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**Achieving social and economic development in africa
through ecological and organic agricultural alternatives.
Proceedings of the plenary presentations of the 3rd
african organic conference.**

Allison Marie Loonto, Olugbenga O. Adeoluwa, Yemi Akinbamijo

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Achieving Social and Economic Development in Africa through Ecological and Organic Agricultural Alternatives

Proceedings of the Plenary Presentations of the 3rd African Organic Conference

Edited by:

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Preface

This publication, *Achieving Social and Economic Development in Africa through Ecological and Organic Agricultural Alternatives*, is a follow up to FAO's 2013 publication *Organic Agriculture: African Experiences in Resilience and Sustainability*. It follows firstly, because it reports on the progress made since the Lusaka Conference in 2012, but secondly, because it pushes forward our understanding of how ecological organic agriculture contribute not only to agricultural and ecosystem development, but also to social and economic developments. In Lagos, we learned that Ecological organic agriculture (EOA) "has a significant role to play in addressing the pressing problems of poverty, food insecurity, land degradation, market access, food safety and climate change in Africa. Ecological organic farming systems increase yields, are resilient to climate change effects and are cost-effective. Further, EOA is climate smart, preserves biodiversity, provides ecosystem services, and produces lower carbon emissions." Both of these lessons remain pertinent to our ability to meet the new Sustainable Development Goals to eliminate global hunger and malnutrition.

This publication gathers together in one volume the plenary papers presented during the Third African Organic Conference that took place in Lagos, Nigeria from 5-9 October, 2015. The different chapters document the institutional support that is developing across Africa to ensure that research, markets, and policies can contribute to the positive developmental impact of ecological organic agriculture. Together, they provide information about the status of ongoing initiatives to develop continent wide policy supports, national approaches and local innovations. A core theme of the event was the value of organic trade globally and the particular importance of focusing attention towards deepening access to national, regional and global markets for ecological and organic products.

The topics addressed in this volume reiterate the contribution of farmers, consumers, researchers, educators, public officials, civil servants, policy-makers, entrepreneurs, financiers and other promoters of ecological organic agriculture to reducing food insecurity and rural poverty, by making agriculture, forestry and fisheries more sustainable and productive, enabling the creation of sustainable food systems and increasing the overall resilience of farmers' livelihoods. Thus, FAO remains committed to promoting this type of work, and is in the process of placing ecological organic agriculture on the global agenda for agricultural development and policy through its series of International and Regional Symposia on Agroecology for Food Security and Nutrition in 2014-2015.

In partnership with the main organizers of the conference [Association of Organic Agriculture Practitioners of Nigeria (NOAN), Federal Ministry of Agriculture and Rural Development, Nigeria, African Organic Network (AfrONet), African Union Commission and IFOAM Organics International] the FAO is pleased to keep the dialogue open on the importance of ecologic and organic agriculture in Africa and encourages all partners to continue to work towards our collective goals of social and economic development in Africa.

Dr. Dr. Allison M. Loconto (FAO / INRA)

Dr. Olugbenga O. AdeOluwa (NOAN/ University of Ibadan, Nigeria)

Dr. Yemi Akinbamijo (Forum for Agricultural Research in Africa - FARA)

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Acronyms

AfroNet	African Organic Network
AUC	African Union Commission
CAADP	Comprehensive African Agriculture Development Programme
EAC	East African Community
EOA	Ecological organic agriculture
FAO	Food and Agriculture Organization of the United Nations
FiBL	Research Institute of Organic Agriculture, Switzerland
ICROFS	International Center for Research in Organic Food systems
IFOAM	International Federation of Organic Agriculture Movements (IFOAM – Organics International)
INOFO	International Organic Farmers Organization
ISOFAR	International Society of Organic Agriculture Research
KOAN	Kenyan Organic Agriculture Network
NEPAD	New Partnership for Africa's Development
NOAN	Association of Organic Agriculture Practitioners of Nigeria
NOARA	Network of Organic Research in Africa
NOGAMU	National Organic Agriculture Movement of Uganda
PELUM	Participatory Ecological Land Use Management
SDGs	United Nations Sustainable Development Goals
SSNC	Swedish Society for Nature Conservation
TOAM	Tanzanian Organic Agriculture Movement
UNCTAD	United Nations Conference on Trade and Development

The Third African Organic Conference

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Third African Organic Conference (3rd AOC) took place in Lagos, Nigeria, from October 5 - 9, 2015. The theme of the conference was “*Achieving Social and Economic Development through Ecological and Organic Agricultural Alternatives*”. This conference followed the successful hosting of the 1st and 2nd AOCs in Uganda (2009) and Zambia (2012) respectively. The African Organic Conference was adopted by the African Union Commission as the Partnership Platform (PP) for Ecological Organic Agriculture (EOA) issues in Africa. Thus, the conference provided opportunities for a wide range of stakeholders in organic agriculture within and outside Africa to interact and present their reports at continental level.

The AOC also supports the decision of the African Heads of States and Governments on organic farming (EX.CL/Dec.621 XVI). The conference had over 220 participants, including 34 farmers; men, women and youths, from 28 countries, with nature of participants covering consumers, farmers, researchers, trainers, academics, extension practitioners, policy makers, private sector actors, financiers in the agriculture value chains, students and promoters of organic agriculture.

The 3rd AOC featured a wide range of scientific and technical presentations that addressed the theme of the conference and were published in the Scientific Proceedings of the Conference. Furthermore, the event hosted networking and multi-lateral discussions for farmers and policy makers. The core areas of intellectual and policy debated focused on the following key themes:

- The potentials of organic agriculture in the context of poverty alleviation, climate change adaptation, food security and trade.
- Sharing of knowledge, information, experiences and skills among key stakeholders in the organic sector.
- Exploring partnerships and cooperation opportunities for the implementation of the African Ecological Organic Agriculture Action Plan, which aims to mainstream “Ecological Organic Agriculture” into national and continental agricultural production systems in Africa by 2020.
- Promoting the uptake of organic alternatives through south–south collaboration, especially in the sharing of experiences.
- Progress and Challenges of ecological organic agriculture in Africa
- Prospects and Lessons from the ProEcoOrganicAfrica, SystCom and Syprobio Projects

The design of the conference provided valuable platforms for participants to exchange and share their experiences in agricultural research pursuits and practical applications. The scientific presentations provided evidence of the contributions of ecological organic agriculture to food

security, income generation, employment, systems resilience, and other aspects of sustainable food systems. A total of 15 technical plenary presentations were made at the conference, while 54 scientific papers were accepted for presentation as oral (50) and four (posters) in the conference. The papers covered different disciplines, such as agronomy, livestock production, aquaculture, economics, and rural sociology.

The conference also provided an opportunity to appraise the progress of the Ecological Organic Agriculture Initiative, which underlies the Decision of the African Heads of States and Governments on organic farming. Participants also shared ideas on how ecological organic agriculture could be optimized to significantly contribute to the Comprehensive Africa Agriculture and Development Programme (CAADP) agenda. The entire conference community took the time to recognize the 2015 Champions for Ecological Organic Agriculture for their diverse and path breaking support in promoting ecological organic agriculture across the continent and across public, private and civil society sectors. Finally, the event also featured the first Afro-Organic Fair (an exhibition of organic produce and products), which stimulated the establishment of contacts for future regional trade among practitioners.

The success of the 3rd AOC was achieved by the active participation of many stakeholders, among whom were: the African Union Commission led Coalition of the Ecological Organic Agriculture (EOA) Initiative in Africa, African Organic Network (AfrONet), IFOAM- Organics International, Association of Organic Agriculture Practitioners of Nigeria (NOAN), Swiss Development Agency for Cooperation (SDC), International Society for Organic Agriculture Research (ISO FAR), Swiss Agency for Development and Cooperation (SDC), Food and Agriculture Organization (FAO), United Nations Conference on Trade and Development (UNCTAD), Research Institute of Organic Agriculture (FiBL), SWISSAID, AgroEco, Forum for Agricultural Research in Africa (FARA), with active participation of the Federal Ministry of Agriculture and Rural Development, Federal Republic of Nigeria.

Major achievements of the event are:

- i. Public presentation of the Strategic Agenda of Ecological Organic Agriculture Initiative in Africa
- ii. Development of a roadmap for ecological organic agriculture research in Africa
- iii. Consideration of enabling policies to enhance ecological organic agriculture practices in Africa
- iv. Sharing of information for improving production and trade activities in ecological organic agriculture in Africa
- v. Networking of business actors and policy makers in ecological organic agriculture

The conference organizers and participants agreed that the event was highly successful, as most of the expectations of the conference were met. The event ended with a conference declaration, as well as a farmers' declaration presented by the representatives of the International Network of Organic Farmers' Organizations (INOFO), which were both presented, discussed and agreed upon during the closing event.

Declaration of the Farmers Forum for Organic and Ecological Agriculture

At the 3rd African Organic Conference, 2015, October 5- 7, 2015, Lagos, Nigeria

We are delegates mandated by organizations of small-scale farmers, including peasants, local communities, family farmers, pastoralists, fish breeders, animal breeders and bee keepers. We represent part of the millions of farming families producing over 70% of the food consumed by humanity. As investors in agriculture we are very proud to do it in the most sustainable way including economic, social and environmental dimensions of development.

During the farmers' forum we discussed, discovered and agreed upon the following points:

- Our peasant communities benefit from an incredible diversity of production adapted to our distinct agricultural and food production systems.
- We are innovative when it comes to food and fibre production in hostile conditions
- We are resilient despite climate crisis we are able to produce food and preserve seed for next season
- Organic farmers are efficient in the use of space and water: in a small piece of land we can maintain fertility, produce various crops at once and ensure food security and food sovereignty
- Diversity of our seed and products can ensure healthy and nutritious food for people including specific diets for special needs
- Organic farmers, especially women, are professionals in the production, sustainability, conservation and multiplication of seed.
- We develop and organize dynamic and self-managed networks firmly anchored to our rural and urban bases.
- We organize regional and intercontinental links to exchange our knowledge, agricultural practices and rich biodiversity in an independent manner.

Despite our inherent rich knowledge and potential, we note with regret the following points:

- That there is a lack of support for the work we have been doing for centuries and that continuously improves our livelihoods.
- That there is a lack of support for the promotion and expansion of our knowledge and practices
- That the initiatives of peasant communities are not being upheld, despite their leading to real food security and food sovereignty
- That peasant seeds are being criminalized by current seed laws promoting the interests of certain seed companies.
- That so-called improved seeds are being promoted despite the knowledge that they are often poorly adapted to local conditions and lead to seed dependency.

- That Agro industrial systems with intensive use of agrochemicals result in negative impacts on soils and biodiversity, in poor human nutrition and increased public health costs
- That farmers are indebted to the agro industrial system in which they are tied financially

Due to our awareness of all the richness, knowledge and practices and the sustainability of organic and ecological farmers' practices, we, the participants of the 3rd AOC, recommend and call on the public institutions of Africa, and the whole world to:

- recognize organic and ecological agriculture as the only solution for sustainable livelihoods and to give it proper support
- Support self-organized organic farmers structure including domestic marketing
- Define better policies enabling conservation of organic seed and biodiversity
- Define and promote policy that supports local and ecological food enterprises
- Improve support for organic and ecological farmers both for agricultural inputs and for access to resources
- Define and promote policy and educational programs to ensure that youth undertakes sustainable agricultural and environmental knowledge.
- Make it clear that cohabitation between conventional and ecological organic agriculture is not a policy option, because the former makes the latter practically impossible

The Lagos Declaration

On Achieving Social and Economic Development through Ecological and Organic Agricultural Alternatives

We, the 220 participants, including 34 farmers; men, women and youths, from 28 countries attending the 3rd African Organic Conference held in Lagos, Nigeria between 5 and 9 October 2015, having deliberated on the theme "*Achieving Social and Economic Development through Ecological and Organic Agricultural Alternatives*",



AGREE that Ecological organic agriculture (EOA) has a significant role to play in addressing the pressing problems of poverty, food insecurity, land degradation, market access, food safety and climate change in Africa. The results shared prove that ecological organic farming systems increase yields, are resilient to climate change effects and are achieved cost-effectively. Further, EOA is climate smart, preserves biodiversity, provides ecosystem services, and produces lower carbon emissions.

APPRECIATING

- the development of EOA Strategic Plan by the Continental EOA Steering Committee and other partners as a means of facilitating the implementation of the AU Heads of State and Government Decision on Organic Farming (Doc. EX.CL/631 (XVIII)). This Strategic Plan is aligned to AUC-DREA's Strategic Plan, 2014-2017, the Comprehensive African Agriculture Development Programme (CAADP) Results framework, the Malabo declaration, AU Agenda 2063 and the United Nations Sustainable Development Goals (SDGs).
- the progress by Network of Organic Research in Africa (NOARA) such as development of an African research agenda for ecological organic agriculture.

RECOGNIZING

- the contribution of household food security to economic development, while embracing the UN Right to Food and food sovereignty,
- the value of organic trade globally,
- that the development and implementation of policies to support the EOA sector will require strengthening the capacities of national ecological organic agriculture stakeholders

RECALLING

- the commitment made by African Heads of State and Government in the 2003 Maputo Declaration calling for the allocation of 10% of public expenditure to agriculture
- the African model legislation, for the protection of the rights of local communities, farmers and breeders, and for the regulation of access to biological resources

WE RECOMMEND ALL MEMBER STATES TO

- Endorse and support the implementation of the African EOA Strategic Plan
- Mainstream EOA in their policies, investment plans and programmes, based on the local needs in consultation with the ecological organic agriculture stakeholders and other like-minded organizations in their countries
- Allocate at least 1.0% of the 10% total public expenditure to agriculture for the implementation of the African EOA Strategic Plan.
- Develop seed systems and training programs for women the youth and other stakeholders to generate planting material resources and breeds of livestock to promote ecological organic agriculture.
- Document and recognize the role of women and youth and to include the contribution household food security towards GDP.
- Domesticated the African model Law for the protection of the rights of local communities, farmers and breeders, and for the regulation of access to biological resources
- Take steps to remove trade barriers within and across borders in order to deepen access to national, regional and global markets and expand their market share

WE URGE

- Africa's development partners and donors to increase support to the AU led Ecological Organic Agriculture (EOA) Initiative, including the expansion of the Initiative to other African countries beyond the eight countries being supported.
- All African stakeholders and development partners to engage in and support NOARA's research agenda which is to support the scientific, innovative and traditional knowledge dimensions of ecological organic agriculture.
- FARA to partner with NOARA in identifying and addressing major research priorities that will help make ecological organic agriculture more productive, profitable and sustainable.
- National, regional and international organizations committed to supporting healthy and productive food and agriculture systems to continue and step up their efforts to sensitize the society about the multiple benefits of ecological organic agriculture.
- Ecological organic agriculture actors at the country level to liaise and work with the CAADP Country teams to mainstream EOA in the CAADP investment plans.

WE CONGRATULATE the following 2015 Champions for Ecological Organic Agriculture for their various outstanding contributions:

- Dr. Hans Herren (President of Millennium Institute, Washington DC and Biovision Foundation, Switzerland),
- Dr. Sophia Twarog (UNCTAD; Switzerland),
- Dr. Mwatima Juma (Senior Programme Officer, IFAD and Chair of Tanzania Organic Agriculture Movement (TOAM), Tanzania),
- Prof. Simplicie Davo Vodouhe (Coordinator OBEPAB, Benin),
- Dr. Gunnar Rundgren (Sweden),
- Prof. Raymond Auerbach (Nelson Mandela Metro University, South Africa),
- John Wanjau Njoroge (Director Kenya Institute of Organic Farming (KIOF), Kenya),
- Joseph Ngugi Mutura (Director SACDEP Kenya),
- Rev. Fr. Godfrey Nzamujo (Founder of Songhai Centre, Benin),
- Ogbeni Rauf Aregbesola (Governor of State of Osun, Nigeria),
- Chief Dr Olusegun Mathew Okikiola Aremu Obasanjo (Former President of Nigeria),

- General Abdulsalam Abubakar (Former President of Nigeria),
- Prof. Gideon Olajire Adeoye (Chair, NOAN, Nigeria).

WE EXPRESS our sincere appreciation for the support of Ogbeni Rauf Aregbesola, Governor of the State of Osun, Nigeria, for offering land free of charge to the Nigerian organic farming actors.

WE THANK the organizers of this conference, including the AU Commission (AUC), Federal Ministry of Agriculture and Rural Development of Nigeria, the Association of Organic Agriculture Practitioners of Nigeria (NOAN), the African Organic Network (AfroNet), IFOAM Organics International, the International Society of Organic Agriculture Research (ISO FAR), the Food and Agriculture Organization of the United Nations (FAO), and all those who provided financial and technical supports.

WE AGREE to meet in Cameroon in 2018 for the 4th African Organic Conference.

Progress in Ecological organic agriculture in Africa

The Ecological Organic Agriculture (EOA) Initiative in Africa, 2015 – 2025 Strategic Plan

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INTRODUCTION

According to the Food and Agriculture Organization (FAO) statistics 2014, agriculture still accounts for 58% of Africa's economically active population and in countries such as Burkina Faso, Ethiopia, Guinea, Mozambique, Niger and Rwanda, the share rises to over 80%. The agricultural systems encourage over reliance on non-renewable external inputs associated with greenhouse gas emissions that adversely impact on climate change, soil fertility and ecosystems. Ecological Organic Agriculture, broadening alternatives in the agriculture sector, is growing on the African continent. Available statistics indicate that there are more than 1.23 million hectares of certified organic agricultural land in Africa and the number of organic producers is also about 574,129 on the continent as at 2013 (FiBL and IFOAM, 2015). According to FiBL and IFOAM (2015), the figure for certified organic agricultural land about a decade and half ago was just 52,000 hectares. To sustain this growth and provide guidance to these farmers, the Continental Ecological Organic Agriculture (EOA) Steering Committee, at its second meeting held in Cotonou, Benin in 2014, mandated the development of a Strategic Plan for the EOA initiative in Africa. The Continental EOA Steering Committee is the apex body, which oversees the development of ecological organic agriculture in Africa.

Following the mandate given by the Continental Steering Committee, a five-day planning workshop was held in Nairobi, Kenya in February, 2015, which produced the first draft of the strategic plan. This workshop was facilitated by a consultant with the active participation of twenty stakeholders in EOA in Africa. The stakeholders include the eight countries currently implementing the EOA initiative in Africa, the African Union Commission, the East African Community, Universities, Research Institutions, Non-Governmental Organizations, traders and individual organic farmers. The draft plan was later shared with various stakeholders and partners in Africa and beyond, who contributed in refining the document. The EOA Strategic Plan covers the period 2015 to 2025 and it takes stock of developments in Africa's agricultural sector and its implication for ecological organic agriculture. The EOA Strategic plan has also been aligned to the Strategic Plan (2014-2017) of the Department of Rural Economy and Agriculture (DREA) of the African Union Commission (AUC), the Results Framework of the Comprehensive Africa Agriculture Development Programme (CAADP), the African Union Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods, African Union Agenda 2063 and the United Nation's Sustainable Development Goals (1,2,3,12,13,14,15 and 17). The strategic plan also highlights some of the achievements and lessons learnt from the pilot phase of the implementation of the 2012 EOA Action Plan.

THE OPERATIONAL CONTEXT IN AFRICA AND ITS IMPLICATION FOR THE EOA STRATEGY

The EOA Strategic plan provides the operational context of the EOA initiative and describes the prevailing political, economic, social, technological, environmental and legal contexts (PESTEL Analysis) and how they affect the EOA strategy. With respect to the political analysis, it was noted that Africa is working towards addressing the challenges facing the agricultural sector. For example, under the Malabo declaration, African governments had recommitted themselves to allocate 10 percent of their total national budgets to agriculture. Also, the Heads of State and Government of the African Union passed a resolution in 2011 on the promotion of organic farming in Africa. The Regional Economic Communities (RECs) have also initiated various programmes and policies aimed at improving food security in their respective regions. At the national level also, African governments have instituted policies geared towards achieving sustainable agriculture.

At the economic front, it was pointed out that agriculture is an important sector in the African economy and second only to trade and industry. African agriculture is also emerging as a force in the global food and nutrition security system. The business environment in Africa for domestic and foreign investors has greatly improved and the demand for Africa's resources, including agricultural products has increased. On social analysis, it was noted that Africa's population is growing rapidly and would hit the 2.4 billion mark by 2050. A combination of an increasing population and improving economic wellbeing would generate an expanded market and increased demand for food. However, there would be the need to harness this potential constructively, so that, young adults would get employed and find work opportunities.

With respect to technological analysis, the EOA Strategic plan stressed that indigenous agricultural technologies are available for sustained production on the farms, rangelands, forests, lakes and seas. These technologies, however, need to be researched further, documented and disseminated among farmers throughout Africa. Various information communication technologies are currently in use in Africa which are boosting agricultural production, financing and marketing. On the environmental front, climate change was noted as a challenging phenomenon facing African farmers. With respect to the legal analysis, the EOA Strategic plan pointed out that various laws on copyright, patents/intellectual property, health and safety and consumer protection exist but need to be enforced.

The EOA Strategic plan also includes a SWOT analysis, where the strengths and weaknesses of the EOA initiative as well as the immediate priorities, opportunities and threats are captured. Some of the strengths of the EOA initiative in Africa include the political blessing given to the EOA initiative by African Union leaders with the passage of resolution EX.CL/Dec.621 (XVII) on organic farming, the wealth of existing indigenous knowledge on ecological organic agriculture in Africa, the existing organizational structures on EOA that has been put in place and the increasing number of stakeholders who have embraced EOA. With respect to weaknesses, it was pointed out that there is lack of clear coordination of EOA actors at the country level and also there is a dearth of empirical evidence and data on the capacity of EOA to meet the food demands of Africa. The other weakness is the limited availability of agro-ecological farm inputs such as seeds and fertilizers. Climate change and the growing global concern for the environment present EOA with a huge opportunity. The growing consumer demand for EOA produce and

products both locally and internationally as a result of increase in health consciousness and food safety is also another opportunity for the EOA initiative in Africa.

The biggest threat to promotion of EOA lies in overreliance on modern agriculture and its investment in high profile public relations. Proponents of modern agriculture subscribe to the use of synthetic pesticides and fertilizers, large scale mono-culture farming, use of molecular science and genetic engineering to increase efficiency and yields. However, such systems of production are not sustainable in the long term. It also seems that the youth of today are not interested in agriculture as a means of livelihood and this development is a threat to the EOA initiative in Africa. These issues informed the strategic direction of the EOA strategy.

THE EOA VISION, MISSION, GOALS AND CORE VALUES

The EOA Vision, Mission, Goals and Core values for the next decade (2015-2025) are as follows:-

Our Vision: Resilient and vibrant Ecological Organic Agricultural systems for enhanced food and nutrient security, and sustainable development in Africa.

Our Mission: To scale up ecological and organically sound strategies and practices through institutional capacity development, scientific innovations, market participation, public policies and programmes, outreach and communication, efficient coordination, networking and partnerships in Africa.

The Overall Goal of the EOA Initiative: To mainstream ecological organic agriculture into national agricultural systems by 2025 in order to improve the quality of life for all African citizens.

Core Values:

- Biodiversity, respect for nature and sustainable development
- Promote family farming cultures, indigenous knowledge, cultural practices and wisdom
- Embrace fairness and justice to the ecosystem.
- Promote safe, nutritious and healthy food.

KEY PRIORITY AREAS AND STRATEGIC OBJECTIVES

The key priority areas or pillars and strategic objectives of the EOA initiative in Africa include the following:-

1. **Research, Training and Extension:** This priority area would help build up the body of scientific data supporting EOA. The main target of this pillar is to conduct as many research projects as possible on EOA so that data, knowledge and practice on EOA would be populated in Africa to help transform agriculture in favour of EOA. This would be done by research and training institutions in collaboration with rural communities, extension and advisory service providers.
2. **Information and Communication:** This priority area would be the vehicle through which EOA reaches out to a vast majority of stakeholders on the continent. Its main target would be to use diverse information and communication platforms to design, package and disseminate relevant EOA material to a wider audience in Africa.

3. **Value Chain and Market Development:** This pillar would stimulate the breeding and production of seed and breeds encourage value addition to EOA products to earn higher profits margin, develop sustainable markets and encourage consumer participation throughout the entire value chain process.
4. **Networking and Partnerships:** This priority would rely heavily on partners and networks in the industry to implement policies and plans. Engagement would be done through Partnership Agreements (PAs) and Memoranda of Understanding (MOUs) between implementers of EOA and potential and willing partners.
5. **Policy and Programme Development:** This is the priority area that will help EOA realize its ultimate goal. Through lobbying and advocacy efforts, national governments in Africa would be persuaded to develop and implement enabling policies and programmes in support of EOA.
6. **Institutional Capacity Development:** This priority recognizes the imbalance in management and planning capacities of nascent EOA institutions. Efforts will be made to establish, develop and support these institutions' organizational capacities as well as equip their professionals with skills and competences to promote EOA in Africa.

The six main strategic objectives of the EOA initiative are as follows:-

- To carry out holistic demand driven, multi-disciplinary, gender sensitive and participatory research, training and extension in support of EOA by 2025.
- To collate, package and disseminate research findings and other relevant information to various stakeholders using various approaches and channels of communication by 2025.
- To increase the share of quality EOA products at the national, regional and international markets through value chain analysis and market development by 2025.
- To foster and strengthen synergies among stakeholders in Africa through building networks and partnerships by 2025.
- To lobby and advocate for the mainstreaming of EOA programmes, policies, plans and in the agriculture sector as well as other related sectors by 2025.
- To strengthen the governance management and operations of EOA institutions in Africa by 2025 for effective functioning and service delivery.

