



Food and Agriculture
Organization of the
United Nations



REPORT

OF THE REGIONAL MEETING ON AGROECOLOGY *in Sub-Saharan Africa*

Dakar, Senegal, 5-6 November 2015



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SUMMARY

Acting as a facilitator to enable debates and foster collaboration among a variety of actors in order to advance science, knowledge, public policies, programmes and experiences, FAO organized the International Symposium on Agroecology for Food Security and Nutrition in September 2014 in Rome, Italy.

This symposium was followed by three regional meetings in sub-Saharan Africa, as well as meetings in Asia and the Pacific, and Latin America and the Caribbean. The Multi-stakeholder Consultation on agroecology for sub-Saharan Africa was held in Dakar, Senegal on 5-6 November 2015.

The regional meetings highlighted existing best practices, policies and scientific innovation in the region and addressed the challenges for the adoption of agroecology, as well as strategies to overcome these challenges.

Agroecology was presented as a solution to harness Africa's social, natural and economic assets as it enhances local biodiversity and the conservation of natural resources. It also represents a paradigm shift in the way agriculture has been practised and analysed by proponent of mainstream science for over a century with an essentially reductionist approach and an increasing dependence on external inputs.

Agroecological approaches emphasize the synergistic interaction of biophysical and social-economic factors that manifest within different site-specific contexts. Agroecological initiatives and practices were recognized as contributing to sustainable agriculture and development while reducing rural poverty, hunger and malnutrition and increasing the climate resilience of agriculture. Agroecology also provides new perspectives for rural youth and can help slow the rural-urban exodus currently occurring in sub-Saharan Africa.

A significant part of conversations around food security and climate change has focused on production and productivity to meet present and future needs. While this can make important contributions to solving these problems, a further observation points out that public goods like social development and innovation are strong—and perhaps the strongest—levers for increasing food security.

It was recognized that this requires a dramatic shift, starting with understanding the current conditions and incentivizing the systems that employ the best solutions: building the soil as a living organism; managing pests through natural practices and with increased biodiversity; and focusing on knowledge development and community empowerment at the local level.

It was highlighted that food producers were the backbone of these local innovation systems, integrating local and scientific knowledge.

The importance of a transition towards agroecology was stressed, emphasizing that this transition should be a process that places those who produce, distribute and consume food at the centre of decisions on food and policy systems.

Regarding policies, it was emphasized that agroecology should be mainstreamed in budgetary allocations and support should be provided to expand agroecology on the ground. In particular, women and youth should be targeted in all agroecology activities and policies.



The participants in this meeting, representatives of governments, civil society, including peasants, fisherfolk, pastoralists, urban communities, indigenous peoples, women's organizations, youth and others, academia and the private sector, issued recommendations for the development of agroecology in sub-Saharan Africa after two days of discussions (see Annex 1).

This report provides an overview of the Regional Meeting.

General information and resources (videos and presentations) are available to the public on the website: www.fao.org/africa/events/detail-events/en/c/330741/.



CONTEXT OF THE REGIONAL MEETING ON AGROECOLOGY IN SUB-SAHARAN AFRICA

FAO organized the regional meeting on Agroecology in Sub-Saharan Africa following a series of other successful high level symposia. FAO organized the International Symposium on Agroecology for Food Security and Nutrition on 18-19 September, 2014 in Rome, Italy, bringing together 400 scientists, food producers, policy makers, and representatives of farmers' organizations, the private sector and NGOs. Following the success of the Symposium, the FAO's Director-General announced that FAO would organize regional meetings on Agroecology in Latin America, Africa and Asia, to discuss this issue further, and in particular would incorporate agroecological approaches in its on-going global work.

On 5-6 November 2015, over 300 representatives from governments, civil society, research and the private sector participated in the Regional Meeting on Agroecology in sub-Saharan Africa hosted by the Government of Senegal and co-organized by the Government of Senegal and FAO in Dakar, Senegal. This was preceded by pre-meetings of civil society organisations, and another on Farmer Research Networks.

The discussions were organized around four sessions on the following subjects:

1. Agroecology as a Path to Food and Nutrition Security for the Agricultural Transition in Africa
2. Agroecology and the use of natural resources in the context of climate change Agroecology: Social Innovation, Livelihoods and Technology
3. Agroecology: social innovation, livelihood and technology
4. Public Policies (including Legal and Institutional Frameworks) to Promote Agroecology

The agenda was prepared by an Advisory Panel (Annex 2).

Note:

Some interventions have been replaced in different sessions for the need of the report's consistency.



OPENING

Speakers:

Abdal Rahmane Baba-Moussa (Deputy Chief of Staff of the Ministry of Agriculture, Livestock and Fisheries of the Republic of Benin)

Almami Dampha (Senior Policy Officer of the African Union Commission)

Julie Brayer Mankor (Agricultural Advisory for West Africa, French Embassy in Senegal)

José Graziano da Silva (Director-General of the Food and Agriculture Organization of the United Nations (FAO) by video message) introduced by Vincent Martin (Representative of FAO in Senegal)

H.E. Papa Abdoulaye Seck (Minister of Agriculture and Rural Equipment, Senegal)

Master of Ceremony: **Pape Faye**

The African context

While hunger worldwide has decreased by 132 million people in the last 20 years, it has increased by 64 million (from 175 to 239 million) in Africa over the same period¹. In the context of Africa, even with growing rates of rural-urban migration and rapid urbanization, about 80 percent of Africa's food is still produced by smallholder family farmers, in highly diverse farming systems, intertwined with natural forests, woodlands, grasslands and aquatic systems. Yet the majority of households and whole communities in Africa producing this food continue to live in extreme poverty and frequently suffer hunger.

Sub-Saharan Africa has the highest annual population growth rate in the world, averaging about 2.5 percent (World Bank, 2014). The region also faces chronic food and nutrition insecurity and hunger. Future projections indicate that circumstances will worsen unless key transformational changes take place now in the agriculture sector. Developing agriculture is an urgent imperative for food security and economic development. Due considerations must be made of the particular resource constraints, socio-cultural underpinnings and governance issues in the region. This underscores the suitability of organic agriculture and agroecological approaches as a paradigm for sustainable agriculture in sub-Saharan Africa.

The role of agroecology

The opening ceremony was presided over by the Senegalese Minister of Agriculture and Rural Facilities, the Honourable Papa Abdoulaye Seck. The meeting built on FAO's International Symposium on Agroecology for Food Security & Nutrition and made links with the FAO Regional Meeting on Agroecology in Latin America and the Caribbean held in June 2015.

¹ FAO, WFP and IFAD. 2012. The State of Food Insecurity in the World 2012. Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition. Rome, FAO



The commitment of African governments to sustainable rural development and to increasing their investments in agriculture so to enhance the livelihoods and well-being of rural populations also reflects a movement in which Agroecology has a role to play, as reflected in the statements of the opening plenary.

Papa Seck noted that the meeting helps to understand what it means to produce more and better, without destroying environment and while reconciling socio-economic and public health challenges through agricultural development. Agroecology's holistic approach - incorporating the traditional knowledge and skills of the world's farming communities with cutting edge ecological, agronomic, economic and sociological research has the potential to support strong, democratically based food systems that provide health and livelihoods to small-scale, family farmers and rural communities; as well as environmental benefits. Through this process of regeneration another kind of agricultural civilization can be built.

Papa Seck also called for a platform to be created that can work with countries to develop National Plans on agroecology, given that most agricultural plans are largely focused on conventional agriculture. To bring the findings of the International Symposium into our agricultural systems, it was noted that there is a need to base agroecology on local socio-economic realities. *"Agroecology needs to be co-managed and co-supported by all actors, as it is an approach that works from the ground"*.

Other policy dignitaries opening the meeting in sub-Saharan Africa noted that agroecology provides key elements, just as resources are becoming increasingly scarce, and as populations are growing. It provides a vehicle to mobilise all actors, both state and non-state, around innovative approaches to agricultural practices with strong social and environmental dimensions. Agroecology, stressing adaptation of agriculture to natural conditions and cycles, as well as to local needs, has been carried out by African farmers and pastoralists for millennia.

Thus, while often not explicitly termed as "Agroecology", many actors and initiatives exist within sub-Saharan Africa building on agroecological principles. The statement provided by the Africa Union noted that *"business as usual is not an option, and the re-greening of agriculture is paramount"*.

FAO's approach

The FAO Director General, José Graziano Da Silva, delivered a message by video, linking Agroecology with the recently adopted Sustainable Development Goals (SDGs). The SDGs renew global commitment to tackle the big challenges of ending hunger, achieving food security and improving nutrition, and promoting sustainable agriculture. To achieve this by 2030, in just 15 years, we need to shift to sustainable food systems that produce more with less environmental costs – *"and we need to do it fast"* he added.

He stressed the role of agroecology, *"Agroecology offers a promising and innovative solution"*, and the central role of millions of smallholder and family farmers, *"They produce most of our food. But with climate change, farmers need even more the support of public policies to continue playing this essential role"*.

He reaffirmed the support of FAO to assist countries in finding solutions to the challenges faced by global food systems and pave the way to a sustainable future *"that leaves no one behind, and become the zero hunger generation"*.



I) AGROECOLOGY AS A PATH TO FOOD AND NUTRITION SECURITY FOR AGRICULTURAL TRANSITIONS IN AFRICA

Speakers:

Mariama Sonko (Association des Jeunes Agricoles de Casamance (AJAC-Lukaal), Senegal)

Etienne Hainzelin (Agricultural Research and International Cooperation Organization (CIRAD), France)

Hamado Tapsoba (Conseil Consultatif sur les Réformes Politiques (CCRP), Burkina Faso)

Souleymane Bassoum (ECOLINK, Senegal)

Million Belay (Alliance for Food Sovereignty in Africa (AFSA), Ethiopia)

Sophia Ogutu (Farmer, Kenya)

Chaired by **Mamadou Goita** (Institute for Research and Promotion of Alternatives in Development in Africa (IRPAD)/Coalition pour la protection du Patrimoine Génétique Africain (COPAGEN), Mali)

Overview

Addressing the persistent problems of food and nutrition insecurity require new approaches and tools that are specific to the African context. The shocks to which the continent is frequently subjected (e.g. natural catastrophes, economic downturns, and conflicts) undermine people's food and nutrition security. Two of the most fundamental challenges to human welfare in Africa are food and nutrition security. Even when people may not necessarily be facing an acute crisis in access to calories, their access to nutritious foods is not secure.

The Sustainable Development Goals, endorsed by the United Nations in 2015, explicitly mention the need to transform our current input-heavy food systems in order to make them more sustainable and contribute to solving the multiple crises of today: hunger and malnutrition, poverty, climate change, environmental degradation, loss of biodiversity, water, gender inequity and health.

Until recently, food security paradigms that aimed to eradicate hunger focused mainly on increasing calorie intake. However, technical, single-crop approaches often do not address the underlying causes of hunger and malnutrition. They could worsen (hidden) malnutrition, as they hinder access to more diverse foods. In fact, biodiversity has an important role to play in achieving healthy nutrition for all. Over recent decades, a few major energy-dense cereals (namely, maize, wheat, and rice) and oilseed crops such as soybeans have grown to dominate domestic food supplies worldwide. As a result, global diets have not only become more homogenous, but also largely composed of processed foods. This, in turn, has undermined local, often better adapted and more nutritious food crops such as other grains, root and tuber crops, as well as pulses and fruits and vegetables. This trend is impacting people's health in rapidly developing countries at an unprecedented rate.

Presenters at the Symposium offered several proposals on ways to achieve this. Promoting the nutritional value of agroecology was highlighted such that food sources become socially empowering, culturally appropriate, environmentally responsible and under the control of small scale food producers.



Agroecology was seen as a way to use biodiversity as a fundamental contributor to diverse, nutritious diets and sustainable systems, through increasing complexity and amplifying the services provided by living organisms. Speakers noted that Agroecology is not a way to revert to the past and avoid new technologies and innovation, but rather a way to connect traditional and scientific knowledge to produce food respecting the environment.

It was pointed out that the Green Revolution provided examples of what is possible when science and policy pulls in the same direction, yet this has left in its wake many unresolved problems such as hunger, malnutrition, environmental degradation; thus Africa needs to avoid repeating this story. Solutions for the transition exist and they start by recognizing that women, with their traditional knowledge, manage both nature and the fertility of nature to produce for people.

Current obstacles to an effective transition include the current system of subsidies that prevent farmers in developing countries from receiving fair prices for their products. In response to this situation, the need for systems of integration for agroecology in the New Partnership for Africa's Development (NEPAD) was proposed. Also, the call was made for better integration of researchers, working in teams across laboratories, to promote agroecology within the national research systems. The critical role of researchers working with farmers, and listening to the farmers, joining together social, technical and methodological capital to find agroecological 'baskets of options' was reinforced.

Participants agreed that while agroecology has been practiced for decades on the continent, it still lacks sufficient support from governments and policy-makers to make better contributions to food and nutrition security. Many participants called for a new narrative based on food sovereignty. To develop this, it would be important to clarify the distinction between food security and food sovereignty; some participants stated that food sovereignty was not about filling empty stomachs, but about being able to choose what to produce and what to eat. In this sense, nutrition security and food sovereignty should not be disassociated: the right to produce and have access to nutritious, culturally appropriate food should be a guarantee for everybody, and most notably for food producers themselves.

Key points discussed

Agroecology as a journey

According to Million Belay (Alliance for Food Sovereignty in Africa) *"Agroecology offers a path that should not be seen as just a type of farming, but as a journey towards thriving living soil, towards increasing biodiversity, towards strengthening farmer innovation, knowledge development and sharing, which are important ingredients for progressing towards higher levels of food and nutrition security. It is recognized that this requires a dramatic a shift, starting with understanding the current conditions and incentivizing the systems that employ the best solutions: building the soil as a living organism; managing pests through natural practices and with increased biodiversity; and focusing knowledge development and community empowerment at the local level"*.

² From the statement of AFSA. 2015. Agroecology - the bold future for Africa. Contributed (and available) from Million Belay, Advisory Panel Member, million@afsafrika.org; millionbelay@gmail.com



Basic principles of Agroecology

Five fundamental principles of Agroecology, which then should be applied and optimized in each local context, have been elucidated by Miguel Altieri and colleagues³:

1. Enhance recycling of biomass and optimizing nutrient availability and balancing nutrient flow;
2. Securing favorable soil conditions for plant growth, particularly by managing organic matter and enhancing soil biotic activity;
3. Minimizing losses due to flows of solar radiation, air and water by way of microclimate management, water harvesting and soil management through increased soil cover;
4. Species and genetic diversification of the agroecosystem in time and space;
5. Enhance beneficial biological interactions and synergisms among agrobiodiversity components thus resulting in the promotion of key ecological processes and services.

