017). *The future of food and agriculture – Trends and challenges*. Rome

- » **Rural youth and migration.** Millions of new jobs will need to be created to meet the aspirations of rural youth. Agroecology provides a promising solution as a source of decent rural employment, one that offers a choice and alternative to urban or international migration. Agroecology is based on a different way of agricultural production that is knowledge intensive, environmentally friendly, socially responsible, innovative, and which depends on skilled labour. Meanwhile, rural youth around the world possess energy, creativity and a desire to positively change their world. What they need is support and opportunities.
- » **Growing consumer demand for healthy diets.** There is an increasing demand for healthy diets, including in urban areas, and an urgent need to diversify diets as a response to rising malnutrition in all its forms (undernutrition and obesity) and associated non-communicable diseases (NCDs). There is also a growing awareness of the existing links between environmental and social issues including climate change, nutrition and health. Integrated agroecological systems can address this demand, while simultaneously promoting soil health and reducing environmental degradation. Innovative markets are emerging at local and territorial levels in synergy with diversified production systems. These markets contribute to the conservation and sustainable use of biodiversity, add value to local products thus improving local income and livelihoods, and make healthy food for improved diets more easily accessible to consumers.
- » **United Nations Decade of Family Farming (2019-2028).** Worldwide Agroecology is rooted in agricultural heritage systems based on family farming, and the knowledge of family farmers is essential for sustaining the local innovation processes of Agroecology. Of the 815 million hungry people in the world, paradoxically, 70 percent are family farmers who make their living from agriculture, herding, fisheries and forestry. Increasing the resilience of their production systems, livelihoods and self-provisioning of nutritious foods are key to eliminating hunger. The prospective Decade of Family Farming offers an important opportunity to raise awareness of, and support for, the inter-linkages between Agroecology and family farming. In particular, there are opportunities for collaboration in the areas of awareness and knowledge creation, promotion of best agroecological practices for smallholder and family farmers, increased pro-poor investments in the direction of Agroecology contributing to selected SDG indicators, and implementation of national policies and programmes.
- » **United Nations Decade of Action on Nutrition (2016–2025).** The Nutrition Decade provides a unique opportunity to highlight the contribution of Agroecology for sustainable food systems that deliver healthy diets and improved nutrition. Food production is an important ecosystem service. Agroecology can produce the food needed for human nutrition through increased dietary diversity, promotion of underutilized traditional crops and sustainably produced animal-source products. It also improves the nutritional status of households, in particular those of smallholder family farmers, either directly or indirectly through pathways such as promoting decent rural employment, or improving resilience to climate change. Agroecology contributes to the Nutrition Decade’s vision of addressing malnutrition in all its forms by applying sustainable food production and effective natural resource management for healthy diets.

SECTION 3

THE SCALING UP AGROECOLOGY INITIATIVE

The Scaling up Agroecology Initiative aims to accompany and support national Agroecology transition processes through policy and technical capacity that builds synergies between countries. It will build alliances among different stakeholders, strengthen networks and allow co-creation of knowledge and knowledge sharing. The Initiative will develop, implement and continuously improve tools, instruments and guidance documents for guiding national agroecological transitions.

The Initiative focuses its efforts on three areas of work that are key to harnessing the opportunities and overcoming the challenges identified in Section 2.

The Initiative will provide a framework for concerted action. Harnessing the potential of Agroecology to transform food and agricultural systems requires a framework for coordinated action and collaboration among a range of actors. The *Scaling up Agroecology Initiative* responds to this need.

The Initiative builds on existing experiences and strengths. It builds on the outcomes of international and regional symposia on Agroecology³ as well as activities implemented at national, regional and international levels. The Initiative will also respond to Member States' request to "*continue to strengthen ...work on Agroecology*"⁴. It will capitalize and bring together the work and efforts of the many partners and stakeholders who have been actively involved in Agroecology and build a new, forward-looking framework for action.

It will develop knowledge, policy guidance and networks needed to guide agroecological transitions (see the 3 areas of work below). This guidance will address the levels of agroecological transitions, including: agroecological practices, agroecosystem re-design, diverse agroecological food systems, and strengthening the enabling environment.

The Initiative will act at national, regional and global levels. National experiences will be shared at regional and global levels to develop improved guidance based on a range of different experiences. An increasing number of countries (as well as states and municipalities) are showing interest in Agroecology and requesting support from inter-governmental bodies to guide transition processes. The Initiative will therefore focus its work in countries which request support to plan and implement transition processes. It will bring together the best expertise from different countries and from international and regional agencies to support national processes.

³ <http://www.fao.org/agroecology/overview/global-dialogue/en/>

⁴ **COAG (2016)**. *Report of the 25th Session of the FAO Committee on Agriculture*.

AREA OF WORK 1. KNOWLEDGE AND INNOVATION FOR SUSTAINABLE FOOD AND AGRICULTURAL SYSTEMS

The Initiative will support local and national efforts to deliver solutions for context-specific needs by generating and co-creating knowledge and conducting capacity-building and training activities. It will strengthen field-based capacity to sustainably manage agro-ecosystems across entire landscapes and seascapes by supporting food producers' organizations, extension agents and inter-disciplinary researchers helping countries achieve food security. It will also enable knowledge sharing across countries and regions that require new solutions to changing climates. The Initiative will demonstrate the impact of Agroecology by expanding the evidence base, exploring research gaps and supporting data collection at national level.

Targets

- » Increase knowledge base/capacity on Agroecology in 50 countries, including through promotion of south-south / triangular cooperation that connects demands of support with existing expertise (Years 1-10)
- » Improving the evidence base on Agroecology and ecosystem-based approaches at regional and global levels (Years 1-2)
- » Collection of relevant data at national level in 15 countries (Years 3-10)

AREA OF WORK 2. POLICY PROCESSES FOR TRANSFORMATION OF FOOD AND AGRICULTURAL SYSTEMS

The Initiative will assist countries in the development of policies for Agroecology with the participation of non-state actors. It will provide technical support to countries and seek to harness existing international instruments and decisions of inter-governmental bodies, including the 2030 Agenda, to support agroecological transition. It will catalyse cooperation throughout the UN system to strengthen agencies' capacities to support agroecological transition processes.

Targets

- » Provide technical support to at least 20 countries in agroecological transition processes including through the promotion of south-south / triangular cooperation that connects demands of support with existing expertise (Years 1-10).
- » Support 20 countries in developing and implementing Agroecology. (Years 1-10)
- » Provide technical guidance on Agroecology to support the implementation of policy decisions of inter-governmental bodies (such as the Committee on World Food Security and the Convention on Biological Diversity) upon request in up to 20 countries (Years 1-10)

- » Develop technical guidance on the implementation of existing international instruments* in relation to Agroecology in 20 countries (Years 1-10)
- » Support governments in their SDG reporting by developing guidance on monitoring – including data collection and policy analysis – for the Goals relevant to Agroecology in 30 countries (Years 1-10)
- » Provide guidance to 20 countries on securing access to natural resources, knowledge and investments to empower women and youth to play a leading role in agroecological transitions (Years 1-10)
- » Present outcomes to relevant UN fora, including the Economic and Social Council of the United Nations (ECOSOC) and High Level Political Forum, and coordinate joint activities with relevant UN-wide initiatives such as the prospective United Nations Decade of Family Farming (2019-2028), the UN Decade of Action on Nutrition (2016-2025), the UN International Year of Artisanal Fisheries and Aquaculture (2022) and the FAO Globally Important Agricultural Heritage Systems (GIAHS).
- » Contribute to the post 2020 biodiversity framework (Years 1-2)
- » Support efforts to report on progress achieved to the governing bodies of relevant UN agencies (e.g. FAO's Committee on Agriculture) (Years 1-10)

* Including but not limited to: *International Treaty on Plant Genetic Resources for Food and Agriculture*; the *global plans of action on plant, animal, forest and aquatic genetic resources of the Commission on Genetic Resources for Food and Agriculture*; *Convention on Biological Diversity*; *Voluntary Guidelines for Sustainable Soil Management*; *Voluntary Guidelines to support the progressive realization of the right to adequate food in the context of national food security*; *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*; *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries and Voluntary guidelines for mainstreaming biodiversity into policies, programmes and national and regional plans of action on Nutrition*.

AREA OF WORK 3. BUILDING CONNECTIONS FOR TRANSFORMATIVE CHANGE

The Initiative will work with all stakeholders – governments, producers’ organisations, consumers, civil society, research and the private sector – and support networks and platforms for knowledge exchange and dialogue at national, regional and international levels. It will ensure collaboration and coordination among UN agencies.

Targets

- » Develop (in 2018) and implement a joint programme of work on Agroecology with partners joining the Initiative (from 2018 to 2030).
- » Present the joint programme of work for discussion and approval to relevant governing bodies (Years 1-3)
- » Increase awareness of Agroecology at all levels and building alliances, including with producer organizations, consumer groups, policy-makers, young people, women’s groups, private and public investors (Years 1-10)
- » Develop tools and guidance for inclusive food systems and innovative markets involving both producers and consumers in 20 countries (Years 1-10)
- » Contribute to increase innovative alliances between producers and consumers in at least 10 countries
- » Contribute to develop Agroecology Cities networks in the framework of the Milan Pact
- » Catalyse the engagement of women and youth organizations in production, processing and marketing initiatives that create decent working opportunities in 20 countries (Years 1-10)
- » Provide guidance to 20 countries on securing access to natural resources, knowledge and investments to empower women and youth to play a leading role in agroecological transitions (Years 1-10)

SECTION 4

WAY FORWARD FOR THE SCALING UP AGROECOLOGY INITIATIVE

FAO is convinced that a wide cooperation among partners and a wide range of actors and institutions is necessary to scale up Agroecology in order to achieve the SDGs. Efforts will focus on the four areas of work described above. The best way to engage with partners will be discussed with UN partners during the preparation of the joint programme of work on Agroecology.

Three types of partnerships are envisaged:

» **UN Agencies and Bodies.**

Role: UN agencies and bodies will partner to identify priorities and strategies for the Initiative and to implement specific activities, building on synergies between normative work and operational functions.

Opportunities: The Initiative will enhance synergies with ongoing UN efforts – mainly the 2030 Agenda, but also including the Decade of Family Farming, the UN Decade of Action on Nutrition, the International Year of Artisanal Fisheries and Aquaculture, the Global Initiative on Decent Jobs for Youth, the Rome-based agencies collaboration on home-grown school meals and the Sustainable Food Systems Programme of the 10-Year Framework for Programmes on Sustainable Consumption and Production Patterns.

» **Governments.** The Initiative will invite all interested Members as partners.

Role: Governments will advise FAO and its partners on priorities and strategies for the Initiative and partner to implement specific activities.

Opportunities: The Initiative will seek cooperation with regional bodies such as the Community of Latin American and Caribbean States and the New Partnership for Africa's Development to support regional cooperation on Agroecology. It will also seek cooperation with relevant targeted initiatives, such as the G20 Initiative for Rural Youth Employment.

» **Non-state actors.** The Initiative will work with partners to implement specific activities on an ad hoc basis, including food producers' organizations, consumers, civil society, research institutions and the private sector.

Role: Implementing specific activities of common interest at local, national, regional and international levels.

Opportunities: Non-state actors have played a vital role in developing, implementing and advocating for Agroecology. Family farmers have developed the knowledge, capacities and networks that must be at the core of creating sustainable food systems. National, regional and international research institutions are pioneering transdisciplinary research to tackle complex problems facing food and agricultural systems. Consumers and the private sector create the demand and also opportunities for inclusive and equitable food systems.

Joining efforts to scale up agroecology. Working together can have a catalytic impact, enabling and empowering Members, communities and family farmers to scale up Agroecology and achieve the transformative vision of the 2030 Agenda: A world with sustainable and inclusive food and agricultural systems, where the health of both people and the planet thrives; where food security and nutrition is assured for all present and future generations; where the scourge of poverty is eliminated; where the fundamental contributions of women are valued and respected; and where core human values of dignity, freedom, equity and human rights are upheld. Agroecology can provide pathways to help achieve this bold and transformative vision.

ANNEX I

SDGs, TARGETS AND INDICATORS RELEVANT TO AGROECOLOGY

END POVERTY IN ALL ITS FORMS EVERYWHERE



Relevance of Agroecology. Family farming, herding and artisanal fisheries and aquaculture provide livelihoods for many of the world’s rural poor. Agroecological approaches support food producers in reducing production costs, translating into greater income, economic stability and resilience.