STRATEGIC APPROACHES

a) **Holistic, multi-stakeholder and multi-sectoral approach**

EOA will adopt a 'holistic, multi-stakeholder and multi-sectoral approach' in implementing its agenda. With the realisation that interlinkages exist across sectors like environmental, health, nutrition, gender, trade, industry, employment and Agriculture, efforts to work with all sectors will ensure greater impact in the realisation of the EOA agenda.

b) **Partnership and networking strategy**

Given the vastness of the continent and the diverse actors in Agriculture, EOA will adopt a 'Partnership and Networking strategy'. This will help to build synergies and complementarities while avoiding duplication of efforts for optimal use of available resources and maximisation of results and impacts. Among partners to be targeted are:

AfrONet, FARA, IFOAM, NOAMs, Farmer associations, RECs, FAO, Research and Training Institutions like FiBL, ICIPE etc.

c) Community empowerment and inclusiveness

‘Community empowerment and inclusiveness’ as a strategy will anchor the EOA agenda in sustainable institutions and demography (women and youth).

d) Growth and expansion strategy

EOA will also adapt a ‘growth and expansion strategy’ so as to reach out to more countries in Africa. With the establishment of the EOA initiative activities in East and West Africa, a roll out into Southern, Central and Northern Africa is planned.

GEOGRAPHIC FOCUS, CONSTITUENCIES AND PARTNERSHIPS

The EOA initiative aims to cover all the fifty four (54) countries of Africa. Primary constituencies of the initiative are farmers in Africa. Women and the youth would also be prioritized. National governments in Africa would be lobbied to mainstream EOA into their agriculture policies. The secondary target groups include farm input suppliers and manufacturers, producers, processors, marketers and consumers. Various institutions with interest in EOA such as research and training institutions, organic networks, farmer associations and organizations as well as Regional Economic Communities would be targeted.

EOA INITIATIVE STRUCTURE, IMPLEMENTATION AND MANAGEMENT OF THE STRATEGIC PLAN

The structure for implementing the EOA Initiative in Africa is as shown below in Fig. 1. The African Union Commission chairs the Continental EOA Steering Committee, which is responsible for awareness raising of the EOA agenda, brand and profile at the continental level. This committee is also responsible for resource mobilization and solicitation of support for EOA activities in Africa. Also, it provides oversight, advice and guidance on the implementation of the EOA strategy. The EOA Secretariat runs the day-to-day affairs of the EOA on behalf of the Continental EOA Steering Committee. The secretariat also provides oversight, advice and guidance on the implementation of the EOA strategy. The Regional Steering Committees create awareness, advocate and lobby for the EOA agenda, brand and profile at the regional level. It reviews the reports from national EOA platforms and report to the continental EOA steering committee. There are also national EOA platforms that promote EOA activities at the country level. In addition, there are lead agencies that assist the work of the national EOA platforms and the Regional EOA Steering Committees.

To implement the EOA Strategic Plan (2015-2025), clear roles and responsibilities have been assigned to the Continental EOA Steering Committee, EOA Secretariat, the Regional EOA Steering Committees, National EOA Platforms and Steering Committees and the lead agencies. The EOA Strategic Plan is backed up by a five-year Action plan which runs from 2015 to 2020. There would be internal monitoring of EOA projects at the country level. Also, there would be a mid-term review of the EOA strategic plan in year 3 (2016) and final review in 2020. Output of this review would result in a possible refinement of the plan. Finally, the EOA Strategic Plan would be reviewed in 2025, leading to the development of the Second EOA Strategic Plan for the period 2025 to 2035.

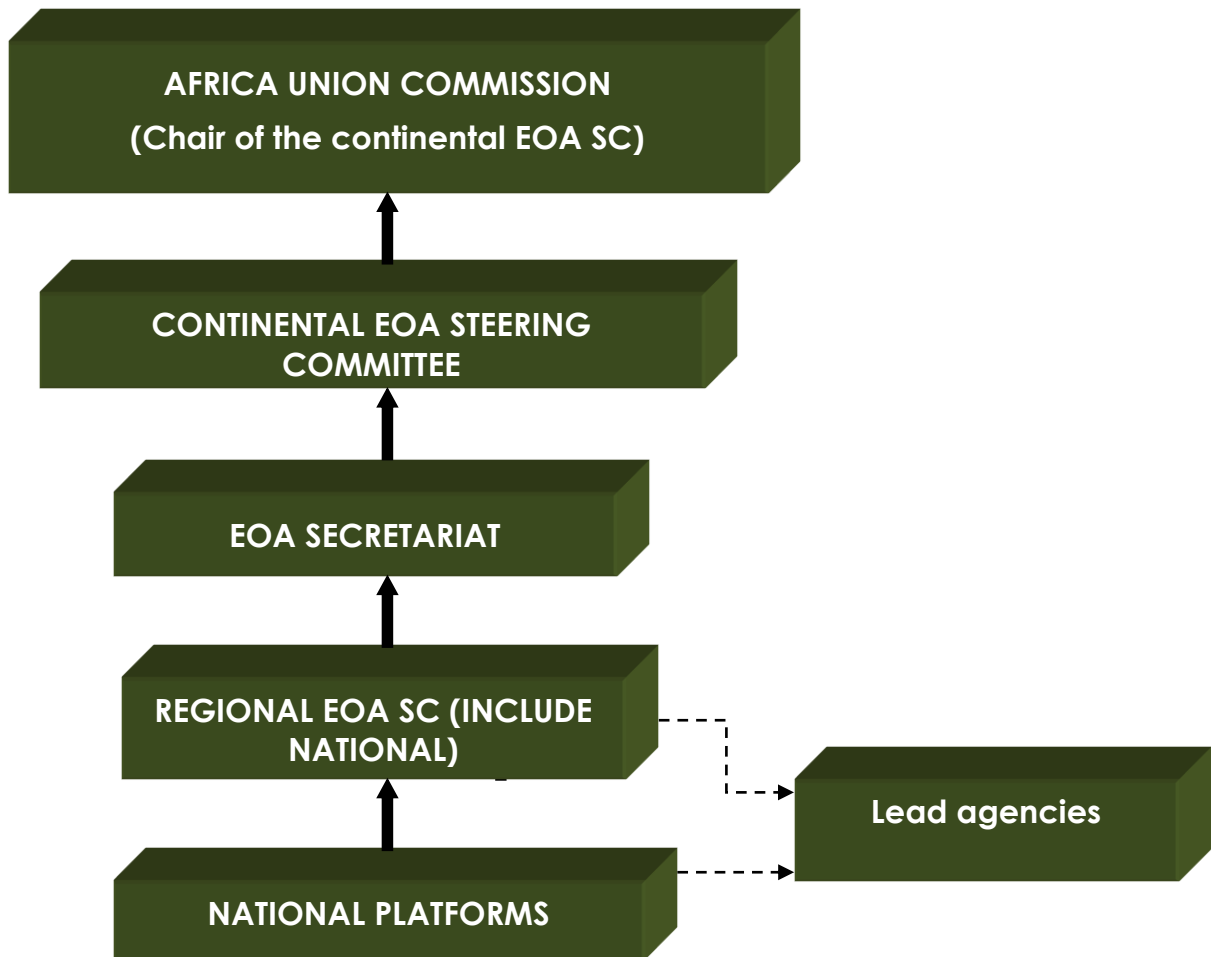


Fig. 1: The EOA Structure

Approximately, 43,900 million Euros is needed to successfully implement the EOA Strategic Plan for the period 2015 to 2025. This figure includes costs of project activities, human resources, technical support and coordination. A comprehensive EOA resource mobilization strategy to guide fundraising and sourcing of funds would be developed to deliver the EOA mandate.

THE EOA INTERVENTION LOGIC

For each of the six key priority areas earlier mentioned, the EOA Strategic Plan has outlined strategic objectives, specific objectives, outcomes, outcome indicators, means of verification and activities for achieving them. Also, risks and mitigation strategies envisaged during the implementation of this strategic plan have been developed and would be fully implemented.

CONCLUSION

The development of this EOA Strategic Plan has given full meaning to the decision taken by the Heads of States and Government of the African Union on Organic Farming (EX.CL/Dec.621 (XVII)) in 2011. This Plan was endorsed at the inaugural meeting of the Specialized Technical Committee on Agriculture, Water, and Environment (Conference of African Ministers of Agriculture) as well as the Third African Organic Agriculture Conference. The implementation of this Strategic plan, will no doubt, boost ecological organic agriculture in Africa, increase the incomes that go to organic farmers, and traders and help achieve food security in Africa, whilst protecting our physical environment. Support for the implementation of this Strategic Plan is urgently needed and the Continental EOA Steering Committee and the entire EOA Fraternity in Africa is counting on our development partners and donors to help raise the needed funds.

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ACKNOWLEDGEMENTS

The provision of financial resources by the Swiss Development Cooperation for the development of this EOA Strategic Plan is hereby duly acknowledged. Biovision Africa Trust, providing the interim secretariat for the Continental Steering Committee, also refined the initial draft of this strategic plan prepared by the consultants.

Progress and Challenges of Ecological Organic Agriculture in Africa

By, Jordan Gama, President, AfrONet

Despite of having low acreage of certified organic land of 1.2 million hectares, which is 3% of world total¹, Africa is pushing ahead with commitment to embrace Ecological Organic Agriculture, to meet both internal and external markets. Currently, Africa is witnessing policy-makers' awareness and recognition of Organic Agriculture as a significant approach in addressing food insecurity, land degradation, poverty, and climate change². The Executive Council of the African Union (AU), endorsed Organic Farming and called upon states and development partners to provide guidance in support of the development of sustainable organic farming systems and improved seed quality³.

Under the patronage of African Organic Network (AfrONet), the organic sector has witnessed significant achievement in the past four years, following its establishment in 2012, in Lusaka, Zambia. AfrONet unites and represents African ecological/organic stakeholders and projects as an important body for the future of the continent's organic movement and sector⁴. Its core aim is to strengthen and support regional networks and the Ecological Organic Agriculture Initiative for Africa. For instance, Organic conferences in Eastern, Western Central and Southern Africa are few examples of success.

Some of the major initiatives/projects, research and ecological organic agriculture education include:

- Projects:
 - FiBL and partners in Africa. They are: Farming Systems Comparison in the Tropics (SYSCOM) (Kenya);
 - Syprobio –based on the existing organic cotton value chain (Mali, Burkina Faso and Benin);
 - Productivity and Profitability of Organic and Conventional Farming Systems (ProEcoOrganicAfrica – 2013 - 2016):
 - A Comparative Analysis in Sub-Saharan Africa (Ghana and Kenya) and
 - Farmer-driven organic resource management to build soil fertility (ORM4Soils) (Ghana, Kenya, Mali, Zambia).
- Research:
 - FARA supports 4 organic Innovation Platforms
 - CCARDESA has in 2015 incorporated organic research in the programme
 - ProGrOV a collaborative organic research in East Africa- SUA, NU, Makerere, Copenhagen & ICROFs

¹ Source: FiBL-IFOAM Survey 2015

² Gama, J. (2006). Latest Development in Organic Agriculture in Africa. In The world of organic agriculture: Statistics & emerging trends 2016. Bonn: FibL & IFOAM.

³ Document EX.CL/Dec.621(XVIII)

⁴ Gama, J. (2006). Latest Development in Organic Agriculture in Africa. In The world of organic agriculture: Statistics & emerging trends 2016. Bonn: FibL & IFOAM.

- University Education:
 - Martyrs University Uganda
 - Sokoine University of Agriculture
 - Senate approved organic curriculum
 - Currently developing Agro Ecology Curriculum
 - Organic Summer School (SUA & Makerere)
 - Nairobi University – certificate course

The progress of the Ecological Organic Agriculture (EOA) in Africa faces various challenges that include the following:

- Inadequate Budget allocations from National/regional communities for Organic Agriculture
- Lack of a shared comprehensive organic action plan/strategy in most countries and regions. (Unlike in Most Western Europe, EU, America and Japan).
- Inadequate research and education on Ecological Organic Agriculture.
- Little investment/support in organizing producers into marketing and value chains
- Mind set of Agricultural Experts and Policy Makers on Ecological Organic Agriculture that it can't solve African food and poverty challenges.

Nonetheless, progress is being made. The next chapters highlight specific progress related to the abovementioned EOA projects across the continent.

Mainstreaming Ecological Organic Agriculture (EOA) into National Policies, Strategies and Programmes in Africa 2014-2018: Progress Report

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INTRODUCTION

The Ecological Organic Agriculture (EOA) Initiative is an African Union-led continental undertaking that is currently being implemented in eight countries namely, Benin, Ethiopia, Kenya, Mali, Nigeria, Senegal, Tanzania and Uganda. Under the coordination of Biovision Africa Trust (BvAT), implementation country level is led by the Country Lead Organizations (CLOs) and supported by Pillar Implementing Partners (PIPs), all selected by their country national platforms.

The EOA initiative is implemented under the guidance and oversight of the AU chaired Continental Steering Committee (CSC) to establish an African organic farming platform based on available best practices; and to develop sustainable organic farming systems and improve seed quality.

The initiative is co-financed by the Swiss Agency for Development and Cooperation (SDC) and the Swedish Society for Nature and Conservation (SSNC) with funding from the Swedish International Development Cooperation (Sida). EOA also receives support from the European Union, administered through the African Union (AU), as well as contributions from beneficiary communities.

BACKGROUND

The EOA initiative was started in response to the African Union Heads of State and Government's DECISION ON ORGANIC FARMING Doc. EX.CL/631 (XVIII). Following the decision, the African Union Commission, in collaboration with PELUM Kenya and like-minded partners, organized an inception workshop in May, 2011 in Thika Kenya with financial support from the SSNC to discuss how to implement this decision. The workshop successfully resulted in a roadmap, concept note and development of an African Organic Action Plan for mainstreaming ecological organic agriculture into national agricultural production systems by 2025. With support from SSNC, the initiative was successfully piloted in six countries; Ethiopia, Kenya, Tanzania and Uganda from Eastern Africa, Zambia from Southern Africa and Nigeria from Western Africa. At the same time, baseline studies were conducted in Benin, Mali and Senegal under BvAT's coordination and with SDC's financial support. Further planning meetings were conducted culminating in the development of an 8-country project proposal and refined structures for mainstreaming ecological organic agriculture into national agricultural production systems by 2025.

The Goal

To contribute to mainstreaming of Ecological Organic Agriculture into national agricultural production systems by 2025 in order to improve agricultural productivity, food security, access to markets and sustainable development in Africa.

The Mission:

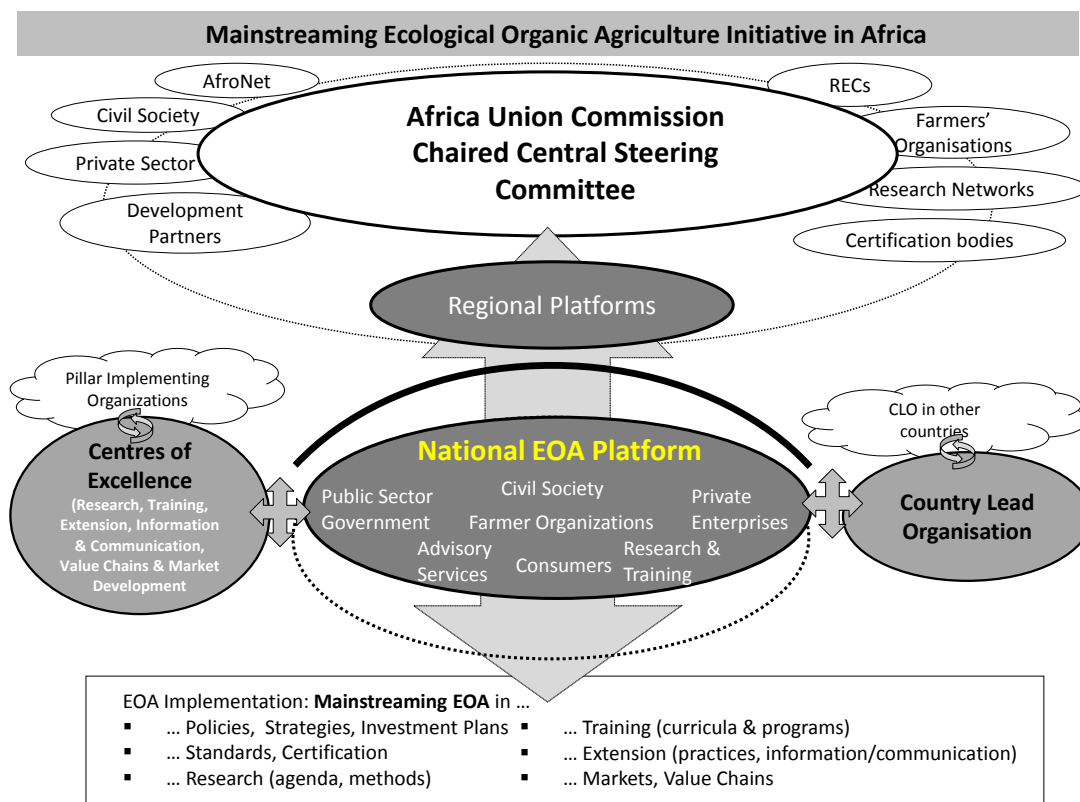
To promote ecologically sound strategies and practices among diverse stakeholders involved in production, processing, marketing and policy making to safeguard the environment, improve livelihoods, alleviate poverty and guarantee food security among farmers in Africa.

The Objectives:

1. To increase documentation of information and knowledge on organic agricultural products along the complete value chain and support relevant actors to translate it into practices and wide application.
2. To systematically inform producers about the EOA approaches and good practices and motivate their uptake through strengthening access to advisory and support services.
3. To substantially increase the share of quality organic products at the local, national, regional and global markets.
4. To strengthen inclusive stakeholder engagement in organic commodities value chain development by developing national, regional and continental multi-stakeholder platforms to advocate for changes in public policy, plans and practices.

STRUCTURAL ORGANIZATION OF EOA INITIATIVE

Coordination and management structures for driving the EOA Initiative have been put in place with various structures as shown in the figure below.



The coordination and management of the initiative from Continental level to the Country level has five levels as follows:

Continental Steering Committee

At the Continental level we have the Continental Steering Committee (CSC) chaired by the African Union. The CSC is the apex in the governance structure of EOA in Africa. The CSC members serve to provide EOA in Africa and its membership with guidance, oversight, and decision-making regarding the operations and activities of EOA. The SC members are appointed to serve on behalf of their institutions, not as individuals, and agree to represent the general interests of their sector.

Continental Steering Committee Secretariat

The Secretariat provides support to the CSC and its subcommittees at the direction of the CSC. Support includes planning and organizing CSC meetings; organizing periodic EOA events as determined by the CSC, promoting communication and linkages between the CSC, subcommittees, and members and developing Africa-wide information sharing tools, including a website. Currently Biovision Africa Trust (BvAT) has been appointed by the CSC members to act as interim secretariat for 2 years from January 2016.

Regional Level Coordination

There are two active clusters for the Eastern Africa and West Africa Secretariats. We have the Southern Africa cluster in place but not very much actively involved because of lack of financial support. The role of the regional clusters is to coordinate regional actors in their regions to implement the EOA agenda, engage with the RECs to integrate EOA in regional and national policy and programs so as to improve their livelihoods, mobilize resources from partners to support EOA activities in their clusters, and develop own rules of procedures and operations in the management of the clusters.

National level Coordination

At country level we have three structures; the National Platforms steered by National Steering Committee (NSC), the CLOs and the PIPs (see Table 1). All these structures are in place in the eight countries. The selection of these countries was based on the assumption they are committed to supporting the development of ecological organic agriculture, and there are some farmer organizations and other relevant strong institutions, such as national organic agriculture movements (NOAMs) on the ground to support the initiative. The national platforms are responsible for various tasks including overseeing implementation of general EOA activities at national level; making follow ups on the integration of EOA in government national policies, plans and strategies; creating links and partnerships among stakeholders and coordinating Organic Agriculture activities in particular countries including creating awareness and building a critical mass and voice on EOA as well as strengthening the Regional and Continental Platforms. The CLOs main role is to coordinate implementation of EOA at the national level by coordinating and working with the PIPs in charge of specific activities at the pillar level.

In some countries such as Kenya, Mali and Ethiopia a relevant related project, the Millennium Institute's and Biovision's Changing Course in Global Agriculture (CCGA's) is being implemented. The project draws on the IAASTD findings, and is supported by the Millennium Institute to advocate for the integration of sustainable agricultural principles into national, regional and global development plans. It was therefore appropriate for the EOA Initiative to

build on CCGA’s activities and tap into the existing synergies where the same initiative was piloted with support from SIDA through the SSNC.

Lead Coordinating Agency

BvAT has continued to support the initiative as the as the Lead Coordinating Agency with support from SDC. It is in charge of management and coordination of the EOA-I. It takes on this role on behalf of and being accountable to the EOA CSC.

Table 1: National Participating Partners (CLOs and PIPs)

Region & Country	Implementing Partners
West Africa	<p>Mali</p> <ul style="list-style-type: none"> • Movement Biologique Malien (MOBIOM) as the CLO and PIP for Pillar 4 • Institute d'Economie Rurale (IER) as PIP for Pillar 1 (RTE) • Association des Organisations Professionnelles Paysannes (AOPP) as PIP for Pillar 2 (I&C) • REMATRAC Bio Exposition Artisanat du Mali Association as PIP for Pillar 3 (VCMD)
	<p>Nigeria</p> <ul style="list-style-type: none"> • Association of Organic Agriculture Practitioners of Nigeria (NOAN) as the CLO and PIP for Pillar 4 • University of Ibadan for Pillar 1(RTE) • Healthy Foods for Consumers Initiative for Pillar 2 (I&C) • NOAN Association of Organic Agriculture Practitioners of Nigeria for Pillar 3 (VCMD)
	<p>Benin</p> <ul style="list-style-type: none"> • Béninoise pour la Promotion de l'Agriculture Biologique (OBEPAB) as the CLO and PIP for Pillar 4 • Organisation Béninoise pour la Promotion de l'Agriculture Biologique (PABE/OBEPAB) for Pillar 1 (RTE) • Platform for Civil-Society Actors in Benin (PASCIB) for Pillar 2 (I&C) • Crastida for Pillar 3 (VCMD)
	<p>Senegal</p> <ul style="list-style-type: none"> • La Fédération Nationale des Acteurs de Développement des Banlieues (FENAB) for CLO and PIP for Pillar 4 • ENDA PRONAT for Pillar 1 (RTE) • ASPAB (Senegalese Association for the Promotion of Organic Agriculture) for Pillar 2 (I&C) • AGRECOL Association for Agriculture and Ecology for Pillar 3 (VCMD)
Eastern Africa	<p>Kenya</p> <ul style="list-style-type: none"> • Kenya Organic Agriculture Network (KOAN) as the CLO and PIP for Pillar 3 (VCMD) and Pillar 4 (SSC) • Biovision Africa Trust as PIP for Pillar 2 • Egerton University as PIP for Pillar 3

Ethiopia	<ul style="list-style-type: none"> • Institute for Sustainable Development (ISD) as CLO and PIP for Pillar 3 (VCMD) and Pillar 4 (SSC) • Mekelle University (MU) as PIP for Pillar 1 • PANOS Ethiopia as PIP for Pillar 2
Uganda	<ul style="list-style-type: none"> • National Organic Movement of Uganda (NOGAMU) as CLO and PIP for Pillar 3 and 4 • Uganda Martyrs University as PIP for Pillar 2 • Makerere University as PIP for Pillar 3
Tanzania	<ul style="list-style-type: none"> • Tanzania Organic Agriculture Movement(TOAM) as the CLO and PIP for Pillar 3 and 4 • Sustainable Agriculture Tanzania as PIP for Pillar 1 • Pelum Tanzania as PIP for Pillar 2

STRATEGIC AREAS OF FOCUS AND IMPLEMENTATION

The initiative embraces holistic production systems that sustain the health of soils, ecosystems and people, and relies on ecological processes, biodiversity and cycles adapted to local conditions rather than reliance on the use of external inputs with adverse effects on people’s total health (human, animal, plant and environmental). The Initiative is anchored on six interrelated pillars namely;

- I. **Research, Training and Extension (RTE):** The overall aim of this pillar is to build the body of scientific data supporting EOA by understanding gaps and implementing activities geared towards enhancing uptake of ecological organic agriculture practices along the entire commodity value chains. The key outcome of this pillar is to have scientific, indigenous knowledge, technologies and innovations on Ecological Organic Agriculture (EOA) increased.
- II. **Information and communication (I&C):** This pillar is an avenue through which EOA reaches out to a vast majority of stakeholders on the continent. It focuses on information and communication on EOA approaches, good practices (production, processes, and learning systems) developed, packaged and disseminated to stakeholders.
- III. **Value Chain and Market Development (VCMD):** This pillar aims at stimulating development of sustainable markets and trade in traditional and high value agricultural produce both at domestic and export levels within EOA. EOA product value chain mapping, data collection, opportunity analysis and product/input vetting are conducted, Business Development strategies (BDS) for target businesses along value chains developed and the market share of EOA quality products at the national, regional and international markets increased.
- IV. **Networking and Partnerships:** This promotes engagement by relevant stakeholders including governments, farmers, civil society, private sector, and the international community. It focuses on increasing the number of stakeholders in Africa collaborating on EOA initiatives by ensuring functional partnerships and networks at national, regional and continental levels are established.
- V. **Policy and Programme Development:** This supports the development and implementation of enabling policies and programmes. It works towards realizing a harmonised understanding and

awareness of the value and benefits of EOA among various stakeholders by targeting plans and policies supporting EOA.

- VI. **Institutional Capacity Development:** This supports and equips professionals with skills and competences to promote EOA in Africa. The main outcome is to ensure well governed, efficient and effective EOA Institutions are developed and evident.