Agroecology as a turning point

Etienne Hainzelin (CIRAD) introduced the session with an overview of agroecological approaches. He explained how agroecology represents a departure from which the way agriculture has been seen and analysed by mainstream science for over a century with an essentially reductionist viewpoint and an increasing dependence on external inputs. According to this mainstream perspective, the logical evolution of agriculture is one of yield intensification through the use of high yielding varieties and high levels of external inputs (fertilizers, pesticides, irrigation, etc.). This model of “conventional intensification” has been the base of industrialized “Green Revolution” agriculture. It promotes a strong specialization of crops, often reduced to a uniform and synchronous canopy, ultimately consisting of a single genotype of some major species, with the rest of the living organisms being systematically eliminated as “limiting factors”.

It has long been seen as the ultimate way to produce, but its sustainability is increasingly questioned, because it has forgotten the importance of biodiversity as the driving force of production and regulation processes in ecosystems. Despite spectacular gains in terms of productivity (economy of scale, homogeneity, mechanization, etc.), it has caused an extreme impoverishment in biotic interactions.

Acknowledging the absolute double necessity of intensification and sustainability, several authors including Pretty and Bharucha (2014) have been developing the concept of ‘sustainable intensification’ as a “processor system where agricultural yields are increased without adverse environmental impact”. This concept emphasizes ends rather than means, which can be extremely diversified (Pretty and Bharucha, 2014).

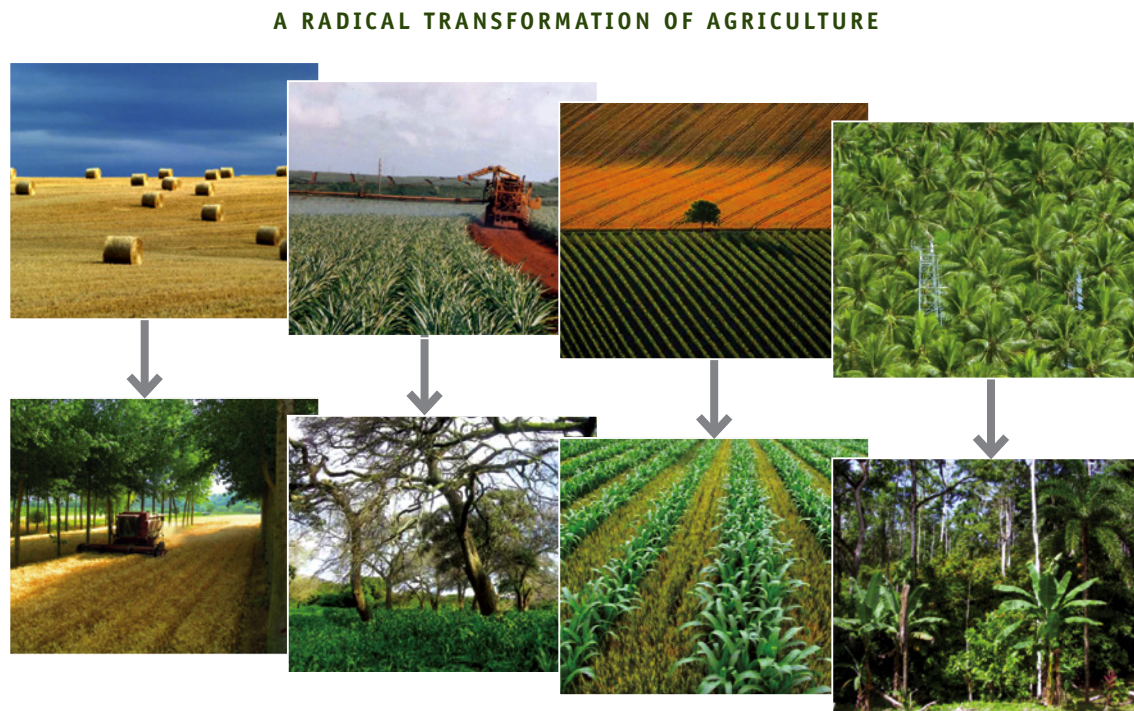
On the other hand, agroecology is very focused on means: it is mainly based on a stronger provision and mobilization of natural resources and functionalities of biodiversity and the relevant ecosystem services that sustain agricultural production such as natural pest control, maintenance of soil fertility and pollination. It represents a turning point with conventional intensification, but it is in tune with the other transformative evolutions that agriculture has known since it

³ Altieri, M. A., & Toledo, V. M. (2005). Natural resource management among small-scale farmers in semi-arid lands: Building on traditional knowledge and agroecology. *Annals of Arid zone*, 44(3/4), 365.



started in the Neolithic: domestication and breeding processes, and later on association with animal-crops, rotation with legumes crops, soil tillage, then no-tillage, etc. (Figure 1).

Figure 1. **Examples of how to change agriculture in a more biodiverse system**



Source: Oral presentation prepared for the regional symposium in sub-Saharan Africa by Etienne Hainzelin, CIRAD

A new way of looking at performance

It is now widely recognized that agriculture is multifunctional, as stated in the following passage from the International Assessment on Agricultural Knowledge, Science and Technology for Development: *“other important functions for sustainable development include provision of non-food products; provision of ecological services and environmental protection; advancement of livelihoods; economic development; creation of employment opportunities; food safety and nutritional quality; social stability; maintenance of culture and tradition and identity”* (IAASTD, 2009).

Agricultural productivity cannot only be measured by labour or land productivity. Negative externalities as well as the supply of ecosystem services and amenities must enter into the calculation. Furthermore, they must be computed over time so that the long-term impact on ecosystem potentialities and resilience can be evaluated. This multi-criteria performance, a crucial element to evaluate sustainability, is being debated; numerous indicators are proposed but very few are agreed upon by consensus. The principles of agroecology lead to a re-analysis of all technical interventions in cropping systems. This analysis is based on a long-term vision of ‘aggradation’, building on existing foundations, where natural capital improvement is one of the goals.

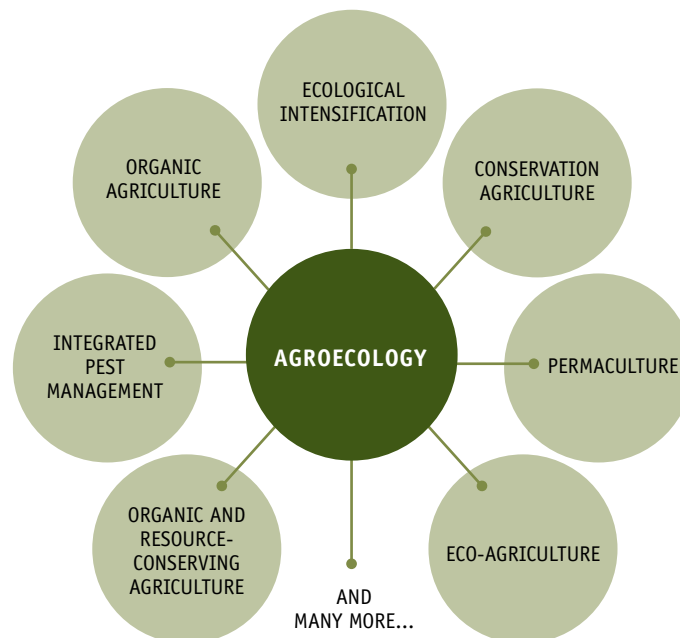


Agroecology has many ‘incarnations’

Although various scholars have described agroecology in considerable detail and with a sound conceptual basis (Altieri, 1995; Gliessman, 1998), today it has no consensual and clear definition. Its very nature is much discussed; it has been described as a science, a movement and a practice, (Wezel *et al.*, 2009), though many proponents stress that these aspects are indivisible.

Agroecology has ‘incarnations’ that are many and very diverse (Figure 2). Within the family of practices, one could include permaculture, organic agriculture, eco-agriculture, conservation agriculture, evergreen agriculture, minimum or no-tillage, etc., each focusing on one specific feature of agroecology, although not always the totality. The expression “ecological intensification” refers even more to the range of means to be mobilized in priority to transform agriculture through agroecology (Griffon, 2013; Tittone, 2013; 2014).

Figure 2. **The very diverse incarnations of 'Agroecology'**



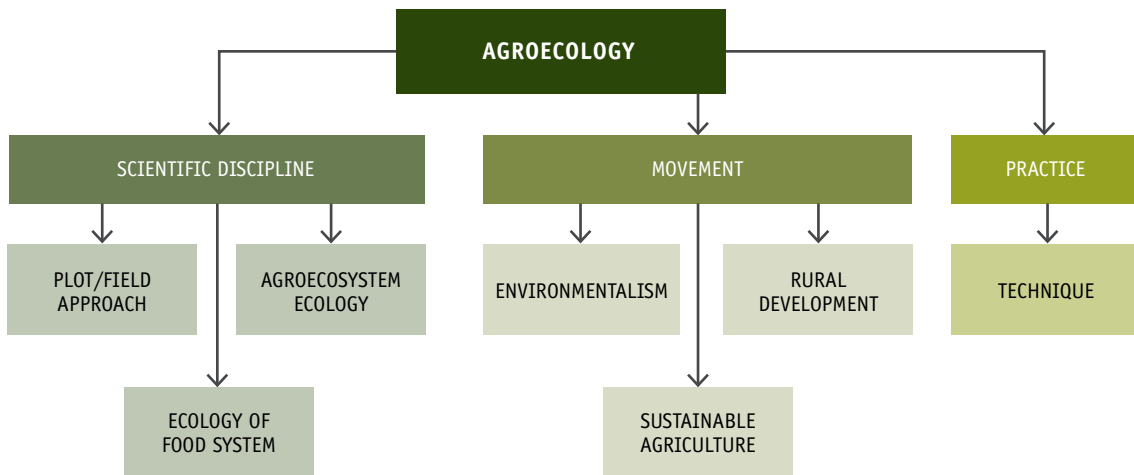
Source: Presentation prepared for the regional symposium in sub-Saharan Africa by Etienne Hainzelin, CIRAD

The way agroecology is presented often goes beyond the ecosystem and plot approach with three pillars which contribute to the development of agroecology. Stemming from the paper by Wezel *et al.* 2009⁴, the diverse forms of agroecology, as a science, a set of practices and as a social movement, were emphasized in presentations (Figure 3).

⁴ Wezel, A., Bellon, S., Doré, T., Francis, C., Vallod, D., & David, C. (2009). Agroecology as a science, a movement and a practice. A review. *Agronomy for sustainable development*, 29(4), 503-515.



Figure 3. Diversity of current types of meanings of agroecology

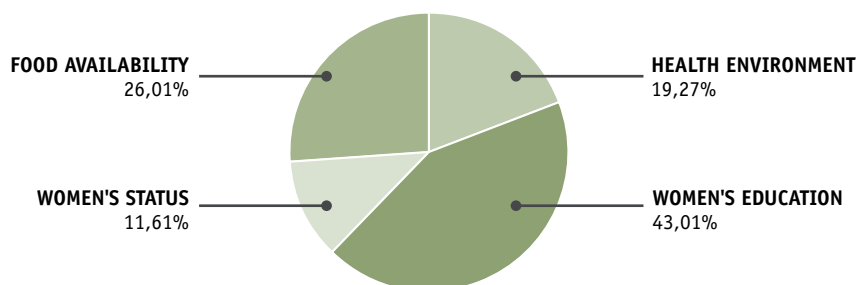


Source: Wezel et al. (2009)

Food security

“Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (World Food Summit, 1996). The importance of women’s education to reduce child malnutrition was highlighted, based on the study of Smith and Haddad (2001) who showed that this factor was the major determinant to fight against this crucial issue (Figure 4). Related to this point, an important observation is the sizeable impact public goods make in improving food security and health measures such as access to sanitation, women’s education, and gender equality as key priority areas.

Figure 4. Contribution of food availability and other determinants to the reduction of child malnutrition 1970-1995 (Smith and Haddad, 2001)



Source: Presentation prepared for the regional symposium in sub-Saharan Africa by Etienne Hainzelin, CIRAD



Food Sovereignty

Civil society organizations (CSO) present at the meeting insisted on the importance of Food Sovereignty, a new narrative for many working in conventional agricultural development. Food Sovereignty reflects the needs and aspirations of farmers, small-scale producers and local communities. The CSO pointed out that agroecology represented the various dimensions of food security and sovereignty.

Agroecologically-sustained biodiversity includes both nutritional diversity and the crop-associated diversity that flourishes under agroecological management. It lies in farmers' fields and crops. This has been neglected in conventional agricultural research and must be prioritized.

The cultural and nutritional dimensions of agroecology

The cultural dimension of agroecology was stressed as being first and foremost to any initiative related to the promotion of agroecology. Agroecology cannot take root outside the culture of the people. It was pointed out that it was not just a question of availability, but also of nutrition and utilization of food in an integrated way. It addresses nutrition by promoting diversity and the importance of highlighting the nutritional value of agroecology.

Agroecology offers a path that should not be seen as just another type of farming, but as a journey towards thriving living soil, towards increasing biodiversity, towards strengthening farmer innovation, knowledge development and sharing, which are important ingredients for progressing towards higher levels of food and nutrition security.

What is needed for the Agroecology transition?

Agroecology was presented as the best solution to harness Africa's social, natural and economic assets as it enhances local biodiversity and conserves natural resources. Agroecological approaches emphasize the interaction of biophysical and social-economic factors that manifest according to different site-specific contexts.

The debate around transitions reflected the fact that the demand for agroecology stems from the realization of the cost and damage of industrial agriculture (e.g. monocultures, soil degradation, agrochemicals and their impacts on natural processes, perceptions of genetically modified organism (GMOs)). The sustainability of African agriculture cannot be predicated on conventional high input production regimes that are clearly susceptible to the volatilities of external resource flows. Agroecology is not only a more productive agriculture that also protects the environment, but also is agriculture with a social dimension, focusing on the reduction of poverty and inequality. Industrial agriculture progresses in the opposite direction.

As resource constraints (or poverty) contribute to the poor performance of Africa's agriculture, it is paradoxical that Africa's poverty reduction strategies should be linked to gains in conventional agriculture⁵.

⁵ Conventional agriculture is also variously referred to as high-input based or industrial agriculture.



The existing diversity of food systems

Family farms provide the framework through which agricultural values are transmitted to future generations. Family farms are sources of knowledge sharing that promote agroecology. The role of women and youth in agroecology is very crucial.

Agroecology focuses on natural mechanisms and is based on diversity of food systems. Natural processes already exist but need to be highlighted and provided with policy support to ensure their sustainability.

While local institutions and knowledge systems may be overstretched and/or insufficiently respected or supported to meet today's growing food and nutrition security needs in many African communities, it is evident that they underpin interactions at the nexus of natural resources, local social safety nets and local food systems.

Transition at the global level

Sophie Oguta insisted on the need to be precise when we address 'transition' – from what to what? She noted that agroecology has existed in Africa since time immemorial. Agroecology is not just about production of organic food, it is about considerably more, including Food Sovereignty and protecting the natural resources that small scale food producers depend upon. Transition should be a process that places those who produce, distribute and consume food at the centre of decisions on food systems and policies.