RELEVANT SDG TARGETS	INDICATORS
1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	1.4.2 Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure
1.5 Build the resilience of the poor and reduce their exposure and vulnerability to climate related events and other socio economic shocks and disasters	1.5.2 Direct disaster economic loss in relation to global gross domestic product (GDP)
1.b Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions	1.b.1 Proportion of government recurrent and capital spending to sectors that disproportionately benefit women, the poor and vulnerable groups

END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE



Relevance of Agroecology. Agroecological systems optimize the use of local and renewable resources. This enables agricultural production systems to harness ecosystem benefits such as pest control, pollination, soil health and erosion control while ensuring productivity. The conservation and sustainable use of biodiversity leads to robust ecosystem services and sustainable agriculture.

RELEVANT SDG TARGETS	INDICATORS
2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round	2.1.1 Prevalence of undernourishment 2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons	2.2.1 Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age 2.2.2 Prevalence of malnutrition (weight for height >+2 or <-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)
2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	2.3.2 Average income of small-scale food producers, by sex and indigenous status
2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality	2.4.1 Proportion of agricultural area under productive and sustainable agriculture

RELEVANT SDG TARGETS	INDICATORS
2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities 2.5.2 Proportion of local breeds classified as being at risk, non-at-risk or at unknown level of risk of extinction

ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES



Relevance of Agroecology. By minimizing the use of potentially harmful agro-chemical inputs, Agroecology reduces agriculture’s negative effects on both human and environmental health.

RELEVANT SDG TARGETS	INDICATORS
3.9 Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	3.9.1 Mortality rate attributed to household and ambient air pollution 3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services) 3.9.3 Mortality rate attributed to unintentional poisoning

ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL



Relevance of Agroecology. Agroecology depends on knowledge adapted to local context by food producers. It delivers relevant and practical knowledge through empowering peer-to-peer systems, enhanced with the knowledge of formal scientists.

RELEVANT SDG TARGETS	INDICATORS
4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex
4.4 Substantially increase the number of youth and adults who have relevant skills, for employment, decent jobs and entrepreneurship	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill
4.5 Eliminate gender disparities in education	4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflictaffected, as data become available) for all education indicators on this list that can be disaggregated

ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS



Relevance of Agroecology. Women have a central role in Agroecology. They are active in many parts of the food system, from the home, to the field, to the market and beyond. Agroecology has the potential to advance women’s rights, empowerment and autonomy.

RELEVANT SDG TARGETS	INDICATORS
5.1 Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws	5.a.1 a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure 5.a.2 Proportion of countries where the legal framework (including customary law) guarantees women’s equal rights to land ownership and/or control

ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL



Relevance of Agroecology. Agroecology prevents surface water and groundwater pollution. It promotes practices that are efficient in water use, enhance soil water retention, and value locally adapted crops that require less (or no) irrigation, allowing safer and more sustainable aquifer storage, recovery and recharge.

RELEVANT SDG TARGETS	INDICATORS
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	6.3.2 Proportion of bodies of water with good ambient water quality
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.1 Change in water-use efficiency over time
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management implementation (0-100)

PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL



Relevance of Agroecology. Agroecological approaches create new decent rural employment opportunities for youth and women. The increased resilience of agroecological production systems helps to better maintain existing jobs, supporting rural livelihoods and communities.

RELEVANT SDG TARGETS	INDICATORS
8.3 Support productive activities, decent job creation, entrepreneurship, creativity and innovation	8.3.1 Proportion of informal employment in non-agriculture employment, by sex
8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities 8.5.2 Unemployment rate, by sex, age and persons with disabilities
8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training	8.6.1 Proportion of youth (aged 15-24 years) not in education, employment or training

REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES



Relevance of Agroecology. Agroecology gives priority to the most marginalised sectors of society: rural women, youth, family farmers and indigenous peoples.

RELEVANT SDG TARGETS	INDICATORS
10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status	10.2.1 Proportion of people living below 50 per cent of median income, by age, sex and persons with disabilities

MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE



Relevance of Agroecology. By promoting a territorial approach to development, Agroecology encourages the development of integrated plans for urban and rural development, with urban areas recognising the multiple benefits that sustainable landscapes can provide them.

RELEVANT SDG TARGETS	INDICATORS
<p>11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage</p>	<p>11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)</p>

ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS



Relevance of Agroecology. Agroecology enhances diversification of diets and food and nutrition security. Agroecological food systems have proven, in many local contexts, to be exemplary providers of high-quality nutritious, healthy and adequate diets, preserving and promoting local food traditions and traditional knowledge. By shortening value chains Agroecology contributes to the reduction of food losses and waste.

RELEVANT SDG TARGETS	INDICATORS
12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries	12.1.1 Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or a target into national policies
12.2 By 2030, achieve the sustainable management and efficient use of natural resources	12.2.1 Material footprint, material footprint per capita, and material footprint per GDP 12.2.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses	12.3.1 Global food loss index
12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	12.5.1 National recycling rate, tons of material recycled
12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities	12.7.1 Number of countries implementing sustainable public procurement policies and action plans
12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities	12.c.1 Amount of fossil-fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels

TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS



Relevance of Agroecology. Agroecology helps mitigate against climate change and its impacts. It reduces the emission of greenhouse gases by promoting integrated production systems that are less dependent on energy from fossil fuels and that store and fix carbon. By promoting diversified and integrated production systems, Agroecology facilitates resilience and adaptation to a changing climate.

RELEVANT SDG TARGETS	INDICATORS
13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	13.1.1 Number of countries with national and local disaster risk reduction strategies
13.2 Integrate climate change measures into national policies, strategies and planning	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions

CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT



Relevance of Agroecology. In aquatic systems the Ecosystem Approach to Fisheries (EAF) and to Aquaculture (EAA) demonstrates an agroecological approach. The Ecosystem Approach ensures that the management of living resources applies an integrated approach to fisheries within meaningful boundaries, taking into account knowledge and uncertainties in the biotic, abiotic and human components.

RELEVANT SDG TARGETS	INDICATORS
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans	14.2.1 Proportion of national exclusive economic zones managed using ecosystem-based approaches
14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics	14.4.1 Proportion of fish stocks within biologically sustainable levels

PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS



Relevance of Agroecology. Agroecology works with local communities, food producers to prevent land degradation and restore degraded areas. Agroecology helps to conserve the biodiversity and ecosystem services that underpins food production.

RELEVANT SDG TARGETS	INDICATORS
15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	15.1.1 Forest area as a proportion of total land area 15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	15.2.1 Progress towards sustainable forest management
15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world	15.3.1 Proportion of land that is degraded over total land area
15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development	15.4.1 Coverage by protected areas of important sites for mountain biodiversity 15.4.2 Mountain Green Cover Index
15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	15.5.1 Red List Index
15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed	15.6.1 Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits
15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts	15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020

PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS



Relevance of Agroecology. Agroecology supports strong and inclusive producers’ organisations that enable the sharing of knowledge, solidarity, representation of their concerns at the policy level.

RELEVANT SDG TARGETS	INDICATORS
16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels	16.7.2 Proportion of population who believe decisionmaking is inclusive and responsive, by sex, age, disability and population group

STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT



Relevance of Agroecology. Scaling up Agroecology calls for increased cooperation between productive sectors, social actors and countries.

RELEVANT SDG TARGETS	INDICATORS
17.6 Enhance north-south, south-south and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism	17.6.1 Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation 17.6.2 Fixed Internet broadband subscriptions per 100 inhabitants, by speed
17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the SDGs, including through north-south, south-south and triangular cooperation	17.9.1 Dollar value of financial and technical assistance (including through north-south, south-south and triangular cooperation) committed to developing countries

ANNEX II FURTHER READING

- FAO. 2015. *Agroecology for Food Security and Nutrition: Proceedings of the FAO International Symposium*, 18-19 September 2014, Rome, Italy
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- Gliessman, S.R. 2015. *Agroecology: The Ecology of Sustainable Food Systems*, Third Edition, CRC Press.
- HLPE. 2013. *Investing in smallholder agriculture for food security. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security*, Rome.
- IPES-Food. 2016. *From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems*. International Panel of Experts on Sustainable Food systems.
- Méndez , V. Ernesto, Christopher M. Bacon & Roseann Cohen (2013). *Agroecology as a Transdisciplinary, Participatory, and Action-Oriented Approach*, *Agroecology and Sustainable Food Systems*, 37:1, 3-18
- Rosset, P.M. & Martinez-Torres, M.E. 2012. *Rural Social Movements and Agroecology: context, theory and process*. *Ecology and Society*, 17(3): 17.

APPENDIX B

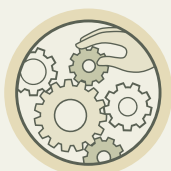
THE 10 ELEMENTS OF AGROECOLOGY



RESPONSIBLE
GOVERNANCE



DIVERSITY



SYNERGIES



EFFICIENCY



CIRCULAR AND
SOLIDARITY ECONOMY



HUMAN AND
SOCIAL VALUES



CO-CREATION AND
SHARING KNOWLEDGE



RESILIENCE



RECYCLING



CULTURE AND
FOOD TRADITIONS

INTRODUCTION

Today's food and agricultural systems have succeeded in supplying large volumes of food to global markets. However, high-external input, resource-intensive agricultural systems have caused massive deforestation, water scarcities, biodiversity loss, soil depletion and high levels of greenhouse gas emissions. Despite significant progress in recent times, hunger and extreme poverty persist as critical global challenges. Even where poverty has been reduced, pervasive inequalities remain, hindering poverty eradication.

Integral to FAO's Common Vision for Sustainable Food and Agriculture¹, agroecology is a key part of the global response to this climate of instability, offering a unique approach to meeting significant increases in our food needs of the future while ensuring no one is left behind.

Agroecology is an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. It seeks to optimize the interactions between plants, animals, humans and the environment while taking into consideration the social aspects that need to be addressed for a sustainable and fair food system.

Agroecology is not a new invention. It can be identified in scientific literature since the 1920s, and has found expression in family farmers' practices, in grassroots social movements for sustainability and the public policies of various countries around the world. More recently, agroecology has entered the discourse of international and UN institutions.²

WHAT MAKES AGROECOLOGY DISTINCT?

Agroecology is fundamentally different from other approaches to sustainable development. It is based on bottom-up and territorial processes, helping to deliver contextualised solutions to local problems. Agroecological innovations are based on the co-creation of knowledge, combining science with the traditional, practical and local knowledge of producers. By enhancing their autonomy and adaptive capacity, agroecology empowers producers and communities as key agents of change.

Rather than tweaking the practices of unsustainable agricultural systems, agroecology seeks to transform food and agricultural systems, addressing the root causes of problems in an integrated way and providing holistic and long-term solutions. This includes an explicit focus on social and economic dimensions of food systems. Agroecology places a strong focus on the rights of women, youth and indigenous peoples.

WHAT ARE THE 10 ELEMENTS OF AGROECOLOGY?

In guiding countries to transform their food and agricultural systems, to mainstream sustainable agriculture on a large scale³, and to achieve Zero Hunger and multiple other SDGs, the following 10 Elements emanated from the FAO regional seminars on agroecology⁴:

- » **Diversity; synergies; efficiency; resilience; recycling; co-creation and sharing of knowledge** (describing common characteristics of agroecological systems, foundational practices and innovation approaches)
- » **Human and social values; culture and food traditions** (context features)
- » **Responsible governance; circular and solidarity economy** (enabling environment)

The 10 Elements of Agroecology are interlinked and interdependent.

WHY ARE THE 10 ELEMENTS USEFUL AND HOW WILL THEY BE USED?

As an analytical tool, the 10 Elements can help countries to operationalise agroecology. By identifying important properties of agroecological systems and approaches, as well as key considerations in developing an enabling environment for agroecology, the 10 Elements are a guide for policymakers, practitioners and stakeholders in planning, managing and evaluating agroecological transitions.

DIVERSITY



Diversification is key to agroecological transitions to ensure food security and nutrition while conserving, protecting and enhancing natural resources.

Agroecological systems are highly diverse. From a biological perspective, agroecological systems optimize the diversity of species and genetic resources in different ways. For example, agroforestry systems organize crops, shrubs, and trees of different heights and shapes at different levels or strata, increasing vertical diversity.