NB: under the SDC Support, the last three pillars are consolidated into one pillar and collectively referred to as Steering, Coordination and Management. This is referred to as Pillar 4 which is coordinated by Country Lead Organizations (CLOs)

SUMMARY OF KEY ACHIEVEMENTS (2012-2016)

Pilot Phase (2012-2013)

In 2012 the pilot phase was supported by the Swedish Society for Nature Conservation (SSNC/SIDA) in 6 countries (Kenya, Uganda, Tanzania, Ethiopia, Zambia and Nigeria) and SDC supported baseline studies in Benin, Senegal and Mali.

The key highlights of the pilot phase were as follows:

- i. Research Training and Extension (RTE): The objective was to establish baseline information on status of EOA research agenda.
 - ✓ The Analyses of 2002 to 2012 studies on EOA was undertaken and revealed that there were low levels of EOA research in all countries surveyed, general awareness on EOA was minimal and poor funding on EOA research; Indigenous agricultural knowledge existing in various communities was documented through the baseline work and there were varying levels of commitment to EOA among youth and women due to information gaps.
 - ✓ Joint review on the organic agriculture curricula present in the different 6 countries was done and gaps identified. Ten manuals covering issues of EOA were developed and covered various topics such as overview of EOA in Africa, Organic Aquaculture, Soil fertility in EOA, Agronomic practices in EOA and Livestock production in EOA. Recommendations for curricula development at 3 levels; certificate, diploma and degree, were made.
- ii. Information and Communication (I&C): It was easy to determine which mode of communication is more appropriate to spread EOA information to farmers. It was also possible to establish that there are varying levels of innovation in information and communication and packaging among the countries. Information strategies were identified such as use of multi-lingual training materials, use of key community persons, poems and drama. The EOA website was developed, www.eoa-africa.org. Various Farmer Information centers were also established under this pillar.
- iii. Under Value Chain and Market Development Pillar, a database profiling organic operators was undertaken in Uganda, Kenya, Nigeria and Zambia.

- iv. Under Networking and Partnership (N&P) Pillar, AfroNet and NOARA conference and event was held in Zambia on 1st to 2nd May 2012. At this time a coordination committee was established. This committee has held several meetings since then to further the EOA research agenda.
- v. The policy and programme development pillar was not implemented in the pilot phase. However it kicked off in the second phase of EOA- SSNC implementation from 2013-2015.
- vi. The baseline studies were undertaken in 3 Francophone countries of Mali, Benin and Senegal. The purpose was to capture existing data from the farmers, the scientific community and other related sectors in order to provide information about the present status of organic agriculture in each country so as to help focus EOA interventions in the region during the roll out phase. Specific issues coming out from these studies included; inadequate manpower to train manpower on EOA and guiding standards to carry out EOA activities, difficulty in coordination within- and between stakeholders, lack of appropriate policies and backing for EOA and limited empirical facts/evidence on performance of EOA (superiority of EOA over conventional agriculture).

Progress of Current Phase (2014-2018)

The initiative has been successfully rolled out in mentioned 8 countries since 2014 and implementation is ongoing with support from SDC in the 8 countries and SSNC in Eastern Africa only. BvAT has so far facilitated the establishment of National Platforms and the selection of CLOs, PIPS and has executed its responsibility of management, accountability and general oversight of all partner activities.

The National Platforms in the 8 countries have been established with National Steering Committees put in place to provide leadership and overall supervision of EOA at the country level.

The Regional Clusters for West and Eastern Africa have been launched and constituted through development of Terms of Reference. The Clusters have elected Regional Steering Committee in charge of providing leadership and overall supervision of EOA at the Regional level. The Southern Cluster is in the process of being supported to establish its structures.

The Continental structure has the Steering Committee constituted successfully with a sub-committee to address technical issues. The SC has so far successfully held four meetings. The Committee has continued to grow with membership drawn from among others the African Union Commission; Department of Rural Economy and Agriculture (DREA) who chair the meetings, IFOAM-Organics International, AfrOnet, various NOAMs drawn from the eastern, west africa regions and south africa regions, Civil Society Organizations (CSO) – BvAT and Pelum Kenya who are currently the Lead Coordinating agencies, EOA Regional Clusters (East Africa, West Africa and South Africa) represented by the Chairpersons and development partners (SDC&SSNC). Through the various meetings, the SC members have continued to provide guidance, oversight, and decision-making regarding the operations and activities of EOA in Africa with respect to annual reports, work plans and budgets.

BvAT has been appointed by the Continental Steering Committee to act as the interim secretariat to the Steering Committee for 2 years while Pelum Kenya has been appointed as the secretariat to the Eastern Africa Regional Steering Committee on an interim basis for same period.

In an effort to sensitize actors about the EOA initiative, Dr. Amudavi attended various regional and international meetings. Key among them was the presentation of EOA Initiative at the SIANI/SLU Global workshop on "Scaling-up' strategies – from Technology Transfer to Empowerment with focus on Sustainable Agricultural Production and Food Security", August 28-29th, 2014, at Ultuna/Uppsala. David also made a presentation on progress of EOA I at SIDA and SSNC Headquarters between 30 August and 2 September 2014. He also attended the 18th IFOAM Organic World Congress 2014 in Istanbul, Turkey from October 13 to 15 where he made a presentation on ecological organic agriculture initiative. The IFOAM Organic World Congress (OWC) only occurs every three years and is the largest and most important meeting of the organic sector. The 2014 conference had 3 themed tracks, The Main Track, The Scientific Track, and The Practitioners' Track as well as a series of Workshops.

Through coordination of BvAT, EOA Continental Strategic Plan (10yrs) and Action Plan (5yrs) were developed in 2015. It involved the active participation of twenty (20) stakeholders with representation from all the eight countries currently implementing the EOA initiative, the Africa Union Commission (AUC), the East African Community (EAC), the African Organic Network (AfroNet), universities and research institutions, Non-governmental organisations, traders as well as individual farmers. The strategy is aligned to continental and international policies and development frameworks and highlights achievements and lessons learnt from the pilot of the implementation of the EOA Action Plan in 2012. In October, 2015 the AUC Specialized Technical Committee (STC) on Agriculture, Water and Environment held a meeting on 7th - 9th October 2015 where the EOA strategic plan was presented and endorsed by Honorable Ministers responsible for Agriculture, Water and Environment. The Strategic Plan was also endorsed by the 3rd Africa Organic Conference held in October 2015 in Lagos, Nigeria.

The 3rd West Africa Organic Conference was held in Benin in August 2014 whose theme was *'Institutionalization of ecological organic agriculture in West Africa'*. The workshop ended with participants showcasing and selling their organic products, visiting organic farms in Benin and also drafted a declaration. The declaration recognizes the need to develop alternative models of production and trade to address the ecological, economic and socio-political crisis of the current agricultural and food system and also the potential of ecological organic agriculture including fair trade to help improve food security, protection of environment and natural resources, resilience of rural communities and the construction of a world of justice and solidarity within and between generations.

The 3rd Africa Organic Conference was held in October 2015 in Lagos Nigeria. This event attracted 220 participants, including 34 farmers; men, women and youths, from 28 countries. The theme of the conference was *"Achieving Social and Economic Development through Ecological and Organic Agricultural Alternatives"*. The conference participants came together to develop a declaration dubbed the 'Lagos declaration'. In the declaration, stakeholders agreed that *'Ecological organic agriculture (EOA) has a significant role to play in addressing the pressing problems of poverty, food insecurity, land degradation, market access, food safety and climate*

change in Africa. The results shared prove that ecological organic farming systems increase yields, are resilient to climate change effects and are achieved cost-effectively. Further, EOA is climate smart, preserves biodiversity, provides ecosystem services, and produces lower carbon emissions’.

EOA stakeholders have continued to attend various events like the global BIOFACH event held yearly in Germany. It is world's leading trade fair for organic food. EOA Stakeholders attending the event have benefited from market expansion and creating linkages and partnerships with various companies for their organic products.

AfrOnet has also been supported to establish relevant institutional structures (e.g. Board of Governance, Secretariat and Programme Units). The structures are now in place with a full time communication officer and assistant administration officer. The Board of Governors has also been constituted and endorsed with the Strategic Plan for AfrOnet being the final stages of development.

KEY LESSONS LEARNT FROM PILOT PHASE AND ONGOING PHASE

- **Adaptation and farmers’ livelihood interests cannot be delinked:** A clear lesson from the field operations is that farmers would not go into applying adaptation options irrespective of how good they might be for the environment and climate resilience, unless the net return from the options benefits them materially in their own farms. Thus, it is very important to analyze the reasons for acceptance as well as the parameters under which potential adaptation options would become attractive to the farmers.
- **Availability of Organic Agriculture data usable at the ground level:** Organic commodities face stiff competition from the proponents of chemical intensive agriculture who have abundant resources and a huge following. Therefore for Organic Agriculture to have a cutting edge, availability of organic agriculture data and information at the farmers’ level is one of the most important ingredients for planning and adoption of EOA strategies. This should be coupled with a collection of success or convincing cases as some people are still skeptical about the potential of organic farming.
- **Necessity for due diligence assessment for collaboration partners:** Drawing from the past experience, it is paramount that a pre-engagement assessment is conducted on organizations to determine their capacities and internal leadership structures. This is informed the case of MOBIOM in Mali which was engulfed in intricate internal wrangles.
- **Relevant supportive structures for the Initiative:** From the past experience it is evident that the initiative needs well established structures to drive its agenda at all levels while ensuring efficiency and accountability among members. Investment in strong and functional platforms from national to continental levels supported by organizations such as AfrONet and the African Union Commission promises sustainability of EOA.
- **Organizational Capacity of Implementing Organizations:** It is important that capacities and capabilities of the organizations in charge of implementation of the initiative are

understood, and a deliberate process put in place on how to support them i.e. train project persons on accounting and management aspects and also undertake an overall assesment of the organizational development process and capacities of the implementing organizations.

- **Partner Planning meetings:** From the onset of the project and during its phase of implementation, it is important to have inception and planning meeting with implementing partners, an issue that was overlooked during the start of project implementation- this will counter the current setback we are experiencing in management of the project at the country level because some partners seem to face challenges implementing the initiative.

CONCLUSION

The wide stakeholder engagement and structures put in place for the mainstreaming of EOA have ensured the initiative has a wide outreach of various stakeholders. However there is need to carry out an organizational capacity assesment of implementing partners to ensure they are well equipped with capacity to implement the initiative at the country level. There is also need to ensure wide stakeholder engagement as the initiative envisages by ensuring the project implementation is spread across reputable partners in the EOA industry. The need to target policy makers cannot be over emphasized. The progress made so far in the EOA research pillar need to be packaged to target and influence policy makers in the revision of national policies and plans to include EOA. The initiative is currently funded by two donors namely SDC and SSNC and thus there is a big gap of financial resources for implementation. Approximately, 43,900 million Euros is needed to implement the EOA Strategic plan successfully. This figure includes project activity costs, human resources, and technical support and coordination costs. There is thus need to reach out on a wider net of viable and interested development partners to join the movement.

ACKNOWLEDGEMENTS

Biovision Africa Trust appreciates the support offered through financial support and in kind by Swiss Development Cooperation (SDC) and Swedish Society for Nature and Conservation (SSNC). We take this opportunity to appreciate Africa Union Commission through its support to stakeholders to undertake trainings on organic certification and their support to stakeholders to attend various meetings and conferences like the successfully concluded 3rd African Organic Conference held in Lagos, Nigeria.

Progress of the Ecological Organic Agriculture (EOA) Initiative Project in Eastern Africa As Supported By the Swedish Society for Nature Conservation (SSNC)

By Zachary Makanya, Country Coordinator, PELUM Kenya

Background history of the SSNC Support in EOA Initiative in Africa

The Decision by Africa Governments for addressing the Agriculture challenges among others, the African Heads of States and Government made a decision EX.CL/ Dec.621 (XVII) on Organic Farming. They requested the African Union Commission and its New Partnership for Africa's Development (NEPAD) Planning and Coordinating Agency (NPCA) to:

- Provide guidance for an African Union (AU) led coalition of partners on the establishment of an organic farming platform
- Provide guidance in the development of sustainable organic farming systems and improved seed quality
- Called upon development partners to provide the necessary technical and financial support for the implementation of the decision
- Requested the AU Commission to keep on making regular reports on the implementation of this decision

In response to the AU Heads Decision on Organic Farming, PELUM Kenya and SSNC held discussions on a possible method to support the implementation of this decision. This was an opportune time for both organization that had a decade long standing relationship in promoting participatory sustainable development in organic farming. A two-day inception workshop was organized for key stakeholders and actors in Ecological Organic Agriculture. The workshop was organized by PELUM Kenya in collaboration with the African Union Commission (AUC) with financial support from the Swedish Society for Nature Conservation (SSNC) in May 2-3, 2011 at the Sustainable Agriculture Community Development (SACDEP) training center in Thika, Kenya. The workshop brought together representatives from East, West, Southern and Central Africa from 12 countries. The main aim of the meeting was to prepare a roadmap and an initiative to implement the AU Heads of State Decision on Organic Agriculture.

About PELUM Association and PELUM Kenya

Participatory Ecological Land Use Management (PELUM) Association is an indigenous network of civil society organizations working in 12 African countries in East, Central and Southern Africa in Kenya, Uganda, Tanzania, Rwanda, Zambia, Zimbabwe, Malawi, Botswana, Lesotho, Ethiopia, Swaziland and South Africa. The association was established in 1995 and works with rural smallholder farming communities in agriculture on ecological land use and natural resource management. The regional secretariat of the association is based in Lusaka, Zambia. All the member organizations form a country working group in each country. To date, PELUM Association has over 250 CSOs as member organizations in the countries it operates in. PELUM Kenya has 46 member organizations spread across 21 counties in Kenya, with a reach of approximately 1.6 million farmers.

About the Swedish Society for Nature Conservation (SSNC)

The Swedish Society for Nature Conservation (SSNC) is a charitable environmental organization and has been Sweden's most influential environmental organisation for decades and currently has around 221,000 members. Climate change, seas and fishing, forests, agriculture and environmental toxins are the priority areas of work, both nationally and globally. In addition, we are behind the world's toughest environmental label, Good Environmental Choice. For many years SSNC has also been working a species projects: the peregrine falcon, the white-tailed eagle and the white-backed woodpecker. The organization spreads knowledge, charts environmental threats, proposes solutions and influences politicians and authorities, both nationally and internationally. Under democratic forms, SSNC works regionally in 24 county branches and locally in 270 community branches.

Under the agriculture sector, SSNC recognizes that industrial farming is leading to pollution, land degradation and depletion of the habitats of many species. With an expanding global population and the threat of climate change, the need for sustainable farming methods is acute all over the world. The Swedish environmental targets a rich cultivated landscape, no eutrophication, a stable climate and a toxic-free environment that require greater action than is being taken today if they are to be achieved. The results of such efforts is to realize Cultivated landscapes with rich natural and historical attributes to be preserved and protected; active farming with grazing animals; production of food that is free from pollutants and of a high quality; and an increased proportion of organic farming.

It is against this backdrop that the mutual need to support the AU decision on organic farming was explored through the now Ecological Organic Agriculture Initiative (EOAI) in Africa.

The Ecological Organic Agriculture Initiative (EOAI) in Africa

The Vision of EOAI in Africa: Resilient and vibrant Ecological Organic Agricultural systems for enhanced food and nutrient security, and sustainable development in Africa.

Mission of EOAI in Africa: To scale up ecologically and organically sound strategies and practices through institutional capacity development, scientific innovations, market participation, public policies and programs, outreach and communication, efficient coordination, networking and partnerships in Africa.

The overall goal of the EOAI in Africa: To mainstream Ecological Organic Agriculture into national agricultural systems by 2025 in order to improve the quality of life for all African citizens.

Core Values: The EOA initiative values are grounded in the reality of sustainable agricultural practices:

- Biodiversity, respect for nature and sustainable development
- Embrace fairness and justice to the ecosystem
- Promote safe, nutritious healthy food
- Promote family farming cultures, indigenous knowledge, cultural practices and wisdom

A pilot phase was established in 2012 supported by Swedish Society for Nature Conservation (SSNC/SIDA) in six countries (Kenya, Uganda, Tanzania, Ethiopia, Nigeria and Zambia). Swiss Agency for Development & Cooperation (SDC) supported scoping baseline studies in Mali, Senegal and Benin. The goal of EOA initiative is to mainstream Ecological Organic Agriculture into national agricultural systems by 2025 in order to improve the quality of life of all African citizens. The initiative was implemented by CSOs – Biovision Africa Trust (Kenya), the Institute for sustainable Development (Ethiopia), NOGAMU (Uganda), TOAM (Tanzania), NOAN (Nigeria), PELUM Regional Secretariat (Zambia) and PELUM Kenya. Within the countries, key programme Implementation Partners were also involved in implementation of different pillars (KOAN, SACDEP, PELUM Uganda, PELUM Tanzania and OPAZZ).

Updates of the On-going EOA Initiative in Africa 2013-2015 SSNC Supported Project

Currently the participating countries in Eastern Africa that are actively engaged in the project implementation are Kenya, Uganda, Tanzania and Ethiopia. The financial support for the initiative is by both SSNC and SDC. SSNC committed its support up to 2015 with an estimated total of 1.3m Euros for three years. The AUC also supported trainings in organic standards, and certification systems for organic products market strengthening, as well as the African Organic Conferences.

Structure of EOA Initiative in Easter Africa

Lead Agencies

PELUM Kenya is the Lead Coordinating Organization for SSNC/SIDA contribution in Eastern Africa while Biovision Africa Trust is the Lead Coordinating Organization for the SDC contribution to the initiative both in Eastern and West Africa.

The Country Lead Organizations (CLOs)

In Eastern Africa the CLOs are NOGAMU in Uganda, TOAM in Tanzania, KOAN in Kenya and ISD in Ethiopia. Each country has various organizations as the Pillar Implementing Partners (PIPs) responsible for advancing each of the six strategic pillars.

Implementation progress of Pillars across Africa

Some highlights from the Pillar Implementation are as follows:

Research Training and Extension (RTE)

1. There has been research, training and extension involving the local extension and farmers for Agroforestry, Soil Fertility Management, Push-Pull Technology
2. Validating research findings in EOA practices through demonstrations and case studies for soil fertility, weed control, pest & disease management
3. Case studies on Integrating Indigenous Traditional Knowledge in EOA Research innovations and consequent documentation (audio, video, local language)
4. Development and review of training manuals and curriculum in organic agriculture
5. Training of trainers for the School of Sustainable Agriculture in East Africa (SSAEA)

Information and Communication Pillar

1. Production of Publications for Information dissemination, documentation of case studies, etc
2. Establishment of Farmer Resource and training Centres
3. Documentation of case studies on ITK integration into EOA Research – audio, visual, local language
4. Gap analysis in information and communication strategies
5. Over 2000 farmers and 2 extension agents trained on use of innovative communication strategies
6. Supported strengthening of communication infrastructure
7. <https://www.youtube.com/watch?v=Xf7NdCU5Rew> on the use of Indigenous Food Production in Ethiopia

Value Chain and Market Development Pillar

1. Value Chain and Market Development for Organic Vegetables and fruits
2. Establishment of Organic Products Bulking centres
3. Establishment of functioning Organic Market outlets and accelerating linking farmers with these outlets
4. PGS and ICS Certification of organic Products for the local and international markets respectively
5. Supporting organization for participation of organic farmers in local, national, regional and international trade fairs
6. Supporting strategic business linkages with green investors
7. Training of internal inspectors; development of a training curriculum for the inspectors
8. Market information and data collection, analysing and dissemination



Plate 1: Organic Products stocking at Corner Shop in Yaya centre

Plate 2: Branded shelves at Nakumatt Prestige - Kenya

Networking & Partnerships; PPD and Institutional Capacity Development

1. Participation in policy review processes – Agriculture policies, Macadamia
2. Development of the Gender Mainstreaming guidelines for EOA
3. Preparation of M&E guideline through a write shop process for Eastern Africa

4. Sensitization of the general public and policy advocacy on introduction of GMOs into the country
5. Trainings and staff capacity development in various thematic and topical aspects to strengthen implementation of EOA

The Regional Platform for Eastern Africa

The Regional Platform for Eastern Africa was established in 2014 in Arusha, Tanzania. The platform held its 2nd meeting in August 6-7, 2015 in Nairobi Kenya, organized and hosted by PELUM Kenya and BvAT. The platform has a working purpose, mandate and terms of Reference. It has a secretariat that is currently hosted at the PELUM Kenya Country secretariat office. Chairmanship is from the East African Community (EAC), and co-chaired currently by UGOCERT, Uganda.



Plate 3: Members of the Eastern Africa Regional Steering Committee from estimated 10 sectors representative institutions

Some highlights of EOA can be viewed at:

<https://www.youtube.com/watch?v=U9roaHx3QX4>

<https://www.youtube.com/watch?v=p2rFRlgyuxA>

https://www.youtube.com/watch?v=Ge9H21C_y0o

<https://www.youtube.com/watch?v=tSjeyYjpBPM>

<https://www.youtube.com/watch?v=Xf7NdCU5Rew>

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Research for Ecological organic agriculture

Reinforcing African Research Capacities in Ecological organic agriculture

Dr. Yemi Akinbamijo, Executive Director, Forum for Agricultural Research in Africa (FARA)

Abstract

The development of Africa agriculture relies much on the continents research capacity to foster the needed change. At the moment the capacity is low and this is grossly dictating the output of the system compared to other regions of the world. The spate of low research capacity is affecting all the sectors of agriculture including Ecological organic agriculture (EOA). The EOA niche portends a huge benefit to Africa food and nutritional security; sustainability of the agrarian livelihood through careful management of the environmental and higher income for the smallholders. The potential for growth in organic agriculture trade in Africa is evidence by its low market share of 3% of the total trade of US \$72 Billion in 2015. The potential growth in global share of trade will be harnessed alongside the capacity of the research systems to foster higher productivity through biological and technical advantage. Current efforts to boost the research capacity on the continent took cognizance of the organic agriculture domain and this include the development of the Science Agenda for Africa Agriculture (S3A). FARA has developed the S3A with the intent of connecting science with needs and opportunities. The S3A is projected to be implemented at the country level with the use of existing initiatives but more importantly, by integrating the science agenda ideals into the countries national Agriculture and Food Security Investment Plan which aligns with CAADP and the STISA. With the S3A, the needed capacity is assured.

Background

Ecological organic agriculture holds an important role in the drive for food and nutritional security in Africa and across the globe. The spate of development in this niche within the agricultural sector is still low, particularly in Africa where the share of trade is insignificant. Total trade in organic agriculture was over USD 72 billion in 2015 from over 43 million hectare, the share of Africa in the trade still remains at 3% in 2015 (as it was in 2013) despite the 19% growth in global trade in the sector. The increasing growth in organic agriculture trade could best be attributed to increased awareness among the populace about health and nutritional needs. This is becoming important in Africa and responds to the recent growth in the middle- class population. In 2015, African middle class stood at 34% of the total population. The Africa Development Bank (AfDB) report defined the middle class as those with daily consumption of \$2-\$20. This growth portends a potential for higher demand for organic commodities on the continent (Mthuli and Abebe 2011).

However, the pace of growth in production and overall organization of the sector is limited due to a number of factors including the non-certification of farms and products; poor communication of requirements for organic production, poor market organization, dysfunctional networking to achieve premium price and more importantly inadequate research efforts to generate technologies that improve the productivity of the organic production system.

This paper examines the state of agricultural research in Africa and recommends the needed interventions that could enhance the delivery of research output for the benefit of organic agriculture.

Advances in Agricultural Research in Africa

The agricultural research system is saddled with the responsibility to foster the development of the sector through the generation of knowledge, technology, invention and the translation of these into innovations. The agricultural research system in Africa is confronted with a number of problems that largely limit its function and contribution to development. The state of investment into agricultural research in Africa is abysmally low compared to other continents. This is adversely affecting the acquisition of tools and equipments that are needed for research. In addition, state-of-the-art laboratory facilities are virtually non-existent and this results in low research outputs. Seck *et al.*, (2015) reported the level of investment in agricultural research and development among six regions in the world. The state of investment has been stagnant in Sub-Saharan Africa while other regions have progressed significantly over time (figure 1). Investment and technology are essential prerequisites for agricultural growth and development. Other studies have also shown that productivity gains are easily achieved where governments allocate the necessary resources to agricultural research and development (Seck *et al.*, 2010). As much as increased fund allocation to agricultural research is necessary, the need to carry out research demanded by end-users is also essential. The lack of mechanism to derive the needed technological issues in the traditional linear approach to agricultural research has led to the generation of inappropriate technologies that are eventually not adopted and remain on the shelves in the research institutes. The challenge of developing technologies that meet the needs of smallholder farmers is adequately addressed with the use of the agricultural innovation systems as the mechanism for conducting agricultural research and development.

Thus, the Forum for Agricultural Research in Africa (FARA) has developed the Integrated Agricultural Research for Development (IAR4D) concept and established the Innovation Platform as its operational mode. The concept provides opportunities for research to be demanded by the users and brings the different stakeholders together to interact in order to identify constraints, generate solutions and use solution options till innovations are generated. FARA has documented the proof that the use of the IAR4D concept leads to generation of relevant technologies, wide adoption of technologies, increased productivity and income for the different stakeholders on the innovation platforms.