The challenge is to put in place operational mechanisms to overcome the threats imposed by climate change, to strengthen the livelihoods of farmers, improve the management of natural resources, and reduce the intensity of greenhouse gas emissions effects.⁶

Different possibilities for the transition were discussed, including:

- » Women and their traditional knowledge playing a key role in managing natural elements and fertility;
- » Young people ('the adults of tomorrow') must be willing to see agriculture as the path for development. The food produced by small-scale practitioners of agroecology being consumed locally. This supports the local economy, local jobs, local nutrition security, regenerating rural livelihoods, and reducing rural exodus of youth.

Mariam Sonko from AJAC-Lukaal, Senegal, a women farmers association from Casamance, pointed out that in Casamance it was decided by these groups that fertilizers and pesticides would not be used; it was not easy to use local resources but they had succeeded in many areas, including in their farms. They had become increasingly empowered to enter into local government and decision making, and maintain a culture of respect for forest and environment in general (see Box 1 below for more details).

⁶ Based on Table ronde 2 : L'agroécologie et la mise en valeur des ressources naturelles dans le contexte du changement climatique, contribution from Makhfousse Sarr, Advisory Panel member, makhfousse.sarr@fao.org



Box 1

A strong testimony of the ways in which agroecology can galvanise food and nutrition security in Africa is provided by the work carried out in the Casamance region of Senegal over the last decade. Recognising that when women have greater opportunities to manage and increase their resources collectively, they consistently use those assets to benefit the health and well-being of their family members and communities, support has been given to expanding such opportunities at various levels, from household decision making to national policy. As rural women and their organizations in Casamance became more confident about their priorities for farming and food production in the wake of conflict, an important question emerged. What type of farming and food systems did rural women want? Before periods of conflict, women had a long tradition of growing many different varieties of rice from their own seeds? They also grew cereals and vegetables, gathered fruits from the forests, and harvested oysters from the mangrove swamps, all of which contributed to a nutritious and diverse diet that was ecologically viable. Many rural women's groups were more interested in rebuilding their own food systems using ecological practices, and thus a strong focus developed on safeguarding local traditional varieties, creating seed production gardens and traditional seed banks and promoting seed exchange. Part of the processes of the groups articulating their needs has led to women leaders acquiring new skills in managing their organizations effectively and gaining more influence in the community. In one survey of participating women, seventeen per cent had been elected to district councils with influence over local government budgets and a range of community issues⁷.

It is important to respect the dynamic aspect of agroecological transformations. Realism and pragmatism demand a greater focus on agro-ecological transitions – which require time and are highly diversified, - rather than advocating for the abrupt replacement of one model by another.

It was pointed out that transitions are made very difficult by the current system of subsidies, which prevent farmers in developing countries from receiving fair prices.

The importance of local innovation systems

Because it relies primarily on natural resources and ecosystem services, agroecology is primarily a science of the local context.

It will not be possible to invent a solution in an agroecological system that is 'ready-to-wear'. Breakthrough innovations can of course be hoped, but generally it will be in the 'tailor-made' and therefore the agroecological transition will pass through local innovation systems.

⁷ New Field Foundation. 2015. Executive summary of *In the Wake of Conflict: An integrated approach to funding peace and vibrant rural communities*. Available at <http://www.newfieldfound.org/publications.html>. Contributed by Mariam Sonko, Advisory Panel member.



The backbone of these local innovation systems is made up of the food producers, who will have to build onto their local knowledge with scientific knowledge. This strengthens the role of farmer learning relative to the role of technology and requires the ability of scientists to nourish the combination of local and scientific knowledge constructions.

Hamado Tapsoba of the McKnight Collaborative Crop Resource Program reinforced the critical role of researchers working with farmers, and listening to the farmers' voice, joining together social, technical and methodological capital to find agroecological 'baskets of options'.

The McKnight Foundation Collaborative Crop Research Program (CCRP) supports Agroecological intensification (AEI) research that can be applied by farmers and communities to improve productivity, nutrition and livelihoods. In Africa there are three Communities of Practice (CoP): in West- (Burkina Faso, Mali and Niger), East- (Ethiopia, Kenya and Uganda) and Southern Africa (Malawi, Mozambique and Tanzania).

Because of the high level of heterogeneity in smallholder farming systems there is need for AEI approaches to understand the diversity and then match options to the diverse contexts.

This leads to the concept of Option x Context (OxC) interactions. The CCRP is using an evidence-based, principles-focused approach to developing Farmer Research Networks (FRNs) that can foster genuine and authentic collaborative engagement and create an environment in which (for FRN see more in the next section):

- » Farmers' groups negotiate research priorities and influence the research agenda.
- » Farmers are engaged throughout the whole research process from diagnosis to design, implementation, analysis, and communication.

Different scales for a coevolution

The challenge of taking into account the different scales was presented as a catalyst of social dynamics. Because agroecology is based on ecosystem services that are frequently mobilized at a scale exceeding that of the field, it is also implemented at larger scales: farm, landscape, watershed, and in the end, the food system, as presented by Etienne Hainzelin. It leads to a diversification of production systems that require planning, management and coordination at the highest levels (for example, controlling the pests on one field requires consideration of different trophic aspects across the landscape; combating soil erosion on the slope of a watershed involves improving the capacity of the land to absorb water across the entire slope, etc.).

In fact, it is often observed that there is coevolution between technical systems and rural societies, between ecological and social systems.

The agroecological transition will therefore push communities to better coordinate together their different production strategies in their own space but also at its periphery. But it also depends on driving forces beyond the control of producers - input supply chains, upstream or downstream value - or even external to crop production - food industry and distribution, urban consumer markets, public policies and regulations, etc. Under these conditions, the broader territorial approaches are needed to integrate this heterogeneity of scales, and involve local systems and stakeholders influencing this context.

The nature of agroecology as a large umbrella that can unite practitioners, scientists and activists was highlighted by Million Belay, as well as the need to mainstream agroecology in national and regional policy, particularly CAADP for the latter.



One avenue that needs more focus is to raise the awareness of consumers for the nutritional benefits of agroecology, to bring them more within the 'umbrella'.

Private Sector

Insights were provided by a representative of the private sector, Souleymane Bassou of ECOLINK, who stressed that agroecology cannot be developed outside the private sector.

The private sector is responding to the pressure of consumers and food distributors and sellers, as value chains become more demanding to meet global standards. In countries like Burkina Faso, Côte d'Ivoire, Mali and Senegal, the private agriculture sector is characterized by farms belonging to both national private companies and farms belonging to foreign companies, and to private sector input providers. They often specialize in fruit cultivation and horticulture. Fruit production of mango is widespread in these countries. In order to meet the demand of its customers the private sector sets up contracts to purchase fruit from orchards belonging to family farms. The requirements for minimum pesticide residues are stricter in export products. Such regulations often bring the production closer to the practices of agroecology. Many farms do not hesitate to take the step to convert to organic farming. In this momentum, the private sector supports the certification of family farms for the standardization of its products.

In agriculture it was noted that it is unfortunate that the need to build capacity is not sufficiently recognized. It is assumed that the sons of farmers will become farmers, yet this is less and less true. It is important to note that the private sector has personnel well trained to work in many aspects of agroecology, particularly the organic sector in the reduction of input use.

With respect to the private sector, it was acknowledged that they have an important role to play; for example in the provisioning of biofertilizers in small packages appropriate for small-scale family farms. Equally, the employment of women in the processing sector for agroecological products has considerable potential.

Financial support for transition

Given the limited private sector involvement, the agroecological transition has received little financial support. In this respect, it can already be considered a social innovation. In Latin America, the basis of the transition is peasant experimentation, involving very small producers. Land and labor are two key variables to consider in developing technological innovations that have value, but they will have value only if they positively impact social innovations in terms of livelihoods, reducing arduous work, building resilience, inclusion of marginalized populations, etc. Agroecology involves a complexity of systems, which causes uncertainty and increased risk-taking on the part of the farmer.

It is essential to take into account the fragility and vulnerability of certain categories of farms as opposed to other farms that are better endowed with factors of production and technical knowledge⁸.

⁸ Previous four paragraphs from Table ronde 3. Agroécologie : Innovation sociale, « livelihoods » et technologies contributed by Etienne Hainzelin, Advisory Panel member etienne.hainzelin@cirad.fr



II) AGROECOLOGY AND THE USE OF NATURAL RESOURCES IN THE CONTEXT OF CLIMATE CHANGE

Speakers:

Massa Koné (Convergence Malienne contre les Accaparements des Terres (CMAT), Mali)

Naseegh Jaffer (Masifundise, World Forum of Fisher Peoples (WFFP), South Africa)

Makhfousse Sarr (FAO Farmer Field School (FFS), Senegal)

Yacine Badiane Ndour (Senegalese Institute for Agricultural Research (ISRA), Senegal)

Fatou Binetou Diop (La Fédération des ONG du Sénégal (FONGS), Senegal)

Chaired by **Lusike Wasilwa** (Kenya Agriculture and Livestock Research Organisation (KALRO), Kenya)

Parallel session on soil health

Facilitator: **Paul Mapfumo** (Professor, University of Zimbabwe)

Rapporteur: **Jean-Luc Chotte** (IRD, Director UMR, France)

Parallel session on Agrobiodiversity

Facilitator: **Etienne Hainzelin** (advisor to CIRAD President, France)

Rapporteur: **Ibrahima Seck** (National federation of organic farming (FENAB), Senegal)

Parallel session on ecosystem services, mixed systems and agroforestry:

Facilitator: **Paul Rogé** (Research associate, Michigan State University, USA)

Rapporteur: **Norah Samupunga** (Programs Officer at ZIMSOFF, Zimbabwe)

Overview

According to the Secretariat of the African Ministerial Conference on the Environment, no continent will be struck as severely by the impacts of climate change as Africa. Given its geographical position, the continent's vulnerability will be exacerbated by the volatile social situation in several of its regions, and the limited capacity of national governments to respond to social crises. It is estimated that by 2020, between 75 and 250 million people in Africa will be exposed to increased water stress due to climate change. Africa's rampant food insecurity and the impacts of climate change are worsened by declining soil fertility problems caused by soil nutrient mining, erosion, and the depletion of soil organic matter.

It was pointed out that industrial agriculture and fishing contribute to climate change and biodiversity loss, both of which impact on small producers, whose livelihoods depend on the natural environment.



The session showed how agroecological practices entail sustainable natural resource use, increased resilience, and climate change adaptation. While maintaining natural resources and increasing the local agro ecosystems potential, agroecology optimizes functional biodiversity above and below ground taking advantage of biological cycles for nutrients, water and energy, limiting the population of bio-aggressors like weeds, pests and soil-borne diseases. Many studies reveal that small-scale farmers who follow agro-ecological practices cope with, and even prepare for, climate change, minimising crop failure during drought. Agroecology has been shown to increase soil water retention and soil nutrient levels, making land more resilient to the droughts and floods that will become increasingly common as the climate changes. Moreover, resilience of farming systems and farming communities is enhanced by high genetic biodiversity, a characteristic of agroecological systems.

Although agroecology is a relatively new term, there is nothing experimental about it. Agroecology is tested and proven: humanity has traditionally farmed following the ecological principles that agroecology promotes and they are embedded in many indigenous and traditional farming practices. Agroecological practices are therefore an effective strategy to respond to the combined crises of natural resource degradation, climate change and food security.

The Regional Meeting highlighted that putting in place operational mechanisms is paramount to addressing these challenges and strengthening the livelihoods of farmers, improving the management of natural resources, and reducing the intensity of greenhouse gas effects. While local institutions and knowledge systems may be overstretched and insufficiently respected or supported to meet today's growing food and nutrition security needs in many African communities, it is evident that they must underpin interactions at the nexus of natural resources, local social safety nets and local food systems. During the African Meeting, some suggestions were brought forward for how to do this. Forms of training that allow farmers to understand the ecological relationships and processes of their agro-ecosystem, such as Farmer Field Schools, were highlighted. Family farmers develop innovative adaptation strategies in order to address climate change, and this can be reinforced through co-creation of knowledge in which researchers work with farmers to optimize practices such as intercropping, agroforestry, crop rotation, and organic fertilization. The valuation of ecosystem services, taking account of local knowledge on agroecological practices can provide opportunities for sustainable management of natural resources and mitigating the effects of climate change was mentioned.

During the seminar, emphasis was placed on the potential of agroecology to improve and save degraded soils and to promote and maintain biodiversity, increasing resilience in the face of climate change.

It was brought to the fore in strong terms that agroecology also has a social dimension, which makes it different from some other forms of 'sustainable agriculture': agroecology seeks to reduce inequality and strengthens social security networks. Examples were provided in which communities struggling with uncertain rainfall and degradation of natural resources found solutions in agroecological approaches that took into account the history, needs and characteristics of the territory, villages, and family farms. Importantly, this approach also resulted in the creation of greener jobs from which women and youth especially benefit.

Some policy barriers to achieving a change towards agroecology remain. Among these are policy frameworks that favour high external chemical inputs over traditional peasant farming.



These practices might not only be costly and based on fossil fuels, but also may hinder the investment in relatively inexpensive approaches such as agroecology.

Participants to the regional meeting noted that agroecology implies putting food producers in the 'driver's seat' of the transition process. Farmer-led and bottom-up solutions, more access to and control over resources for farmers, and more research with farmers into agroecology were among their top recommendations.

Key points discussed

Land restoration

There are many successful approaches to agroecology development. For example, Fatou Binetou Diop presented the experience of an NGO in Senegal focusing on families and the local environment, preventing land degradation and creating local employment. Through solidarity and mutualism, families and villages have restored their productive base, using animal waste to increase yields, and learning to better integrate legumes with crops. The development of market gardening and value addition has increased both solidarity and food security. They have moved into new forms of economy, improving rural livelihoods through the development of rural banks to ensure a decent price for producers, developing markets for renewables, producing energy to light homes at night, and creating "green" jobs which keep youth employed in a vibrant rural economy.

Soil health

The session on soil health noted that the science of ecological management of soils can support agroecology to integrate ecological principles into farm management systems, based on traditional and holistic systems.

Figure 5. **Improving soil health trough constructing natural stone walls**



Source: Oral presentation prepared for the regional symposium in sub-Saharan Africa by Makhfousse SARR, Coordonnateur GIPD, FAO Sénégal



Under agroecological management, it is possible to attain more stable yields with reductions in the need for synthetic fertilizer, increased profitability, and a trend towards greater soil organic carbon and fertility as shown in many instances; however more agroecological research is imperative. Wise management of organic waste can result in increased yields, better absorption of water, and can also evolve into local industries in providing waste for use as organic fertilizer.

Agrobiodiversity

The session on agrobiodiversity discussed how research could be oriented and supported to provide practical agroecological solutions. It noted that agroecology is not a way to revert to the past and avoid technologies and innovation, but rather a way to connect traditional and scientific knowledge to produce food in a more sustainable way while respecting the environment.

Thus, research is an important element of adapting agroecological principles to local contexts through the integration of ecological principles into farm and system management. Depending on the context, improved performance may mean any or all of the following: increased productivity, enhanced use of local resources, maximized returns from external inputs, improved stability and/or diversity of diets, with associated increases in resilience and environmental service provision from farmed landscapes.