Intercropping combines complementary species to increase spatial diversity.⁵ Crop rotations, often including legumes, increase temporal diversity.⁶ Crop–livestock systems rely on the diversity of local breeds adapted to specific environments.⁷ In the aquatic world, traditional fish polyculture farming, Integrated Multi-Trophic Aquaculture (IMTA) or rotational crop–fish systems follow the same principles to maximising diversity.⁸

Increasing biodiversity contributes to a range of production, socio-economic, nutrition and environmental benefits. By planning and managing diversity, agroecological approaches enhance the provisioning of ecosystem services, including pollination and soil health, upon which agricultural production depends. Diversification can increase productivity and resource-use efficiency by optimizing biomass and water harvesting.

Agroecological diversification also strengthens ecological and socio-economic resilience, including by creating new market opportunities. For example, crop and animal diversity reduces the risk of failure in the face of climate change.

Mixed grazing by different species of ruminants reduces health risks from parasitism, while

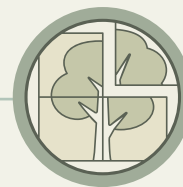
diverse local species or breeds have greater abilities to survive, produce and maintain reproduction levels in harsh environments. In turn, having a variety of income sources from differentiated and new markets, including diverse products, local food processing and agritourism, helps to stabilize household incomes.

Consuming a diverse range of cereals, pulses, fruits, vegetables, and animal-source products contributes to improved nutritional outcomes. Moreover, the genetic diversity of different varieties, breeds and species is important in contributing macronutrients, micronutrients and other bioactive compounds to human diets. For example, in Micronesia, reintroducing an underutilized traditional variety of orange-fleshed banana with 50 times more beta-carotene than the widely available commercial white-fleshed banana proved instrumental in improving health and nutrition.⁹

At the global level, three cereal crops provide close to 50 percent of all calories consumed,¹⁰ while the genetic diversity of crops, livestock, aquatic animals and trees continues to be rapidly lost.

Agroecology can help reverse these trends by managing and conserving agro-biodiversity, and responding to the increasing demand for a diversity of products that are eco-friendly. One such example is ‘fish-friendly’ rice produced from irrigated, rainfed and deepwater rice ecosystems, which values the diversity of aquatic species and their importance for rural livelihoods.¹¹

CO-CREATION AND SHARING OF KNOWLEDGE



Agricultural innovations respond better to local challenges when they are co-created through participatory processes.

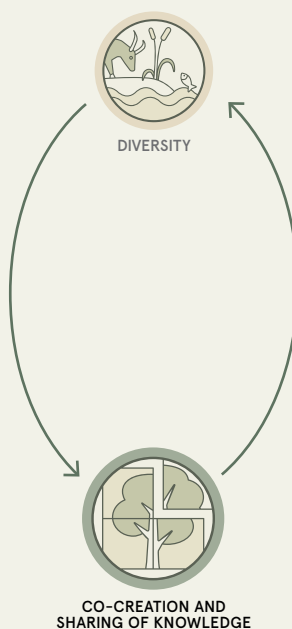
Agroecology depends on context-specific knowledge. It does not offer fixed prescriptions – rather, agroecological practices are tailored to fit the environmental, social, economic, cultural and political context. The co-creation and sharing of knowledge plays a central role in the process of developing and implementing agroecological innovations to address challenges across food systems including adaptation to climate change.

Through the co-creation process, agroecology blends traditional and indigenous knowledge, producers' and traders' practical knowledge, and global scientific knowledge.

Producer's knowledge of agricultural biodiversity and management experience for specific contexts as well as their knowledge related to markets and institutions are absolutely central in this process.

Education – both formal and non-formal – plays a fundamental role in sharing agroecological innovations resulting from co-creation processes. For example, for more than 30 years, the horizontal *campesino a campesino* movement has played a pivotal role in sharing agroecological knowledge, connecting hundreds of thousands of producers in Latin America.¹² In contrast, top-down models of technology transfer have had limited success.

Promoting participatory processes and institutional innovations that build mutual trust enables the co-creation and sharing of knowledge, contributing to relevant and inclusive agroecology transition processes.



SYNERGIES



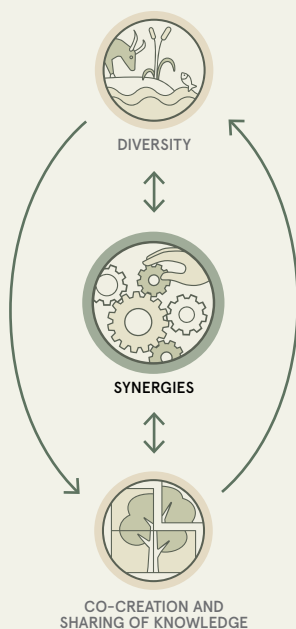
Building synergies enhances key functions across food systems, supporting production and multiple ecosystem services.

Agroecology pays careful attention to the design of diversified systems that selectively combine annual and perennial crops, livestock and aquatic animals, trees, soils, water and other components on farms and agricultural landscapes to enhance synergies in the context of an increasingly changing climate.

Building synergies in food systems delivers multiple benefits. By optimizing biological synergies, agroecological practices enhance ecological functions, leading to greater resource-use efficiency and resilience. For example, globally, biological nitrogen fixation by pulses in intercropping systems or rotations generates close to USD 10 million savings in nitrogen fertilizers every year,¹³ while contributing to soil health, climate change mitigation and adaptation. Furthermore, about 15 percent of the nitrogen applied to crops comes from livestock manure, highlighting synergies resulting from crop–livestock integration.¹⁴ In Asia, integrated rice systems combine rice cultivation with the generation of other products such as fish, ducks and trees. By maximising synergies, integrated rice systems significantly improve yields, dietary diversity, weed control, soil structure and fertility, as well as providing biodiversity habitat and pest control.¹⁵

At the landscape level, synchronization of productive activities in time and space is necessary to enhance synergies. Soil erosion control using *Calliandra* hedgerows is common in integrated agroecological systems in the East African Highlands.¹⁶ In this example, the management practice of periodic pruning reduces tree competition with crops grown between hedgerows and at the same time provides feed for animals, creating synergies between the different components. Pastoralism and extensive livestock grazing systems manage complex interactions between people, multi-species herds and variable environmental conditions, building resilience and contributing to ecosystem services such as seed dispersal, habitat preservation and soil fertility.^{17,18}

While agroecological approaches strive to maximise synergies, trade-offs also occur in natural and human systems. For example, the allocation of resource use or access rights often involve trade-offs. To promote synergies within the wider food system, and best manage trade-offs, agroecology emphasizes the importance of partnerships, cooperation and responsible governance, involving different actors at multiple scales.



EFFICIENCY



Innovative agroecological practices produce more using less external resources.

Increased resource-use efficiency is an emergent property of agroecological systems that carefully plan and manage diversity to create synergies between different system components. For example, a key efficiency challenge is that less than 50 percent of nitrogen fertilizer added globally to cropland is converted into harvested products and the rest is lost to the environment causing major environmental problems.¹⁹

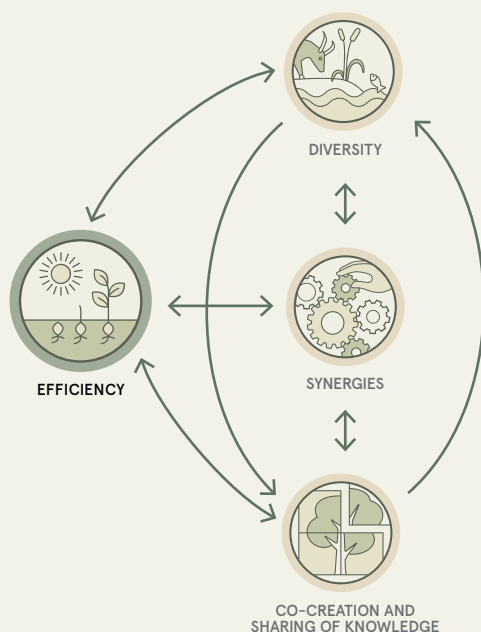
Agroecological systems improve the use of natural resources, especially those that are abundant and free, such as solar radiation, atmospheric carbon and nitrogen.

By enhancing biological processes and recycling biomass, nutrients and water, producers are able to use fewer external resources, reducing costs and the negative environmental impacts of their use.

Ultimately, reducing dependency on external resources empowers producers by increasing their autonomy and resilience to natural or economic shocks.

One way to measure the efficiency of integrated systems is by using Land Equivalent Ratios (LER).²⁰ LER compares the yields from growing two or more components (e.g. crops, trees, animals) together with yields from growing the same components individually. Integrated agroecological systems frequently demonstrate higher LERs.

Agroecology thus promotes agricultural systems with the necessary biological, socio-economic and institutional diversity and alignment in time and space to support greater efficiency.



RECYCLING



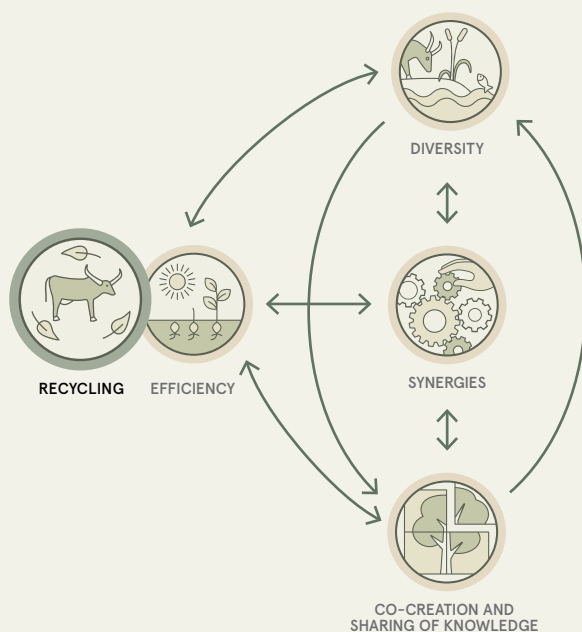
More recycling means agricultural production with lower economic and environmental costs.

Waste is a human concept – it does not exist in natural ecosystems. By imitating natural ecosystems, agroecological practices support biological processes that drive the recycling of nutrients, biomass and water within production systems, thereby increasing resource-use efficiency and minimizing waste and pollution.

Recycling can take place at both farm-scale and within landscapes, through diversification and building of synergies between different components and activities. For example, agroforestry systems that include deep rooting trees can capture nutrients lost beyond the roots of annual crops.²¹ Crop–livestock systems promote recycling of organic materials by using manure for composting or directly as fertilizer, and crop residues and by-products as livestock feed.

Nutrient cycling accounts for 51 percent of the economic value of all non-provisioning ecosystem services, and integrating livestock plays a large role in this.²² Similarly, in rice–fish systems, aquatic animals help to fertilize the rice crop and reduce pests, reducing the need for external fertilizer or pesticide inputs.

Recycling delivers multiple benefits by closing nutrient cycles and reducing waste that translates into lower dependency on external resources, increasing the autonomy of producers and reducing their vulnerability to market and climate shocks. Recycling organic materials and by-products offers great potential for agroecological innovations.



RESILIENCE



Enhanced resilience of people, communities and ecosystems is key to sustainable food and agricultural systems.

Diversified agroecological systems are more resilient – they have a greater capacity to recover from disturbances including extreme weather events such as drought, floods or hurricanes, and to resist pest and disease attack.