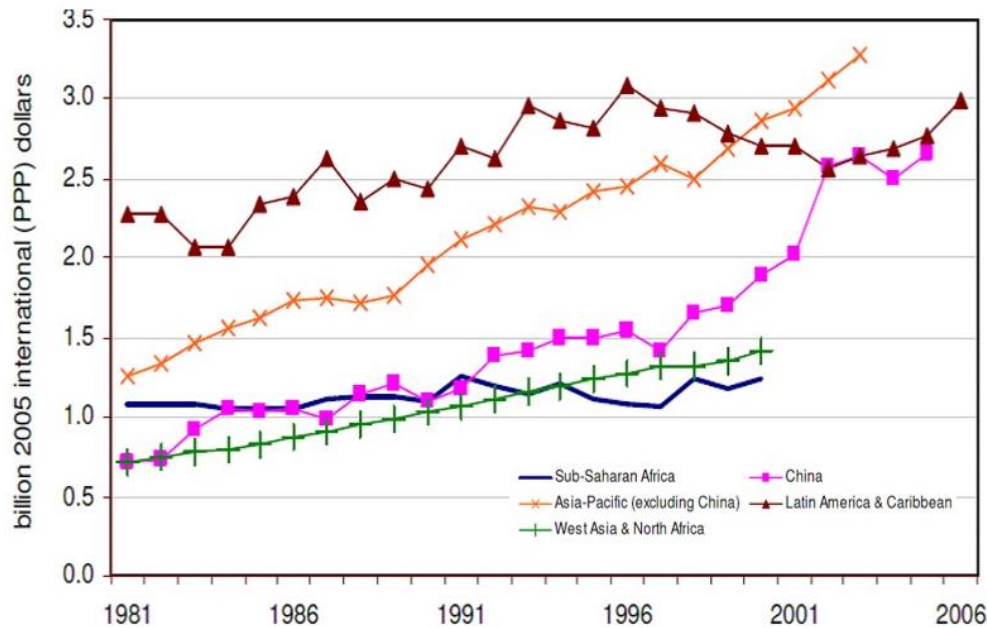


Figure 1. Public agricultural research and development investment trends in developing countries (Adapted from: Papa Abdoulaye Seck et al 2015)

Will Research Play a Role In Advancing Ecological organic agriculture In Africa?

The role research plays in ecological organic agriculture is much more obvious now than at any other time in the history of organic agriculture in Africa. The increased awareness and demand for safe organic products has heightened the need for technological intervention to address the limitation of the organic agriculture production pathways. The ecological organic agriculture pathways rely much on the low external input methods especially the natural fertility of the soil for continuous production. This often affects the productivity of the systems compared to the conventional practice. Tomek et al., (2012) following a meta-analysis of 362 studies on yield gap between organic and conventional systems reported an average yield gap of more than 20%, which is mainly attributed to the maintenance of nutrient availability in the organic system. The obvious depletion of soil nutrient from the organic matter pool due to continuous cropping and its effect on the function of the soil will at some point require the use of external input. This scenario necessitates the development of an efficient soil fertility maintenance technology that is efficient, cost effective, low in drudgery and sustainable. There is the need to have high quality organic fertilizer in large supply to sustain the numerous hectares of organic farms needed to produce the different commodities.

Other technological limitations include the potent methodologies for pest and disease control; current interventions revolve much around the cultural practices and the use of biopesticides. A number of plant extracts have been researched and packaged as broad spectrum organic insecticides. Others combinations of plant materials that can be prepared at home are also

available. Mary et al (2011) reported about the combined extract of leaves of *Solanum pindiriforme*, *Lippia javanica* and *Allium sativum*, as an effective organic pesticide for the control of tobacco aphid which is a vector for more than 23 viral diseases. The concerns about organic pesticides lies with their effectiveness. A recent study that compares four organic pesticides on the control of Aphids on Soybean showed that the effectiveness of control is around 10-30%. The organic pesticides were also non-selective against soybean aphids; they killed other insects compared to the synthetic pesticides used in the trial (Balai et al., 2010). This evidence suggests that more research interventions are needed to advance the precision of the organic pesticides.

The big issue of sustaining yield and or achieving the genetic potentials of the different varieties also calls for research intervention. Apparently, this is not limited to organic agricultural production only but to all methods of production. The huge yield gap between the potentials of the varieties when tested in the research station and what is obtained in the farmers' fields require attention. There is the need for the organic agricultural systems to develop an intensification system that maximizes the biological advantage in the genotypes as well as all the needed technological advantages. A systemic approach for overall productivity enhancement across the value chain of the different commodities will also be necessary to ensure profitability and continuous production.

Thus, the role of research in the development of ecological organic agriculture will not be limited to dealing with technological issues alone, but also with all institutional and infrastructural issues surrounding the overall productivity and sustainability of the organic intensification pathway.

State of Agricultural Research into Ecological organic agriculture

Research input into organic and ecological agriculture at the global level is increasing. The Research Institute of Organic Agriculture(FIBL) report indicated the growth in intervention in Europe where a handful of public and private institutions are engaged in generating knowledge and technologies to provide solutions to the different constraints to sustainable production (Urs and Helgal, 2000). In Africa, bulk of the research in organic agriculture is carried out by the different universities and departments in the research institutes. The number of specialized organizations is limited with the exception of Non-Governmental organizations and private research entities that carry out research into input and product development for commercial purposes. The African Organic Network (AfrOnet) is facilitating the development of an active network for organizations in the countries. AfrOnet also conduct research and development activities. The international agricultural research institutes especially the CGIAR centers are contributing to research issues in various ways.

At the continental level, FARA is providing a continental framework to ensure that science contributes adequately to agricultural development. FARA and its constituents in partnership with the CGIAR, IFAD, The World Bank and other development partners developed the Science Agenda for Agriculture in Africa (S3A) <http://faraafrica.org/programs/frameworks/science->

agenda. The agenda specifies the core requirements to foster the development of agricultural research in Africa. The S3A also aligns with other continental frameworks for agriculture in Africa, such as the Comprehensive Africa Agricultural Development Program (CAADP), the Malabo declaration <http://www.nepad.org/foodsecurity/news/3719/agriculture-malabo-declaration-changed-way-doing-business-africa>, the Science, Technology and Innovation Strategy for Africa (STISA) <http://hrst.au.int/en/content/science-technology-and-innovation-strategy-for-africa-2024>.

The S3A aims to connect science to transform agriculture in Africa, the core focus of the agenda includes the provision of the frameworks and guidelines to;

- Identify the broad areas of science to be developed in partnership with the main stakeholders
- Facilitate the necessary transformation of national science and technology institutions
- Help focus on the need for human capacity building at all levels
- Facilitate increased funding from diversified sources to support science
- Facilitate alignment of actions with resources to ensure value-for-money and desirable impact
- Facilitate effective partnerships among mandated African institutions at sub-regional/regional levels and between these actors and their external partners.
- Commit to solidarity in science by sharing information, technologies, facilities and staff in pursuit of common challenges and opportunities.

The implementation of the S3A gives cognizance to the broad thematic issues with the aim that research should connect science with the needs and opportunities of agriculture in Africa.

Box 1. Connecting Science with needs and opportunities of agriculture in Africa

In many countries, agricultural production is moving from subsistence systems to more market-led systems. Productivity is the result of several factors, including higher yielding crop varieties; better breeds, feed and health of livestock; the interactions of genetics with the environment; better management of natural resources, including water for rain-fed and irrigated agriculture; crop and animal husbandry; external agricultural inputs such as seeds, fertilizer, agricultural machinery and implements; access to credit to purchase inputs; availability of labor; and market access, through value chains, linking farmers to markets. The relative importance of these factors varies by country and community and by farming system. The priority themes are:

- a) Sustainable productivity in major farming systems, i. transforming production systems, ii. Crop improvement and crop protection, iii. Livestock breeds, health and feed, iv. Aquatic and inland fisheries, v. Agro-forestry and forestry, vi. Agricultural mechanization
- b) Food systems and value chains, i. Food and nutritional security, food processing, safety and storage, ii. Post-harvest handling, processing and storage
- c) Agricultural biodiversity and natural resource management, i. Conserving and enhancement of biodiversity, ii. Land and water resources and irrigation management
- d) Mega trends and challenges for agriculture in Africa, i. Climate change, variability adaptation and mitigation, ii. Policy and institutional research, including market access and trade, iii. Improving livelihoods of rural communities
- e) Cross-cutting themes: The S3A is also underpinned by three cross cutting themes: i. Sustainable intensification: as an organizing framework for enhancing productivity, at all scales of production. ii. Modern genetics and genomics: to give better understanding of gene function, leading to more specific targeting of genetic improvement in agriculturally important species of crops, livestock, fish and trees; iii. Foresight capabilities, including strategic planning, modelling, and analysis of ‘critical technologies’, as a means of systematic analysis and interpretation of data and perspectives to better understand trends and future challenges.
- f) Transforming production systems in general is key across all farming systems in the African context. This includes: crop improvement and crop protection, constraints to crop production; customer-focused plant breeding; horticultural and tree crops; and crop protection. Improving livestock production and productivity is increasingly a priority and the agenda includes: livestock production, better feeds, better breeds, better health; aquatic systems and inland fisheries.
- g) Other priorities in the agenda include: agro forestry and forestry systems; agricultural mechanization; food systems and value chains (including food and nutritional security); post-harvest handling, food processing, safety and storage; increased processing; improving food storage; and food safety; agricultural biodiversity and natural resource management; conservation and enhancement of agricultural biodiversity; land and water resources; irrigation and integrated natural resource management.
- h) Mega trends and challenges for agriculture in Africa include climate change, variability, adaptation and mitigation, and urbanization.
 - i) Sustainable intensification is presented as a “new paradigm” for global agriculture that Africa will pursue as a pathway to producing greater yields, better nutrition and higher net incomes while reducing over-reliance on pesticides and fertilizers and lowering emissions of harmful greenhouse gases.
 - j) Biosciences, information and communications technologies
 - k) Information and communications technologies
 - l) Foresight capabilities must be strategic in orientation and must involve activities such as horizon scanning with the aim of identifying and analyzing trends, weak signals and ensuring early warning as well as developing effective strategic responses

Adapted from: *FARA, 2014. Science agenda for agriculture in Africa (S3A): “Connecting Science” to transform agriculture in Africa. Forum for Agricultural Research in Africa (FARA), Accra, Ghana.*

Pathways for Reinforcing Capacities for Research in Organic Agriculture

The efforts of FARA in contributing to reinforcing research capacity in organic agriculture revolve around the implementation of the science agenda in the various African countries. This will give opportunities for carving a niche for research capacity development for organic agriculture. The implementation plan for the Science Agenda has been developed and it aims at mainstreaming the Science Agenda into the national Agricultural Food Security Implementation plan (NAFSIP). With this, the action will be based at the country level and will give cognizance to the thematic areas of interest in the country. The Science Agenda will also build on the existing initiatives to foster practical action.

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Opportunities and challenges for Reinforcing Organic Agriculture Research Capacity in East African Universities: Experience of Makerere University

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Abstract

There is a need for generation of new knowledge and skills to reinforce organic agriculture capacity to answer a variety of lingering questions about production, product quality, marketing, social economic implications on livelihoods and sustainable development through research. Generated knowledge is also needed to inform development and institutionalization of national policies on organic agriculture. Support to universities in collaboration with the private sector to popularize and commercialize organic agriculture through curriculum review and regional harmonization will help to produce a critical mass of competent graduates to promote organic agriculture. At Makerere University we believe great success in the subsector will only come from great support.

Introduction

Growth and development of organic agriculture in East Africa continues to be driven by the increasing demand from nutritionally and environmentally conscious consumers in developed countries. In Uganda, the organic subsector is mainly driven by the private sector and commercial export companies ([IFOAM, 2005](#)). Development of organic export market was earlier accelerated by support from the Swedish International Development Agency (SIDA) under the Export Promotion of Organic Products from Africa (EPOPA) in 1994. A study by [Gibbon and Bolwig \(2007\)](#) concluded that farms engaged in certified organic export production are more profitable than those that are solely engaged in conventional production. However, much of the progress made in the subsector has been in the area of crop production with little or no integration with organic livestock production.

Despite the availability of market for organic products in the European Union and beyond, organic farming still faces a number of challenges. This is attributed to several factors including minimal demand for organic products locally and regionally, limited government infrastructural support, high costs of third party certification and low levels of knowledge and poor information dissemination ([UNEP-UNCTAD, 2010](#)). Limited research in organic agriculture in African universities has possibly contributed to the minimal demand for organic products locally and regionally. Besides, negative stereotyped attitude towards a career in the subsector is quite evident among many scholars. This has further exacerbated lack of appropriate technologies and limited capacity to attract research funding to organic agriculture. It is, therefore, postulated that if organic agriculture is to be mainstreamed into the African development agenda, involvement of universities is crucial in reinforcing organic agriculture research capacities. Moreover, agricultural faculties have been slow to adopt and adapt to new realities of the need for

mainstreaming organic agriculture into undergraduate and graduate curricula as a way of generating a critical mass of actors in the subsector. Other hindrances to organic agriculture in Uganda include inexistence of an explicit organic agriculture policy (Hine and Pretty, 2006). The objective of this article is to highlight the opportunities, challenges, research impact and experience of Makerere University (MAK) in collaboration with International Center for Research in Organic Food systems (ICROFS), University of Nairobi (UoN), Sokoine University of Agriculture (SUA), University of Copenhagen and the three national organic movements of East Africa (NOGAMU, TOAM and KOAN) to build organic agriculture research capacity.

Structural approach for Reinforcing Organic Agriculture Research Capacity in East African Universities

In an attempt for Africa to address its growing food security concerns and broadening employment opportunities, it is crucial to engage universities to upgrade the quality of trained human resource. Therefore, agricultural colleges and faculties are important targets to accelerate production of graduates with relevant knowledge and skills to function as positive catalysts along the knowledge chain of organic agriculture, food security and safety.

Young researchers scientifically trained in different discipline were therefore identified from Makerere University (MAK), UoN and SUA. Relevance for organic agriculture was introduced to all the fresh recruits using tailor made and focused training to enable development of research capacities within their own field of expertise. Supervisors from the south worked with external supervisors from Danish Universities to identify needs of students for additional scientific training and methodology development. Danish supervisors drew upon expertise from the Research school for organic agriculture and food Systems (SOAR).

Overall, 9 PhD and 6 MSc students were initially enrolled at MAK, UoN and SUA under the DANIDA funded Productivity and Growth in Organic Value Chain (ProGrOV) project. The students were expected to present several seminars and to produce Msc and PhD theses as well as scientific publications before graduation. The capacity of the students and their assigned local and international supervisors was strengthened to enable collaboration with private sector through a series of programmed rotational workshops in the East African region. Interdisciplinary research based on both within country and regional challenges was developed aimed at producing competent graduates. The research focused on whole supply chain of organic products, farm systems, product quality, marketing, social economic implications and impact on rural community development. A number of support structures were developed to facilitate learning and communication between students and their supervisor. All supervisors and regional students were structured to attend annual workshops. This was aimed at broadening the perspective of the students and their supervisors on their own research, including values and principles of organic farming as a way of understanding the wider context in which their research is embedded. The students were also encouraged to present their findings at international conferences and all the publications including popular versions and scientific write ups generated from the research were exposed to international community readership via the literature platform on organic food and farming found at the organic E-prints: <http://organic.prints.org>.

All PhD students underwent SOAR training course in Denmark aimed at imparting scientific approaches to research in global organic food chains. Agro-ecology, environmental care and

livelihood research were also introduced. The students were inducted into formulation of research questions on complex issues which are relevant in the current economic, agricultural and political situation in East Africa.

In order to ensure qualified supervision of PhD and MSc, training of supervisors during the first annual workshops in Kampala was conducted. This was aimed at creating distinctive competences of supervisors in organic agriculture aimed at guiding students so as to equip them with “a tool box” of knowledge and skills to publish in international refereed journals. To ensure employability beyond PhD and MSc study, each student has been generating a Personal Career Development Plan (PCDP). Expertise from Danish universities and ICROFS has been drawn upon to introduce the concept of personal career development planning and recording where each student gets assistance depending on tasks and background.

Impact of Reinforcing Organic Agriculture Research Capacity at Makerere University

The Agro-ecology and agricultural productivity component attracted two PhD students. One student focused on integrating livestock into crop production system so as to encourage value addition and diversification of sources of income in the organic pineapple production chain. The second PhD researched on developing an integrated pest management package for organic pineapple farmers. The major challenge faced by candidates was to defend the new concept of organic agriculture research among professors on the college graduate board who were researchers in conventional agriculture. It took the students over one year to convince the different panels in order to get officially registered as graduate candidate. Fortunately, all the candidates stayed the course and the PhDs are in their final year. As part of the processes for initiating action oriented research, community needs assessment was carried out (Nalubwama et al., 2014) to identify challenges of integrating livestock into organic pineapple farming. This was aimed at developing strategies to enhance nutrient recycling for sustainable organic pineapple productivity. It was observed that in addition to growing pineapples, the farms also kept different livestock (Figure 1).

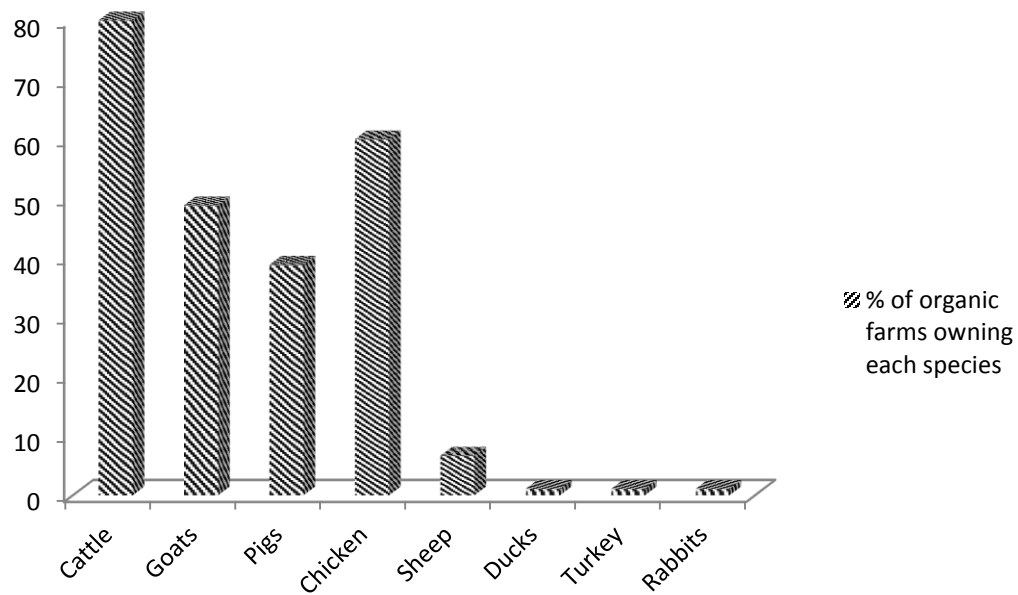


Figure 1: Proportions (%) of organic pineapple farms owning each livestock species in both Kayunga and Luwero districts.

A move towards having organic farms orientated towards organic livestock production will possibly enable farmers benefit from a fully integrated organic system with the benefit of accessing niche markets for the organic animal and their products. Research that improves farmer’s knowledge on how to select for particular production traits from indigenous livestock based on organic farming principles under tropical conditions were suggested as strategies that might support integration of livestock into smallholder organic pineapple production.

The second PhD candidate observed that the occurrence of the pineapple mealybug (*Dysmicoccus* spp.) has been increasing at an alarming rate on pineapples farms in Uganda (Kabi et al. 2016). The cause of the epidemic is unknown but yet it leads to lower yields and unsightly pineapple fruits (Plates 1 and 2) . The study therefore set out to establish if the prevailing cropping systems, production and management practices can provide an insight into the trend. Farmers used different soil fertility management practices depending on farm type (organic or conventional) ($\chi^2 = 99.351$; $df = 3$; $P < 0.001$) (Table 1). Using a biological monitoring study, it was observed that mealybug populations were lower in the pineapple-banana intercrop as compared to the sole pineapple crop. Earthed-up seedbeds created a favourable environment for mealybug multiplication compared to growing the plant on flat beds. The popular practice of using coffee husks as soil amendments was found to promote population build up whereas following reduced the infestation levels.



Plate 1 Unsightly pineapple fruit infested with mealybugs



Plate 2. Cultural practices of earthed up garden to control mealy bugs

Table 1: Proportion of organic and conventional farmers using different soil management practices and cropping systems

Management Practices/systems	Percentage of farmers		Pearson Square Value (χ^2)	Chi-Value
	Organic	Conventional		

	farmers	farmers	
Seedbed type			
Earthed-up	31.0	63.6	0.487 ^{ns}
Flat seedbed	69.0	36.4	
Soil fertility management Practices			
Coffee husks	31.0	36.4	99.361 ^{***}
Foliar fertilizer	0	28.8	
Fallowing (<10years) +Foliar fertilizers	0	34.8	
Fallowing (≥10years)+No amendment	69.0	0	
Cropping Systems			
Pineapple-banana intercrop	59.5	53.0	0.662 ^{ns}
Pineapple-beans-banana intercrop	7.1	7.6	
Pineapple sole crop	33.4	39.4	

*, ** and *** represent Chi-square values (χ^2) significant at $P < 0.05$; 0.01 and 0.001, respectively

Source : Kabi et al. 2016. Agriculture, Ecosystem & Environment: 222, 23-29)

The MSc. candidate in this component evaluated the use and availability of feed resources and the coping strategies used by smallholder certified organic pineapple farms to overcome dry season feed shortages. Farmers reported high cost of concentrates and scarcity of feeds as their biggest challenges in dairy cattle production. As a coping strategy to feed shortages, majority (42.9%) of farmer scavenged for feed resources from both organic certified and nonorganic neighboring farms which is contrary to organic livestock farming standards. The practice of acquiring feed resources varied with cattle management systems, willingness and attitudes towards using non conventional feed resources (Figure 2 and Figure 3). It was, therefore, concluded that management of livestock feeding in the study area fell short of the requirements for organic livestock feeding standards. Research to develop strategies that can use alternative on-farm feed resources through ensiling organic pineapple wastes during the dry season was recommended and implemented together with the farmers as a long term strategy to address feed challenges for organic livestock farmers.

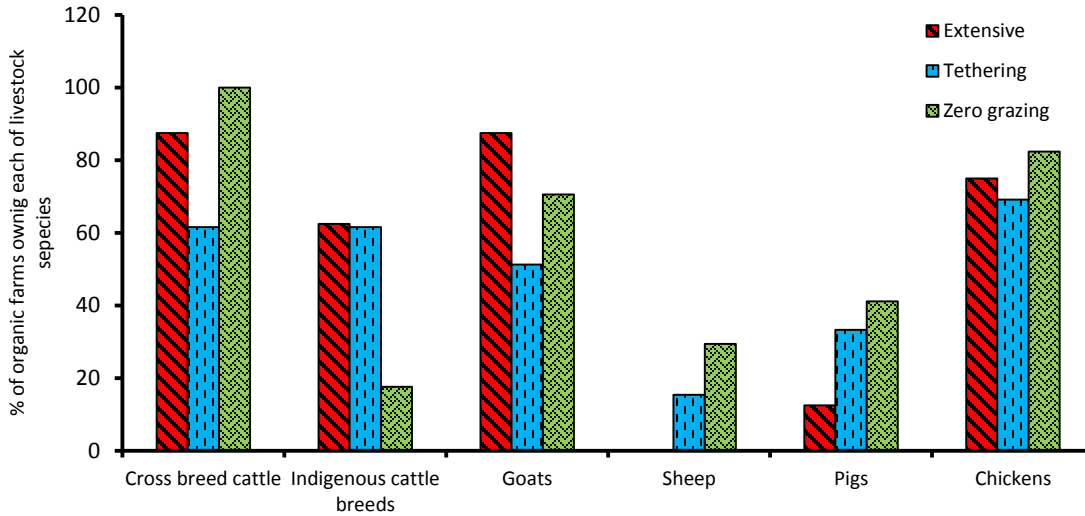


Figure 2: Graph showing the percentage distribution of livestock species under the different cattle management systems.

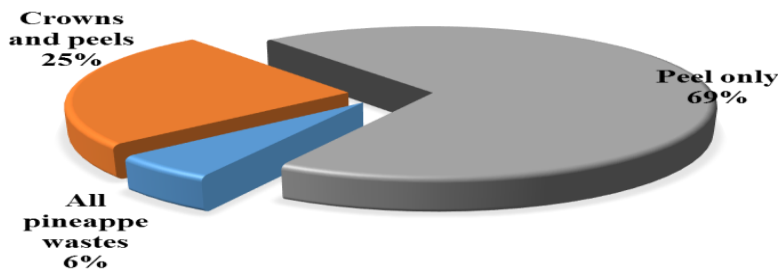


Figure 3: Percentage of use of the different pineapple processing by-products by farmers in feeding their cattle

The third PhD candidate in the Value chain and agribusiness development component analyzed governance of the global value chain exporting pineapple from Uganda. In this component the second MSc student explored two aspects: i) Consumer characteristics and determinants of their preferences for organic products in Kampala, Uganda. ii) Determinants of consumer willingness to pay for organic products in Kampala; Uganda. Although the Msc. students completed, they are still working on the publications. The PhD candidate in this component is in his final year and has one manuscript accepted by the African Crop Science Journal. Results showed that 10 export companies linked farmer produce groups to importers in Europe, Japan and America. The organic pineapple value stream was reported to be shorter than the conventional stream. A small proportion (28%) of pineapples produced by farmers was exported through the organic pineapple

value stream. Exporters seldom met the volume orders from importers possibly due to infrastructural limitations. More volumes could be exported if i) interest rates were lowered to encourage investment by exporters, ii) a range of organic pineapple products were produced through value addition, iii) there was better coordination among export companies, iv) there was more vigilance by the Government especially through enacting legislation that favor the organic sector.

Conclusion

Mainstreaming organic agriculture into the African development agenda will only be possible if universities in partnership with private sector are involved in creating a critical mass of practitioners to advance the subsector. This will only be possible if new knowledge and skills are generated through research to reinforce organic agriculture capacity to answer a variety of lingering questions on production, farm systems, product quality and marketing of organic products at local and regional levels. New knowledge through research is also needed to inform development and institutionalization of national policies on organic agriculture. It is our belief that great success in popularizing and commercialization of organic agriculture locally and regionally will only come from great support to universities through curriculum review and development to train competent graduate.