Beyond these tangible impacts, agroecological principles also embody notions such as farmer participation and ownership in the research process, integration of global and local knowledge, and cross-sector and multilateral collaboration. Because of the high level of heterogeneity in smallholder farming systems, agroecological research must understand this diversity and then match options to the diverse contexts.

The necessity for research to help identify species, including livestock and trees, adapted to climate change was emphasized.

The need for meeting the needs of farmers in plant breeding was highlighted, noting that plant breeders often work with dead soils, not the living soils that are actively managed by farmers with organic inputs. In Ethiopia farmer researchers developed enhanced durum wheat in living soils showing the potential for much improved yields.

Ecosystem services, mixed systems and Agroforestry

The session on ecosystem services, mixed systems and agroforestry emphasized that there are different ways to enhance ecosystem services. For instance agroforestry is a system that integrates trees and shrubs with crop and/or animals to create environmental, economic, and social benefits (Figure 6). The component of trees in this system provides advantages such as nitrogen fixation, shelter for livestock, timber and wood production or different foods such as fruits or nuts. Agroforestry systems have a long tradition in Africa. Integrated agricultural systems combine crops with vegetables or livestock. These systems increase food production at farm and regional levels, while improving many ecosystem services.

It was recognised that agroecology provides several ecosystems services. The challenge is in how ecosystem services are viewed by other players; if taken as commercialization commodities the concept could actually work against the integrated systems upon which agroecology is based.



Figure 6. **Agroforestry systems**



Source: Oral presentation prepared for the regional symposium in sub-Saharan Africa. Left photo: high species diverse Agroforestry system by Etienne Hainzelin, CIRAD. Right photo: Silvo pastoral system by Makhfousse SARR, Coordonnateur GIPD, FAO Sénégal

Cases of agroecology practices promoting ecosystem services:

1. Livestock play a fundamental role in some parts of the Sahel to regenerate grasslands by helping the seeds to germinate. This goes against the common narrative that livestock cause environmental destruction.
2. Establishment and pruning of perennial trees amongst crops may help protect crops from the increased temperatures that are projected for much of sub Saharan Africa.
3. Integrated systems provide several services such as the regulation of pests and disease by natural enemies.
4. Improvement of soil through rapidly growing legumes.
5. Crop associations with trees in some cases stimulate crop production

Barriers to adoption of agroforestry and integrated farming systems identified:

1. Land tenure.
2. Technical information is lacking – specifically by extension services.
3. Time required to establish these systems.
4. Credit to subsidize the transition process.
5. Policy that restricts the integrated use and management of natural resources.

Cases of innovations to overcome adoption barriers:

1. In terms of technical information and tenure – women associations in Mali have limited access to resources and land. Women associations promoting agroecology have carved out new solutions to the land access problem for women who harvest forest products such as Shea nut.



2. Community managed forestry is a dynamic approach to accessing and protecting natural resources.
3. Instead of a single strategy, NGOs and other promoters should view the adoption process as a transition that may require diverse local strategies and intermediate steps such as improvement of soil through rapidly growing legumes.
4. The territorial organising of peasants to integrate resources across production zones as well as high level policy discussions make it easier for agroecology to be integrated nationally.

Experience of Farmers Field Schools

Farmer to farmer training groups work well, including FAO's Farmer Field Schools (FFS) method, as presented by Makhfousse Sarr. Farmer field schools enable farmers to understand ecological processes and to make their own decisions about Climate Change adaptation. The social dimension is manifested throughout the process, throughout the participatory farmer training method of FFS. Examples of specific practices in FFS related to Agroecology are for instance: 1) Integrated Pest Management, which showed a reduction in pesticides use in cotton production in Mali and a reduction in chemical fertilizer use and seed input as well as increased production in Rice production in Benin. 2) System of Rice Intensification (SRI), which showed a reduction of water use between 16 to 48 percent and an increase in Carbon and Nitrogen content in Senegal. 3) The use of organic fertilizer against Striga weed invasion in Senegal increasing yields up to 89 percent, and 4) Erosion measurements implemented to restore degraded soil, support the return of herbaceous species and recharge the water table.

Access to land

Access to natural resources was presented as crucial for the development of agroecology. This means ensuring producers', especially women's, youth's and indigenous peoples' access to natural resources, notably land, water and biodiversity.

Massa Koné described the alliance in Mali countering land grabbing. When addressing natural resource issues it is important to question: 'natural resources' developed by whom, and why, and to consider the issue of access and control over resources and seeds. He pointed out the role of communities in the conservation of biodiversity. If communities have control over what they produce, they are able and willing to invest in agroecology, and harmonise practices with the natural ecosystem, and create economic dynamics that support women and mitigate the rural exodus of youth. If people do not feel secure, with no means to acquire land due to privatization of land, water and biodiversity, the rural exodus will continue, with dramatic consequences of impoverishment and loss of autonomy. The FAO has been working with governments on issues of land tenure and governance, and should continue to advise and assist governments to identify and support land governance regimes that support agroecology.

The impact on agroecology on climate change

The way we produce food has tremendous impacts on the climate. Some estimate food production to be the number one contributor to greenhouse gas (GHG) emissions, far exceeding that of transportation. Estimates by FAO show that emissions from agriculture, forestry and fisheries have almost doubled over the past fifty years, and could increase additional 30 percent



by 2050. Although the direct contribution of the fisheries sector to aggravate climate change processes is considered to be lower than agriculture, industrial wild capture fisheries do contribute to GHG emissions⁹.

Small-scale producers use much less resources, and do not produce emissions from long distance transport. They coexist with nature, making them very sensitive to climate change. Agroecology is largely for local use, providing local jobs, and local nutrition security. But it was pointed out that research is necessary to evaluate the impact of agroecology: for example information concerning the impact of GHG emissions by livestock is practically non-existent. It is clear that agroecological research is imperative.

Research in climate change adaption

Yacine Badiane Ndour spoke of research activities on agroecology in face of Climate change as carried out by Institute for Agricultural Research (ISRA, Senegal) in partnership with IRD and CIRAD.

They are focusing on the ecological management of cultivated systems as influenced by organisms that are 'ecological engineers'. They also study traditional and holistic systems, and identify how to optimize nutrient cycles based on local techniques or the co-construction of knowledge with researchers. This includes documenting the importance of organic matter and fertility, organic matter and carbon sequestration. A significant technical challenge in agroecology is pest management for horticulture. More research is needed on this and how to intensify production while preserving the environment.

It is recognized that social elements are key, and must be included in the focus of research. To intensify while protecting the environment requires novel solutions. Research supported by good science can ensure that agroecology in Africa integrates ecological principles into farm management systems.

The need was raised during the discussion to enhance the critical role of agroecology in biodiversity conservation. The importance of community seed systems that address availability, access and ownership issues was highlighted as well as the importance to strengthen the existing local knowledge with farmer-led research and participatory research.

Farmer led research and Farmer research network

The debate insisted on the importance of the promotion of farmer-led, bottom-up, local innovation systems and practices to enhance the fundamental role of agroecology in biodiversity conservation and to strengthen the dissemination of innovations;

To understand the particular conditions under which smallholder farmers operate and collaborate to identify or develop options that fit farmers' contexts, address their constraints, and provide them with new opportunities, an evidence-based, principles-focused approach is needed in developing Farmer Research Networks (FRNs) which can foster genuine and authentic collaborative engagement and create an environment in which:

⁹ According to a 2009 FAO study fishing operations were estimated to emit 40-130 Tg CO₂.



- » Farmers' groups negotiate research priorities and influence the research agenda;
- » Farmers are engaged throughout the whole research process from diagnosis, design, implementation, analysis, and communication;
- » It is ensured farmers who lack financial, social, and resource capitals are included;
- » Agriculture's technical-social problems are addressed with research designs that include reasonable comparisons and counterfactuals, data management, protocols, and sound analysis methods that can reveal patterns and suitable options across diverse agro-ecological and social contexts;
- » Facilitate learning and knowledge sharing across farmer and research groups with similar agendas, interests, and constraints.

All these aim at transforming institutional cultures so that researchers develop greater understanding of local needs and personal connections with farming communities. This can then lead to research and development systems that can become more responsive and create products that are more useful and successful in the field and, hence, to more food and nutrition secure as well as more resilient smallholder farming communities¹⁰.

Agroecology and Climate Change in the context of Small-scale fisheries

Agroecology speaks to the diversity of small-scale producers all over the world, including small-scale fishers. Small-scale fishers live in co-existence and operate in harmony with nature, employing more sustainable and traditional fishing practices. Food producers' diverse knowledge and practices are linked to their local environment, and is often not fully understood or valued by scientists, decision-makers etc.

As noted by Naseegh Jaffer, industrial wild capture fisheries contribute significantly to GHG emissions, especially with practices such as a result of increased engine power coupled with trawl fishing. This along with increasing fish fleet sizes, engine power, destructive and ecologically unsound fishing practices, are exacerbating the impacts of climate change on the lives of fishers themselves. Industrial overfishing plays a crucial part in the loss of biodiversity and environmental degradation.

This stands in sharp contrast to fish caught in small-scale inland fisheries, where 94 percent of the catch is consumed in the country in which it is fished. Small-scale fisheries build on agroecological practices, where entire fishing communities (men, women and youth) are culturally and spiritually connected to fishing practices. All fish-catching operations rely heavily on fossil fuels but studies show that large-scale operators use ten times more fuel per tonne of catch than small-scale fishers¹¹. Adding to this, some artisanal fishers (e.g. in Mozambique) actually collect and commercialize some of the discards from industrial vessels. Further, as most is fished for local consumption and trade, emissions caused by transportation are also reduced. This is especially the case for inland fisheries, where 94 per cent of the small-scale inland production is consumed in the country in which it is fished.

¹⁰ From document "Improving the performance of farming systems through Agroecological intensification (AEI) by Hamado Tapsoba, Advisory Panel member.

¹¹ HLPE report, p. 56



The low impact on the natural environment of small-scale agroecological fishers, and preservation of natural habitats such as mangrove forests, provide the best protection against climate change impacts such as floods and storms¹².

A fundamental shift

Industrial agriculture and fisheries have had detrimental effects on the environment and have contributed to climate change. A fundamental shift is needed from that model to a truly more sustainable, agroecological paradigm. This challenge requires avoiding promoting approaches that essentially reproduce the industrial food system while mitigating some of its unsustainable impacts.

This means for Civil Society Organizations (CSOs), among others, distinguishing clearly between agroecology and climate smart agriculture. Apart from being a science, and a framework of practices, principles and values, agroecology is a movement that aims among others to increase producers' autonomy over the agricultural and food systems. Connecting to this statement it was noted that agroecology helps to cool the climate but also does much more, for example to give dignity and autonomy to smallholders.

¹² Previous three paragraphs based on discussion paper "Agroecology and Climate Change in the Context of Small-Scale Fisheries" contributed by Naseegh Jaffer, Advisory Panel member



III) AGROECOLOGY: SOCIAL INNOVATION, LIVELIHOODS AND TECHNOLOGY

Speakers:

Ibrahima Diedhiou (Université de Thiès, Senegal)

Barnaba Rotich (DUDUTECH, Kenya)

Etienne Hainzelin (Agricultural Research and International Cooperation Organization (CIRAD), France)

Gora N'Daye (Kaydara Farm and School, Senegal)

Paul Nyabenda (International Movement of Catholic Agriculturalist and Rural Youth Catholics (MIJARC), Rwanda)

Chaired by **Ibrahim Coulibaly** (Coordination Nationale des Organisations Paysannes (CNOP), Réseau des Organisations Paysannes et des Producteurs (ROPPA), Mali)

Overview

Addressing humanity's future challenges will require social innovation and collaboration between different actors on an equal footing, combining different types of knowledge, experience and technology, including traditional knowledge. During the 2014 FAO's International Agroecology Symposium, it was concluded that in achieving a transition, local contexts should be awarded greater importance and that therefore, we must learn from local agroecological knowledge. Many conventional top-down extension efforts have left farmers demobilized and disempowered. All too often, peasant knowledge was ignored through the promotion of external advice, chemical inputs, seeds and machinery.

The need for upscaling agroecology was emphasized in the African regional meeting, with the premise that different situations call for different practices. In this context of amplifying strategies, the importance of farmer knowledge and the need for family farmers to participate more in research and policy making, the role of biodiversity-related knowledge for nutrition, and the inherent and unbreakable links between culture, society, and agriculture were highlighted.

One of the principle obstacles to the spread of agroecology is the tendency to promote narrow, indivisible packages of techniques that farmers find hard to adopt in full. This approach ignores farmers' own agency in the design and selection of effective agroecological solutions and overlooks the fact that innovation processes are complex and non-linear. Contrary to the approach of mainstream agricultural science, agroecology is based in local needs and conditions and its further development and spread is best done through fostering collaborations with and by local farmers, both male and female.

Agroecology requires a more radical shift in which farmers are seen as researchers in their own right. In agroecology, farmers continuously build situation-specific knowledge that allows them to develop under unpredictable and changing circumstances. There are no fixed prescriptions in agroecology about how to produce, process, market or store food, feed, medicine and



fibre. Rather, different practices work in different ways depending on each specific context and ecosystem. Agroecology is neither reductionist nor deterministic and is constantly developed from approaches that are creative and that recognize and integrate the diversity of traditional agriculture. This kind of thinking manifests itself in, for example, the Farmer-to-Farmer methodology, which originated in Central America, in the Farmer Field Schools around the world, and in the many social processes that originate from the bottom and are replicated horizontally. These and many other initiatives together have formed the basis for the agroecology movement.

Co-creation of knowledge happens when new knowledge emerges from sharing, learning, and working with other people. This is especially relevant and urgent in the context developing climate resilient agriculture. Farmers' knowledge of seeds, land, water and other local resources are absolutely central in this process, and it can be supported and enriched with 'formal' scientific knowledge. As such, agroecology is strongly rooted in farmer practice and knowledge, especially that of women farmers. FAO's international symposium recognized that horizontal (farmer to farmer) communication and exchange is a powerful mechanism. It also emphasized the need to have better linkages between academia, governance mechanisms and women's groups. The symposium explicitly acknowledged that local knowledge of biodiversity and women's knowledge is as important as that of men and emphasis should be placed on the knowledge generated and maintained by women.

Arguing for policies that value local capacities in agricultural innovations, the need was expressed for a supportive institutional framework for the use of biological alternatives on farms that could help to effectively decrease the use of chemicals in agriculture. Social innovation in agroecology is especially important to attract more youth to farming, even more so in Africa where young people represent 60% of the population. A recommendation was made for basic adult and children's education in agroecology in order to better equip youth with basic skills in agroecology.

Other suggestions included the empowerment of rural youth, so that they continue to work with agroecological processes; promoting dialogue between rural communities and the scientific sector; and creating a forum where youth can share and compare ecological techniques, with the aim of increasing sustainability in their production.