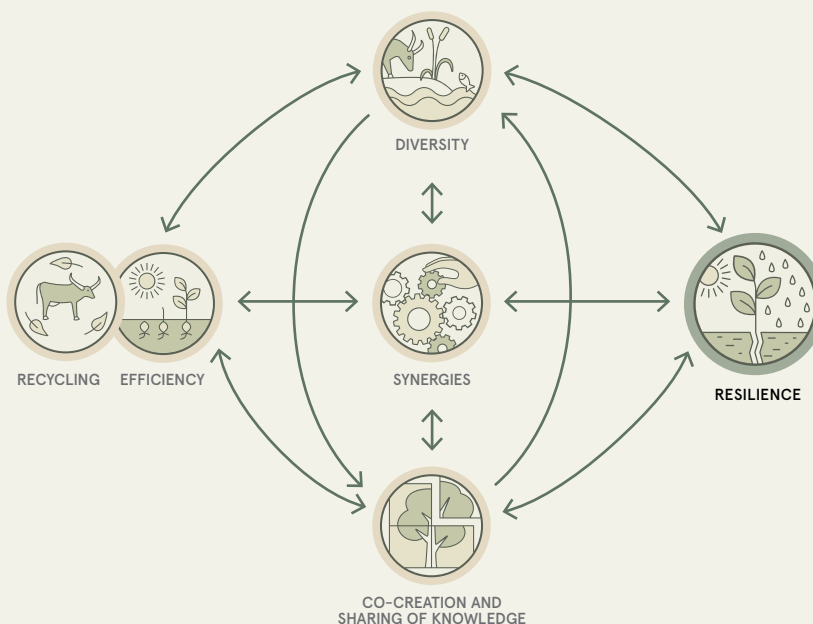
Following Hurricane Mitch in Central America in 1998, biodiverse farms including agroforestry, contour farming and cover cropping retained 20–40 percent more topsoil, suffered less erosion and experienced lower economic losses than neighbouring farms practicing conventional monocultures.²³

By maintaining a functional balance, agroecological systems are better able to resist pest and disease attack. Agroecological practices recover the biological complexity of agricultural systems and promote the necessary community of interacting organisms to self-regulate pest outbreaks.

On a landscape scale, diversified agricultural landscapes have a greater potential to contribute to pest and disease control functions.²⁴

Agroecological approaches can equally enhance socio-economic resilience. Through diversification and integration, producers reduce their vulnerability should a single crop, livestock species or other commodity fail.

By reducing dependence on external inputs, agroecology can reduce producers' vulnerability to economic risk. Enhancing ecological and socio-economic resilience go hand-in-hand – after all, humans are an integral part of ecosystems.



HUMAN AND SOCIAL VALUES



Protecting and improving rural livelihoods, equity and social well-being is essential for sustainable food and agricultural systems.

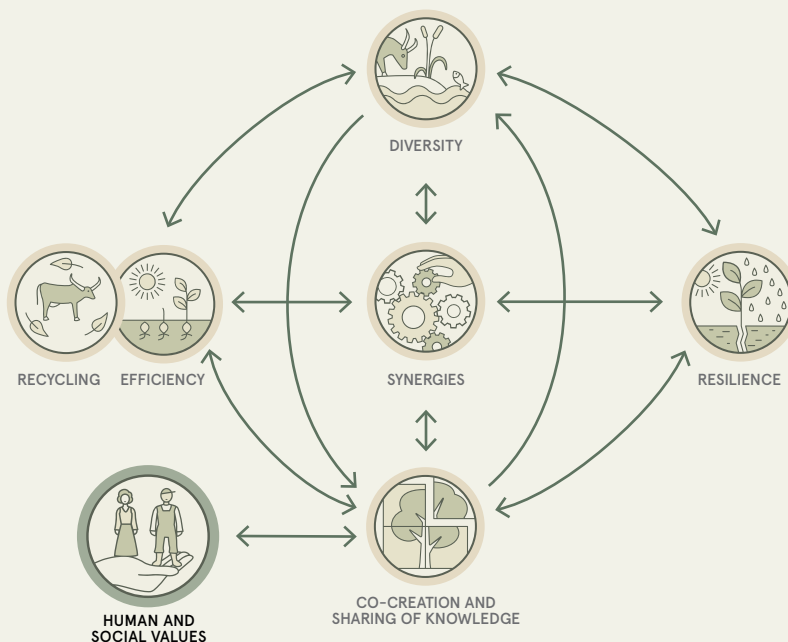
Agroecology places a strong emphasis on human and social values, such as dignity, equity, inclusion and justice all contributing to the improved livelihoods dimension of the SDGs. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems. By building autonomy and adaptive capacities to manage their agro-ecosystems, agroecological approaches empower people and communities to overcome poverty, hunger and malnutrition, while promoting human rights, such as the right to food, and stewardship of the environment so that future generations can also live in prosperity.

Agroecology seeks to address gender inequalities by creating opportunities for women. Globally, women make up almost half of the agricultural workforce. They also play a vital role in household food security, dietary diversity and health, as well as in the conservation and sustainable use of biological diversity. In spite of this, women remain economically marginalised and vulnerable to violations of their rights, while their contributions often remain unrecognized.²⁵

Agroecology can help rural women in family farming agriculture to develop higher levels of autonomy by building knowledge, through collective action and creating opportunities for commercialization. Agroecology can open spaces for women to become more autonomous and empower them at household, community levels and beyond – for instance, through participation in producer groups. Women’s participation is essential for agroecology and women are frequently the leaders of agroecology projects.

In many places around the world, rural youth face a crisis of employment. Agroecology provides a promising solution as a source of decent jobs. Agroecology is based on a different way of agricultural production that is knowledge intensive, environmentally friendly, socially responsible, innovative, and which depends on skilled labour. Meanwhile, rural youth around the world possess energy, creativity and a desire to positively change their world. What they need is support and opportunities.

As a bottom-up, grassroots paradigm for sustainable rural development, agroecology empowers people to become their own agents of change.



CULTURE AND FOOD TRADITIONS



By supporting healthy, diversified and culturally appropriate diets, agroecology contributes to food security and nutrition while maintaining the health of ecosystems.

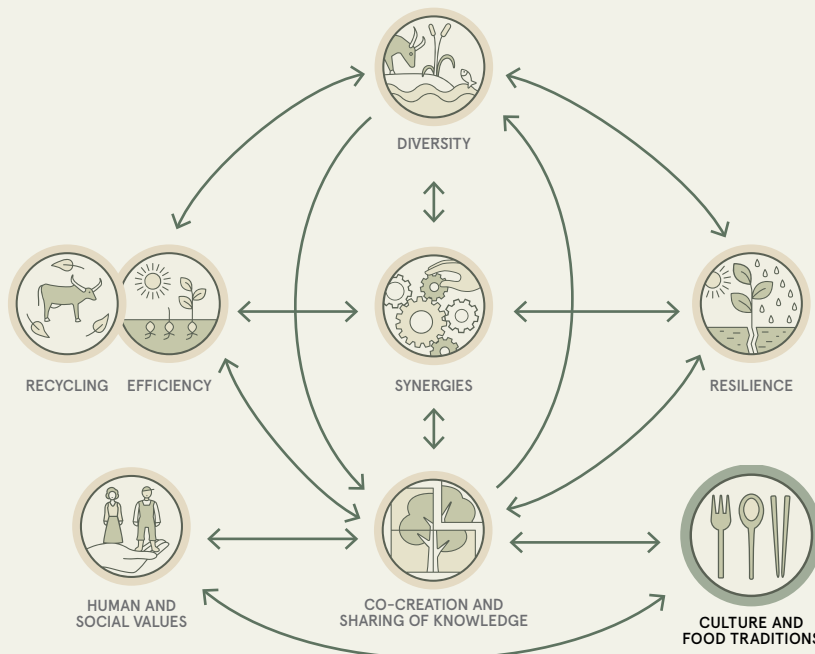
Agriculture and food are core components of human heritage. Hence, culture and food traditions play a central role in society and in shaping human behaviour. However, in many instances, our current food systems have created a disconnection between food habits and culture. This disconnection has contributed to a situation where hunger and obesity exist side by side, in a world that produces enough food to feed its entire population.

Almost 800 million people worldwide are chronically hungry and 2 billion suffer micronutrient deficiencies.²⁶ Meanwhile, there has been a rampant rise in obesity and diet-related diseases; 1.9 billion people are overweight or obese and non-communicable diseases (cancer, cardiovascular disease, diabetes) are the number one cause of global mortality.²⁷

To address the imbalances in our food systems and move towards a zero hunger world, increasing production alone is not sufficient.

Agroecology plays an important role in re-balancing tradition and modern food habits, bringing them together in a harmonious way that promotes healthy food production and consumption, supporting the right to adequate food. In this way, agroecology seeks to cultivate a healthy relationship between people and food.

Cultural identity and sense of place are often closely tied to landscapes and food systems. As people and ecosystems have evolved together, cultural practices and indigenous and traditional knowledge offer a wealth of experience that can inspire agroecological solutions. For example, India is home to an estimated 50 000 indigenous varieties of rice²⁸ – bred over centuries for their specific taste, nutrition and pest-resistance properties, and their adaptability to a range of conditions. Culinary traditions are built around these different varieties, making use of their different properties. Taking this accumulated body of traditional knowledge as a guide, agroecology can help realise the potential of territories to sustain their peoples.



RESPONSIBLE GOVERNANCE



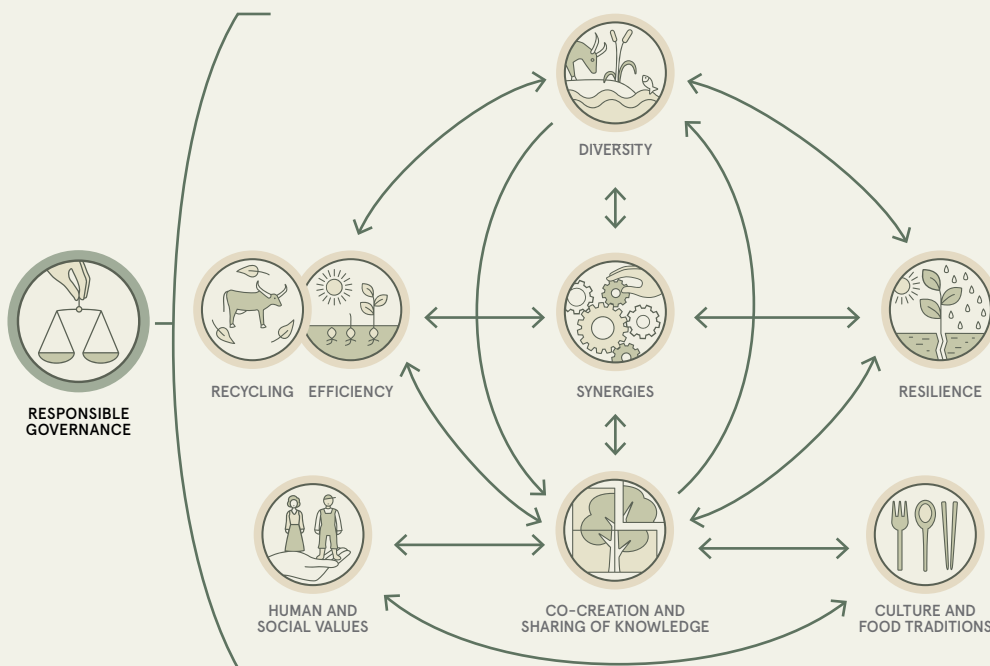
Sustainable food and agriculture requires responsible and effective governance mechanisms at different scales – from local to national to global.

Agroecology calls for responsible and effective governance to support the transition to sustainable food and agricultural systems. Transparent, accountable and inclusive governance mechanisms are necessary to create an enabling environment that supports producers to transform their systems following agroecological concepts and practices. Successful examples include school feeding and public procurement programmes, market regulations allowing for branding of differentiated agroecological produce, and subsidies and incentives for ecosystem services.

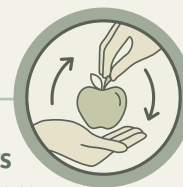
Land and natural resources governance is a prime example. The majority of the world's rural poor and vulnerable populations heavily rely on terrestrial and aquatic biodiversity and ecosystem services for their livelihoods, yet lack

secure access to these resources. Agroecology depends on equitable access to land and natural resources – a key to social justice, but also in providing incentives for the long-term investments that are necessary to protect soil, biodiversity and ecosystem services.

Agroecology is best supported by responsible governance mechanisms at different scales. Many countries have already developed national level legislation, policies and programmes that reward agricultural management that enhances biodiversity and the provision of ecosystem services. Territorial, landscape and community level governance, such as traditional and customary governance models, is also extremely important to foster cooperation between stakeholders, maximising synergies while reducing or managing trade-offs.



CIRCULAR AND SOLIDARITY ECONOMY



Circular and solidarity economies that reconnect producers and consumers provide innovative solutions for living within our planetary boundaries while ensuring the social foundation for inclusive and sustainable development.

Agroecology seeks to reconnect producers and consumers through a circular and solidarity economy that prioritizes local markets and supports local economic development by creating virtuous cycles.