Acknowledgements

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Organic Research Agenda for Africa – The Way Forward

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INTRODUCTION

Ecological production systems offer a science-based alternative to the industrial model that currently dominates most African agriculture. By adopting ecological organic approaches, African countries can transform the way they produce their food in more sustainable ways, with benefits for total health – human health, animal health, plant health and environmental health. This is with the recognition that production of huge quantities of food, fiber and fuel, comes with external consequences to the human health, environment, and even long-term agricultural productivity. Naturally, we are not able to sustain healthy production systems. Thus the need for developing a vibrant organic agriculture research and education has been growing since the last decade. The African continent needs research to unravel the potential of agroecological systems and support systems to enable transition from overly relying on industrial and unsuitable agriculture to adoption of agroecological approaches. This translated into the establishment of the Network for Organic Agricultural Research in Africa (NOARA) during the Organic World Congress in June 2008 held at Modena, Italy. The network was then launched in Kampala, Uganda in May 2009.

At the 2nd African Organic Conference held in Lusaka, Zambia, May 2012, NOARA was strengthened and with formation of Sub-regional committees for Eastern, Southern, Western (Anglophone), Western (Francophone), Central and Northern Africa⁵. A draft agenda was prepared but there was a growing consensus that the agenda should be unified, inclusive, universal, transformational, and flexible enough to be adapted to national and regional priorities and capacities. It also became necessary that it be linked to the recently developed Ecological Organic Agriculture (EOA) strategic plan for 2015-2025 and to align it with regional and continental declarations and global efforts such as the Technology Innovation Platform of IFOAM' Global Vision and Strategy for Organic Farming Research. The Global Agenda 2030 for sustainable development to eradicate poverty and hunger everywhere; combat inequalities within and between countries; build peaceful, equitable and inclusive societies; protect human rights and promote gender equality and women's and girls' empowerment, and ensure lasting protection of the planet and its natural resources requires attention in the agenda. Moreover, the issue of how to drive the agenda into practical action within sustainable institutional structures and management continued to push for further discussion and action.

The EOA initiative has created impetus for the organic agriculture research agenda. The initiative has a mission of promoting ecologically sound strategies and practices among diverse

⁵ This conference attracted 300 participants from 35 countries and produced the Lusaka Declaration (2012) on Mainstreaming Organic Agriculture in the African Development Agenda.

stakeholders to safeguard the environment, alleviate poverty and guarantee food security. It has four main objectives, namely:

1. To increase documentation of information and knowledge on organic agricultural products along the complete value chain and support relevant actors to translate it into practices and wide application.
2. To systematically inform producers about the EOA approaches and good practices and motivate their uptake through strengthening access to advisory and support services.
3. To substantially increase the share of quality organic products at the local, national and regional markets.
4. Strengthen inclusive stakeholder engagement in organic commodities value chain development by establishing national, regional and continental multi-stakeholder platforms to advocate for changes in public policy, plans, programs, and practices.

The EOA Initiative is anchored on six pillars, namely:- (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. The action plan was later submitted to interested parties and donors for financial support for its implementation, beginning with successful pilot activities in several countries (Kenya, Uganda, Tanzania, Zambia, Benin, Mali, Nigeria, and Senegal).

NOARA seized an opportunity during the 2nd East African Organic Conference which was held in Dar es Salaam, Tanzania, from 1-4 July 2013, to initiate development of the Organic Research Agenda for Africa. During that conference, a stakeholder side meeting was held on 2nd July and was attended by more than 80 participants from Africa and beyond (refer to the list in Annex 1). The proceedings of the meeting included presentations which highlighted the research that has been undertaken in East and West Africa on organic Agriculture followed by a brainstorming session to identify constraints and opportunities for organic agriculture in the continent and to define broad research themes where research needs to be undertaken in order to help address the challenges and harness opportunities. Furthermore, key words to define the Vision and Mission Statements for the Agenda were discussed and thematic research areas were identified. The outcomes of the meeting were consolidated and delivered as a presentation by NOARA during one of the sessions of the Main Conference (refer to Annex 2).

The current document provides the draft Vision and Mission Statements and elaborates on the generic thematic areas of focus for the research agenda. It will be enriched with contributions from the Sub-Regions in Africa which will highlight and communicate the organic research requirements and needs from different parts of the continent. Participants to the meeting, as well as other stakeholders, will provide feedback on draft document and the finalized version of the Research Agenda Document will be used for various purposes including resource mobilization to support research activities.

Need for a research agenda on organic agriculture in Africa

In order to undertake its responsibilities and activities, the Network for Organic Agricultural Research in Africa (NOARA) interim management team spearheaded initiation of the development of an Organic Agriculture Research Agenda for Africa covering all the sub-regions

of the continent. The Organic Research agenda aims to investigate how to bring the African small-scale farmers' voices and perspectives into a global conversation on agriculture and food.

Identified Key Constraints/Challenges to Organic Agriculture in Africa

The stakeholders to the NOARA meeting in Dar es Salaam identified the following as key constraints which limit organic agriculture promotion and practice in Africa:

- Farming in general is viewed as not being attractive to the youth, hence organic agriculture, could be viewed in the same way by current and some future farmers (youth)
- Limited awareness and understanding of organic agriculture, and differentiation from non-organic is not easy for unlabeled goods on the market.
- The need/requirement for certification to qualify production as 'organic' can be expensive and prohibitive for smallholder farmers.
- Contamination can occur to organic produce at different market development levels along the production to marketing chain.
- Long transition period to convert from conventional to organic agriculture is sometimes associated with decreases in yields or household income. The transition period can also make organic production costly during the initial stages.
- Poor access to inputs e.g. organic seed – the inputs are in many cases not available on the local markets.
- Limited access to information and technologies on organic agriculture to influence decision making along the value chain – from production up to consumption.
- Limited research on organic farming, marketing etc. in Africa in the past and at present.
- Limited funding support to organic research/development from national and non-state sources – not given full recognition.
- Existing infrastructure is not suitable for organic production and development of organic value chains compared to conventional production.
- No specific market for organic products - some farmers are forced to sell at conventional markets and miss out on the benefits of organic marketing (this may require training, developing a market strategy, and research and innovations to market organic products in local and export markets).
- High cost of producing organically in areas where organic inputs are not readily available.
- Even though market availability is a challenge, there are instances where organic produce is limited or in short supply hence there is need for ensuring adequate supply to meet current and potential future demand.

Identified Key Opportunities for Organic Agriculture in Africa

Most of the challenges identified can present potential opportunities for organic agriculture in Africa. The stakeholders identified the following as key opportunities which organic agriculture presents. Some of these opportunities can be enhanced through basic and adaptive biophysical and socio-economic research at various levels – production, harvesting and postharvest management, distribution and marketing, consumption, as well as policy.

- Sensitization on organic agriculture benefits to stimulate greater local/regional demand for products.

- Organic agriculture can facilitate access to niche markets for raw and processed products – could farming become more attractive to the youth through organic production?
- Potential for climate change adaptation/mitigation – to what extent can organic agriculture help farmers to adapt to challenges emanating from climate change and variable weather?
- Potential contribution to addressing land and soil degradation.
- Reduced potential for environmental contamination through e.g. reduce use of synthetic pesticides and chemical fertilizers.
- Addressing some socio- and economic- environmental demands: contributions of organic agriculture to household food security, improved nutrition, food safety, and increased incomes.
- Combining traditional and new technologies (including indigenous knowledge and germplasm systems to enhance sustainable agriculture and livelihoods).
- Technology development along the whole chain from production to consumption and dissemination to reach many farmers (pest and disease management, soil fertility management, postharvest handling and management and associated tools/equipment and packaging materials, etc.)
- Responding to policy/conventions/protocols demands – organic agriculture has the potential to fulfill certain expectations and demands from conventions and protocols.
- Reliance on low external inputs can assist farmers to reduce the costs of their production. However, contextual applicability of this needs to be assessed.
- Potential for employment creation.
- Potential for linking African business community and entrepreneurs to other continents.
- Market opportunities for organic products.

The participants indicated that NOARA should support/facilitate research which should aim to address the identified opportunities and challenges and seek ways of building farmers' resilience to climate change and improve farmers' livelihoods in a sustainable way. It should be participatory- to increase acceptance and should involve actors/ implementers/ beneficiaries. There was also a suggestion that there is need to link with other platforms such as conservation agriculture which is being promoted in various parts of Africa.

The Organic Agriculture Research Agenda for Africa

Vision Statement

Organic (both certified and non-certified) farmers (male and female) in Africa are more competitive and have increased and stabilized yields; better access to markets; improved food, nutrition and income securities; while contributing to overall poverty reduction, national development and environmental protection in Africa.

Suggested keywords for Vision Statement

- Dynamic and relevant research (properly communicated)
- Vibrant ecologically sound OA
- Availing of scientific evidence and knowledge for organic agriculture development through demand driven/farmer-led research and participatory approaches
- Creation of a pool of knowledge for OA advocacy and development

- Competitiveness of African OA
- OA significantly contributing to food security, poverty reduction, environmental protection
- OA as one of the best options to addressing climate change related negative impacts

Mission Statement

Creation and dissemination of scientific evidence and knowledge for holistic organic agriculture development guided by users' demand, participatory research approaches and EOA principles

Key words for Mission Statement

- Harmonize existing and new findings from research
- Offer relevant solution to challenges facing the EOA through participatory and holistic processes guided by EOA principles
- Clear practices and technologies for optimizing yields, quality, returns in an environmentally friendly way
- Engagement of policy makers
- Influencing decision makers on e.g. investment etc
- Both certified and non-certified organic products labelled in the market

Strategic Thematic Areas for the African Organic Research Agenda

Based on the identified challenges and opportunities, the meeting participants came up with key thematic areas where NOARA should focus their research on. These are:

Thematic Areas for Research

- Productivity and sustainability of agricultural systems (crops and livestock)
- Biodiversity
- Extension and dissemination
- Processing/Value addition and Marketing
- Consumer and nutrition issues
- Socio-economics
 - Perceptions/criticisms
 - Benefit/impact quantification
 - Trade-off and synergies
- Climate Change
- Policy and policy analysis
- Holistic system approaches

Some components to the Key Thematic Research Areas

These have been identified but to be prioritized for each sub-region.

- a) Productivity and sustainability (crops and livestock)
 - Input systems – germplasm, nutrients
 - Nutrient cycles and sources
 - Plant and animal health and protection (weeds, pests, diseases)
 - Soil and ecosystems management, land degradation
 - Integrated approaches – compatibility

- b) Biodiversity
 - Analysis in both arable and non-arable lands
- c) Extension and dissemination
 - Quality information to be shared
 - Appropriateness of extension and dissemination methods used
 - Scaling up approaches
- d) Processing/Value addition and Marketing
 - Product development and value addition – technologies on postharvest protection, management and handling including packages
 - Profiling organic products
 - Certification – impacts on practice and adoption of organic
- e) Consumer issues
 - Consumer information/awareness
 - Food safety issues
- f) Socio-economics
 - Perceptions/criticisms
 - Benefit/impact quantification at individual, household, community and national levels (including job creation)
 - Trade-offs and synergies
- g) Climate Change issues
 - Soil-water relations
 - Greenhouse gas emissions
 - Carbon stocks and sequestration
 - Adaptive interventions – participatory plant breeding etc
- h) Policy and greater responsibility for organic production
 - Policy analysis.
 - Continuous collaboration between organic agriculture and all the other modes of farming.
 - Organic agriculture as an alternative and not necessarily the only way - this could also assist the policy makers in understanding the concept and how they could implement this within the policies.
 - Voice of African Organic Farmers needs to be heard at the next COP meeting
 - Support services and incentives (from conventional to organic) to encourage wider uptake of organic
- i) Holistic System Approaches
 - How to conduct studies on the EOA systems/value chains using a holistic/ system thinking approach to identify major opportunities and challenges.
 - Mapping out of indigenous knowledge and technical coping with climate change

Sub-Regional Priorities and Details for Research Needs

One of the key recommendations from the 2nd July 2013 meeting was that after receiving feedback from the 2nd July 2013 meeting participants, the document would be shared with all sub-regions in Africa. Facilitated by the Interim-Sub-regional Committees, each sub-region will discuss the draft and provide inputs which are specific for their context in terms of research needs. NOARA will receive and consolidate these inputs to develop the ‘final’ NOARA Africa Research Agenda Document. The ‘final’ draft will be shared with key stakeholders including the Forum for Agricultural Research in Africa (FARA), as an advocacy tool to seek for advice and

support in implementing the key activities of the Research Agenda for Africa. The process has been rather.

Responsibilities of NOARA

The overall responsibilities of NOARA are to:

1. Develop research portfolios by bringing together research domains, functions and institutions that efficiently allocates responsibilities among actors.
2. Develop research policies and system strategies.
3. Support research programme design and management to enhance development of necessary and appropriate technologies, practices and institutions for efficiency along the agricultural value chain.
4. Manage scientific information by tapping into information and research results from other countries and global sources in order to provide advisory and regulatory functions to Ecological Organic Agriculture (EOA).
5. Promote public awareness of the importance of science, technology and indigenous knowledge in advancing best practices in EOA through documentation and sharing.
6. Foster a scientific community within Africa which recognizes interdependencies with national, regional and international research partners.
7. Seek support from potential established and credible research agencies to be co-opted to support research initiative.

Activities of NOARA Interim Steering Committee

The key activities of NOARA are proposed as follows:

- Create an interactive platform to link all the role players in the development and implementation of the research agenda.
- Initiate the process of developing research priorities, policies and system strategies.
- Selection, identification and location for the project management, coordination and administration office.
- Develop guidelines for coming up with thematic areas using a participatory bottom-up approach across the regions.
- Engage regional nodes to take stock of existing and relevant research results and the need for technologies and innovations.

The strategy will help NOARA in understanding the pathways from high quality outputs to policy and practice change outcomes and impacts, and what can be learnt from the Organic Agriculture experience around the world.

Continental Sub-Committees

Region	Interim Sub-Regional Committee Representatives
Eastern Africa	David Amudavi - Chairman (Kenya) damudavi@biovisionafricatrust.org Mwatima Juma - Secretary (Tanzania) - mwatimajuma@yahoo.com

	Ethiopia Representative – to be nominated Charles Ssekyewa – (Uganda) - cssekyewa@gmail.com
Southern Africa	Daniel Kalala – (Zambia) – danielkalala2@gmail.com Thierry Alban Revert - (South Africa) – Thierry@futureenergys.co.za ; tar@planetac.co.za Irene Kadzere – (Zimbabwe/Switzerland) - irene.kadzere@fibl.org
Western Africa (Anglophone)	Victor Togun - (Nigeria) – email.gboyetogun@yahoo.com Noah Adamtey – PR & Communications (Ghana/Switzerland) - noah.adamtey@fibl.org
West Africa (Francophone)	Laurent C. Glin - (Mali) – Laurent.glin@wur.nl N’Guiro Sidy El’Moctar – (Senegal) - mobiom_mali@yahoo.fr
Central Africa	To be identified
Northern Africa	To be identified

Conclusion

The ideas behind this agenda have been developed through a dynamic consultative process beginning from 2008 to 2014. The discussions have involved a wide range of stakeholders who consistently identified the need for an organic agriculture research agenda. The challenge now is to reach consensus on the proposed concepts and aspects of the agenda. It is anticipated that focus on the agenda and the network will grow in tandem to increase research in organic agriculture, documentation and sharing of findings, and insights for policy decision making. For the agenda to be supported and to become the norm for EOA in Africa there will also be need to carefully consider forging appropriate supportive partnerships and striving to advocate for increased funding of organic research and wide-scale sharing of findings generated.

Integrated Organic Agriculture Research- African Experiences from the European Perspective

Gian L. Nicolay, Africa coordinator FiBL

FiBL, the Swiss based Research Institute of Organic Agriculture, has intensified its involvement on the African continent since 2009. This paper aims to provide deeper insights into its scientific foundation of operations and understand how Organic development can address food insecurity, climate change and rural poverty.

The context: crises, globalization, African food insecurity and science

Food and agriculture are contentious issues in modern times. Globalization and world markets are reshaping communities, nations, trade regimes, production technologies and human destinies all over the planet. Rural poverty, weak states, hunger, deteriorating landscapes, depleted soils, diminished water tables, declining biodiversity and climate change pose grim pictures after over 60 years of development work at international level (Luhmann 1997, IAASTD 2009, Ziegler 2011). Farmers and land laborers working on shrinking land resources have become the people most vulnerable to food insecurity in African societies. Their voices are politically marginalized and rarely heard by the state, thus farmers do not participate in technology development policy discussions. Agricultural technologies are dominated by multinational agro-industries that control global market channels.

Farmer-based agriculture has long been considered as a pillar of human civilization (Bailey 1905, Berry 2002, Lawrence and McMichael 2012) and critical to provide environmental services. Neoliberal policies, capital extensive and household-based food production systems have become under pressure and the states in West Africa have reduced their support since the mid-eighties (Cissokho 2009). What went wrong in Africa? One view is that these failures are the outcome of poorly envisioned political and scientific frameworks based on erroneous theories (Meadows 1994). An alternative perspective blames overly ambitious industrialization plans and the neglect of long-term agricultural development (Eicher 1999). Still another opinion sees it as the result of inappropriate scientific research and poor interdisciplinary execution led by powerful global organizations and institutions—like the World Trade Organization, the World Bank and the International Monetary Fund—that operate on a neoliberal agenda (Hardeman and Jochemsen, 2012). Today's is seen at the once the battle between neoliberals and their opponents (Busch 2010) a reflection of the social situation in the millions of African villages and most of the weak and failed states (Agbese 2007). Has the ideology of neoliberalism blocked or negated sustainable development and peasant-driven approaches (McMichael 2001, Meadows, Randers et al. 2004, Pellizzoni 2011)?

Social systems theory have been proposed as a way to clarify complex realities and provide meaningful propositions (Luhmann 1984). We may need to go beyond science and include philosophical insights as provided by the life science methods developed by Henri Bergson, which clarified on key notions relevant for non-material phenomena like consciousness, duration, creativity and freedom, as they appear in biological and human systems.

Nowadays it is a less contested fact that both agriculture, food systems and rural development as well as science are co-produced by humans and their societies. Our agricultural and food systems are shaped by scientific and technologic development of the last 200 to 500 years. Rural areas are formed among other by commodity chains established for the global market, by worker migration attracted by jobs or in search for land and urbanism. Since some years, the majority of people live in urban settings, in both industrialized and so-called developing countries. The wealth created with industrialization has also contributed to an explosion of scientific workers, disciplines and journals. New technologies like the Internet and Big Data emerged, which changed the object as well methods of science, including the paradigms and analytical tools (Wieviorka 2014).

It is the task and role of science to propose explanations, patterns of understanding, theories or arguments on where we stand (ISSC and UNESCO 2013). In the field of agro-ecology as a science (Wezel, Bellon et al. 2009), this aim is uncontested (Méndez, Bacon et al. 2013), but the scope of this science is often excluding many societal and bio-physical forms which are related to industrial and conventional agriculture. It is obvious that this task is only possible by finding general patterns, rules and theories. We propose here an integrated and “holistic” approach in order to capture Food and Agriculture phenomena going beyond “agroecology”, founded in social and cultural sciences and taking the historic or time dimension into account. Organic agriculture is itself an integrated approach and therefore better observable in its integrity. Proponents of Organic with research interests must be interested in understanding the context as well, which is not possible without the use of scientific and philosophical methods.

Sustainable Development Goals and Ecological Organic Agriculture

The new sustainable development goals (SDG) can be seen as an outcome of an important societal process that is in response to global socio-economic challenges. The international community has approved the SDG’s just before the Lagos conference here in October 2015. At least nine out of the 17 goals are directly linked with our sector, and particularly with Ecological Organic Agriculture (EOA), the ecological organic agriculture as promoted by the African Union and the organic stakeholders since 2011 (Table 1).

Table 1: SDG goals directly related to the performance of food and agriculture

G1: Poverty	G12: sustainable consumption and production
G2: Hunger	G13: Combat climate change
G3: Health	G15 : Sustainable land use
G6: Water management	G15 : Inclusive and peaceful societies
G8: Economic growth, decent work	

We do not need to explain and argue here these logical links, as we are critical believers in Organic. We are all aware of its benefits to healthy food and environments, more efficient water use and climate change adaptation and mitigation thanks to the care provided of the soils through

organic matter management (Reganold and Wachter 2016). We have many cases describing economic growth and more decent working conditions were organic standards are applied and the growing demand for organic food is satisfied. It might not be a scientific proposition that inclusive and peaceful societies in which over 50% of the households depend on natural resources require a well-organized agriculture sector, but this we can state at least as a hypothesis.

We call EOA, or ecological organic agriculture, all form of sustainable agriculture which respects the principles of regeneration, ecology, care, health and fairness. Its concept is larger than the certified organic production and includes agroecology (Niggli 2015). EOA is a guiding concept and tool in order to steer the sector towards the fulfillment of SDGs. Life cannot exclude people and society, as they themselves depend on the biological and biophysical processes. Agriculture science therefore needs to include people⁶ and its societies in order to cope with the complexities generated mainly by globalization processes over the last two centuries. Agriculture is as well the main custodian of the fragile soil, the earth's skin. As soils are highly influenced by farmers, workers and industrial activities, transdisciplinary research has to capture their knowledge. Memories of both people and societies provide patterns of tradition and innovation and they are as real as soil samples, crops and markets. Agricultural sciences and agro-economy have to be complemented in future more by cultural and other social sciences (like agro-sociology) in order to better observe and understand this time component (duration/consciousness) researched by Bergson (1938 (2013)) and often misunderstood in science.

We can summarize this by formulating five hypotheses:

1. food systems impact societies and communities and vice-versa;
2. agricultural production, land use change, processing and circulation of goods cause 40-55% of GHG;
3. food and agriculture systems are the foundation of a healthy rural economy;
4. organic and agroecological food and agriculture systems relink soils and food and bring back carbon to the soils and finally;
5. industrial food and agriculture systems are not able to achieve SDGs.

Knowledge based ecological farming has to be mainstreamed in order to fit to SDGs. FiBL applies therefore a holistic approach (in Africa), integrating the various scientific disciplines and the related practical knowledge from the stakeholders; Infra-structure and institutions beyond the farming level (i.e. super-structure) beyond the farming level are fully integrated.

A unified science and promising research methods

The above principles and approach were developed and discovered by implementing an EuropeAid financed food security and climate change research for development project in the cotton belt of West Africa (Nicolay, Dabire et al. 2014). Nine distinct problems had to be addressed simultaneously, i.e. soil degradation, food insecurity and poverty, climate change impact, low productivity, inefficient value chains, neglect of agriculture, technological and social disconnections, indignities suffered by peasants and their communities, and failed states. In order

⁶ We insist on the usefulness of distinction between people/human and society. Too often, these concepts are confounded.

to understand the true nature of this complex phenomenon, the classical methods of science were not any more appropriate.

We developed the “Syprobio” approach, using the project name as a brand. Originally starting with sociology and transdisciplinary and action-research principles, we ended with a unified approach transcending social sciences and including biophysical phenomena. Further key features are: (i) the farmer is always present as an actor and often at the center of developing innovations, (ii) integrated agriculture for development (IAR4D) as applied by FARA, (iii) start with organic farmers⁷ and move then towards conventional farmers with specific best practices and finally (iv) consider the process of action-research itself as part of the living process and object of research (reflexivity).

Overwhelming complexity that grew with each additional observation with the need to deliver understandable and practical knowledge led to the scientific foundation presented in the form of a grammar, narrative or a linguistic game (Wittgenstein 2010 (1953)) understandable for both the practitioner and agriculture researcher. Science has to serve practical needs of society and people and needs a language that is understood by the scientists involved in this topic and system of practice, in our case agricultural scientists. It was obvious from the general progress made in philosophical and scientific research of the last centuries, that the scientific truths are based on conventions and can never pretend to be ontological (Kant 1998 (1781)); Pierce 1877; Bergson 1938; Spencer Brown 1972; Feyerabend 1982; Rorty 1993) .

We propose to observe the following four main forms as concepts within the research object or phenomenon to understand: (i) Natural, human and social fields and their capitals; (ii) heterogeneous actor-networks; (iii) social systems and; (iv) narratives. We hypothesize that complex phenomena need observation of all of these forms and perspectives in order to provide meaningful propositions.

Capitals and social fields:

We “construct” the main fields, i.e. Nature, Human and Society (Tab. 2). They are in reality always specific and empirically observable and part of a larger context. Within the field of Society, we propose concept polarities, each with its specific form of the given fields and allocate the respective capitals accordingly.

Table. 2: Seven forms of capital within the sector including the main poles within society to observe

Symbol	Field (with main poles)	Name of capital	Main forms of capital within Agriculture, food systems and rural development
C _p	Nature	bio-physical	Land, soil, water, plants, animals, tools, machinery, infrastructure, energy supply, global goods, various technologies

⁷ Because they apply already a relatively advanced stage of EOA and can serve as model

C _h	Human	human	People, age, health, knowledge, dignity, food security
C _e	Society Inside/outside sacred/profane male/female oppressor/victim friend/enemy peasant/urban elite producer/consumer conventional/organic short term/long term poor/rich visible/invisible dream/“reality” signifier/significant	economic	Property (land and other forms), markets, distributional power, investments
C _f		financial	Economic capital disposed in the form of money, income (through work and rents)
C _s		social	Customs, trust, love, education status, relations, networks, roles, household, groups, clans, organizations, access to economic and financial capital, performative power
C _c		cultural	Languages, titles, values, norms, morals, narratives, myths, science, signs, arts, information, text, collective memory, ritual
C _{sym}		symbolic	Symbol, (symbolic)power, influence, rights (property, legal, civic, political, human), laws, territoriality, representativeness, governance (global, national, local), democracy

For agricultural scientists, the forms of biophysical, human, economic and financial capital need no further explanation here. New might be the differentiation of social, cultural and symbolic capital, which needs some comment. As all human actors are members of social groups and communities, and food and agriculture as well as rural development have to distribute the scarce resources in form of capital, the patterns of social, cultural and symbolic (political) forms are not separable from the other more common forms. It is the integration of the seven forms of capital, which reveals the understanding of the dynamics for the sector. Important is to observe the capitals within the context of the specific (historic) social fields, determined by their polarities. The historic or time dimension is important, as we know that all forms of life are in permanent movement.