Key points discussed

Social innovation for food security

A significant part of the current conversations around food security and climate change has focused on production and productivity to meet present and future needs. While this can make important contributions to solving these problems, the further observation that public goods like social development and innovation are strong - and perhaps the strongest - levers for increasing food security is a powerful and important insight. Further, improvements in each of these priority areas would also be likely to increase the community-level autonomy, capacity, and sovereignty, as well as improve agricultural productivity.

Also mentioned was the importance to take into account the fragility and vulnerability of certain categories of farms as opposed to other farms that are well-endowed with factors of production and technical knowledge.



As it was mentioned in the former sections, there is a need to valorize the capacity of local actors to innovate. In addition, there is a challenge that must be resolved in articulating the relationships between research and community dynamics. Farmers are trying new ways of farming and through this they innovate: some of the technologies generated by local innovation have improved the livelihoods of communities, but the innovative capacity of local communities remains inadequately valued. It was made clear that the agroecological transition requires a new balance of power between farmers and agro-industry, which should stimulate local creativity.

Furthermore, the empowerment of farmers, women, the community approach, and the right to access to natural resources promoted by agroecology are key levers for innovation for food security.

Local innovation systems are essential to create the linkages between local resources and basic scientific research. Training, learning and empowerment processes will have a key role. The challenge of involving difference scales can be a catalyst of social dynamics and the agroecological transition is particularly adapted to smallholders.

The importance of taking value chain and market development into account in innovations in order to make agroecology more attractive to youth was also mentioned.

Youth involvement

Agriculture in Africa has untapped potential to create jobs, both directly and indirectly. This sector will need to be more dynamic and appealing than it is now in order to attract young people and then these young people will need to view it more positively than they do now because their perception varied widely across Sub Saharan Africa.

The education of youth can be instrumental in the creation of youth enterprises in agroecology, particularly when there is community support. Paul Nyabenda illustrated this with the case from MIJARC Rwanda. The example of a youth-based initiative that developed innovations in agroecology, focused particularly on gender issues, religion and culture, environmental management and leadership, and using a rights-based approach that links animal, plant and environmental health. Young people are well suited to acquire and exercise managerial expertise, and bring energy, vitality and innovation into the work force. When their willingness to contribute is matched with opportunity they can have a transformative impact on economic growth and social development.

Formation and partnership with municipalities to keep youth on villages

Gora Ndiaye President of the Pan African Association of Gardens and the Platform Ecological Agriculture and Organic for Senegal presented its Agro-Ecological Farm School Kaydara. He cited his inspiration: René Dumont, Pierre Rabhi, Vandana Shiva, and Wangari Muta Maathai, founder of the Green Belt Movement and Nobel Peace Prize in 2004, Cheikh Anta Diop and Hamadou Ampaté Ba.

The school was established to address the challenges of villages being emptied of their youth, who move to the city or foreign countries. Young people no longer know how to live on their land where the soil is impoverished by monoculture conducted for decades and consequent erosion. The farmers are selling their land. Young people who want to stay in the village will soon be 'landless'.

Figure 7. **Agroecological farm Kaydara**

Source: Oral presentation prepared for the regional symposium in sub-Saharan Africa by Gora N'Daye

It is urgent to address these situations and stop this headlong rush, the will is not enough, we need knowledge, and we also need everyone to decide to do his part.

The farm is located in the Fatick region, 150 km south of Dakar. It opened its doors in 2007 to welcome the first candidates for internship training. The action of the farm is to train farmers, young and old, women and men, in agroecological practices of diverse and complementary activities taking into account the necessity to restore soil fertility, protect the environment, and manage water.

The registration criterion for a candidate to training was namely the ownership of at least one hectare of land. However this was not applicable at the opening of the training center. In order to resolve the case of young people without land 'motivated' by agroecology, land was acquired and allocated to those few young people at the start.

The process has evolved since 2007 and gradually strategy has evolved: several mayors are now working with them to anchor agroecology in their land. Twenty young people from one same municipality were trained, and granted their 20 hectares of land with 80 hectares reserved by the Mayor council for future candidates. In another municipality 3 hectares were planned for the installation of 12 young people. In Fimela, where the farm is situated, local authorities have invested in the villages to explain the staffing approach of a hectare of land each young candidate following the training, so 20 hectares have been mobilized for 20 young people.



The engagement with municipalities serves to accompany the youth as they develop their farms to help also contribute to reforestation of the commons: 10,000 coconut trees have been planted in 5 years. The choice of coconut is due to environmental and economic reasons: the coconut tree's speed of growth, the shade it provides to understory plants, the sustainable production of the coconut's economic value by use of all its parts (nuts, leaves, trunk), the brake it presents to marine erosion, its fibrous roots, its majestic beauty.

The engagement with municipalities also supports women in the production of reproducible seeds.

Young farmers are in internship for a period of 9 months to 2 years. During their training they are provided different capital necessary for their installation:

- » Land capital;
- » The vegetable capital: fruit trees (mainly coconut trees), forest trees, forage;
- » The wildlife capital: poultry, rabbits, or donkeys. According to the choice of young farmers;
- » The seed capital;
- » The capital of agro-ecological knowledge and technological knowledge;
- » Financial capital consists of the sales revenue of their productions (2/3 for students, 1/3 for the Farm School).

They design their personal project for their farm and submit it to the end of their training period.

This project was highlighted for its pertinence and consistence with the principles and objectives of agroecology as it contributes to promote youth employment and prevent rural depopulation, ensure food security or food sovereignty of families, improve living conditions and offer prospects, fight against desertification, land degradation and salinization, restore soil fertility and preserve biodiversity.

Example of technical innovation at local level

An example of characterization and joint experimentation on farmer innovation is the project called "Valuation of *Piliostigma reticulatum* fertility islands for the cultivation of mango trees in semi-arid areas", presented by Ibrahima Diedhiou. The activities undertaken have identified and characterized an agroecological innovation that involves growing seedlings of mango trees in clumps of *Piliostigma reticulatum* (Figure 8). It has improved the quality of the soil and promotes the growth of the mango trees without irrigation. It is easily reproducible in Sahelian agro-ecosystems because it has been shown that *Piliostigma reticulatum* performs well on the major types of Sahelian soils. Therefore, it offers great potential for development of growing fruit in semi-arid areas in order to improve food security and farm incomes as well to create jobs. Yet this local innovation had not been valued, until collaboration between farmers and researchers in Mali and Senegal characterised the farmer innovation. Through joint experimentation, farmers and researchers have come to understand why islands of this shrub can support mango trees in their early growth, through redistribution of hydraulic life, better water retention, and improvement of soil quality.



Figure 8. **Integration of *Piliostigma reticulatum* shrubs for the cultivation of mango trees**



Source: Oral presentation prepared for the regional symposium in sub-Saharan Africa by Ibrahima Diedhiou
Université de Thiès, Senegal

Private sector involvement

On the private sector side, Dudutech - a company in East Africa - is an example of an enterprise that is developing and commercializing natural enemy technologies, conducting farmer training on good agricultural practices and participating in developing regulatory frameworks for registration of biological products for use in agricultural farms in collaboration with the government of Kenya and South Africa. Barnaba Rotich featured Dudutech's experience in developing and using biological inputs since 2001.

The need for socio economic indicators

The necessity of obtaining evidence base on the social and economic performance and benefits for farmers from adopting agroecological practices was highlighted. Although broad reviews of agroecology already exist, a systematic overview of the effects of agroecological practices on socio-economic indicators reflecting impacts on farmers' sustainable livelihoods is currently lacking. Using a methodology developed utilizing the Sustainable Livelihoods Framework, this initial analysis could assess the impacts of adoption of agroecological practices on forms of human capital (labour productivity and labour demand) and financial capital (farm profitability and yield). In over half the cases, both yield and farm profitability were increased with agroecological approaches. However, the number of studies carried out in Africa was the lowest of all regions, around 3 percent, which highlights the need for more place-based research along these lines in Africa¹³.

¹³ Danolfo, R., Gemmill-Herren, B., Graub, B., Garibaldi, L.A. 2015. Social and economic performance of Agroecology. Poster presented at 2nd Global Food Security Conference, Ithaca, New York.



IV) PUBLIC POLICIES (INCLUDING LEGAL AND INSTITUTIONAL FRAMEWORKS) TO PROMOTE AGROECOLOGY

Speakers:

Yemi Akinbamijo (Forum for Agricultural Research in Africa (FARA), Nigeria),

Soxna Mbaye Diop (Ministry of Agriculture and Rural Equipment Senegal)

David Amudavi (African Union Ecological Organic Agriculture Initiative and Biovision Africa Trust, Kenya)

Djakagbè Kaba (Solidarity Finance Banks, Guinea)

Elizabeth Mpfu (The Zimbabwe Smallholder Organic Farmers Forum (ZIMSOFF), La Via Campesina, Zimbabwe)

Chaired by **Peter Gubbels** (Groundswell International, Canada/Ghana)

Overview

Agroecological practices are an ancient tradition that are constantly evolving in Africa. Smallholders and family farmers both make up the vast majority of the farming community, and as land managers, they are the key to food security. Notwithstanding, the necessary policy support to preserve this important sector is lagging behind.

While around the world, farmers are eager to transition to a more sustainable model; they need institutional support and a conducive policy environment to be able to do so effectively. Especially in areas where soils have become degraded. More investments in agroecology and policy support are therefore needed to help small-scale producers improve soil and water conditions, increase yields, and achieve both local food security and long-term ecosystem sustainability.

At the regional meeting, participants analysed the particular actors and interests that either support or undermine the transition to agroecology. In that light, the Maputo Declaration of 2003 was raised as it reflects one of the continent's major governmental commitments to agriculture and food security. It declares that Africa will invest 10% of national budgets in agriculture. However, most of the investment is going to conventional agriculture, with individual countries spending up to large percentages of their agriculture budgets on fertilizer subsidies. At the regional meeting, it was agreed that the Maputo Declaration must be implemented by all states in ways that can promote agroecology.

This paradigm change places small-scale producers at the centre of participatory policy development. The focus of future policies needs to be on growing crops that are consumed locally as opposed to commodities for mass markets, and on giving farmers, especially women, control over their natural resources. Innovation, learning, institutionalizing, and the sharing of experiences between different regions of the world were seen as key. Calls were, moreover, made for the promotion of best practices on public policies for agroecology in all regions as well as South-South cooperation.



Various initiatives in Africa can guide the way. The Ecological Organic Agriculture Initiative (EOA) of the African Union, an endeavour that equally emphasizes scientific and traditional knowledge for agricultural development, aims to integrate organic agriculture into the national agricultural production systems and policies. The government of Senegal uses a model to understand the type of agricultural practices that, combined, can effectively contribute to positive change. This model compares different scenarios for sustainable agriculture, food security, and rural poverty. It demonstrates how low external input agriculture at small scale can provide a long-term increase in production. In contrast, the high external input large-scale agricultural system provides an immediate increase in production, but is less efficient in the longer run. This difference can be attributed to variability in resilience of the two agricultural systems and their impacts on employment, poverty, and food and nutrition security.

To achieve sustainability, the implementation of policies was recommended that enhance the capacities of farmers by improving governance and land tenure. The importance of governments implementing the Voluntary Guidelines on the Responsible Governance of Tenure was highlighted, along with equity policies regarding access to credit, insurance, and market information.

Transition implies both what can be termed 'scaling out' and 'scaling up' agroecology. Strengthening farmer's access to technical and financial resources as well as fostering farmer-to-farmer knowledge exchange can achieve scaling out. Scaling up agroecology can be done by increasing research, investment and supportive policies for agroecology. It is however important to note that traditional linear, top-down and pre-designed processes of scaling are not adequate for agroecology. Since agroecology is so rooted in local circumstances, its spread and growth will require multidimensional strategies, and an interdisciplinary approach.

Key points discussed

Experiences and approaches from the major African Institutions

African Union have decided to strengthen sustainable food production on the continent creating Ecological Organic Agriculture Initiative into the Comprehensive African Agriculture Development Programme (CAADP) which is a programme of the African Union in the New Partnership for Africa's Development (NEPAD).

Agroecology and ecological organic agriculture are considered examples of sustainable agriculture, which have the potential to significantly improve outcomes for both society and nature compared to typical approaches.

African stakeholders recognize that developed knowledge and knowledge systems will be paramount in the next phase of CAADP implementation. Mainstreaming organic agriculture in the CAADP would be one way of diversifying from the current export orientation of organic products to supporting priority staple foods identified in agricultural policy documents to achieve national food and nutrition security. However, opportunities exist to expand the organic base to non-certified staples for local consumption.

Yemi Akinbamijo informed that earlier, the continental organic movement had gained the ultimate political support when the Executive Council of the African Union (AU), adopted a decision on organic farming during its Eighteenth Ordinary Session in January 2011.



At the 2nd African Organic Conference held in Lusaka, Zambia, in 2012, the delegates ratified the institutionalization of AfroNet and passed the “Lusaka Declaration on Mainstreaming Organic Agriculture into the African Development Agenda”. The Declaration specifically urged “all African Governments to include organic agriculture in their policies and agricultural development agenda, including their CAADP¹⁴ Country Compacts and Investment Plans, in consultation with the organic agriculture stakeholders in their countries”.

Following the continental declaration, various initiatives are currently under implementation. These are aimed at generating more scientific data and information that is context specific to help inform policy, promoting training/education and extension on organic agriculture, promoting value chain and market development, promoting networking, capacity building and supporting mainstreaming of EOA in programmes, plans and policies.

African level: the Ecological Organic Agriculture initiative

Instead of asking if ecological agriculture can feed the world, one might better ask if industrial agriculture can sustainably feed the world. Most existing agricultural development plans focus on high-input agriculture, yet the number of malnourished in Africa remains stubbornly high. We need a critical mass of champions to push for another vision. The (EOA was presented by **David Amudavi**, which aims to mainstream it in production systems and policies by 2025. The initiative is based on an Africa Union decision. EOA draws on science, but also on traditional knowledge, and civil society movements. CSOs have been a key driver, including in getting government support.

The Plan is anchored on six interrelated pillars: (i) Research, training and extension, (ii) Information and communication, (iii) Value chain and market development, (iv) Networking and partnership, (v) Policy and programme development, and (vi) Institutional capacity development. There is a continental steering committee, chaired by the African Union, and regional and national platforms, and its objective is to mainstream EOA in various areas (policies, standards, research, markets, etc.). They aim to build bridges among stakeholders, through platforms at national, regional, continental levels with AU links and global platforms including IFOAM links. This involves several countries in West and East Africa.

A greater focus on smallholder agriculture and environment is recommended and support should be widened by building the evidence base and successful cases. A country investment of 1 percent on ecological agriculture is being advised. Tools for making informed decisions on various options. Plans are needed that are implemented and monitored, and there is a tool available for this T21 model.