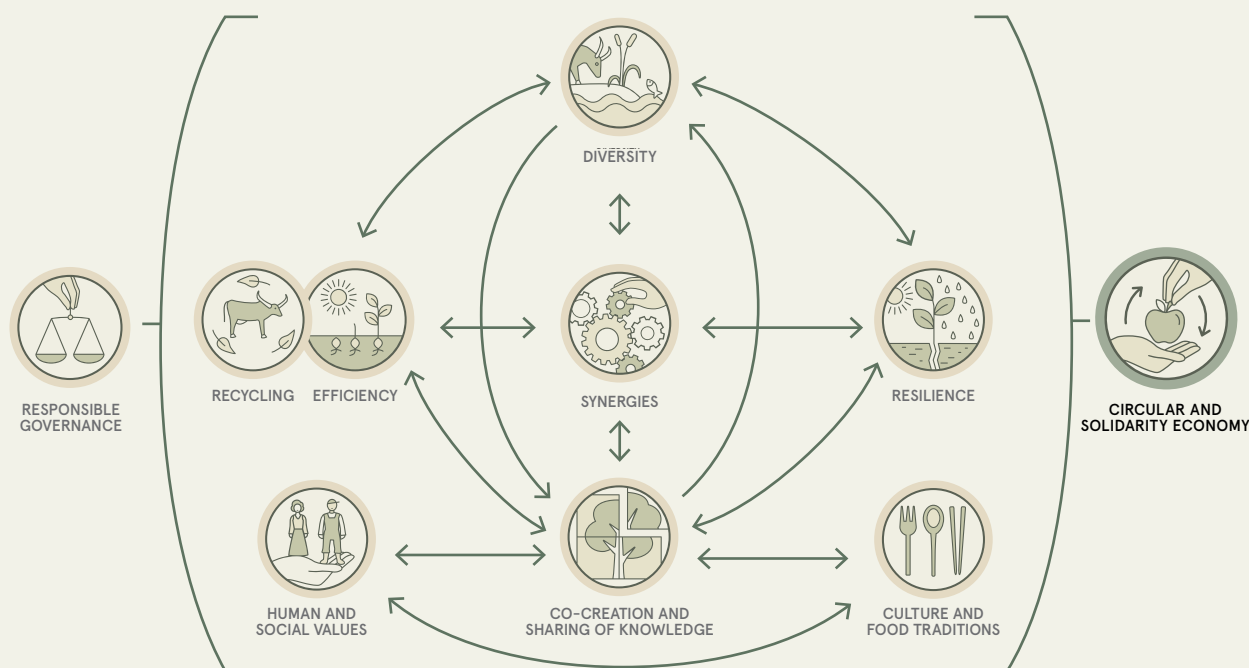
Agroecological approaches promote fair solutions based on local needs, resources and capacities, creating more equitable and sustainable markets. Strengthening short food circuits can increase the incomes of food producers while maintaining a fair price for consumers. These include new innovative markets,^{29,30} alongside more traditional territorial markets, where most smallholders market their products.

Social and institutional innovations play a key role in encouraging agroecological production and consumption. Examples of innovations that help link producers and consumers

include participatory guarantee schemes, local producer's markets, denomination of origin labelling, community supported agriculture and e-commerce schemes. These innovative markets respond to a growing demand from consumers for healthier diets.

Re-designing food systems based on the principles of circular economy can help address the global food waste challenge by making food value chains shorter and more resource-efficient. Currently, one third of all food produced is lost or wasted, failing to contribute to food security and nutrition, while exacerbating pressure on natural resources.³¹

The energy used to produce food that is lost or wasted is approximately 10 percent of the world's total energy consumption,³² while the food waste footprint is equivalent to 3.5 Gt CO₂ of greenhouse gas emissions per year.³³



ENDNOTES

- ¹ FAO's Common Vision for Sustainable Food and Agriculture balances the social, economic and environmental dimensions of sustainability across agricultural landscape and seascape mosaics. It outlines general principles for sustainable food and agricultural systems that are highly productive, economically viable and environmentally sound, contributing to equity and social justice. The five FAO principles for Sustainable Food and Agriculture are: 1) improving efficiency in the use of resources; 2) conserving, protecting and enhancing natural ecosystems; 3) protecting and improving rural livelihoods, equity and social well-being; 4) enhancing the resilience of people, communities and ecosystems; 5) promoting good governance of both natural and human systems.
- ² Examples include: the International Assessment of Agricultural Knowledge, Science and Technology for Development, which called for an increase and strengthening of agroecological sciences in 2008; the 2011 Report on Agroecology and the right to food, presented by the Special Rapporteur on the right to food to the UN Human Rights Council; the Ecological Organic Agriculture Initiative of the African Union and the Community of Latin American and Caribbean States (CELAC) that have promoted agroecological practices and policies at regional level; the Ecosystem Approach (including pillars of ecological wellbeing, human wellbeing, and governance), endorsed by the Convention on Biological Diversity and applied by FAO through its Ecosystem Approach to Fisheries and Aquaculture since 2000.
- ³ Brazil's Fome Zero programme provides a telling example. *Fome Zero* proved instrumental in reducing extreme poverty (from 17.5 percent in 2003 to less than 3 percent in 2013) and eradicating hunger. The programme involved a large number of policy and development instruments, including support for agroecological food production and consumption (**Instituto Brasileiro de Geografia e Estatística**. 2013. *Pesquisa nacional por amostra de domicílio: segurança alimentar* (available at: www.ibge.gov.br/home/estatistica/populacao/).
- ⁴ The 10 Elements of Agroecology were developed through a synthesis process. They are based on the seminal scientific literature on agroecology – in particular, Altieri's (1995) five principles of agroecology and Gliessman's (2015) five levels of agroecological transitions. This scientific foundation was complemented by discussions held in workshop settings during FAO's multi-actor regional meetings on agroecology from 2015 to 2017, which incorporated civil society values on agroecology, and subsequently, several rounds of revision by international and FAO experts. **Altieri, M.A.** 1995. *Agroecology: The Science of Sustainable Agriculture*. CRC Press. **Gliessman, S.R.** 2015. *Agroecology: The Ecology of Sustainable Food Systems*. 3rd Edition. Boca Raton, FL, USA, CRC Press, Taylor & Francis Group.
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- ⁶ **FAO.** 2011. *Save and Grow – A policymaker's guide to the sustainable intensification of smallholder crop production*. Rome.
- ⁷ **FAO.** 2014. *Ecosystem Services Provided by Livestock Species and Breeds, with Special Consideration to the Contributions of Small-Scale Livestock Keepers and Pastoralists*. Commission on Genetic Resources for Food and Agriculture Background Study Paper No. 66, Rev. 1 (available at: www.fao.org/3/a-at598e.pdf).
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- ⁹ **FAO.** 2010. *Sustainable Diets and Biodiversity: Directions and Solutions for Policy, Research and Action*. Rome.
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- ¹¹ **Halwart, M. & Bartley, D.M.** 2007. Aquatic biodiversity in rice-based ecosystems, pp. 181-199. In: Jarvis, D., Padoch, C. & D. Cooper (eds.), *Managing biodiversity in agricultural ecosystems*. British Columbia Press. 492p.
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- ¹⁵ **FAO.** 2016. *Scaling-up integrated rice-fish systems – Tapping ancient Chinese know-how.* South-South Cooperation (available at: www.fao.org/3/a-i4289e.pdf).
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- ²² **FAO.** 2017. *Sustainable Agriculture for Biodiversity – Biodiversity for Sustainable Agriculture.* Rome.
- ²³ **Holt-Giménez, E.** 2002. Measuring farmers' agroecological resistance after Hurricane Mitch in Nicaragua: A case study in participatory, sustainable land management impact monitoring. *Agriculture, Ecosystems and Environment*, 93: 87-105.
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- ²⁸ **National Bureau of Plant Genetic Resources (ICAR).** 2013. *Why do we conserve plant genetic resources?* (available at: www.nbpg.ernet.in).
- ²⁹ **FAO/INRA.** 2016. *Innovative markets for sustainable agriculture – How innovations in market institutions encourage sustainable agriculture in developing countries.* Rome.
- ³⁰ **FAO/INRA.** 2018. *Constructing markets for agroecology – An analysis of diverse options for marketing products from agroecology.* Rome.
- ³¹ **FAO.** 2017. *The future of food and agriculture – Trends and challenges.* Rome.
- ³² **ibid.**
- ³³ **FAO.** 2014. *Food Waste Footprint Full-cost Accounting: Final Report.* Rome.

APPENDIX C

CHAIR’S SUMMARY

2ND INTERNATIONAL SYMPOSIUM ON AGROECOLOGY: SCALING UP
AGROECOLOGY TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS (SDGs)
3 – 5 April 2018, Rome

CHAIR’S SUMMARY

This document represents an attempt by the Chair to capture the richness of the contributions presented during the Symposium by different stakeholders and experts, to be more fully registered in the full report of the Symposium to be prepared by FAO, and does not necessarily reflect the opinions and views of each individual participant or of each of the Member States which participated in the Symposium.

The Second International Symposium on Agroecology, held at FAO’s headquarters, bringing together more than 700 participants with representatives from 72 governments, about 350 non-state actors’ organisations, and representatives of 6 UN organisations, analysed experiences, evidence and public policies to respond to the challenges facing food and agriculture systems. Building on the First International Symposium on Agroecology for Food Security and Nutrition, held in Rome in September 2014, and the seven regional multi-stakeholder seminars on Agroecology, organised by FAO between June 2015 and November 2017¹, participants explored solutions, experiences and practices coming mostly from the grassroots, articulated in a transformative vision of agriculture to be resilient, equitable and socially just, based on Agroecology. The Second International Symposium provides support to the notion that we have reached a turning point: it is time to scale up Agroecology now.

The focus on increasing yields promoted by the Green Revolution is viewed by many as not sustainable and not sufficient to eradicate hunger and poverty, or to face the challenges of natural resources exhaustion, environmental degradation and biodiversity loss, and the need to adapt to climate change. It is broadly recognised that in order to achieve the 2030 Agenda for Sustainable Development, there is an urgent need to promote transformative change in how food is grown, produced, processed, transported, distributed and consumed. Agroecology is seen by many to offer multiple benefits, including for increasing food security and resilience, boosting livelihoods and local economies, diversifying food production and diets, promoting health and

¹ FAO. 2018. *Catalysing Dialogue and Cooperation to Scale up Agroecology: Outcomes of the FAO Regional Seminars on Agroecology* (available at <http://www.fao.org/3/I8992EN/i8992en.pdf>)

nutrition, safeguarding natural resources, biodiversity and ecosystem functions, improving soil fertility and soil health, adapting to and mitigating climate change, contributing to women's empowerment, and preserving local cultures and traditional knowledge systems, often in synergy with organic agriculture.

It is broadly recognised as critical that legal and regulatory frameworks are implemented in a way that ensures transformative change towards sustainable agriculture and food systems based as far as possible on Agroecology, and respects, protects and fulfils farmers' rights and promotes access to productive resources such as land, water and seeds. It is especially broadly recognised that it is critical to ensure the active participation of family farmers², in particular small-scale food producers, women and youth, as historical subjects of Agroecology, in dialogue spaces of public policies, and to develop policies that promote the spread of organic farming. This will not only facilitate the spread of Agroecology but will provide the drive for policy and institutional changes and investments that are supportive of using Agroecology to transform food and agricultural systems toward sustainability. Sustainability can only be achieved with the inclusion of all actors in food and farming systems in all continents, from small-scale farmers and their families to the networks of conscientious consumers. Fostering diversity on farms, strengthening local food systems, valuing traditional knowledge, ensuring equity and access to land and economic resources, and respecting the multiple food cultures around the world are understood as core components of Agroecology.

Agroecology scaling up is recognized and proposed by many as a way forward in the coming decade as a strategic approach and means to promote and achieve the 2030 Agenda for Sustainable Development and, in particular, SDG 2 on hunger eradication, food security and sustainable agriculture. In fact, Agroecology is recognised as contributing to numerous other SDGs, and as providing one of the most integrated, comprehensive and holistic approaches that will directly benefit those whom the 2030 Agenda aims to uplift. In order to achieve many SDGs, the diverse agriculture systems of the world have to initiate their transition towards sustainable agriculture and food systems, with different starting points and diverse pathways based, as much as possible, on Agroecology principles.