(ii) Heterogeneous actor-networks:

We link the category of capitals with the description of the potential forms of heterogeneous actor-networks. As an actor we consider each agent capable to influence a network (Latour, 2005). It is obvious that we can find infinite examples of actor-networks of this form. The question is if we observe the relevant and meaningful ones, if we make a relevant distinction.

Table. 3: List of potential actors within the categories of capitals and examples of actor-networks

		Potential actor (examples)	Examples of actor-networks
C _p	bio-physical	Virus, water torrent, wind, fire, machine, GMO seed, pesticide, synthetic granulate	Innovation tested by farmers and researchers Farmers using mobile phones Plant disease affecting a field of a

C _h	human	Man, woman, child	family farm Hungry farmer community Climate change affecting agricultural landscape (form of global risk) Populated area affected by land degradation Nation bound together by military force, myths and international aid Agricultural conference Organic cotton value chain in Mali or Burkina Faso TV show with a film on agriculture and its role in development Organic farms cleaning rivers and enhancing biodiversity in the surroundings of a Nature Reserve in Benin
C _e	economic	Land title, commodity, market information, price	
C _f	financial	Equity, money, hedge fund	
C _s	social	Farmer, teacher, laborer, scientist, politician, leader, journalist, manager, lawyer, widow, priest, terrorist, consumer, banker, outsider, hero, foreigner	
C _c	cultural	Journal article, pamphlet, poem, radio emission, video, taboo, information, dress, theatre, cultural ceremony, dance	
C _{sym}	symbolic	National symbol, arrest warrant, policy act, democratic institutions, public space, constitution	

The challenge for the involved researchers is to detect the real agency of the actors and their networks and to agree on their description and relations within the ecology of signs and things. It becomes obvious that only interdisciplinary teams are capable to do such a work in a concrete and practical case and that such a process has its economic costs. Tab.3 provides a list of meaningful actors and heterogeneous actor-networks used within the Syprobio project.

(iii) Social systems:

Social systems (Luhmann 1984) are here clearly distinct from human and bio-physical as well from heterogeneous systems and networks. Fig. 1 is conceptualizing our understanding of the distinct systems Nature, People and Society. It is important to accept, that we use the Luhmannian definition of social system, in which people are not part of the social systems but of its environment. In Fig. 1 we however present the Luhmannian social system concept in the form of a simplified non-hierarchical but differentiated and complex global society with its key function systems. We purposely draw the boundary of Agriculture as well as Economy and Technologies related to agriculture as crossing Society and Nature in order to highlight our constructivist use of systems theory and its dependence with our interest.

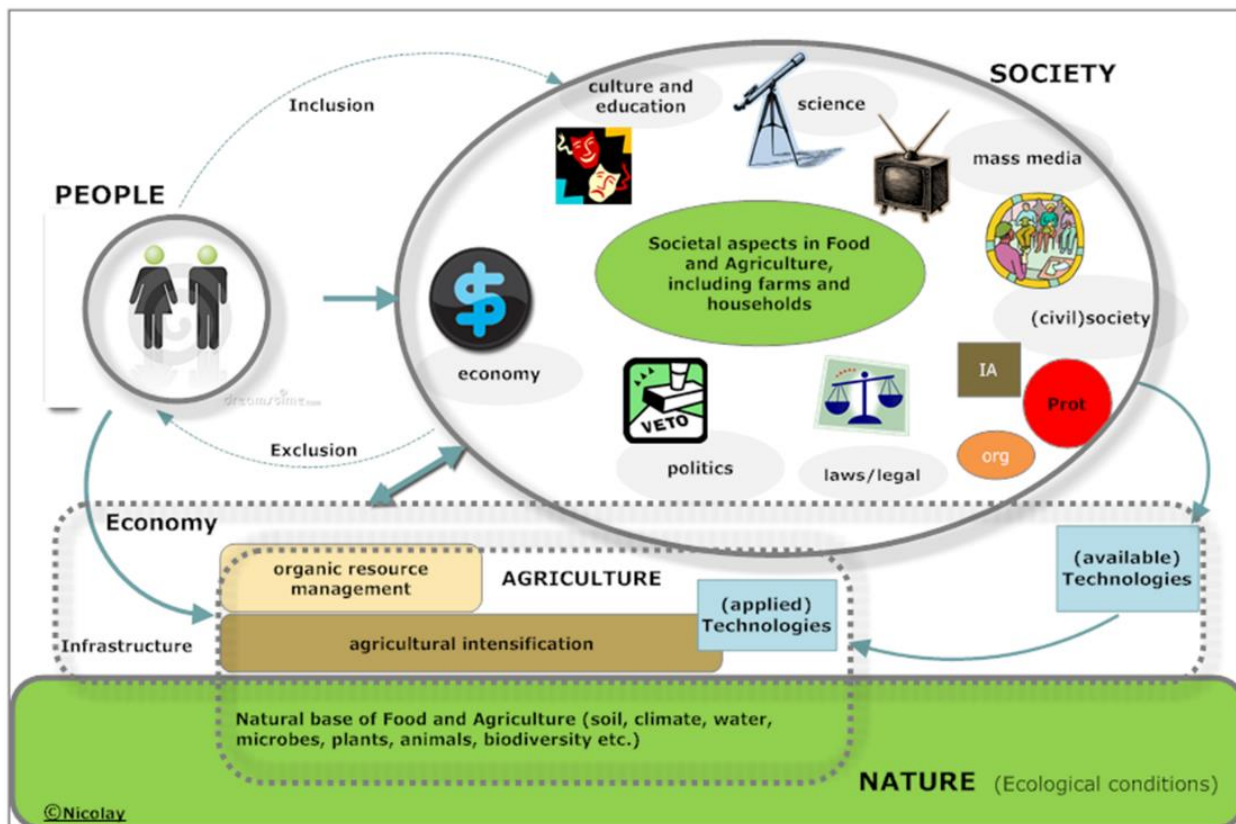


Fig. 1: Agriculture and Food systems situated in relation to Nature, People and Society. Society is distinct into the seven function systems (economy, politics, science, etc.) as well as organizations (org), interactions (IA) and protest movements (Prot).

We describe the seven main function systems for our sector in more detail in Tab. 4. The proposed list is a product of the heuristic process of the research in West Africa. Under different context, it may be meaningful to observe other function systems like “education”, “religion” or “military” (Luhmann, 1998). Important is to acknowledge the fact that these function systems are constructed and that this (global) level needs to be taken into consideration for many phenomena or performance observed. They are “copied” through re-entry into national and regional, sometimes local levels. Apart from these forms, we find at micro-level innumerable forms of interactions—normally of short duration—and at mid-level, many distinct forms of organizations. All these forms constitute social systems and can be described and distinct with meaningful variables for empirical research.

Table 4: The main seven function systems of the sector, with examples of performances and their specific key operation.

<i>Function system</i>	<i>Examples of subsystems and key variables (as relevant for food and agriculture)</i>	<i>Important inputs/outputs (=performance)</i>	<i>Key societal Operations (=function)</i>

Economy	Financial sector; Agricultural sector, industrial agriculture; Food sector; Land as market; Labor market; Knowledge/information market (advisory, paid information, etc.)	Capital, money, (international financial markets); Labor; Profit Trade (local, global); Exchange; Price; Consumption, production	Payments
Politics	Agrarian politics; Rural development politics; Security system; Territorial states; ideologies; state administration; African Union; United Nations system;	Policies, Political success (re-election, to stay in power); Programs and projects (Agrarian reforms, Rural development programs); executing power, provide security; administration	Take collective decisions, exercise power
Law	Land tenure; Land law; Human rights; Labor rights and laws	Laws; administration of justice; provide justice,	Rights
Civil-society (not really a function)	Local (territorial) community (villages etc); Clans, tribes; folk society; Ethnic community; nation; Age groups, secret societies; Community agriculture ; Social movements;	Segmentation and kinship; Ascribed/achieved status and position in society, prestige; Symbols of boundary, rites and other forms of social memory; Stratification (classes); rural/urban differentiation; Gender; Races; Career pattern; Nationalism; Human rights claims;	Trust building Love Passion
Culture (including education)	Initiation; education; moral and ethics	Magic practices; Religion; Myths (Local, indigenous, global); knowledge; Stories; Social inequalities claims	Search for meaning and morality
Science	Agricultural sciences; Economics and agro-economy; (Rural) Sociology; Agriculture systems theory; Alternative agriculture; Universities and Higher Education	Scientific knowledge (publications); Scientific journals; Scientific communities and events; Teaching, mainly agricultural sciences, NRM, ecology, RD	Truth finding, higher education process
Mass media	Books; Radio; TV; (Mobile)phones; Internet and social media; press; extension material and manuals	Reports on ecological conditions and related social system failures (famine, desertification, injustice, corruption, crime, investments etc.)	Information delivery

We postulate therefore that only the global perspective can meaningfully provide the understanding of the dynamics and key processes of complex contemporary phenomena of agriculture, food systems and rural development. The cotton industry in West Africa is since over 200 years not anymore independent from the economic, cultural, political, and later legal, scientific, civil society-bound and media-based operations. Social systems theory allows better

understanding of these invisible and “big” forms and their relation under the unifying process of communication with its unit “meaning”.

(iv) Narratives

Finally, all signs and forms observed and documented from a given complex phenomenon need to be formulated in a coherent and meaningful text. It will depend on the scope and purpose of the research, which variables, forms of capitals, actor-networks and social system will be made visible and put into a coherent context. Narratives are a combination of local, national and global scripts and backgrounds, which is often the case in complex phenomena of our object. They enhance chances to overcome fragmentation and reduce vulnerability of the concerned community (Polletta, Chen et al. 2011). This complexity requires in most cases teams of scientists and longer research horizons. Each narrative can be analyzed in the three categories of idea, interest and institution, embedded in concrete farming systems and economies.

The construction of the narrative of complex phenomena and its performance requires practical skills, experience and a minimal number and quality of involved researchers as both actors and audience⁸. The difficulty and complexity of the phenomenon or problem to understand is another important factor. The focus is more on performance than action in order to better visualize the field of transformation and contributes rather to problem solving (through performance) than mere description. The inclusion of the audience- here the community of researchers and scientists working on the common object “Agriculture, food systems and rural development” is important in order to achieve the expected performance. In research for development (R4D), additional actors like farmers, technicians, bankers, local leaders, officials, policy makers, journalist and donors are part of the audience.

Conclusion

We propose a method of unified science for development aiming to capture the complex phenomena of food and agriculture systems related to rural development, allowing framing SDG and EOA in a coherent and integrated way. This method integrates concepts borrowed from sociology, farming systems approaches and current agricultural sciences, and is based on logic, epistemology and reason. Our “object” is perceived as part of life, thus beyond bio-physical sciences due to the importance of the memory, consciousness and duration of its elements. Life is seen as a creative process with the particular feature of freedom given to the human actor. Transformation of society, and therefore of food and agriculture systems cannot be understood without a deep understanding and –of course- existence of engaged people and humanity. The classical science, excluding the “human factor” will not capture phenomena of agriculture. But we as agronomists, agro-economists, agro-sociologists, agro-ecologists and generally speaking scientists of food and agriculture have to take the human factor and with that memory and historical processes into consideration. If not, we miss the point. Ecological organic agriculture has the unique chance, to position itself as a key process within the SDG and climate smart agriculture, when properly guided by science in its integrated form.

⁸ Even within the agricultural sciences, the audience is very diverse and fragmented dependent on backgrounds, interests and intellectual capacities. To note that the audience shapes the performance and impact of the narrative.

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Ecological Organic Agriculture Knowledge, Information and Experiences: Going from Organic 1.0 towards Organic 3.0

Prof. Dr. Gerold Rahmann, President, International Society for Organic Agriculture Research (ISO FAR)

Abstract

Organic farming is considered and proved as sustainable, productive and profitable food and farming systems in a low-external-input / medium-output approach. Therefore: Organic is a success story. Nevertheless, from a global perspective, certified Organic is still a niche. But, more than 50% of the farms on the earth – mainly small scaled with low input / low output level – are managed with the measures and strategies of Organic farming, just without certification. This is the chance that Organic farming becomes a reputed and scaled-up solution to defeat the future global challenges in food and farming. Organic can help to prevent hunger, reduce farm land degradation and losses in biodiversity, mitigate climate change, income and jobs, and supply healthy and enough food with a low-external-input / medium output farming strategy. The Organic 3.0 approach is the basis for this contribution.

Introduction

Organic farming is considered and proofed as sustainable, productive and profitable food and farming system in a low-external-input / medium-output approach of the farmers' own concept (Figure 1). The globally harmonised principles of Organic farming – Health, Fairness, Care, Ecology and Quality – are targets and mission for millions of organic farmers all over the world (IFOAM 2005). In 2013, more than 45 million hectare in about 170 countries are managed under the standards of Organic farming and the global organic market has reached a value of 80 billion US-Dollar (Willer & Lernoud, 2015). Beyond agricultural practices and their technical and economic bases, organic farming was and is a life model and thus includes important aspects for social reform. Therefore: Organic is a success story (Paulsen et al. 2009, Rahmann 2010, Rahmann 2011, Zalecka 2014; Figure 2) because:

- Low/un-polluted products
- Environmentally sound
- Improving soil fertility
- High premium price – high farm income
- Organic is climate smart agriculture and multifunctional
- Suitable for low-external-input / medium-output production
- Export chances for development

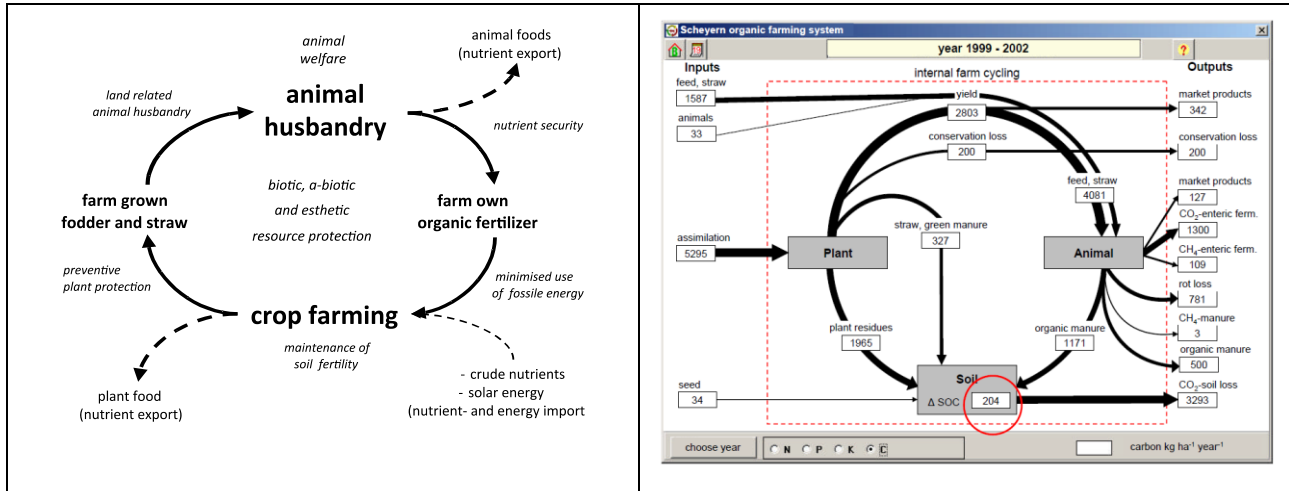


Figure 1. The cycle of Organic farming as model and in the Software REPRO (Hülsbergen & Rahmann 2013)

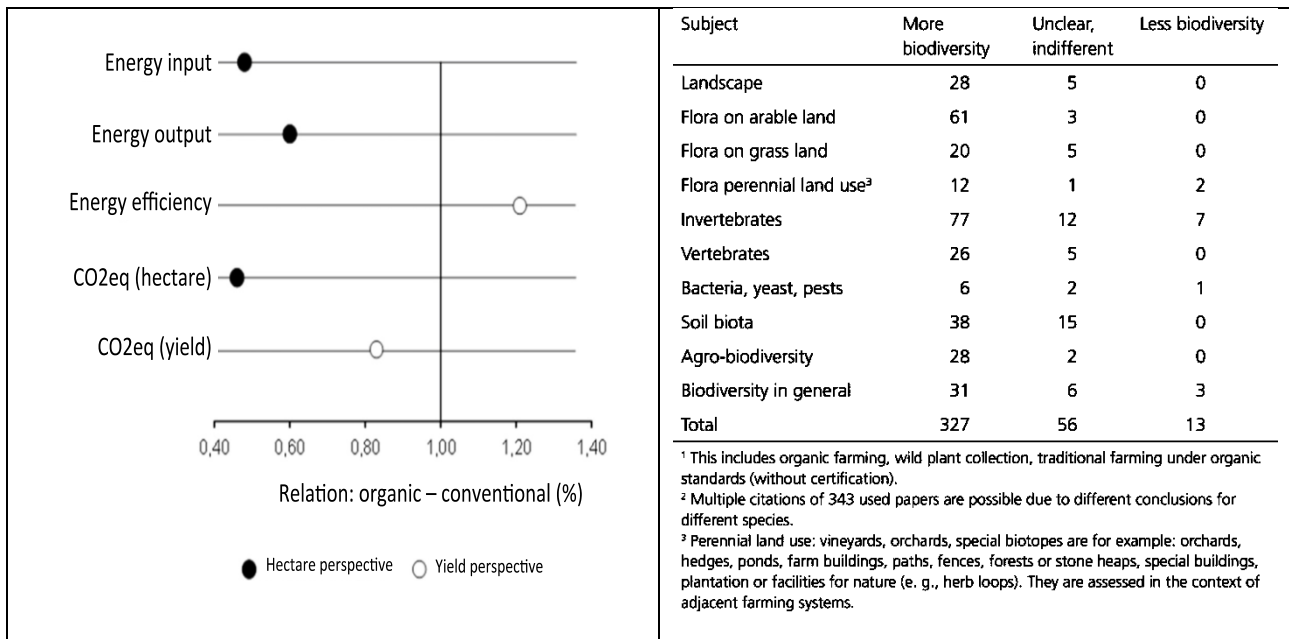


Figure 2. Organic versus Conventional: Organic is climate smart agriculture (Hülsbergen & Rahmann, 2013) and better for biodiversity (Rahmann 2011)

Nevertheless, from a global perspective, certified Organic farming is still a niche. Less than 1 % of global farm land is managed organically and only a little share of the global population is consuming organic qualities in a significant amount (Rahmann et al. 2009). But, more than half

of the world farming systems are managed with the measures and strategies of organic farming, but mainly in low-input / low-output systems (Rahmann & Aksoy 2014).

Africa lacks behind other continents in taking the chance of going Organic. There are slightly more than 1.2 million hectares of certified organic agricultural land in Africa, which constitutes about three percent of the world's organic agricultural land and only 0.1% of Africa's farm land (FAOSTAT 2016). With about 574'000 producers and an average farm size of 2 hectare, Organic farming in Africa it mainly done on small scale farms. The majority of certified organic produce in Africa is destined for export markets (Willer & Lernoud, 2015). Key crops are coffee, olives, nuts, cocoa, oilseeds, and cotton. There is a growing recognition among policy makers that organic agriculture has a significant role to play in addressing food insecurity, land degradation, poverty, and climate change in Africa (see www.eoa-africa.org).

The future challenges of food and farming are severe:

- Feed 9 to 11 billion people in the next 30 to 80 years with enough, affordable and healthy food.
- Protect environment like soils, water, air, biodiversity and landscapes in increasing intensification strategies.
- Mitigate greenhouse gas emissions and adapt on climate change in all farming systems and value chains.
- Incorporate novel ethics, food habits, demographic and lifestyles in the food chains.
- Produce food on limited farm land and fossil (non-renewable) resources efficient and profitable.

These challenges must be addressed by all farming systems concepts on local, regional, national and global level. Organic can help to prevent hunger, reduce farm land degradation and losses in biodiversity, mitigate climate change, create income and jobs, and supply healthy and enough food with a low-external-input / medium output farming strategy. After decades of farmers driven development of resilient organic farming systems, the role of science becomes more important (Niggli et al. 2014).

The future challenges must be addressed by all farming systems concepts on local, regional, national and global level. Organic methodologies and tricks can play an important role as leading sustainable food system to alleviate small holder farmers from low-external-input / low-output towards sustainable low-external-input / medium-output farming systems. That will help to make sustainable, resilient and profitable food production. The "Organic 3.0" approach is the basis for this contribution (Braun et al. 2010, Strottdrees et al. 2011, Arbenz et al. 2015, DAFA 2015; Figure 3).

What has to be done that Organic is fit to contribute to tackle the future challenges?

There are two time dimensions: the next 35 years till 2050 and the time from 2050 up to 2100. In 2050 we will have approximately 9 billion people and 1 ha agricultural farm land per capita. In 2100 we will have 11 billion people and only 0.7 ha per capita. This discussion and challenge is the same like for conventional agriculture: limited resources needs to intensify (factor-factor

relation) and be more productive (output-factor relation) and be more efficient (factor-output relation).

Organic 3.0: What is that?

- Defined by German Organic Farmers in 2010
 - Organic 1.0: Yesterday the pioneers
 - Organic 2.0: Today business and regulations
 - Organic 3.0: Future feed the world sustainable
- First official distribution and publication 2011 DWCI in Korea
- Idea taken over by (with concepts):
 - BioFach, FOAM, German speaking organic associations (Bioland, BioAustria, BioSwiss), German Agricultural Research Association (DAFA), SOFAR, others
- Many publications are available...

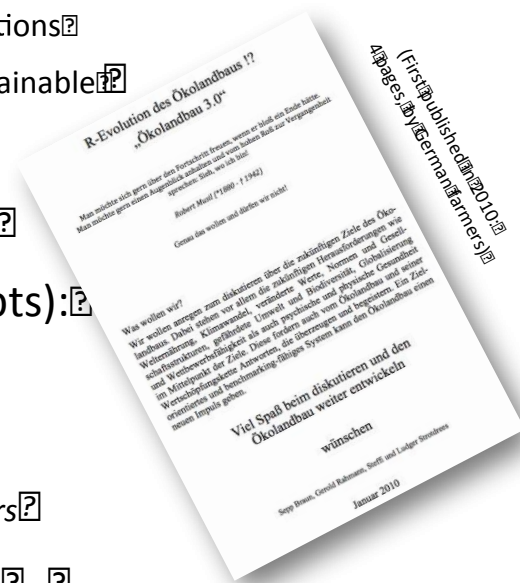


Figure 3. Organic 3.0 – What is that?

My five visions about the need of Organic farming development till 2050:

Conventional can learn from Organic: The production must be more and more sustainable. That means: ecological sound, high ethical standards (e.g., animal welfare, fair trade), profitable and social acceptable. There is a need to change the industrial production strain of conventional and be back to local acceptable farming systems, where farmers can have a good income and the price is affordable for everyone. The external costs of production needs to be included into the price of products.

Organic can learn from Conventional: Efficiency and productivity with limited resources, e.g., agricultural land. Organic needs to be more productive to be accepted in societies with limited land and food quantities. Not all farm inputs are bad. Clear criteria are needed to incorporate good conventional strategies into Organic: e.g., synthetic amino acid if all feeds are produced on

the farm. Mineral fertilizers, if produced with renewable energy and in a quantity, which does not pollute the environment and products (Figure 4).

Scale-up Good Organic Farming Practice: Good Farming Practice is necessary to fulfil the consumer and public demands as well as be more efficient with limited resources. Both, organic and conventional have to train and trigger their farming systems on the track of better practice. In future we cannot effort spoiling and inefficient farming practices. Capacity building and training needs to the support of research, mainly via socio-economics: How can we transfer Good Organic Farming Practice to all farms as a permanent process (Figure 5)?

The food production needs more close links to the consumer: Consumer must accept, that in the coming future not everything will be always and everywhere for a cheap price available. It will be not possible and producible in the coming future that everyone on the earth will consume like the western world today. We need to avoid wasted food, reduce livestock and utilize novel food sources. Additionally, the consumers need to bring back valuable nutrients back to farming: clean and efficient.

Farming has to change from “commodity related” towards “needs related” production: Ecological Food First means also that non-food production is second and needs alternative - not farm related - production bases. Community Supported Agriculture needs to be improved and scaled-up.