A national Multistakeholders assessment of food system in Senegal

A case study of a national assessment in Senegal was presented by **Soxna Mbaye Diop**. There is a need for a transformation of agriculture and the food systems across the globe to address the food and nutrition security issues with a strong emphasis on ecological sustainability. At national level, a holistic and systemic assessment of the agriculture sector is required to ensure that

¹⁴ CAADP – Comprehensive African Agriculture Development Program



political decisions, strategies and actions guarantee food and nutrition security for all and reduce rural poverty, while at the same time protecting natural resources.

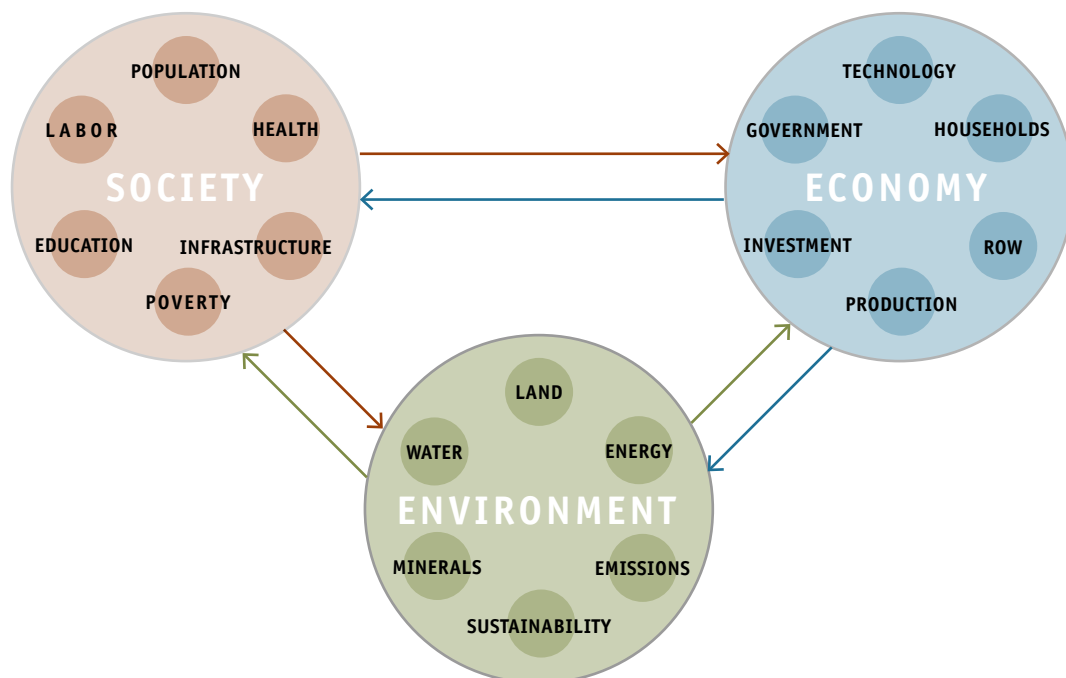
Foundation Earth, Watershed Media, and the Millennium Institute are supporting the government of Senegal in conducting a multi-stakeholder assessment of the food system through the use of a computer simulation model (T21), which was developed through a multi-stakeholder and participatory process. The T21 model constitutes an important tool for policy analysis and decision-making to orient and monitor national policies, strategies and action plans to achieve sustainable development.

The partners modeled the impact of spending a loan on two options. The initial assessment compared a proposed investment plan that mainly focuses on the construction of irrigation infrastructure (to support industrial flower production for export to Europe) which is typical of large-scale and high external input agriculture to a scenario in which the loan would support low-input small scale agroecology oriented farming with a strong training component.

Initial findings indicate that the loan in the second scenario more successfully achieves the goals of increasing sustainable production, creating jobs, alleviating poverty, enhancing food security, while addressing climate change concerns and with far less pollution externalities.

In a similar analysis in Kenya, the Millennium Institute and Biovision Foundation preliminary model findings show that a shift from the current support of provision of inputs (such as mineral fertilizer and chemical pesticides) towards the provision of training of low external input

Figure 9. **Structure of the T21 model**



Source: Oral presentation prepared for the regional symposium in sub-Saharan Africa by Sokhna Mbaye Diop, MAER



techniques (such as use of natural fertilizer, biological pest control, conservation agriculture etc.) is effective in increasing agricultural production, food and nutrition security, and in decreasing rural and overall poverty in the country¹⁵.

From the ensuing discussion following the final session, points that were made included the following:

We have to look at efforts that African countries have made to remove hunger. Africans thought they could feed their populations on their own. In Guinea there were 'production brigades' to drive mechanization, very allied with Latin American countries. Were the national policies coming from the people or were they top-down policies? From 1960-1970 these policies showed they did not work; plus there were many natural disasters and pesticides were needed, etc. As we talk about food security and food sovereignty today we know that it's the people who created the latter concept. Governments have prioritized agriculture, but conventional agriculture based on high inputs. Agroecology is supported by women's organizations and CSOs. We need mainstreaming into national plans and policies: public policies should support goods and services common to smallholders and improve national output. In addition, basic research is needed to support local farmer innovations and agroecological approaches. Participants made multiple requests to FAO, to mainstream agroecology in many aspects of FAO's workstream.

Policy change

It was highlighted that a change in policies and institutions is needed so that agroecology (including implications for land governance, biodiversity, nutrition, climate change adaptation) is mainstreamed. Business as usual is not an option.

Policy change is critical for moving forward with agroecology in Africa. Regarding Governance: top-down policies should be avoided; policies must be based on establishing platforms for agroecology at all levels (national, regional, continental and global), especially with the inclusion of farmers' organisations. Mainstreaming agroecology in the international arena, specifically FAO's workstreams, was stressed, to support national and regional initiatives.

In order to enable an environment for policies, agroecology should be mainstreamed in national and regional policies and programs. This includes developing National Plans for agroecology, which respect the multi-functionality of agroecology, with the meaningful participation of organizations of smallholder food producers. In addition, agroecology should be mainstreamed in budgetary allocations and support should be availed to expand agroecology on the ground. In particular women and youth should be targeted in all agroecology activities and policies. The right to food should be promoted as a strategy for promoting political change and improving rural facilities, access to credit, insurance, and market information. Finally, focus on capacity building and training for farmers and scientists and extension is needed.

More and appropriate research with a focus on smallholder agriculture and environmental issues is recommended, particularly participatory research and base research on local farmer

¹⁵ Foundation Earth and Watershed Media. 2015. Biosphere Smart Agriculture in a True Cost Economy; available at <http://www.fdnearth.org/files/2015/09/FINAL-Biosphere-Smart-Ag-in-True-Cost-Economy-FINAL-1-page-display-1.pdf>; cont contributed by David Amudavi, member of the Advisory Panel



innovations. The importance of multiple knowledge systems needs to be recognized, as integral to building the evidence base (not just on scientific knowledge) and documenting and sharing successful cases. In addition, tools need to be developed for making informed decisions on various scenarios.

The evidence base for agroecology should be built and strengthened in order to provide evidence-based decision making.

Investing in agriculture

It was stated that only 8-9 countries have met the 10 percent Maputo Declaration on Agriculture and Food Security, because funds weren't invested in science. Over 28 countries invest less than 5 percent in agriculture. Any investments in agriculture should support the efforts of the largest investors in smallholder agriculture: smallholders themselves. The access and control over their own natural resources is critical for smallholders, through in part the implementation of the Voluntary Guidelines on the Governance of Tenure of Land, Fisheries and Forests. Genuine land reform and Farmers' Rights to keep, save, exchange and sell their seeds should be supported; the African Union model law on access to biodiversity to develop national laws is an excellent resource in this respect. Free-trade policies impose unfair terms and support agri-business, including intellectual property rights (IPRs) that criminalize smallholders in saving, exchanging and replanting their seeds.

Regarding markets and trade, enhancing appropriate value chains and agro-food industries for agroecology is important. Public procurement that promotes agroecology (as in Brazil) should be promoted and FAO should work with small-scale food producers and movements to document and promote best practices on public policies for agroecology in all regions, also promoting South-South Cooperation.

Challenges of hunger and poverty are rising in Africa. There is considerable debate on policies for agricultural transition in Africa. In many instances, there is enough food, thus policies should focus on reducing the inequalities characterized by the dichotomies of unsustainable consumption on the one hand, and hunger on the other.

Forty billion dollars are spent per year on food imports to Africa. However, 80 per cent of the workforce in sub-Saharan Africa is in agriculture. Why are there imports into Africa, with all the resources available? Sub-Saharan Africa imports from countries with advanced technologies and can never be out-competed until there is a similar investment in agriculture, albeit not necessarily with the same technologies and sciences.

The Green Revolution in Asia shows what is possible when science, policy and societal pull in the same direction. Why did the Green Revolution succeed? Because Asian countries invested heavily in agriculture, had relevant policies, focused on monocultures. But it has left many unresolved issues (hunger, nutrition, environment, etc.) and all of these are issues of concern for agroecology. So we need to avoid repeating this story, while learning from its experiences.



Women's development at community level

L'Association Guinéenne pour l'Allègement des Charges Féminines (AGACFEM) is a women's development organization, education, information, advocacy to promote women's rights and initiatives, especially in rural areas. Its focus was presented by Djakagbè Kaba. Through a multidisciplinary approach, it provides community development services in the following areas: 1) Promotion of proper agriculture for food sovereignty through a field school format to exchange good agriculture practices, but also a learning environment for rural women in mastery of agro-technical and ecological subject matter; 2) Technical and food processing technologies: through the multifunctional platform, real tools against multiple dimensions of poverty of rural women, job creation and training on rights, literacy and simplified management are provided; 3) The promotion of cooperative and solidarity credit, as an alternative to the creation of financial structures, based on the savings of rural women through membership solidarity.

By partnering with New Field Foundation the Community Grants Program of the AGACFEM has been implemented. The purpose of the Program was the creation of the Cooperative of Rural Women for Agriculture, Food Sovereignty and Development and to build a business centre for rural women to complement the value chain of agricultural production. Products of the rural women can be bought at the centre, increasing the marketing of processed products and becoming accessible to domestic and foreign markets. The products are organic, created from mastery of the principles of agroecology.

Social movement involvement: la Via Campesina

Via Campesina is a global movement of small-scale food producers. Its work and perspectives on policy in Africa was presented by Elizabeth Mpofo. She noted that we are in a world of competition and African agriculture is facing many challenges. FAO's effort to organize this conference is appreciated, because it is important to know what policies are needed rather than accepting imposed policies from outside. There are also negative policies that go against agroecology. They are destroying small-scale producers. Small-scale food producers don't have access and control over our own natural resources. Positive policies are for instance public procurement measures that promote agroecology like in Brazil. FAO should work with small-scale food producers and movements to document, consult and promote best practices on public policies for agroecology in all regions, including the promotion of South-South Cooperation. FAO recognizes that the biggest investors in smallholder agriculture are smallholders themselves so any other investments should provide support.



V) MULTI-STAKEHOLDER DISCUSSION PANEL: OUTCOMES AND WAY FORWARD

Speakers:

Dulclair Sternad, (FAO Regional Office for Latin America and the Pacific, Santiago, Chile)

Subash Dasgupta (FAO Regional Office for Asia and the Pacific, Bangkok, Thailand)

Chaired by **Jahi Chappell** (Institute of Agricultural Trade and Policy, USA)

Dulclair Sternad, reporting on the Brasilia meeting, emphasized the power and presence of civil society in the Latin America and Caribbean (LAC) and the consensus on defining agroecology as science, movement, and practice. The idea of the social and cultural space of the meeting was introduced and the long history of cross-country coordination on agroecology which allowed the meeting to start from a space of established commonalities. The offer and interest of civil society in LAC to engage in South-South collaboration with partners in Africa was presented in an effort to build shared strength and knowledge towards a new agri-food system based on rights, adequate policies, and agroecology.

Subash Dasgupta, emphasized that it will be mainly examining the technical elements of agroecology in the upcoming Asia meeting, with researchers and practitioners working to exchange experience and knowledge and develop a more concrete idea of what the techniques of agroecology meant in the Asian context. Civil society involvement in this meeting, as in the Africa meeting, will be central.

Elizabeth Mpfu reiterated the importance of the grassroots/civil society voices, and the fact that agroecology unites many kinds of producers – fisherfolk, pastoralists, small farmers, and urban producers. She emphasized that what was needed was greater acknowledgment that producers have the capacity to make a majority of the investment in agriculture themselves. So working together to support farmers’ solutions – agroecology – needs to be the center of focus.

Paul Mapfumo spoke of the difficulty in truly participatory research with farmers, who are often resource and time constrained, and how research can put an additional burden on farmers. Scientists must be aware of this and ensure that their research serves farmers, rather than allowing their research to be separated between the laboratory/university and the farmers themselves. Researchers cannot work in agroecology without working alongside farmers and truly hearing and responding to their voices and needs. But currently there is insufficient recognition in academia and governments that this is the most important and necessary work, and too little recognition of what it takes to support both the researcher and the farmers to do this adequately.



VI) RECOMMENDATIONS AND CLOSING

Speakers:

Mamadou Gueye (National Academy of Sciences, Senegal)

HE Moustapha Lô Diatta (Secretary of State of the accompaniment and mutualisation of producer organizations, Senegal)

Jean-Felix Paganon (Ambassador, French Embassy in Senegal)

Vincent Martin (Representative of FAO in Senegal)

The recommendations of the consultations

The participants in this meeting, representatives of governments, civil society, including locals, fisherfolks, pastoralists, urban communities, indigenous peoples, women's organizations, youth and others. Academia, and private sector issued recommendations for the development of agroecology in sub-Saharan Africa. The final version of the recommendations of the consultation were presented by Mamadou Gueye after being debated in plenary session and amended (see Annex 1).

Government of Senegal intervention

HE Moustapha Lô Diatta explained that agriculture was considered by the Government of Senegal as one of the main levers to reduce poverty and develop economic growth. The Plan Senegal Emergent (PSE) reflects this political will.

"The initiative of the FAO to promote agroecology is an important step in Africa; it is motivated by the challenges arising from the interest and commitment of Heads of State and Governments to support African Agriculture".

He presented the challenges in Senegal including improving institutional capacity, coordination of collaborative networks, development of platforms for information, better consideration of ecological research organic farming through research, improving links between industry and research institutions and increasing financial resources.

"Yes, we believe in agroecology because it promotes biodiversity, adapts to climate change impacts and relies on the systems of services provided by ecosystems it supports, as well as the knowledge, local practices and innovation communities needed to achieve food security and increased and more reliable income, so we must accelerate, intensify and ensure the sharing of knowledge, practices and experiences in order to develop policies that encourage practices of agro-ecology".

Regarding the recommendations, he pointed out their major multidisciplinary and multisectoral nature which are important to build a sustainable agriculture, respectful of people and the environment.

"I'd be happy to bring these recommendations elaborated with the support of the international scientific community, under the aegis of FAO, to the attention of the President of the Republic, President of ECOWAS for a wide sharing and ownership by those peers. Be already assured that the



Government of Senegal will spare no effort for the prompt implementation of your recommendations for improving our national strategy of agro-ecology”.