The ministers of agriculture/environment of the following countries presented their perspectives and activities related to Agroecology: Angola, Burkina Faso, Costa Rica, France, and Hungary. The Permanent Representatives of China and Iran, and the Archbishop of the Holy See also spoke. Issues raised included: need to scale up Agroecology to reach the SDGs; agriculture must fundamentally change to do so; many countries already have relevant policies, laws, targets and concrete achievements; the need for developing legal frameworks and strengthening technical

² Family farmers are considered in a range from smallholder to medium-scale farmers, and include peasants, indigenous peoples, traditional communities, fisherfolks, mountain farmers, pastoralists and many other groups representing every region and biome of the world. They run diversified agricultural systems and preserve traditional food products, contributing both to a balanced diet and the safeguarding of the world's agro-biodiversity (FAO Family Farming Knowledge Platform, 2018; available at: <http://www.fao.org/family-farming/en/>).

and institutional capacities for Agroecology; Agroecology is necessary for food sovereignty and decreasing dependence on food imports; climate change, desertification and water scarcity are key challenges in many countries; biodiversity is an essential part of Agroecology; farmers must be able to live with dignity from their work; avoid silos and cooperate on innovative integrated approaches; international dialogue is necessary to move forward; be involved in true cost accounting; policies are needed but also social mobilisation; need to focus on Agroecology as a part of the UN Decade for Family Farming; welcome collaboration between the RBAs on Agroecology.

Over the last four years, FAO has convened very fruitful multi-stakeholder dialogues, and its commitment to continue to support this dynamic at global and regional levels is broadly welcomed. Building on the outcomes of these processes and on the draft proposal for a Scaling up Agroecology Initiative³, participants have identified a range of options on how stakeholders can contribute, in multiple ways, to strengthening existing agroecological systems already developed by farmers as well as to promote the transition to sustainable agriculture and food systems through the use of Agroecology principles and practices. The key actions contained in Annex 1 of this document are options for consideration.

WAY FORWARD

Agroecology is seen by many as a great opportunity to support the transformation that is needed in our food systems and different kinds of commitments from different stakeholders are identified by participants as urgently needed. Based on the outcomes of the regional processes, the Second International Symposium on Agroecology and the work areas of the proposed Scaling up Agroecology Initiative, FAO’s continued commitment to Agroecology has been highlighted, including the broad recognition of the need to foster its growth and support countries and different stakeholders in this process while respecting the principles and local experiences of Agroecology. A variety of ways for stakeholders to engage in this process over the next decade have been identified by many participants, including:

- » **Governments:** develop policy and legal frameworks to promote and support Agroecology and sustainable food systems, including by putting in place policies that support Agroecology and family farmers, in particular smallholder producers, women and youth.
- » **FAO:** submit to FAO Committee on Agriculture in 2018 a document on options for mainstreaming Agroecology based on potential elements contained in this Chair’s Summary and the Final Report of the Symposium, including the consideration of a detailed 10-year action plan for the Scaling up Agroecology Initiative.

³ Scaling up Agroecology Initiative: Transforming food and agricultural systems in support of the SDGs (A proposal prepared for the International Symposium on Agroecology, 3-5 April 2018), available at: <http://www.fao.org/3/I9049EN/i9049en.pdf>

- » **FAO:** pursue its mandate to reinforce the work on Agroecology through its different programmes and strategic framework, including GIAHS (Globally Important Agricultural Heritage Systems) and work with small-scale producers' organisations and governments to support implementation of Agroecology at local, national, and international level, including through promoting dialogue and sharing data.
- » **FAO:** take the lead, in partnership with other international organizations, academia and research organizations, to facilitate the development of new methodologies and indicators to measure sustainability performance of agricultural and food systems beyond yield at landscape or farm level, based on the *10 Elements of Agroecology*⁴ and experience in developing indicator 2.4.1 to measure the sustainability of agriculture systems at the country level in the overall framework of measuring progress towards Agenda 2030.
- » **UN partners of the Scaling up Agroecology Initiative, including FAO, IFAD, WFP, CBD, UNEP and UNDP:** work in a coordinated way to scale up Agroecology through policies, science, investment, technical support and awareness, according to their mandate and expertise, and extending the knowledge to all actors in societies.
- » **FAO and IFAD:** use the Decade of Family Farming 2019–2028 as an opportunity to raise awareness in the international community about the importance of family farming and to link family farming and Agroecology for achieving sustainable development.
- » **FAO and WHO:** use the UN Decade of Action on Nutrition 2016–2025 as an opportunity to raise awareness in the international community about the importance of family farming and Agroecology for achieving health and nutrition for all.
- » **Small and medium enterprises and investors, including from the private sector:** explore the potential of Agroecology, and different and innovative ways to invest in it, to increase responsible investment in Agroecology in accordance with agroecological principles and relevant international frameworks⁵.
- » **Foundations and funders:** view Agroecology as an opportunity to transform the food system and address challenges by increasing long-term funding to Agroecology including environmental, economic and social components, including the co-creation of knowledge, and to multiple stakeholders, in particular small-scale producers' organisations, NGOs and governments. Engage with networks of funders and foundations to increase sustainable funding for Agroecology.

⁴ *The 10 Elements of Agroecology: Guiding the Transition to Sustainable Food and Agricultural Systems*, available at: <http://www.fao.org/3/I9037EN/i9037en.pdf>. The 10 Elements of Agroecology were developed through a synthesis process. They are based on the seminal scientific literature on agroecology – in particular, Altieri's (1995) five principles of agroecology and Gliessman's (2015) five levels of agroecological transitions. This scientific foundation was complemented by discussions held in workshop settings during FAO's multi-actor regional meetings on agroecology from 2015 to 2017, which incorporated civil society values on agroecology, and subsequently, several rounds of revision by international and FAO experts. **Altieri, M.A.** 1995. *Agroecology: The Science of Sustainable Agriculture*. CRC Press. **Gliessman, S.R.** 2015. *Agroecology: The Ecology of Sustainable Food Systems*. 3rd Edition. Boca Raton, FL, USA, CRC Press, Taylor & Francis Group.

⁵ Including the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, the Principles for Responsible Investment in Agriculture and Food Systems, and Free Prior and Informed Consent (recognised under the United Nations Declaration on the Rights of Indigenous Peoples).

- » **Family farmers and small-scale producers:** continue feeding their communities and the cities of the world, sharing their knowledge and experiences and using their networks and farmer-to-farmer processes to scale up Agroecology, including Agroecology schools, providing multiple benefits to society and promote participative co-innovation building upon traditional knowledge and practices.
- » **Civil society organisations:** maintain support for Agroecology movements by producing knowledge and awareness and advocating for the enhancement of agroecological systems worldwide. The Declaration of small-scale food producers’ organizations and civil society organizations at this Symposium will be an integral part of the final report of the Symposium.
- » **Academia and research organisations:** increase training and research on Agroecology, including pushing the boundaries of science, to increase and consolidate the evidence base on the impacts of Agroecology, involving farmers in this process, respecting and promoting traditional knowledge and their knowledge systems. Develop new methodologies and indicators for sustainable food systems that are not solely based on yield including online collaborative platforms to connect relevant actors and enable the co-creation of knowledge. Extend the research agenda to the cost effective and massive transfer of knowledge to millions of farmers on Agroecology and support networking among innovative agroecological farms that involve collaboration between farmers and researchers.
- » **Consumers and citizens:** act as agents of change in the food system to promote responsible consumption, and increase innovative alliances between producers and consumers. Request the private sector and governments to support and invest more in Agroecology.
- » **Committee of World Food Security and its High Level Panel of Experts on Food Security and Nutrition:** consider the actions identified in this Chair’s Summary in the report of the High Level Panel of Experts on Food Security and Nutrition on agroecological approaches and other innovations for sustainable agriculture and food systems that enhance food security and nutrition, and the policy roundtable that it will inform in 2019.

ANNEX 1

KEY ACTIONS FOR SCALING UP AGROECOLOGY

- 1. Strengthen the central role of family farmers and their organisations in safeguarding, utilising and accessing natural resources**
 - a. Upholding the human rights of family farmers, agricultural workers, indigenous peoples, and consumers, in particular women and youth
 - b. Scaling up Agroecology by supporting the sharing of experiences, knowledge and collective action among the family farmers currently engaged with Agroecology
 - c. Respecting, protecting and fulfilling family farmers' rights and access to common goods and natural resources such as land, water, forests, fisheries and genetic resources, including through the operationalisation of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, and the development of regulatory frameworks that implement the Farmers' Rights (including Article 9 of the International Treaty on Plant Genetic Resources for Food and Agriculture)
 - d. Recognising, preserving and utilising traditional and indigenous knowledge, culture and heritage, including traditional foods
 - e. Promoting the dynamic management of biodiversity and use of local and traditional crops and livestock breeds
 - f. Supporting product diversification and integration of cropping, livestock, aquaculture, and forestry

- 2. Foster experience and knowledge sharing, collaborative research and innovations**
 - a. Developing family farmer-led and participatory research and co-innovation that is people-centred, builds collective capacities to solve systemic problems, is climate resilient, low-cost, enhances family farmers' autonomy and livelihoods, is locally adapted, uses natural resources sustainably and evolves according to feedback
 - b. Developing interdisciplinary and transdisciplinary research and filling research gaps and promoting technical, social and institutional innovations for Agroecology
 - c. Creating networks for family farmers' to share their innovations and multi-stakeholder cooperation platforms for collaboration between farmers and researchers at local, national, regional and global levels
 - d. Investing in smallholder family farmer-led training and knowledge sharing, such as the peasant Agroecology schools and including Agroecology in training and educational curricula from primary schools to universities
 - e. Documenting the social, economic, health, nutrition, resilience and social justice benefits of Agroecology, including qualitative and quantitative data
 - f. Developing analytical frameworks for developing policies and the instruments to implement them

3. Promote markets for agroecological based products for health, nutrition and sustainability

- a. Supporting value addition to agroecological products, shorter food supply chains and innovative markets, such as public procurement schemes and direct linkages between consumers and family farmers
- b. Harnessing consumers’ existing demand for healthy and fair products to strengthen Agroecology and further raising awareness of the benefits of agroecological products, including nutritional quality, health and the importance of diversified production systems for diversified diets, and the need to change consumption patterns that are fed by resource-intensive production systems
- c. Promoting small-scale social enterprises for Agroecology and developing regulatory frameworks that facilitate the sales of products (particularly for processed and animal based products) from agroecological smallholder agriculture
- d. Promoting markets and economies based on solidarity and ensuring that food from Agroecology is affordable for the urban and rural poor
- e. Promoting territorial approaches and the transition to circular food systems, linking where appropriate with the GIAHS initiative hosted by FAO
- f. Reforming policies and incentive measures to enhance local food systems and strengthen local markets for agroecological family farmers
- g. Conducting baseline studies on production and market potential that help make the case for Agroecology and monitor its growth
- h. Promoting organic farming

4. Review institutional, policy, legal and financial frameworks to promote agroecological transitions for sustainable food systems

- a. Transforming legal and regulatory frameworks at all levels to ensure transitions to Agroecology based on integrated and coherent multi-sectoral food policies, based on long-term objectives and planning, that respect human rights, particularly the right to food
- b. Developing public policies and initiatives that adhere to universal human rights based values while responding and adapting to local contexts, that support the central role of family farmers, particularly women, in driving forward Agroecology, and that are monitored for continuous improvement and accountability
- c. Ensuring that policies recognise the importance of existing and neglected agroecological systems, such as pastoralism and artisanal fisheries, for food security and economic livelihoods
- d. Opening up spaces and support for people’s participation, in particular those most marginalised, in public policies and considering the specific needs of family farmers, including women and youth, by including them in policy development