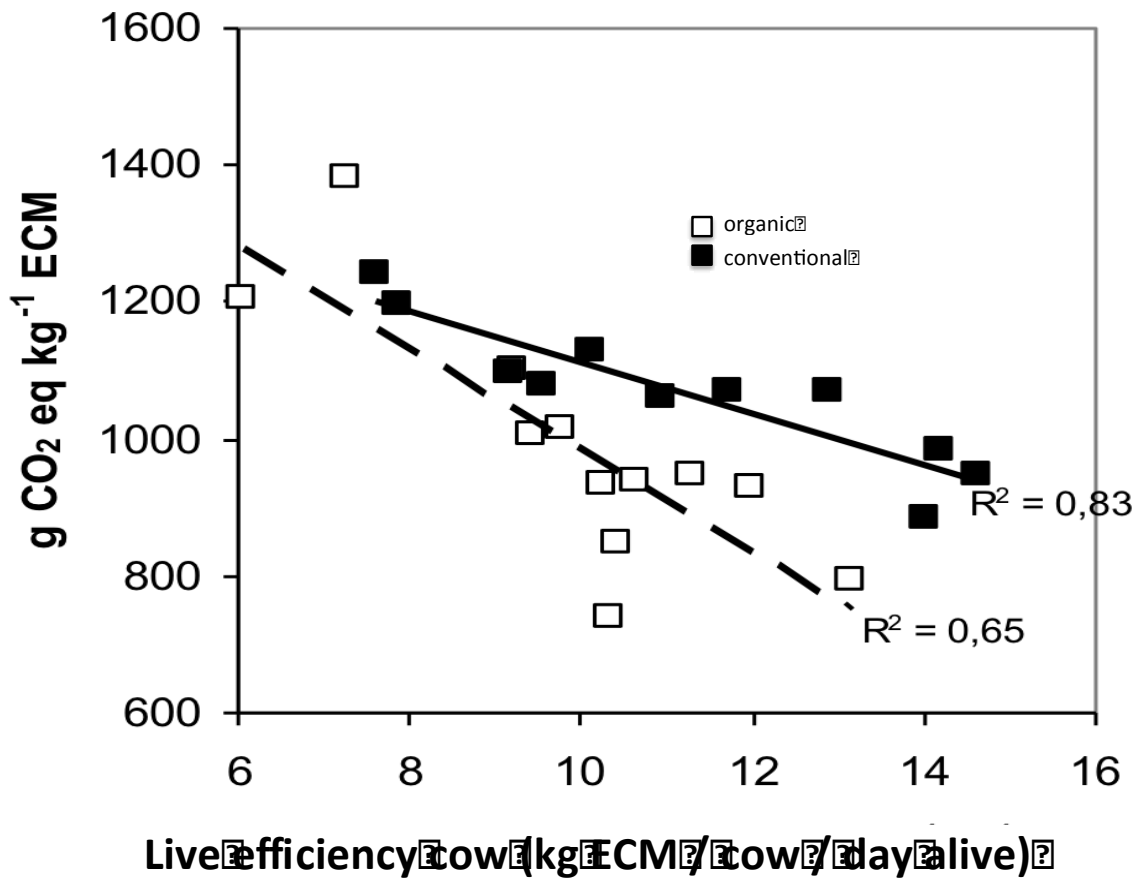


Figure 4. Organic versus conventional dairy farming: Greenhouse Gas emissions per kg of milk: more milk is less GHG with advantage Organic dairy (Hülsbergen & Rahmann 2013)

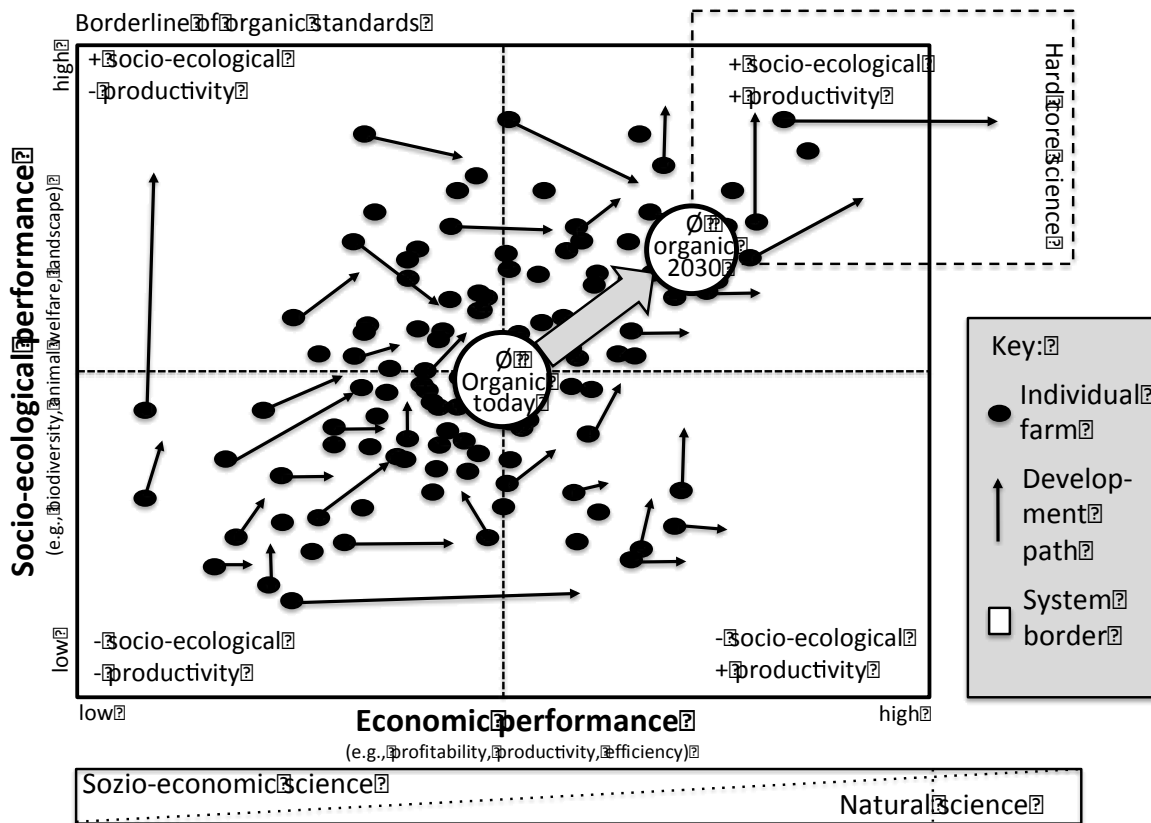


Figure 5. Scale-up „Good Organic Farming Practice“ to all farmers

What needs to be initiated today to tackle with the challenges after 2050?

There is no real discussion about food security and safety after 2050 and up to 2100. All the five vision from above will not be able to fulfil the demand of 11 billion people. As an organic farmer and scientists I must state that I am skeptical that we can improve „Good Organic Farming Practice“ to a level that the IFOAM principles are fulfilled (care, health, ecology, fair; plus quality). If we just continue with intensification and encroachment of farmland we cannot feed 11 billion people and preserve biodiversity, keep water clean and make good food available and affordable for everyone. I see following options, where the innovations (socially and technologically) have to be invented in the coming decades:

Less livestock and changed animal husbandry systems: Numbers of livestock needs to be reduced by a significant number, from ethical point of view probably even towards zero (in specific cultures and regions). That needs improved food consumption skills (e.g., avoiding malnutrition with vegan diets). Invention of novel protein food resources based on insects and sea food are necessary.

Local versus global food chains: The transport of food from one place to another place on the earth will be not as easy as today. Fossil energy and probably limited space will need new farming and food distribution systems. Probably people have to go to food areas and not food to people areas as today. Migration and better distribution of humans and food have to be initiated.

Land-less food production: Organic farming likes soil and prohibits soil-less food production. But: soil is scarce, probably degraded, polluted or sealed and therefore not avail for healthy food production. Food can be produced on sealed surface (urban agriculture, in-door/household, on roofs etc.). Aquaponics is a chance to link water and land related food production. Last but not least inventions should be done to substitute some food ingredients from agriculture towards reactor production. It can be thought about sugar or other carbohydrates produced by bacteria in large scale reactors in highly polluted and populated areas (e.g., in Asia). Human feces can be a resource to feed the bacteria and close the chain of production and consumption. Processed food can have a share of natural and artificial food. There is a need that such artificial food ingredient production is common and not private property to avoid shareholder influence on feeding people. Can you imagine: 25-50 % (or even more) of the food ingredients (mass components like carbohydrates) are produced in artificial reactors in urban or peri-urban areas, a lot of land space would be released for our Organic visions: biodiversity, recreation and landscape.

The suggestions for the second half of this century are brave and will probably create a deep debate in the Organic movement as well as in Conventional agriculture. But it brings a lot of chances as well. I guess, that private food companies have started already going towards a landless food chain. That must be avoided that food becomes an even more private and shareholder issue (like seeds and other farm inputs today). The socio-economic and technological innovations have to be started soon to be applicable and acceptable in the far future.

Conclusion

Organic 3.0 discussions have released a discussion about the future development of the Organic sector. There are many think tanks started ideas. Most of the ideas are very rough and not with practical visions for research. But there should be no time lost, that Organic takes the leadership for innovations, that helps to tackle with the future challenges, to design clear pathways to be more sustainable: food supply and to have ownership for the definition of ecology, health, care, fair and quality.

I hope that the Organic community in Africa and on the globe is brave and strong enough to lead in this century the sustainable food and farming development to tackle future challenges. That would need to throw away some of the ballasts of the Organic ideas of the last century. This century is the chance and the need for actions.

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Markets for Ecological organic agriculture in Africa - Challenges and Opportunities

Strengthening regional value chains in the African agri-food sector

Malick KANE, Henrike Pacini, Bonapas Onguglo (UNCTAD).⁹

Introduction

Despite a renewed focus on agriculture as a mean of poverty reduction¹⁰ and the adoption of a continental policy framework for agricultural transformation, agriculture in Africa remains too often characterized by low productivity and little value added.

In this context and with the aim of supporting the ongoing effort to boost intra-African trade and establish the Continental Free Trade Area (CFTA)¹¹, UNCTAD engaged in identifying policies and measures to promote the development of sustainable regional value chains in the African agri-food sector.

Building on the existing literature on value chains and looking into major agricultural commodities traded on the continent, UNCTAD developed a methodology to assess potential regional value chains and provide recommendations to foster their development.

The Regional Value Chain (RVC) concept and its relevance in the African context

The RVC concept

A value chain can be defined as the full range of activities which are required to bring a product or a service from conception to delivery to final consumers – and final disposal after use – through different phases of production¹². As such, it covers activities pertaining to primary production, transformation, marketing and residue management.

In the case of agri-food products, a value chain can thus be defined as the set of actors and activities that bring a basic agricultural product from the field to final consumption, and add value at each stage of the production process¹³.

Recent research pointed out the growing importance of regional value chains¹⁴. Value chains are qualified as regional when their activities are spread beyond national borders¹⁵, in the same region or, in the case of Africa, on the same continent. Regional value chains (RVC) can cover two realities:

1. when production is regional, and intended for regional consumption
2. when production is regional, and supplies global markets¹⁶.

At the African level, it is now largely accepted that developing regional value chains for strategic agricultural commodities is essential¹⁷. Developing regional value chains could exploit scale

⁹ Contribution based on the draft UNCTAD Policy Report on Fostering the Development and Strengthening of Regional Value Chains in Agricultural Commodities and Processed Food Products

¹⁰ Webber, C. Martin (2010)

¹¹ Effort symbolized by the launch by the African Union (AU) in June 2015 of the Continental Free Trade Area (CFTA) negotiations and the adoption of the 2012 AU "Declaration on Boosting Intra-African Trade and the establishment of the Continental Free Trade Area".

¹² Kaplinsky and Morris (2001), quoted in Proctor, F., Lucchesi, V. (2012)

¹³ OECD, World Trade Organization (2013)

¹⁴ OECD (2013)

¹⁵ Proctor, F., Lucchesi, V. (2012)

¹⁶ OECD, World Trade Organization (2013)

¹⁷ Economic Commission for Africa and African Union (2009)

economies, lower production and marketing costs, and help removing non-tariff barriers¹⁸. As most countries export primary commodities, some of them selling packaged and processed goods and other involved in marketing and branding¹⁹, there seems to be room to develop productive synergies within the continent and ultimately stimulate intra-African trade.

The intra-African trade in agricultural commodities

In Africa, agriculture accounts for approximately 25% of the GDP and employs close to 70% of the labour force²⁰. According to some estimates the total value generated by African agriculture amounted to 313 billion USD in 2013²¹.

Despite 22 African countries being net food importers²² and the growing market opportunities generated by a rising income and a growth of a middle class, the share of intra-African trade in agricultural products remains low. In the period 2007 to 2011, Africa exported on average only 21% of its food items within the continent.

One of the explanations to this limited development of intra-regional trade in the agri-food sector is directly related to the existence of trade barriers within the continent. The current efforts to boost intra-African trade and establish a CFTA would contribute tackle such barriers. Available calculations from regional institutions indicate that at the intra-African level, agricultural exports face an average protection rate 60% higher than for non-agricultural ones. Moreover, two-thirds of African countries impose tariffs on agricultural products imported from Africa which are higher than the African average²³.

Examples of agricultural commodity prioritization at the African level

The Declaration of the 2006 Africa Union Abuja Food Security Summit provides an example of the political will to prioritize the development of strategic agricultural commodities in the continent. Linking intra-African trade and agricultural development, the declaration calls for the accelerated development of twelve strategic commodities. It also identifies the effective implementation of the trade arrangements adopted in the Regional Economic Communities (RECs) and the adoption of harmonized standards as ways to reach this target.

Proposed Value Chain prioritization methodology

Building on a review of the current major value chain analysis methodologies, a prioritization methodology was designed to inform the selection and the development of African regional agri-food value chains in complement to stakeholder consultations.

This tool, intended to support policy makers, is based on the below criteria.

Economic criteria

Under this criterion, factors such as export value and its growth on the continent as well as start-up costs will be considered. The competitive advantage will also be assessed based on the

¹⁸ *Ibid.*

¹⁹ OECD (2013)

²⁰ Economic Commission for Africa and African Union (2009)

²¹ UNDPI (2014)

²² UNCTAD (2013)

²³ African Union Commission and Economic Commission for Africa (2012)

productivity, costs of production, infrastructure, and business environment. In addition, potential value addition (VA) growth will be studied by assessing the opportunities for developing processed products and capturing existing price premiums for certified productions.

Social criteria

Considered social aspects will include the type of workforce (is it a family farming system with smallholders or an extensive farming system with rural employees?) and the potential for income growth. Other elements such as the prevalence of women workers and the possibility of skills development (with the existence of training centres or programmes, for instance) will be taken into account.

Environmental criteria

The sustainability of the production practices is a key issue in the proposed RVC assessment model. Many sustainable certifications and standards exist for agri-food products such as the East African organic products standard. As the regional market for agri-food products will grow, the importance of such instruments vis-à-vis the continental trade is expected to become more significant.

Regional integration criteria

Taking into account the degree of adaptation to the regional context – especially in the perspective of the future CFTA – is an essential part of the proposed methodology. In this regard, the synergies between countries (LDC producer vs. importer, intra-REC trade, etc.) and the maximization of effects at the regional level (possibility to foster infrastructures at the regional level, potential to create regional innovation centres, etc.) were identified as relevant parameters.

Preliminary assessment of promising regional Value Chains

To illustrate the proposed prioritisation process and highlight current challenges and opportunities in terms of RVCs development, the proposed methodology was applied to a set of products chosen based on their recognized importance for the African agricultural economy, and on the emphasis put by several key publications²⁴.

The table below presents the results of this exercise.

Categories and criteria	Floriculture	Cashew	Pineapples	Avocados	Tea	Onion / shallot	Potato
Economic criteria (30%)							
Export value in Africa	3	2	1	1	5	4	4
Growth of market demand in Africa	3	2	4	4	5	2	4
Contribution to GDP		3		3	5	3	2
Start up costs	3	3	3	3	3	3	3
Existence of a competitive advantage	3	3	2	2	2	2	2

²⁴ Webber, C. Martin (2010); FAO (2014).

Potential for VA growth	3	4	4	4	5	3	4
Sub-total	15	17	14	17	25	17	19
Economic impact = (30 x sub-total) / 100	4.5	5.1	4.2	5.1	7.5	5.1	5.7
Social criteria (20%)							
Target population	3	4		2	4	2	3
Potential for income generation		3					
Potential for skills development					2		
Other effects on rural life		2	2				5
Sub-total	3	9	2	2	6	2	8
Social impact = (20 x sub-total) / 100	0.6	1.8	0.4	0.4	1.2	0.4	1.6
Environmental criteria (20%)							
Impact of the infrastructures needed on the environment							-1
Existence of sustainable certifications and standards	3	3	3	3	3	3	3
Impact on biodiversity and soil conservation					-2		3
Sub-total	3	3	3	3	1	3	5
Environmental impact = (20 x sub-total) / 100	0.6	0.6	0.6	0.6	0.2	0.6	1
Regional integration criteria (30%)							
Potential impact on regional employment	4	3	3	2	3	2	2
Complementarities between countries	4	4	4	3	4	3	3
Potential for developing African infrastructures	3	2	2		3	3	2
Potential for innovation and R&D	3	3	3	3	3		4
Sub-total	14	12	12	8	13	8	11
Regional impact = (30 x sub-total) / 100	4.2	3.6	3.6	2.4	3.9	2.4	3.3
Total weighted score	9.9	11.1	8.8	8.5	12.8	8.5	11.6

Assessment results reveal that among the considered products, Tea and Potato can be considered presenting the highest potential in a RVC development perspective.

Further to this initial analysis, these two commodities were subject to a subsequent review using the upgrading approach which focuses on increasing value addition at all the levels of the value chain²⁵. More specifically, the following four areas of improvement were considered:

- processes: increasing the efficiency of internal processes
- products: introducing new products or improving existing ones
- functions: changing the mix of activities or moving to different links in the value chain
- chains: moving to a new value chain²⁶.

²⁵ Economic Commission for Africa and African Union (2013)

²⁶ *ibid*

This last review highlighted the existence of common solutions for promoting the emergence of these two potential RVC. In terms of processes, it underlined the need for institutional strengthening at the regional level. For instance, improved regional collaboration was identified as a possible way of enhancing marketing and research efforts. On the product side the existence of various diversification opportunities were emphasised. On the function level, potential linkages with other sectors such as tourism or with other agricultural productions were pointed out. Finally, on the chain angle the analysis confirmed the importance of sustainability certifications and concluded on the existence of opportunities for developing an organic production for some niche markets.

Conclusion

This short overview of the preliminary results of UNCTAD's recent work on RVCs in the agri-food sector highlighted the relevance of the RVC concept in view of promoting intra-regional trade, agricultural development and the establishment of an effective Continental Free Trade Area.

For the two commodities selected using the proposed value chain prioritization methodology the conclusion of the CFTA would bring about significant benefits. In the case of the tea sector, the main gain could be the elimination of tariff barriers at the continental level, allowing Eastern African countries to freely sell to expanding markets out of their RECs. For the potato sector, one of the principal advantages would lay in the fact that policy coordination and dialogue will be enhanced through the CFTA, providing for a better strategy towards trade development and food security.

In the specific case of organic agriculture, the objective of promoting the development of RVC is equally relevant. Whether through enhanced institutional development, standard harmonisation or increased competitiveness deriving from economies of scale, efficient regional organic value chains offer promising prospects for the promotion of organic agriculture.

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Promoting development in Tanzania by connecting tourism and small-scale agriculture

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Abstract: Tourism and agriculture are important contributors to the development of local economies. Many developing nations that are now experiencing rapid tourism growth have agrarian societies and tourism is the first or second source of export earnings. In this context, the main objective of this study is to enhance the understanding of linkages between these two sectors, as well as propose suggestions for how they could be strengthened with the aim of promoting bottom-up sustainable development in the United Republic of Tanzania. An extended version of this article has been submitted to publication in the Journal of Cleaner Production.

Keywords: *Africa; Tanzania; local sustainable development; pro-poor tourism; small-scale agriculture*

Introduction

The United Republic of Tanzania has vast untapped natural resources, including an abundance of wildlife, unexploited mineral reserves and arable land, which offer a wide range of development opportunities (IMF, 2014).

The performance of exports has been weak in the last couple of years, largely due to lower commodity prices on international markets. Exported volumes of cotton, sisal and tobacco have declined by more than 30 per cent. Fortunately, the decline in value of agricultural exports was compensated for by an increase in the value of re-exports, demonstrating the significance of the country's role as a hub for neighbouring countries. At the same time, the value of revenues derived from tourism also increased (World Bank, 2015a).

Tanzania's climate and soil give the country a comparative advantage in farming a variety of crops, as well as in horticulture and floriculture. The country has 15 million hectares of arable land (out of which 2 million hectares are under permanent cropping) and 33 million hectares of forest (World Bank, 2014).

The country's tourism sector has grown by an average annual rate of 12 per cent between 2000 and 2012 (World Bank, 2015b). The growing tourism and hospitality sectors offer investment prospects in accommodation development, conference tourism, beach tourism, historical sites,

amusement parks, leisure parks, specialized cuisine restaurants, golf courses, air and land transport infrastructure developments, and wildlife tourism.

Tourism and agriculture are important contributors to the development of the local economy. Many developing nations that are now experiencing rapid tourism growth have agrarian societies and tourism is the first or second source of export earnings. For example, 20 out of the world's 48 least developed countries (LDCs) rely on tourism and agriculture as the basis for the livelihoods of most of their inhabitants (UNWTO, 2015). It is imperative, therefore, that these sectors receive close attention, especially concerning the potential linkages between tourism and sustainable agriculture.

Linkages between Tourism and Agriculture in Tanzania

There is high recognition by the local government that tourism can be an important player in poverty alleviation and local development (UNCTAD, 2014; UNCTAD, 2015). However, there is not yet a holistic strategy nor are there indicators for measuring tourism development and poverty reduction (SNV, 2007; Michael, 2011; UNWTO, 2015).

At the country level, there are various business and trade associations, but none focused on linking the agriculture and tourism sectors: the Tanzania Chamber of Commerce Industry and Agriculture (TCCIA), Tanzania National Business Council (TNBC), Confederation of Tanzania Industries (CTI) and the Tanzania Investment Centre (TIC). These organizations do provide information and limited promotion, especially in commerce, manufacturing and agriculture but there is no organization linking the hospitality industry and local farmers directly. There are other tourism business related groups like the Tanzania Association of Tour Operators (TATO) and the Hotel Association of Tanzania (HAT). These associations mainly deal with advocacy and lobbying but hardly with cross-sectorial business linkages. Likewise, the Tanzania Tourism Board (TTB) deals mainly with marketing strategies.

At the local level, food supply is needed by the tourism sector but linkages are done on personal business terms through individual brokers – middlemen – or via street markets. There are currently no formal agricultural programmes that assist local farmers in meeting the requirements of hotels and restaurants or tap into their markets (Vock, 2014; Kyaruzi, 2014; Mashindano, 2014).

As a result, the food supply chain in the country is very complex and disorganized. Most agricultural goods (i.e. horticultural products) are traded through middlemen to wholesale markets. Kariakoo in Dar es Salaam is the most important hub for the vegetable trade. In fact, more than 50 per cent of horticultural products are traded through this large market. Most small-scale farmers depend on rain-fed agriculture meaning in the main harvest season there is enormous overproduction and much of the crop that cannot be sold is lost (Ki Ayo, 2014).

With regard to organic agriculture, there are large numbers of organic farmers for whom formal certification does not have any advantages, since all their organic produce is sold unlabelled and mixed up with conventional produce by brokers. This is true for farmers who practise subsistence farming for the food security of their families or their community and the majority of organic producers who sell in local markets. Unfortunately, there are no official statistics to quote on this type of informal uncertified organic production. The majority of certified organic produce from the Tanzania is destined for export markets, particularly in Europe. However, consumer interest

for organic products is picking up in Dar es Salaam and other tourist towns such as Arusha (Gama, 2014).

Supply and demand

Producers and traders or their associations are the stakeholders linking agriculture to tourism. Producers of horticultural products are mainly small-scale farmers either growing a single crop or a wider variety of horticultural products. These small-scale farmers tend not to be organized when it comes to supplying local or regional markets, and their smallholdings have an average size of about 2.5 ha (Salami, Kamara and Brixiova, 2010). There are a few larger properties but none above 4 ha (Ki Ayo, 2014; Kyaruzi, 2014; Manege, 2014; Mashindano, 2014). In this context, the supply of organic products can be categorized into two distinctive channels: the supply to formal export markets and the supply to local or regional markets.

Supply to formal export markets tends to be coordinated by international requirements and is characterized by the need to comply with importing countries' regulations and/or standards on organic products. Tanzanian organic export products are largely destined for Europe, the United States of America and Japan. Therefore, compliance with European regulation on organic agriculture (EC 834/2007), the United States Department of Agriculture (USDA) National Organic Program (NOP) and the Japan Agricultural Standard (JAS) is mandatory for all stakeholders along the supply chain. In order to meet these requirements, small-scale farmers are organized in groups along specific commodity chains destined mainly for export. This context is also a reality for horticultural products grown under GAP schemes, mainly destined to export, such as Serengeti Fresh Ltd in Arusha, which is a member of the Partners in Protection (PiP) program.

Supply to local or regional markets is highly diversified and informally organized. Within this supply chain structure there are *dalali* (local brokers) who negotiate deals between farmers and buyers. There are also two types of buyers. The first, *wanunuzi* (first-tier), usually buy large quantities from many local brokers which they later sell in wholesale markets. These buyers hire transport through *dalali wa magari* (transport brokers) to carry the goods to wholesale markets such as the main markets in Kariakoo or Arusha. At the markets, there are market brokers (also known as *dalali*) who receive the load of products, commonly on credit, and sell it on to retail traders or second-tier buyers, including retail market traders, shops, hotels and restaurants. These market brokers know each other and work closely together, forming a cartel and making it difficult for newcomers to enter the market (Leijdens, 2008; Gama, 2014; Ki Ayo, 2014; Mashindano, 2014).

Since farmers are not well organized and are mostly small-scale producers, their bargaining power is limited and usually they have to accept the low prices brokers offer. Hence, there is little transparency in the trade, putting farmers in a disadvantaged position (Mashindano, 2014; Vock, 2014). Moreover, the low prices offered to farmers by brokers together with the high price they present to second-tier buyers such as hotels and restaurants has not been helpful in motivating producers and consumers to develop organic market chains in the local market.

Horticulture value chain

In local organic products value chains, brokers are normally left out of the supply chain due to traceability requirements. In order to sell their products as organic and get a premium, farmers

must guarantee that their products can be traced along the entire chain as organic. Hence, producers either sell directly to first- and second-tier buyers or to consumers.