FAO Intervention

Vincent Martin, on behalf of Dr. Jose Graziano da Silva, Director-General of the United Nations Food and Agriculture Organization (FAO), thanked the participants of the regional meeting on agroecology for food and nutrition security in sub-Saharan Africa.

He thanked the Republic of Senegal, the French Republic, the Global Alliance for the Future of Food, the Swedish Society for Nature Conservation, and the New Field Foundation for their partnership and support for the organization of this meeting.

On the eve of COP21, the thinking shared here shows the will to change the paradigm, to break in the approach to food issues and agricultural development, one of the greatest challenges of the 21st century: *“Taking sustainable food systems that produce more with fewer environmental costs”* in the words of the Director General of FAO and the Ministry of Agriculture of Senegal.

He recalled the main features of agroecology as they have been highlighted:

- » Building on the complementarity of plant and animal species;
 - » Ecosystem balance provided by biodiversity;
 - » Resilience;
 - » Synergistic effect of interdisciplinary approaches;
 - » Tapping local knowledge in light of the technological advances of the 21st century, to stimulate technological and social innovation while promoting simplicity;
 - » Consider agriculture with a capital “A”, to make it a real lever for social inclusion, source of employment and economic growth while being aware of the social and economic constraints.
- He also presented some highlights of the deliberations which call for closer collaboration:
- » Between the public and private sectors and civil society to strengthen the implementation development and scale agroecology in Africa;
 - » Between researchers and producers in order to make family farms, smaller and more efficient producers in a production environment increasingly complex, taking into account climate change adaptation;
 - » Of all the actors involved in the promotion of agroecology and policymakers.

The decision makers were asked to introduce agroecology in policies and strategies for economic and social development of all communities.

He reaffirmed FAO’s commitment “to work with all stakeholders to promote agroecological approaches for building resilience to climate change and food and nutrition insecurity.” FAO will use these recommendations to enhance its work plan to support the production and agricultural productivity in sub-Saharan Africa.

Four courses of action were proposed:

- » Integrate agro-ecological approaches in the programming of FAO’s field activities, and build on good practice already existing in the field of healthy and sustainable agriculture, developed especially through approaches such as Farmer Field Schools and Integrated Pest Management (IPM);



- » Strengthen South-South cooperation for regional and intercontinental sharing approaches and promising agro-ecological technologies;
- » Regionally, build capacity-building platforms and knowledge exchange;
- » Build the necessary bridges between local practices and proven national and regional agricultural development policies.

He also made a connection with the 29th Regional Conference of FAO in Abidjan from 4 to 8 April 2016 in which FAO will inform its members of the results of this meeting as well as the Vision 2063 agenda of African Union for sustainable development in the continent. FAO will accompany the African Union and its members in this effort by providing technical expertise to work on agroecology in order to increase production and environmental protection in agriculture, through the detailed Programme for the Development of Agriculture in Africa.

Finally he stressed the importance of the fact that the group of people gathered at this meeting continue to work together, to exchange information and experiences, making a movement for the agro-ecological transition.

“Finally, I can assure you that FAO will continue to promote the holistic approach of agroecology, interdisciplinary research and training producers. With the ultimate hope of a sustainable future that leaves no one behind and become the Zero Hunger generation.”



Annex 1

RECOMMENDATIONS of the Participants of the Regional Meeting on Agroecology in sub-Saharan Africa

06.11.2015

Context

FAO organized on 18th and 19th September 2014 in Rome the International Symposium on Agroecology for Food Security and Nutrition. The successful Symposium brought together 400 scientists, food producers, policy makers, farmers' organizations, the private sector and NGO representatives. During this Symposium FAO's Director-General announced that FAO would thereafter organize regional meetings on Agroecology in Latin America, Africa and Asia, to discuss this issue further and would incorporate agroecological approaches in its on-going work.

In February, 2015 representatives of producers' organizations and social movements met at the Nyéleni Training Centre in Sélingue, Mali and produced the Nyeleni Declaration on Agroecology outlining the civil society's view on Agroecology.

The Regional Meeting on Agroecology in sub-Saharan Africa

On 5 and 6 November 2015 over 300 representatives from governments, civil society, research and the private sector have participated in the Regional Meeting on Agroecology in sub-Saharan Africa hosted by the Government of Senegal and co-organized by the Government of Senegal and FAO in Dakar with the opening ceremony presided by the Senegalese Minister of Agriculture and Rural Facilities. The meeting builds on FAO's International Symposium on Agroecology for Food Security & Nutrition that took place in September 2014 and FAO's Regional Meeting on Agroecology in Latin America and the Caribbean.

The commitment of African governments to sustainable rural development and to increasing their investments in agriculture so to enhance the livelihoods and well-being of rural populations also reflects a momentum in which Agroecology has a key role to play.

Agroecology, stressing adaptation of agriculture to natural conditions and cycles, as well as to local needs – has been carried out by African farmers and pastoralists for millennia. Thus, while often not explicitly termed "Agroecology", many actors and initiatives exist within sub-Saharan Africa that builds on agroecological principles.

Agroecology's holistic approach - incorporating the traditional knowledge and skills of the world's farming communities with cutting edge ecological, agronomic, economic, and sociological research, has the potential to support strong, democratically-based food systems that provide health and livelihood to small-scale, family farmers, rural communities; as well as environmental benefits.



During this meeting, agroecological initiatives and practices have been recognized as achieving sustainable agriculture and development while reducing rural poverty, hunger and malnutrition and increasing climate resilience of agriculture. Agroecology also provides perspectives for rural youths and can help slow the rural exodus currently occurring in sub-Saharan Africa.

During our deliberations in four round tables on the following themes:

1. Agroecology as a Path to Food and Nutrition Security for the Agricultural Transition in Africa
2. Public Policies (including Legal and Institutional Frameworks) to Promote Agroecology
3. Agroecology: Social Innovation, Livelihoods and Technology
4. Public Policies (including Legal and Institutional Frameworks) to Promote Agroecology

Speakers and participants from governments, civil society, research and the private sector have identified the following recommendations on Agroecology in sub-Saharan Africa:

Governments and policy makers, donors and technical partners, with the support of intergovernmental organizations, particularly FAO, should:

1. Ensure producers', especially women's, youth's and indigenous peoples' access to natural resources, notably land, water and biodiversity by developing simple procedures for the acquisition, registration and securing of land tenure. In this context, the "Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests" should be implemented;
2. Mainstream Agroecology into regional and national agricultural policies and programs including into regional economic communities and incorporating fisheries, forestry and livestock into CAADP, which should develop an innovation platform on Agroecology;
3. Create platforms to collect and exchange agroecological experiences and innovations across the African continent and on national levels;
4. Put in place tools that allow, among others, to review and transform current agricultural subsidy systems as well as trade and investment policies towards Agroecology and adequately finance policies and laws promoting Agroecology, especially to fund Agroecology research;
5. Launch pilot projects at territorial level such as the creation of agroecological territories;
6. Develop and implement public procurement policies that favour agroecological and local food production as well as intensifying South-South cooperation on Agroecology;
7. Integrate Agroecology in national research systems and in the curricula of higher education institutions, at the level of pedagogic programmes in training centres for producers both formal and informal, including farmer field schools, school farms, farmers' trainings and school gardens;
8. Put in place and fund an African fund for the development of Agroecology;
9. Integrate knowledge of agricultural practices in natural conditions into education to catalyse the role of Agroecology in economic process;
10. Promote the development of seeds systems that address availability, access and ownership issues, including community seed systems, indigenous knowledge, extension services;
11. Raise awareness about the nutritional value of agroecological products;



12. Protect the diversity of local peasant seeds against any negative external influence;
13. Incentivize local private sector actors to embrace agroecological principles;
14. Formulate responsive national plans that will strengthen land use systems that promote and sustain Agroecology;
15. Develop Agroecology independently of Climate Smart Agriculture and propose to COP21 that an international protocol for Agroecology be put into place and adopted by national governments.

Academia and the research community should:

16. Strengthen existing local knowledge, farmer-led research as well as farmers research networks with a focus on the co-creation of knowledge and participative research;
17. Build and strengthen the evidence base for Agroecology, collect, and better disseminate data on Agroecology to enable evidence-based decision making;
18. Invest more in applied agroecological research with a focus on selecting varieties and breeds directly on-farm, as well as on social and human sciences applied to Agroecology;
19. Identify species, including livestock and trees, adapted to climate change.

Civil Society Organizations should:

20. Develop networks and mobilize stakeholders to create solidarity based economies that foster Agroecology;
21. Encourage producers and civil society organizations to continue to promote agroecological practices on the community level in rural and peri-urban areas.

Institution at all levels, communities and sectors should:

22. Promote farmer-led, bottom-up, local innovation systems and practices to enhance the fundamental role of Agroecology in biodiversity conservation and to strengthen the dissemination of innovations;
23. Take value chains and market development into account in innovations in order to make Agroecology more attractive, especially to youth.

We recommend the government of Senegal and the FAO Regional Office for Africa to inform at the forthcoming FAO Regional Conference for Africa about these recommendations.

We invite organizations to commit to implement one or more of these recommendations.

We invite participants to commit to integrate these recommendations in their organizations.



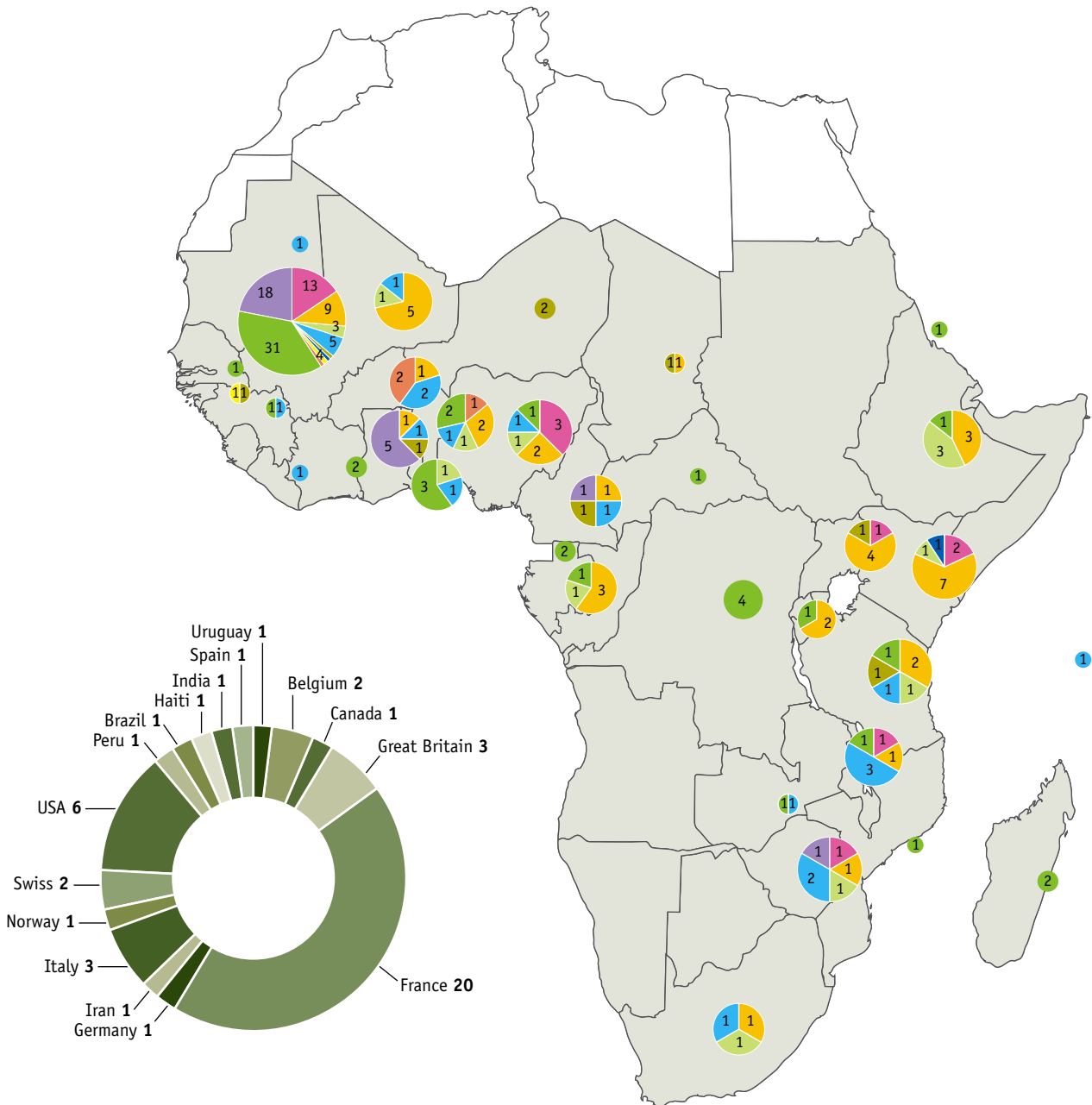
Annex 2

List of Advisory Panel members

Last name	First name	Organization
Akinbamijo	Yemi	Executive Director, FARA (Forum for Agricultural Research in Africa)
Amudavi	David	AU Ecological Organic Agriculture Initiative Secretariat (Biovision Africa Trust)
Batello	Caterina	FAO-HQ (Headquarters)
Belay	Million	Alliance for Food Security in Africa
Bojang	Foday	FAO, RAF (Regional Office for Africa)
Coulibaly	Ibrahima	Président du CNOP (National Coordination of Peasant Organizations of Mali) et Vice-Président du Réseau des organisations paysannes et de producteurs de l'Afrique de l'Ouest (ROPPA)
Gemmill-Herren	Barbara	FAO-HQ (Headquarters)
Gliessman	Steve	Professor Emeritus in Agroecology, University of California, Santa Cruz
Coly	Emile	Directeur de la Protection des Végétaux, Ministère de l'Agriculture et du Développement Rural du Sénégal
Gueye	Cheikh	Assistant Representative - Programmes, FAO Sénégal
Hainzelin	Etienne	Advisor to President Director General du CIRAD (Centre International de Recherche Agronomique pour le Développement)
Jaffer	Naseegh	Director of Masifundise and International Coordinator of the World Forum of Fisher Peoples
Mapfumo	Paul	Professor, University of Zimbabwe
Mpofu	Elisabeth	National Chairperson for Zimbabwe Smallholder Organic Farmers Forum (ZIMSOFF) and General Coordinator of La Via Campesina
Nicholls	Clara	President of SOCLA (Sociedad Científica Latinoamericana de Agroecología) and University of California, Berkeley
Nzamujo	Godfrey	Director of Songhai Centre
Rotich	Barnaba	Operations Manager, Dudutech (Natural pest control services, Lake Naivasha, Kenya)
Sarr	Makhfousse	Expert en agroécologie et coordinateur du Programme de Gestion Intégrée de la Production et des Déprédateurs (GIPD) du Sénégal
Sonko	Mariama	Member, General Treasurer, Association des Jeunes Agriculteurs de la Casamance (AJAC/Lukaal), Senegal
Tapsoba	Hamado	Regional Representative, West Africa, CCRP (Collaborative Crop Research Program)
Wasilwa	Lusike	Head of Crop Systems, KALRO Secretariat KALRO Secrétariat - Kenya Agricultural & Livestock Research Organization