- e. Changing the measures of success: developing multi-criteria indicators on the environmental, economic and social aspects of Agroecology that measure the long-term performance of agroecological systems and internalising the externalised costs of agriculture including through true cost accounting
- f. Backing up these policies with the required funding and investments, including through responsible public and private investments, that support the investments of family farmers (the major investors in agroecological production systems), based on the principles of responsible agricultural investments
- g. Increasing the support to Agroecology from donors and funders, including accessing climate funds for Agroecology
- h. Adopting laws and budgets that support Agroecology by raising awareness of Agroecology among parliamentarians
- i. Promoting long-term thinking and investments by the ethical finance sector as well as a critical engagement by savers, and alliances between savers and those receiving loans in support of Agroecology, also through the use of indexes such as the Agro-Biodiversity Index⁶
- j. Implementing policy and legislative mechanisms that prevent market monopolies by private sector actors whose actions block the scaling up of Agroecology
- k. Sharing knowledge and experience from countries who have legal and policy frameworks on Agroecology to those who are interested in developing them
- l. Analysing the impacts of subsidies on ecosystems and natural resources use and consider support for sustainable agriculture, including Agroecology
- m. Developing strong regulations to preserve natural resources from pollution and degradation, to avoid negative impacts on human health and rewarding family farmers who create multiple benefits for society
- n. Strengthening international cooperation for Agroecology and integrating Agroecology into the work of the Rome-based agencies (FAO, IFAD and WFP) as a priority
- o. Strengthening the critical role of FAO on public policies and regulatory activities (including measurements of the performance of agriculture), creating spaces for democratic debate and platforms for discussion and negotiation to harmonise public and private strategies

⁶ The Agro-Biodiversity Index <https://www.biodiversityinternational.org/abd-index/>

5. Take Agroecology to scale through integrated and participatory territorial processes

- a. Supporting territorial approaches and planning for Agroecology that promote the rights of local communities to land and access to natural resources, and that integrate across sectors and reconnect the urban and rural by involving all local actors in an integrative, participatory and inclusive way
- b. Include indigenous people in territorial development processes based on the principle of Free Prior and Informed Consent (recognised under the UN Declaration on the Rights of Indigenous Peoples)
- c. Managing conflicts in territories through open multi-sector dialogue that include the concerned parties, including indigenous peoples
- d. Support the restoration of territories to respond to the needs of family farmers in marginal areas based on success stories of Agroecology that contribute to food sovereignty
- e. Ensuring that laws and policies for Agroecology have continuity and real impact by continuing to strengthen the participation of civil society organisations, through participatory democracy, to ensure that their human rights are fully respected
- f. Supporting networks of cities, municipalities, territories and villages that promote Agroecology linking also to initiatives to promote the right to food, such as the Milan Urban Food Policy Pact
- g. Promoting youth employment through Agroecology, which is knowledge and labour intensive
- h. Including territorial approaches to Agroecology in climate related plans, including the Koronivia Joint Work on Agriculture at the UNFCCC

APPENDIX D

SIDE EVENTS

DEBATE ON INNOVATIONS FOR AGROECOLOGY

PANELLISTS

1. **Isabel Andreoni**, Director, Montevideo Rural
2. **Johannes Goudjanou**, Chief Executive Officer, Premium Hortus
3. **Vijay Kumar**, Policy Advisor, Department of Agriculture in the Government of Andhra Pradesh
4. **Nout van der Vaart**, Programme Associate, Open Government Partnership's Civil Society Engagement team, hosted by Hivos

FACILITATOR

Allison Loconto, Science, Technology and Society Fellow at Harvard University and Research Scientist at INRA

FAO launched a call for innovations to be presented in an innovation fair during the Symposium. As a result, 130 proposals were received of which 30 were selected to be presented as posters. Four of these innovators – representing public, private, NGO and research sectors – were invited to participate in the debate on innovations.

Two weeks before the debate, FAO launched an online survey for participants of the Symposium, posing two simple questions:

- i. What are, or should be, the main characteristics of agroecological innovations?
- ii. Why are these characteristics important for agroecological transitions to sustainable food systems?

The results were very insightful and the main characteristics that emerged revolved around local, farmer and ecological knowledge. Specifically:

Agroecological innovations should be climate resilient, people-centred and women-led [...]. The challenges will require combining research and traditional knowledge, stronger theoretical knowledge and field testing by farmers to inform the research.

Agroecological innovations should be low cost, easy to do (user friendly), effective, sustainable, in harmony with the environment, natural, chemical free, replicable and improve biodiversity by using inputs from the same farm or area.

Agroecological innovations should be adapted locally, promote empowerment and evolve according to feedback. They are based on the ecological processes of the agro-ecosystem. They integrate a part of social development.

In response to why these characteristics were important, sustainability was the main reason – for food, farms, farmers, biodiversity and agricultural systems in general. Specifically:

For innovations to be useful in rural communities they have to be informed by the needs and aspirations of the indigenous people while at the same time addressing their needs.

Agroecology is understood as a systemic proposal, it must fight the dominant economic system, its values, its principles, its practices and its ethics. To do this it has to deconstruct and build new practices and new institutions; they make it possible to produce without strong external dependence and for a long time.

Respondents affirmed that innovations in Agroecology provide a sustainable way to fight the dominant economic model that has marginalized many farmers and a way to decrease external dependence by giving a leadership role to farmers, women, and indigenous people.

PRESENTATION BY PANELLISTS

1. *Isabel Andreoni, Director, Montevideo Rural*

Agroecology is a systemic approach linked to the economy, and which has a social aspect. Principles such as social justice and fair distribution of technologies must be key components in innovations for agroecology. Therefore, analysis is needed on how, and from where, public policies and new institutions at regional and global level are shaped, how to open up areas of participation, dialogue and knowledge exchange, and management and control, and how to involve people from rural areas. Collective capacity to solve systemic problems is needed to generate social inclusion and sustainability so to counter the current power imbalance.

2. *Johannes Goudjanou, Chief Executive Officer, Premium Hortus*

Agroecology is not just a set of practices. It is a platform to support agroecological producers. Innovations have to first be local, inspired from local grassroots and national experiences. The question is often whether we can obtain viable, feasible companies that can be sustainable over time with innovations in agroecology. What we are showing is that this is possible with sustainable business plans. The ecological impact is also key; certain types of agroecological innovations do not have enough impact. Thus, we have to ensure that our agroecological innovations have positive ecological impacts. Agroecological innovations have to be technological as well, we cannot talk about competitiveness if we do not also address the issues of the technologies that are used.

3. Vijay Kumar, Policy Advisor, Government of Andhra Pradesh

Agroecology itself is an innovation. It is swimming against the tide, against the dominant and chemical intensive paradigm. Livelihoods of farmers are key and they are in peril because of Green Revolution technologies and their negative impacts on water and soil fertility. In India, for example, how do we support the six million farmers in Andhra Pradesh, made up of 85 percent smallholders and five percent women-headed households, to feed themselves sustainably? This is where innovations for Agroecology come into play. Innovations in knowledge dissemination and value chains are going to shift farmers' behaviours to those that are in harmony with nature. Innovation in extension services is led by farmers, and polished and enabled by governments, whose support is crucial to move towards this transformative change.

4. Nout van der Vaart, Programme Associate, Open Government Partnership's Civil Society Engagement team, hosted by Hivos

Innovations can take many different forms. They can be agronomic but also social to ensure wider uptake. This needs official recognition by governments and inclusion in national development plans and policies. They should acknowledge the role of smallholders to shape more sustainable food systems by facilitating and enabling a policy environment through access to trainings, finance and development of markets for diverse crops. These farming communities should be involved in decision-making for Agroecology in a meaningful way. Finally, innovations in Agroecology should take gender issues into consideration (e.g. unequal access to land is a problem). Any innovation must be oriented toward keeping youth in agriculture because there is no future of food without training today's youth.

INTERACTIVE DEBATE

Isabel Andreoni, Director, Montevideo Rural

First, Agroecology has to work on the decolonisation of terms such as “scale”, “competitiveness” and “viable innovation”. Agroecology is not a technological innovation like the Green Revolution was, but instead it is a system itself, reproducing life and not just capital. Therefore, we must think of public policies’ role in the whole process from production to consumption. How can we implement the policies? Public policies are the product of work in the field. They must be integrated. There must be participation of stakeholders – this is key for true transformation. Agroecology has to be perceived as a production system, so the policies need to challenge institutions: when and how are policies generated and how does social transformation come about? We discuss these issues a lot. There has to be social construction of technologies for those technologies to be transferred. What is built in one territory does not necessarily fit in another. Public policies must take this into account, seeking universality of justice, but particular features of each area. Finally, social economy along with Agroecology has to transform the capitalist system, and this takes time. The existing culture has to be dismantled based on local changes and newly built cultures. There are alternatives to the capitalist system.

Vijay Kumar, Policy Advisor, Government of Andhra Pradesh

The greatest challenge facing agroecological farmers is swimming against the consequences of the Green Revolution or “dumb” agriculture, in which farmers did not need any knowledge as long as they knew how to use the technologies. Farmers need to promote Agroecology between themselves and highlight the fact that Agroecology pushes them closer to nature, biodiversity and soils. Farmers are the leaders in Agroecology. They are the scientists because they live or die from their agroecological practices and not from a published paper. I want to clarify that I have nothing against technology, but human mediations are also important. Our job is to understand how to empower farmers to use technologies without misrepresenting their agricultural traditions and cultures as a whole. We have to evaluate all innovations to ensure that they are in harmony with nature. We need both tradition and modernity.

Shi Yan, Director, General of China Community Supported Agriculture Alliance

Innovation for me is tradition because with the thousands of years of farming that we have, the more I think of innovation, the more I find it in our traditional systems. There are many ideas of innovation that come from universities or the government, but very few reach the farmers. We have to connect tradition with innovation. For example, what is attractive to people in China is tradition. Have you found any connections with history in your country? How do farmers innovate?

Johannes Goudjanou, Chief Executive Officer, Premium Hortus

The first step in innovations for Agroecology is at the local level. We tend to leave aside the management side and only focus on traditional management of farm holdings. We have to manage existing innovations in a different way. There are many agroecological innovations, but they are not always viable. The use of biofertilizers could be an alternative but we need more impact studies on them to introduce them. The second step is to reconcile technology and agroecological innovations. We had to innovate by creating a platform for distribution of agroecological products in countries. The third step is the role of policymakers in agroecological innovations, they need to boost local innovators. We should never forget that smallholders are the best innovators because their survival depends on producing food.

Nout va der Vaart, Programme Associate, Hivos

In our food labs in Zambia, we succeeded in overcoming the lack of harmony between technology and knowledge by creating sub-groups of local food system actors, working together for solution pathways, policies and production of more nutritious crops, beyond maize.

Petra Benyei, Research Student, Institut de Ciencia I Tecnologia Ambiental, Spain

The issue of innovations for Agroecology is how to reorganize the whole economy towards a more feminist economy – an app is not going solve our problems. As mentioned, we need to decolonize the concept of innovation. Innovating means bringing something new and different than before. Agroecology is innovative and it has enabled me to work with traditional knowledge through a web platform. This open source of information gives me hope.

Dorn Cox, FarmHack Community

We link networks of farmers and on-farm innovation at FarmHack because we believe that real innovation is at the farm, and we need to translate that from one farm to another. We face many of the same problems, but low-cost open source communication technology is revolutionary. If we do not control the technology, we will be controlled by it. We have the possibility to have observatories because every farm can be an observatory and can communicate with other farms. We have the interfaces for local languages, but what we are asking now is how do we improve document and information exchanges?

Mariam Sow, Director, Environnement et Développement du Tiers Monde (ENDA Pronat)

I coordinated a network that is part of ENDA Pronat where we started by studying fertilizers and inputs. To develop an agriculture that will feed us, “modern” agriculture based on external inputs is not the answer. We have to look at Agroecology to generate innovations that involve local stakeholders. We need to be asking ourselves honestly if we will be going to change according to a top-down paradigm or to farmers’ expertise. In addition, we need research institutions to investigate local concerns to generate answers. We need to change practices and policies. We need a change of international policies. This is critical. International institutions are still telling us that we need to focus on increased production. Control of markets is absolutely crucial; our local agriculture is not receiving subsidies but has to compete with products that are subsidized.

Batmaka Somé, McKnight Foundation

We need to re-think the whole notion of innovation. Sometimes I have the impression that we forget about local technologies. Our work cannot be done without networks. The farmers are the major researchers and scientists and researchers are also a medium for dissemination. We need synergies between farmers and researchers, and at local, national, regional and global levels. Replicability is important, but we should not forget the local and social contexts. We talk about “options by context”; local people should pick whatever fits them.

CONCLUSION

The speakers concluded that the current high external-input production system needs to be deconstructed and the term “innovation” needs to be decolonized. Innovation must come about based on own knowledge rather than on the basis of what is imposed by others. Innovation is a process, not just a technology, with new rules and ways of working together that benefits most people, and in particular the farmers who produce our food.