Annex 3 Participants



PARTICIPANTS AGROECOLOGY SYMPOSIUM PER COUNTRY AND PER SECTOR

- RESEARCH NGO CSO FARMER'S ORGANIZATIONS INDIGENOUS ORGANIZATIONS
- PRIVATE SECTOR COUNTRY DELEGATES DONOR GOVERNMENT FAO



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2	Philippe	Lecomte	Belgian	CIRAD
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4	Abdal Rahamane	Baba-Moussa	Béninoise	Directeur de Cabinet adjoint du ministre de l'agriculture, de l'élevage et de la pêche de la République du Bénin
5	Charles	Dramane	Béninoise	MIJARC
6	Dulclair	Sternadt	Brazilian	FAORLC
7	Michael	Farrelly	British	Tanzania Organic Agriculture Movement
8	Kirtana	Chandrasekaran	British	FoEI / IPC support
9	Hamado	Tapsoba	Burkinabé	Collaborative Crop Research Program, The McKnight Foundation
10	Mariame	Ouattara	Burkinabé	NEW FIELD FOUNDATION
11	Diema Olivia Regina	Some/Hema	Burkinabé	Association Munyu des femmes
12	Gilbert	Zongo	Burkinabé	Agronome
13	Sanou	Issouf	Burkinabé	Fédération Nationale des Organisations Paysannes (FENOP)
14	Mathew	Musumbale Abang	Cameroonian	FAOSFE
15	Atangana	Josephine Marie Christelle	Cameroonian	PROPAC
16	Ali	Aii Shatu	Cameroonian	AFSA/IPACC
17	Catherine T Epse	Minadier	Cameroonian	Training Officer Director
18	Medard Meyanga	Ayong	Cameroonian	FIMARC
19	Faris	Ahmed	Canada	USC Canada
20	Emmanuel	Ndjikara	Centrafricaine	Ministere des eaux et forets chasse et peche
21	Jean	Samba	Congolaise	Ministère de la pêche et de l'aquaculture
22	Bethuel	Makoss	Congolaise	Ministère de l'Agriculture et de l'Élevage
23	Joseph Léon	Samba	Congolaise	MPA/DGPE



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25	Antonio	Micha Ondo	Equatorial Guinea	Ministre de la Pêche et de l'Environnement
26	Weldu	Dawit Tesfai	Eritrean	Ministry of Agriculture
27	Almami	Dampha	Ethiopian	Senior Policy Officer of the African Union Commission
28	Behailu	Alemayehu	Ethiopian	IFSN national network
29	Million	Belay	Ethiopian	Alliance for Food sovereignty in Africa
30	Yonas	Yimer	Ethiopian	Alliance for Food Sovereignty in Africa (AFSA)
31	Susan Burnell (Sue)	Edwards	Ethiopian	Institute for Sustainable Development
32	Ayele Kebede	Gebreyes	Ethiopian	Panos Ethiopia
33	Mersha	Zelege, Yilma	Ethiopian	MELCA-Ethiopia
34	Julie	Brayer Mankor	French	French Embassy - Economic Service
35	Remi	Cluset	French	FAO HQ
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37	Jean-Felix	Paganon	French	French Embassy
38	Chantal Rose Marie	Jacovetti	French	CNOP/convergence
39	Guillaume, Christian, Marcel	Bastard	French	GRET
40	Marwan	Ladki	French	Hub Rural
41	Dominique	Masse	French	Institut de Recherche pour le Developpement
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43	Etienne	Hainzelin	French	CIRAD
44	Florent	Maraux	French	CIRAD
45	Jean-Luc	Chotte	French	IRD
46	Denis	Depommier	French	CIRAD
47	Frédérique	Jankowski	French	CIRAD (Dakar)



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49	Hervé-Charles	Ndume-Engone	Gabonese	Projet d'appui à la Gestion Durable des Ressources Forestières au Gabon
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52	SostheneNicaise	Ahanda	Ghanaian	FAORAF
53	Foday	Bojang	Ghanaian	FAORAF
54	Priyambada	Joshi	Ghanaian	FAORAF
55	Soalandy	Rakotondramanga	Ghanaian	FAORAF
56	Subash	Dasgupa	Bengali	FAO
57	Peter	Gubbels	Ghanaian	Groundswell International
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59	Alfredo	Handem	Guinea Bissau	SWISSAID
60	Kaba	Djakagbe	Guineenne	Association Guinéenne pour l'Allègement des Charges Féminines "AGACFEM"
61	Cathy	Clermont Dauphin	Haitian	IRD
62	Subramaniam	Kannaiyan	Indian	LVC
63	Maryam	Rahmanian	Iranian	FAO HQ
64	Caterina	Batello	Italian	FAO HQ
65	Simone	Borelli	Italian	FAO HQ
66	Paolo	Tedeschini	Italian	FAO HQ
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68	Kone	Mouhammadou	Ivoirienne	Direction des production d'élevage
69	Jean Paul	Sikéli	Ivoirienne	COPAGEN
70	Maryleen	Micheni	Kenyan	Participatory Ecological Land Use Management - PELUM Kenya
71	Kuria	Gathuru	Kenyan	HIC



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72	Sophia	Ogutu	Kenyan	World March of Women
73	Pauline	Mundia	Kenyan	Biovision Africa Trust
74	Hellen	Nafula Ngema	Kenyan	SACDEP Kenya
75	Shoba Mohamed Liban	Liban	Kenyan	Pasotralist Women for Health and Education
76	Eustace	Kiarii Gachanja	Kenyan	KOAN
77	David	Amudavi	Kenyan	Biovision Africa Trust
78	Barnaba	Kipruto Rotich	Kenyan	DUDUTECH-Finlays horticulture Kenya LTD
79	Lusike	Wasilwa	Kenyan	Kenya Agricultural & Livestock Research Organization
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81	Mino	Nandiranina	Madagascar	Chargée d'Etudes
82	Jean Zafy	Edouard	Madagascar	MEEMF
83	Gertrude	Kambauwa	Malawian	
84	Anita	Chtiaya	Malawian	Malawi Farmer-to-Farmer Agroecology project
85	Alice	Gubudu	Malawian	Malawi Farmer-to-Farmer Agroecology project
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89	Traore	Alimata	Malian	COFERSA
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91	Daouda	Traore	Malian	CARE International
92	Maryam	Allen	Malian	Practical action
93	Mamadou	Goïta	Malian	IRPAD/Afrique
94	Anne	Berson	Malian	CAWR Center for Agroecology Water and Resilience - BEDE Biodiversité Echanges et Diffusion d'Expériences
95	Guilhermina	Amurane	Mozambican	Ministry of Land, Environment and Rural Development



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97	Kanta	Ado	Nigerian	Ministère de l'agriculture
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102	Jean Paul	Nyabyenda	Rwandese	MIJARC
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104	Billerach	Brigitte	Senegalese	CEEDD
105	Abdouyale	Ndiaye	Senegalese	FAPD
106	Christ	Mbaye		
107	Nicolas	Venn	Senegalese	FOS/FL
108	Alban	Masaparisi	Senegalese	Analyste
109	Ibrahima	Mendy	Senegalese	DAPSA/MAER
110	Alain	Mbaye	Senegalese	IPAR
111	Noel SD	Lapa	Senegalese	CEEDD
112	Aliou	Ba	Senegalese	RBM
113	Souadou	Sakho-Djimbira	Senegalese	IPAR
114	Tabara	N'Daye	Senegalese	New Field Foundation
115	Guilaine	Thébault Diagne	Senegalese	FAOSN
116	Cheikh	Gueye	Senegalese	FAOSN
117	Makhfousse	Sarr	Senegalese	FAOSN
118	Yacine	Cisse	Senegalese	FAOSN
119	Komlan	Kwadjodde	Senegalese	FAOSN
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121	Abdoulaye	Thiam	Senegalese	FAOSN



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124	Lucile	Hummel	Senegalese	FAOSN
125	Ibrahima	Niang	Senegalese	FAOSN
126	Marie Daluze	Preira	Senegalese	FAOSN
127	Madjiguène	Ngom	Senegalese	FAOSN
128	Penda	Sow	Senegalese	FAOSN
129	Marie	Dieng	Senegalese	FAOSN
130	Oumar	Cissokho	Senegalese	FAOSN
131	Doudou	Diop	Senegalese	FENAB
132	Alihou	Ndiaye	Senegalese	Comité Ouest-Africain des Semences Paysannes
133	Nage	Bathily	Senegalese	Direction Horticulture
134	Karfa	Diallo	Senegalese	Enda Pronat
135	Gora	Ndaye	Senegalese	Association Jardins d'Afrique - Ferme Ecole Agro-écologique de Kaydara
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139	Saliou	Cisse	Senegalese	Direction de la Protection des Végétaux
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143	Ibrahima	Diouf	Senegalese	Sapeur Pompier
144	Amadou	Kanoute	Senegalese	Ministère de la Culture et de la Communication
145	Penda	Mbow Wade	Senegalese	Ministère de l'Agriculture et de l'Équipement Rural
146	Cheikh Ahmed Tidiane	Ndiaye	Senegalese	Ministère des Affaires Etrangères et des Sénégalais de l'Extérieur



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150	Laurent	Vidal	Senegalese	IRD
151	Khady	Diagne	Senegalese	ENDA
152	Pape Djiby	Ndiaye	Senegalese	Ministère de l'Economie, des Finances et du Plan
153	Ousmane	Sylla	Senegalese	Ministère de l'Agriculture et de l'Équipement Rural
154	Nadia	Tih Chuienui	Senegalese	PAN-Africa
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156	Astou	Gueye	Senegalese	Ministère de l'Agriculture et de l'Équipement Rural, chargé de mission
157	Bounama	Dieye	Senegalese	DA/MAER
158	Madické Mbodj	Ndiaye	Senegalese	UADB
159	Mamadou	Kébé	Senegalese	DHOST
160	Oumar	Sané	Senegalese	Direction agriculture/ MAER
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162	Laure	Diallo	Senegalese	ENDA Pronat
163	Thierno	Sall	Senegalese	ENDA Pronat
164	Awa	Thiandoum	Senegalese	Coordinatrice
165	Falilou	Diagne	Senegalese	UGPM
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167	Fatou Binetou	Diop	Senegalese	FONGS
168	Ndeye Bineta	Ndione	Senegalese	ENDA Cooperation
169	Charles	Bakhoum	Senegalese	World Vision International (West Africa regional office)
170	Famara	Diedhiou	Senegalese	Fahamu Africa



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173	Souleymane	Bassoum	Senegalese	ECOLINK
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178	Maïssa	Goudiaby	Senegalese	MAER
179	Mamadou	Kandé	Senegalese	MEDD
180	Mamadou	Gueye	Senegalese	Académie Nationale des Sciences et Techniques du Sénégal
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185	Lala	Nael	Senegalese	AGRECOL-NAT-BI
186	Noba	Kandioura	Senegalese	UCAD
187	Ndeye Rokhaya	Thiane	Senegalese	Agropasteur
188	Fatoumata	Soumaré	Senegalese	Animatrice
189	Veillon	Anna	Senegalese	Consultante
190	Josette	Lukianoff	Senegalese	Jardins d'Afrique
191	Issa	Thiaw	Senegalese	Green Senegal
192	Adrien	Desplat	Senegalese	AGRISUD
193	Ousseynou	Gueye	Senegalese	FONGS
194	Sidy	Ba	Senegalese	COPAGEN
195	Maguatte	Lo Diop	Senegalese	Protocole



N°	First name	Last name	Nationality	Organization
196	Alioune	Fall	Senegalese	DG ISRA
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198	Papa Sam	Gueye	Senegalese	MAER
199	Aly Sané	Niang	Senegalese	MAER
200	Ramatoulaye	Diouf	Senegalese	UCAD
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202	Alioune	Diagne	Senegalese	ENSA/UT
203	Mogamed Naseegh	Jaffer	South African	Masifundise/WFFP
204	Theresa	Falatsa	South African	FSC / LVC
205	Carlos	Alfonso Gomez	Spanish	CERAI
206	Nicolas	Porchet	Swiss	Biovision
207	Benjamin	Graub	Swiss	FAO HQ
208	Jordan	Gama	Tanzanian	African Organic Agriculture Network (AfrONet)
209	Editrudith	Lukanga	Tanzanian	WFF
210	Ndiyaine	Mosses	Tanzanian	WAMIP
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212	Ngardouel	Mbainaikou Olivier	Tchadienne	SWISSAID
213	Kwami Dodzi	Kpondzo	Togolese	Friend of the Earth
214	Simon Anoumou	Todzro Komi	Togolese	Centre de Formation Agricole et de Production Ecologique du Togo (CFAPE-TOGO)
215	Bakai	Piwelon	Togolese	Direction des Ressources Forestières/Ministère de l'Environnement et des Ressources Forestières
216	Ayeva	Tchatchibara	Togolese	ITRA
217	Aboudoumisamilou	Issifou	Togolese	Ministère de l'agriculture de l'élevage et de l'hydraulique
218	Baliraine	Hakim	Ugandan	Eastern and Southern Africa Small scale farmers forum (ESAFF) and AFSA



N°	First name	Last name	Nationality	Organization
219	Omara	Amuko	Ugandan	IUF
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221	Barbara	Herren	USA	ICRAF
222	Michael	Michener	USA	Croplife International
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224	Paul	Roge	USA	SOCLA
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227	Elizabeth	Mpofu	Zimbabwean	ZIMSOFF; La Via Campensia
228	Norah	Samupunga	Zimbabwean	LVC
229	Garikai	Magaya	Zimbabwean	Actionaid
230	Mapfumo	Paul	Zimbabwean	University of Zimbabwe
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Annex 4

Pictures of the event





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REPORT *of the* REGIONAL MEETING
on AGROECOLOGY
IN SUB-SAHARAN AFRICA

REGIONAL MEETING
ON AGROECOLOGY
in Sub-Saharan Africa

Seeking to gain a better understanding of the role that agroecology can play in eradicating hunger and malnutrition, FAO organized the Regional meeting on agroecology in Sub-Saharan Africa, held in Dakar, Senegal on 5-6 November 2015.

FAO acted as a facilitator to enable debates and foster collaboration among a variety of actors in order to advance science, knowledge, public policies, programmes and experiences on agroecology, supporting the strengthening of the already-extensive evidence-based knowledge for agroecological approaches in agriculture.

The participants in this meeting, representatives of governments, civil society, including peasants, fisherfolks, pastoralists, urban communities, indigenous peoples, women's organizations, youth and others, academia, and private sector, debated agroecological approaches in the region and challenges linked to food systems, climate change, natural resources, social innovation and public policies needed. They issued recommendations for the development of agroecology in Sub-Saharan Africa after two days of discussion.



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