To achieve such a goal, the speakers underlined the need to join efforts with decision makers, national and international institutions, civil society and, most of all, farmers. These stakeholders must promote Agroecology as an innovation in itself and its values should be included in national, bilateral, and multilateral agencies’ policy frameworks. Lastly, all the panellists agreed that Agroecology has to be youth- and women-centred, and that Agroecology is for present and future generations.

“FRIENDS OF AGROECOLOGY” AND THE THREE ROME-BASED AGENCIES

PANELLISTS

1. **Maria-Helena Semedo**, Deputy Director-General (FAO)
2. **Cornelia Richter**, Vice-President (IFAD)
3. **Stephanie Hochstetter**, Director (WFP)

MODERATOR

François Pythoud, Ambassador and Permanent Representative of Switzerland to FAO, IFAD and WFP.

The event was organized by the “Friends of Agroecology” Group, composed by the Permanent Representations of Brazil, China, Côte d’Ivoire, France, Hungary, Japan, Senegal, Switzerland, and Venezuela.

The purpose of the side event was to present the different outcomes of Agroecology of the three RBAs in their programmes and policies for food security and nutrition. The event also served as a platform for the RBAs to exchange national and regional experiences related to agroecological practices and their potential for sustainable food and agricultural systems.

The event was divided into three parts:

1. A summary of concrete actions in the transition processes towards Agroecology.
2. Key drivers and expectations for RBAs to support a stronger impact of Agroecology in the future looking ahead at the 2030 Agenda for SDGs.
3. An open discussion and exchange with participants.

Maria-Helena Semedo introduced the session. She referred to the outcomes of the First International Symposium on Agroecology, held in 2014, which contributed to the significant growing interest on Agroecology and highlighted its significant role in achieving food security and nutrition, and the Paris Agreement on climate change and the SDGs. She added that the regional seminars on Agroecology organized by FAO in sub-Saharan Africa, Asia and the Pacific, Europe and Central Asia, North Africa and the Near East and Latin America and the Caribbean, had also been crucial to scale up Agroecology from a local to an international level. Last, she discussed other areas being explored by FAO that will contribute to agroecological transitions by enabling policy environments and understanding the barriers to the adoption of Agroecology.

Cornelia Richter discussed current IFAD activities that showcased Agroecology as a main contributor to the SDGs, and within its mandate on poverty reduction. She gave the example of IFAD's focus on rural households and women in promoting smallholders to ensure their farming methods are business-oriented and resilient to climate change. She mentioned IFAD's projects and programmes that use a multi-level approach, including country strategies for policy dialogue, to bring aboard experiences from other countries on agroecological principles. She also mentioned IFAD's commitment to taking a holistic approach to scaling up Agroecology, through projects and programmes, and the need to continue working closely with the two other RBAs.

The first part of the event ended with Stephanie Hochstetter who described WFP's Strategic Plan under Objective 2, which reflected principles of Agroecology. She mentioned that WFP's programmes may not have explicitly used the term "Agroecology" but its humanitarian interventions and purchase of local foods while working in synergy with partners and public policies, reflect the 10 Elements of Agroecology.

The second part of the event started with key Malagasy experiences in Agroecology. Madagascar was introduced as an agricultural country in which Agroecology is a promising prospect for the farmers, including in terms of profit making. The country succeeded in developing a plan, governed by a task force that brings on board policy frameworks and coordinates interventions on Agroecology. As a result, Madagascar is expecting the three RBAs to support policy frameworks, technical needs and capacity building at national level but also international level through south-south cooperation for sharing agroecological experiences and successful case studies.

The Malagasy experiences were followed by comments on the misconception of organic farms being small, leading to a lack of technologies for large-scale organic farming that are more energy and water saving. This problem could be solved by the RBAs, by facilitating cooperation of farmers at various scales, promoting research that incorporates traditional knowledge, spurring younger generations to take up agriculture and investments and financing mechanisms for farmers.

To conclude the second part of the event, Chef Rajdeep Kapoor, Leader of the Slow Food India Chef's Alliance, underlined the principles of Slow Food to minimize wastage, reduce carbon footprints, eat local foods, eat seasonally and live a healthy life. Consequently, his expectation is for the RBAs to create programmes that would revive forgotten crops, maintain biodiversity and healthy soils and create awareness on Agroecology. He also shared his strong interest for RBAs to introduce reforms on sustainable agriculture and create direct links in the value chain between farmers, producers, and chefs, the consumers.

KEY ISSUES ARISING FROM THE OPEN DISCUSSION

Participants were invited to engage in an open discussion, during which the following key points were highlighted:

- » There is a need to re-think how we intervene in the field and learn from previous ecological traditional practices such as in seeds.
- » RBAs need to join hands and have a transformative impact on Agroecology that also influences UN-wide policies especially at the Secretariat. The new Secretary-General's proposal for the next years is weak on zero hunger, food security and rural development.
- » There is a need to work more with young people on awareness of Agroecology and experience sharing also through the recently launched IFAD platform on youth.
- » IFAD remains realistic because Agroecology is a process and through a multi-stakeholder approach, it will be possible to see the limits, challenges and forge solutions through innovative approaches.
- » FAO is in a transition period towards Agroecology and we may not all agree but we will have to find avenues for implementation.

FINAL STATEMENTS FROM PANELLISTS

Maria-Helena Semedo was pleased with such good recommendations from the audience, providing insights into the normative work of FAO such as creating spaces for dialogue, helping countries with policy frameworks, supporting sharing of good practices, advising farmers on other cross-cutting issues such as climate change, and partnering with the RBAs through projects and programmes.

Cornelia Richter noted the different expectations from the audience, which are paving the way for IFAD's organisational strategy. She suggested creating a business model for Agroecology with the joint efforts of RBAs to identify strengths and gaps for scaling up and creating awareness among consumers.

Stephanie Hochstetter mentioned that while WFP has a big role to play in achieving the SDGs, it plays a smaller role in relation to Agroecology – however, through cooperation with the other RBAs, WFP will be more impactful. She explained that working together as RBAs increases resilience, especially through the ongoing joint programmes and complementary programmes in Africa on land regeneration, pastoralism and infrastructure development. This corporation between RBAs allows each organization to contribute through their different competitive advantages to achieve desired results and a common vision.

Francois Pythoud concluded by stating that this side event was an opportunity to address various objectives for Agroecology, including in innovations and technology support, engaging with governments, advocacy and farmer interactions, working with financiers, bringing on board young people and forging partnerships as RBAs.

STRATEGIC FUNDING – DONORS ACCELERATING TRANSITION TO AGROECOLOGICAL FOOD SYSTEMS

PANELLISTS

1. **Ananthapadmanabhan Guruswamy**, Chief Executive Officer, APPI
2. **Mohamed Bakkar**, Programs Unit at the GEF
3. **Ludovic Larbodière**, Project Officer of the French Ministry of Agriculture and Fisheries, Agribusiness and the Forest
4. **Kyra Busch**, The Christensen Fund

MODERATOR

Ruth Richardson, Executive Director of the Global Alliance for the Future of Food

The AgroEcology Fund, which is a multi-donor fund supporting agroecological practices and policies, organized this side event that gathered donors to explore opportunities to coordinate efforts, identify shared principles and to collaborate towards viable food systems.

Ananthapadmanabhan Guruswamy started the discussion by explaining that his organisation works on the identification of and support to vulnerable people, who are mainly smallholder farmers. He also highlighted the high number of suicides and the precarious financial situations of many smallholders and stressed the need to work with indigenous organizations. He underlined the importance of putting farmers at the heart of discussions on agroecological food systems and the need to look for opportunities that go beyond current niches. Donors have to collaborate with governments to find a place within the system to promote Agroecology and invest in its advocacy to reach all farmers. Donors need to ensure continuous support to farmers, but they also need to facilitate international, national and local debates. He concluded that our narratives have to change before we see changes in systems and that our knowledge on agroecological practices and evidence-based frameworks need to be strengthened.

Mohamed Bakkar briefly presented the work of the GEF, highlighting the support to different conventions. He mentioned the different areas of work in partnership with 18 agencies, including FAO, and the need to create more opportunities for farmers to adopt innovations and the need to remove invisible barriers such as the risks associated with agriculture. Additionally, he expressed the need to step back and apply a business approach for Agroecology, in which farmers will be trained to be able to also mobilize funds independently. He finished his statement by saying that there is a need to create enabling conditions at national level, to work closely with governmental counterparts and a special need for improving the evidence-base on social, health, economic and environmental benefits of Agroecology.

Ludovic Larbodière informed the panel that Agroecology had been given a high priority on the French political agenda since 2012, including through the establishment of legal and regulatory frameworks to further strengthen ongoing programmes. As an example, he shared the collaborative work between France and FAO since 2014. On agroecological issues, France is providing financial support, secondment of experts and supporting the organization of the international symposia and regional consultations. Agroecology is a key element for the creation of innovative policies that can provide not only better incomes to farmers but also motivate young professionals, promote healthier diets and enhance consumers' awareness. He recommended investing more on training, education and communication with farmers, and in placing Agroecology high in national political agendas. He concluded that global coalitions had an important role to play in this process and that Agroecology is cross cutting, meaning that integrated programmes and policies are needed to mainstream Agroecology.

Kyra Busch explained that the work of the Christensen Fund focuses on agro-biodiversity and food security. She stressed that we cannot separate our food from the land and people, thus the landscape approach is the way forward. She also highlighted the importance of indigenous people through community-based approaches and watersheds, and supported the idea of economic well-being based on viable food systems and models for resource mobilization at all scales. The fact that Agroecology has the ability to integrate various subjects, such as labour, migration, food and land use, means that Agroecology is not just another form of agriculture. It is important to strengthen ownership of policies. She mentioned that the challenges lie in the implementation of such policies. Therefore, there is a need to identify the appropriate scale to match the scale of our questions and problems and to look for other funding streams within local economies. She ended by stating that there is a need to change the misconception that only major corporations are able to scale up programmes and generate major changes.

KEY ISSUES ARISING FROM THE OPEN DISCUSSION

In addition to the previous statements, recurring main points shared by the audience included:

- » There is a need to shift emphasis from projects to long-term interventions.
- » Narratives need to change – there is a governance crisis.
- » Investments are being made in the wrong areas, reflecting a governance issue.
- » There is a need to invest and strengthen investments in social movements and producers to be better prepared and be able to liaise with governments and mobilize resources.

The facilitator of the side event, Ruth Richardson, concluded the side event by inviting participants to access a survey listing ten recommendations and asked them to provide only their top three strategies that donors can use to accelerate the transition to Agroecology. The results of the poll were:

1. promote an enabling policy environment;
2. co-create a compelling narrative for Agroecology;
3. better connect Agroecology to other critical issues.

Participants also suggested other strategies such as:

- » Secure national government, bilateral and multilateral resources as anchor investments.
- » Engage farmers through meaningful partnerships to shape funding and investment flows.
- » Develop and use evidence to support funding and implementation.
- » Support implementation and action.
- » Match investments and resources to accelerate transitions across scales.
- » Mainstream data and data platforms, community leadership, education and communication for Agroecology.
- » Mobilize and customize the ecosystem of investment and funding flows towards Agroecology.

In April 2018, FAO organized the Second International Symposium on Agroecology: “Scaling up Agroecology to achieve the Sustainable Development Goals”. The Symposium brought together more than 760 participants and catalysed inter-disciplinary dialogue and collaboration from a wide variety of actors. The Symposium enabled and consolidated fundamental agreements and commitments needed to scale up and scale out Agroecology at all levels in order to achieve the Sustainable Development Goals. Representatives from 72 governments discussed how public policies for Agroecology can enable progressive transitions to sustainable agriculture and food systems in the framework of the 2030 Agenda for Sustainable Development. Representatives from 350 non-state actors discussed the main benefits that Agroecology provides on the ground, in terms of local innovations, practices, techniques and integrated approaches that respond to different challenges, built through dynamic interactions among farmers, scientists, researchers, consumers and practitioners. Representatives from six United Nations organizations identified opportunities to promote Agroecology at global level as well as concrete pathways to bring Agroecology into their global programmes of work as a way to support countries in the transition towards sustainable food and agriculture. The Scaling up Agroecology Initiative was launched during the Symposium in cooperation with major UN partners and received wide support from participants, who committed to engage in its adoption and implementation through increased partnerships and collaboration. The Initiative is proposed as a way forward and as a strategic approach to promote and achieve the 2030 Agenda through Agroecology, in particular SDG 2.

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