Looking into the farmers income, significant price variations were observed between the shortage and surplus seasons and conventional versus organic products. The low prices during the surplus season can be attributed to a number of factors but two of them are decisive in defining selling prices:

- Small-scale farmers correspond to 75 per cent of the rural population, whose farming practices are largely rain fed. As a result, farmers mainly produce at the same time during the rainy season generating an oversupply that cannot be absorbed by local markets. Due to limited market linkages with stakeholders at regional markets, small-scale producers have to accept low prices.
- Substantial pre- and post-harvest losses occur as a result of inefficiencies of the agricultural value chain. It is estimated that about 30 to 40 per cent of the overall crop production is lost annually because of the limited processing or value-adding infrastructure accessible to small-scale farmers. At times, farmers can lose their entire harvest (Tanzania, 2013).

In this context, brokers are definitely the key stakeholders within the local horticulture trade. However, they often are considered as hindering agents who in some instances can manipulate weights and measures, mislead farmers and withhold market information (Vock, 2014; Mashindano, 2014; Gama, 2014). Although their practices are sometimes questionable, they also take huge risks and perform important functions such as:

- Linking buyers to farmers and their products since buyers would not deal with farmers individually due to their large numbers and distance from market hubs.
- Delivering payments in cash to farmers or using balance transfers through mobiles.
- Bulking and transporting goods to urban centres and assuming the risk when there is a breakdown or quality loss, especially given the fact that the road transport infrastructure is still very poor in the rural areas where farmers are located. Moreover, the transport arrangements used to move horticultural products from production sites to local or regional markets are based on ordinary non-refrigerated or open trucks. The lack of a cold chain and packaging standards often hasten the deterioration of the products before reaching the market.

Currently, there are a few initiatives attempting to directly link producers and consumers without the need for brokers. One of these initiatives is the farmers' market concept, which is supported by TOAM. On a specific day, consumers can appreciate and buy organic products directly from farmers. This approach has been successfully used in Uganda and Kenya for not only stimulating awareness of organic products but also their local consumption. The farmers' market concept provides a direct link between farmers and buyers. It enables information exchange on product quality, volumes and other characteristics. The introduction of farmers' markets can facilitate diversity and innovation and increase marketing of organic products to the tourist industry.

In addition, through the MAFSC, the Tanzanian Government is developing a policy on contract farming aimed at regulating and guiding contract farming (Mwasha, 2014). However, it is important to emphasize that the contract farming policy in the offing needs to focus more on

strategies that will motivate the private sector to engage and invest in smallholder contract farming rather than just highlighting rules that have to be followed in contract farming.

Main Challenges on linking tourism and horticulture products

Ensuring a reliable supply of fresh and high quality horticultural products (including organic produce) to restaurants and accommodation services is one of the main obstacles to overcome in linking small-scale farmers to the tourism sector. As the horticulture supply chains faces a number of constraints growth and competitiveness are held back. These constraints can be divided into two main groups: lack of direct communication channels and bottlenecks or inefficiencies in the supply chain.

Lack of direct communication channels

The current lack of direct communication channels results in the following challenges:

- Farmers lack market information, resulting in slow or no development in production and marketing practices.
- Farmers lack sufficient knowledge on integrated pest management (IPM) and organic production techniques, resulting in the continued use of expensive chemicals and fertilizers, cutting profit margins and putting their health and the local environment at risk.
- The communication channels within the supply chain are not transparent and the middlemen are the dominant stakeholders in the chain; this results in farmers having no power in marketing their production.
- Lack of sufficient data available at district level makes it difficult for policymakers and support organizations to understand the reality and take well-evidenced decisions.
- Lack of a legal framework to enforce compliance with contracts and high informality in the sector result in insecurity for farmers and for companies entering into contract farming.
- Lack of effective institutions to support the sector and implement regulations.

Bottlenecks in the supply chain

A bottleneck limits the flow of products in a supply chain. Such bottlenecks can be caused by inefficiencies or resources working at full capacity. Currently, there are many bottlenecks or inefficiencies in the local horticulture supply chain (both conventional and organic chains) linking producers to consumer markets. Some of these inefficiencies are related to infrastructure problems, while others are related directly to local brokers. The following challenges were identified:

- Lack of irrigation causes farmers to rely on rain-fed production, resulting in farmers trading their produce at low prices. In short, the dependency on rain-fed production forces all farmers to sell at the same time, which increases the competition among them and makes joint marketing difficult.
- Limited availability of organic pesticides and knowledge to manufacture natural pesticides result in farmers continuing to use chemicals.
- Quality does not seem to be a factor that influences price. This is a missed chance to increase the price paid to farmers for higher quality. This is also influenced by the

common practice of brokers mixing different product qualities from diverse producers to improve profitability.

- Very few farmers are organized. Hence, there is no joint bulking or trading practices. This limits trade of horticultural products that usually requires small-scale farmers to work together in groups to establish IQM as a way of ensuring traceability and quality integrity for organic products. In turn, this gives brokers the chance to assume those activities themselves and reduce farmers' profit margins.

Facing the challenges

Based on the above observations, a set of potential thematic strategies that can be used as stepping-stones for building an institutional framework able to link the tourism and sustainable agriculture sectors at multiple levels – country, regional, local and community. These strategies aim at generating net benefits for small-scale farmers and include unlocking opportunities by building a more supportive policy and planning framework. The thematic strategies are:

- *Awareness and capacity building*: Raising awareness and building capacity to attain a high level of consciousness, understanding and ability in support of the implementation of linkages between tourism and agriculture are critical.
- *Start-up drivers*: Selecting regions that can serve as multipliers based on successful local experiences such as the growth corridors initiative.
- *Public-private partnerships and destination level cooperation and action*: The private and public sectors and destination stakeholders are key components in the implementation of pro-poor tourism (PPT) practices. Achieving the objectives of this strategy will rely on collective commitment, strategic partnerships, effective institutional arrangements and facilitating processes. The theme also addresses the lack of supportive funding and other mechanisms as a key constraint in improving linkages.
- *Effective promotion of pro-poor tourism and branding*: This strategic theme focuses on the need for promotion of PPT products, experiences and destinations in the Tanzania through an effective and robust marketing plans and branding.

These four themed strategies indicate ways to empower a cooperation platform linking tourism and agriculture in Tanzania. However, they require a detailed action plan, which should be developed by the national government together with local stakeholders, outlining interventions for each type of strategy.

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Promoting Organic Trade in Africa: the way forward

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Introduction

This short note summarizes the main points made during the presentation of the work on NOGAMU and partners on promoting trade in organic products across the African continent. It begins with a brief update on the status of agriculture in Africa and the tensions between the cycle of poverty, food insecurity and agriculture trade. The success and challenges of Organic trade in addressing poverty and food security in Africa is briefly summarized and propositions are made about what needs to be done to bring about the desired Vibrant Organic trade in Africa in the future.

Status of Agriculture in Africa

Agriculture (including both primary production and trade) is the primary activity of more than 60% of the population in Africa. It is the back bone of the African economy, accounting for more than 30% of the GDP in many sub-Saharan countries. Moreover, agricultural products are the main export products for most African countries. The vast majority of farmers in Africa are subsistence farmers, working on small family farms - more than 95% of farmers in Sub Saharan countries farm less than 5ha. In Uganda for example, over 70% of population are engaged directly in agriculture as farmers, and over 95% of these are smallholders (depending on less than 3ha of cultivated land). In sum, the agriculture sector is both fundamentally important to African economies and to the livelihoods of African populations.

There has been two perennial challenges facing rural Africa, poverty and food insecurity, and the question has been how trade can address these challenges. The conventional wisdom is that in order to double food supply to address food insecurity and poverty, efforts need to be re-doubled to modernize agriculture. However, the great technological progress in the past half a century has NOT been reflected in major reductions in hunger and poverty in developing countries.

In light of questions around poverty and food insecurity, there is a growing appreciation of the importance of trade in resolving these problems. Quoting The Government of Uganda Agriculture Sector Development Strategy and Investment Plan: 2010/11-2014/15 (ADSIP) *“Agriculture’s ability to generate income for the poor, particularly women is more important for food security than the ability to increase local food supplies.”* NOGAMU feels that reduction of poverty and food insecurity for smallholder rural populations requires a focus on locally adapted farming systems, in other words those systems that use local resources, a diversification of crops, good water management, and income generation through access to a variety of markets. The main point of agreement here is that the focus of these efforts need to be not only local food supplies, but on developing those products that can be traded internationally. Ecological and organic products have that potential.

Organic farming and trade as a successful tool in poverty reduction in Africa

Ecological organic agriculture has been among the fastest growing subsectors in East Africa with growth rates ranging between 15-30% per annum. Uganda is constantly leading the continent in

certified famers, with 190,552 in 2014 (Willer and Lernoud, 2016). Currently, according to NOGAMU's records, we can report the following figures:

1. Over 215,000 certified organic farmers
2. 305,000 ha of certified land
3. 44 certified export companies
4. volume of exports growing at an average of 40% per annum in the past 2 years
5. Value of exports to international markets stood at USD 43 Million by end of 2013



There is increasing adoption of Organic farming by smallholder farmers in Africa, which can be attributed to the following trends:

- Suitability and compatibility to smallholder farming systems
- Closer to and utilizes most traditional farming practices
- Relatively low risk, given production and resource constraints
- low market entry barriers compared to conventional fruits and vegetable exports
- Increasing global demand for organic products and associated premium prices, contributing to improved household incomes in the rural communities
- There has been increasing interest and involvement from the private sector mainly as a result unfolding market opportunity in international markets.

The factors that have been responsible for the growth of OA in East Africa can be contributed to the following factors:

- The rapid development of the organic sector in east Africa has been largely attributed to trade.
- The momentum generated by initiatives at national and regional level like the SIDA funded EPOPA Programme in Uganda and Tanzania, and the generous support from donors such as Hivos, UNCTAD, and UNEP propelled the sector to double digit growth between 1998 and 2008.

- The development of organic agriculture movements across all east African countries (KOAN, TOAM, NOGAMU, BOAM and ROAM), has facilitated the mobilization and coordination of all actors in the sector.
- The Development of a regional East African Organic Products standard (EAOPS), has facilitated not only regional trade, but also provided a platform for future harmonization with other international standards.
- Universities and other tertiary institutions are now offering degree, diploma and certificate courses in Organic agriculture.
- National organic policy processes have been initiated in all east African countries and are at various levels of progress.
- Local certification bodies were initiated (Ugocert, TanCert, Encert, etc.), and the recent Ugocert became the first African Certification to be approved by the EU for direct certification for the EU market.
- Through the SIDA funded OSEA I and OSEA II, regional aspects related to standards and certification capacity have been consolidated: EAOM and its management, actualization of regional trade, consumer awareness, etc.



With support from the UNEP-UNCTAD Capacity building project, the regional EAOPS and its accompanying Mark (EAOM) and Participatory Guarantee System (PGS) certification were developed and have now been integrated are being used for the facilitating domestic and regional marketing in organic products across East Africa. For example, in Uganda we can see the following trends emerging:

- Diversity of products at domestic market growing fast, including Animal products
- 3 supermarkets stocking organic products
- 4 exclusive organic outlets (including the NOGAMU shop)
- Home delivery scheme (Basket delivery)

Global sales for organic products now reach over USD 72 billion, with large and growing markets in Australia, India, the US and Europe (Willer and Lernoud, 2016). Unfortunately, Africa's contribution to this organic trade is less than 3%, yet Africa is probably the continent with the most appropriate conditions for organic production. Increasing incomes is critical in the rural areas, where in many parts of East Africa, smallholders dominate. According to a study carried out by IFPRI in Uganda, 60% of households in rural areas purchase more food by value than they sell (Benson, 2008). Organic agriculture's success in the rural areas has been largely seen in its ability to generate sustainable incomes for the rural areas. Therefore, there is a clear need to promote trade in ecological and organic products in order to raise incomes

Challenges and Way Forward to Organic Trade in Africa

Despite this positive growth and great potential for Organic trade in Africa, challenges remain for the sector:

1. Smallholder farmers and the Value Chains are **NOT mobilized or organized**. We find ourselves asking: *where are the organic products??*
2. Capacity to comply to standards and certification requirements still not yet sufficient. There are *not enough resources and skilled personnel- certifiable Quality Management Systems are lacking*.
3. There are currently limited investments and financing in strategic areas of the value chains, specifically in *processing, value addition and Logistics*
4. We see limited research into new technologies and product development in Africa: *where are the new products to match the new consumption patterns?*
5. Limited Promotion, Branding and Packaging: *Who knows about your organic products? What is their experience about your products, what do they remember about them?*

What needs to be done for the future?

We suggest three ways to move forward. First, strengthen the institutional capacity of the smallholder farmer associations and networks to lead and coordinate all actors in the chain. Second, there should be direct interventions/investments to bottlenecks of entire value chains (Value chain approach), with a focus on both the export and local/regional markets (e.g. Certification and Agri-financing). Finally, we must gain a strategic focus on research into organic friendly technologies and product development. By consolidating efforts across the continent, we can build stronger markets for ecological and organic products through regional and international trade, which can have positive impacts on poverty reduction and food insecurity.

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Policies and Institutions for Ecological Organic Agriculture

Dynamics of Organic Agriculture development: a global view

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The planet is challenged. Poverty and hunger, climate change, loss of biodiversity and depletion of water, soil and genetic resources are just a few major issues for which the present agriculture and food system is at least partly responsible. Agriculture is a main problem, but also a main solution. The Organic movement, united in its umbrella, IFOAM – Organics International, which is legitimized, backed and supported by its membership in 120 countries, advocates for an alternative paradigm and supports the facilitation of change toward true sustainability in agriculture and its value chains. It enables organic agriculture and agro-ecological methods to unfold their potentials, which are showcased in all the arable continents on more than 80 million ha of certified land, with 2,3 million certified farmers and consumer purchases of 80 billion US\$. While production, trade and markets are dynamically growing and the achievements mostly occurred in the last 10 to 15 years, certified organic agriculture represents less than 1% of agriculture land and food markets. Organic 3.0 is the title of the future visions and strategy of the Organic movement, which is presently widely discussed.

This paper takes a look a) at the positioning of Ecological Organic Agriculture including in the context of the International Year of the Soils, b) at the nature of ecological intensification as the basic concept of production to cover the needs of all the people and the planet c) at the present dynamics of development and d) the future outlook under the title Organic 3.0.

Positioning Ecological Organic Agriculture (EOA)²⁷ in the context of the International Year of Soils

Unfortunately, many people think that EOA is a farming system that refuses to take up new technologies: a system of people that want to farm like our ancestors did and that ignores the modernization of agriculture and the new challenges for producing the food. This misconception dates back to when EOA was positioned exclusively by the non-application of synthetic fertilizers, pesticides and GMOs. In this view, EOA is seen as a restriction for development. It is defined by what is not allowed rather than to what it is effectively

The Brundtland commission of the UN defined sustainability in 1987: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

The Earth Charter says, “a sustainable global society is founded on respect for nature, universal human rights, economic justice, and a culture of peace.”

²⁷ In Africa, Organic Agriculture is often referred to as Ecological Organic Agriculture (EOA). In this paper the two terms are synonym.

doing.

In reality, EOA is a science and principle based farming system in harmony with nature. It is defined as a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved. It includes certified and non-certified organic farming even though there are no statistics about the latter and it is based on the principles of Health, Ecology, Fairness and Care.

The international year of soils 2015 stressed the importance of soils for food security. FAO officials²⁸ alarmed the world community about the fast pace of soil degradation, fast depletion of groundwater, excessive use of pesticides-fertilizers all collectively putting stress on farming and forestry. And they reminded us that agriculture couldn't remain the same.

While global recognition of the need for sustainability in agriculture is now greater than ever, industrial agriculture is expanding at an ever-greater pace. Millions of hectares of land around the world, including species and carbon rich ecosystems, are being converted into industrial plantations to meet rising demand for animal feed and agro-fuels. Land being acquired in the Global South by food insecure countries is taken for highly mechanized industrial production systems that often displace local communities and smallholders. Despite the massive increase in food production, the number of hungry and starving, at 800 million²⁹, starkly demonstrates the gross inequity of the global food system. Against this background, Organic Agriculture developed into a food system that is committed to offer a viable alternative to farmers but also to consumers and citizens. True sustainability in agriculture is the goal to be achieved. Ecological Organic Agriculture – as holistic forerunner system – is aiming at productive farming in harmony with nature and can contribute its approaches, concepts and successes to achieve this goal. On long term, agriculture in Africa and around the globe can nourish people only sustainably or not at all.

Ecological intensification to cover the needs of people and the planet

The strategy of EOA is based on the concept of **eco-functional and social intensification** (eco-intensification). Eco-intensification is the process of increasing agriculture productivity through the enhancement of biological processes (most importantly photosynthesis), ecological knowledge, ecological practices and ecological functions rather than through intensification of finance, chemicals, energy and waste. It aims at building the resilience of the farm itself rather than outsourcing resilience to companies through the purchase of fossil fuel intensive chemical inputs.

Ecological Organic Agriculture - despite being aware of market failures and the risks - has a strategy that is characterized by using the market economy to create awareness, consciousness and through that create impact for the planet and the societies. The assumption is – and there is

²⁸ <http://www.thehindu.com/todays-paper/tp-national/agriculture-cant-remain-the-same-says-fao-official/article7962821.ece>

²⁹ <http://www.fao.org/3/a-i4671e.pdf>

evidence for the assumption³⁰ – that a growing market leads to growing impact on true sustainability.

Examples of Organic and Agro-ecological Practices		
Push and pull systems (Maize, Sorghum) Planting with space (SRI, Teff) Rotation Compost Bioslurry Compost Teas	Catch crops Green manures Inter-cropping and stacking Mulching Agroforestry Stimulating plant exudates	Holistic management / livestock practices No till / minimum till / till Mineral balancing Beetle banks
Examples of Ecological Functions that can be influenced by organic practices		
Nitrogen fixation Carbon sequestration Water holding Water purification	Resilience Growth / photosynthesis Pest & disease / predator balance / equilibrium / stasis	Pheromones Mineralization

Dynamics of organic development

According to the latest FiBL survey on certified organic agriculture worldwide³¹, as of the end of 2014, data on organic agriculture was available from 172 countries (up from 170 in 2013).

There were 43.7 million hectares of organic agricultural land, including in-conversion areas. The regions with the largest areas of organic agricultural land are Oceania (17.3 million hectares, 40 percent of the world’s organic agricultural land) and Europe (11.6 million hectares, 27 percent). Latin America has 6.8 million hectares (15 percent) followed by Asia (3.6 million hectares, 8 percent), North America (3.1 million hectares, 7 percent) and Africa (1.3 million hectares, 3 percent). Currently, nearly one percent of the agricultural land globally is certified organic. By region, the highest organic shares of the total agricultural land are in Oceania (4.1 percent) and in Europe (2.4 percent). However, some countries reach far higher shares: Falkland Islands (36.3 percent), Liechtenstein (30.9 percent), Austria (19.4) percent. In eleven countries, more than ten percent of the agricultural land is organic. For 2014, almost 500 000 more hectares of organic agricultural land were reported than for 2013. There has been an increase in organic agricultural land in all regions, with the exception of Latin America. In Africa, the area grew by almost 5.5 percent (over 54 000 hectares). A major relative increase of organic agricultural land was noted for Nigeria, Myanmar, Tonga, and Malta. In absolute terms, the highest increases were noted for Uruguay (almost 0.4 million hectares), India (+0.2 million hectares) and the Russian Federation (+0.1 million hectares). Apart from agricultural land, there are further organic areas (37.6 million

³⁰ <http://orgprints.org/24369/1/jawtuschetal-2011-world-of-organic-agriculture-p88-91.pdf>

³¹ <http://www.organic-world.net/yearbook/yearbook-2016.html?L=0>

hectares), most of these being areas for wild collection. In total, 81.2 million hectares (agricultural and non-agricultural areas) are certified organic.

There were almost 2.3 million certified organic producers in 2014. Forty percent of the world's organic producers are in Asia, followed by Africa (26 percent) and Latin America (17 percent). The countries with the most producers are India (650 000), Uganda (190 552), and Mexico (169 703). Over a quarter of the world's organic agricultural land (11.7 million hectares) and more than 86 percent (1.9 million) of the producers reside in developing countries and emerging markets.

Global retail sales of organic food and drink reached 80 billion US dollars. North America and Europe generate approximately 90 percent organic product sales with United States (27.1 billion euros), Germany (7.9 billion euros), and France (4.8 billion euros) representing the biggest markets. China has consumer purchase of 3.7 billion euros. The highest per-capita consumption was found in Switzerland, Luxembourg, and Denmark. The organic market is very dynamic with double-digit growth from 2013 to 2014 (72 to 80 billion US dollars). In the year 2000, retail sales were only 15 billion US dollars.

In Africa, there were almost 1.3 million hectares of certified organic agricultural land, which constitutes about three percent of the world's organic agricultural land. There were more than 570 000 producers. Uganda was the country with the largest organic area (240 000 hectares) and with the largest number of organic producers. The country with the highest share of organic agricultural land was the island state Sao Tome and Principe, with 12 percent of its agricultural area being organic. The majority of certified organic produce in Africa is destined for export markets. Key crops are coffee, olives, nuts, cocoa, oilseeds, and cotton. There is a growing recognition among policymakers that organic agriculture has a significant role to play in addressing food insecurity, land degradation, poverty, and climate change in Africa. Unfortunately, no statistics exist that display figures about non-certified organic agriculture areas, producers and consumer purchases.

The economic successes and growth rates are a precondition of prosperity of the EOA sector. However, this is not yet success. Only when social development takes place and sustainability increases, the purpose is fulfilled. EOA includes all the dimensions of sustainability. What that means in details is described in the *“best practice guidelines for agriculture and value chain”* of IFOAM – Organics International³².

Future outlook under the title Organic 3.0

After two years of think tanking, the organic movement is discussing further development under the title Organic 3.0, when Organic 1.0 is understood as the world of the Organic pioneers. 2.0 is the present-day reality with the fast expansion as described in the previous chapter and the high level of codification through standards and regulations. The present strategy of developing a reliable certification system that is supported by government regulations enabled continuous growth from a few farmers in many pockets of the world to a globally consolidated sector with millions of producers and consumers.

³² <http://www.ifoam.bio/en/organic-landmarks/best-practice-guideline-agriculture-and-value-chains>

FIGURE 3 | Towards More Sustainable Agriculture

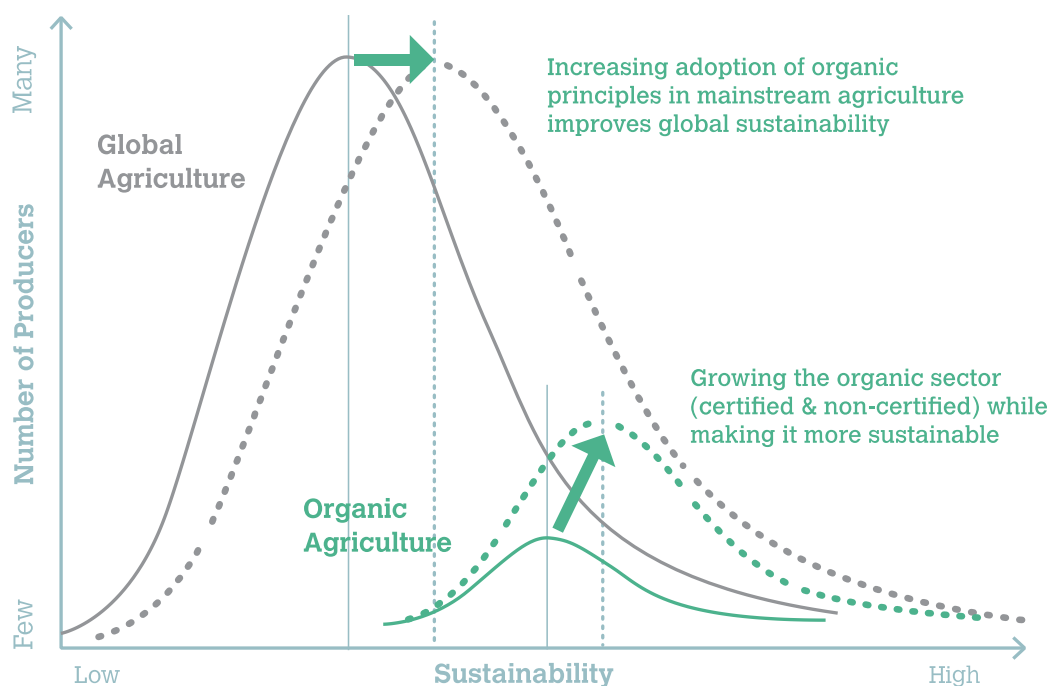


Figure: The Organic 3.0 model of the facilitation of change towards truly sustainable agriculture

Organic practices have been tested, replicated and scaled up globally. There is evidence of positive impacts on a wide range of important issues such as consumer health, biodiversity and the improved welfare of producers. The holistic system viewpoint of concentrating not only on the exploitation of short-term market opportunities proved to be robust and assured growth even in times of economic crises in many countries.

While there is sound development and wide prosperity in the organic sector, many stakeholders also state a need for reforms and call for a paradigm shift in order to make production and consumption truly sustainable. The achievements of Organic 2.0 are undisputedly impressive, but certified organic agriculture has not even reached 1% of agricultural land or of global food consumption.

Lady Eve Balfour – an organic pioneer herself - cautioned in 1977 in the first conference of IFOAM – Organics International against too strict adherence to a limiting set of rules. Balfour seemed to already fear that organic might box itself in, might define itself in an exclusive way, and so she argued for a farmer-led approach which prioritized the outcomes and impacts necessary to foster the ‘wholeness’ of a diverse, ‘living world’.

Delivering on the ambitions to have impact on the sustainable development of the planet requires further up-scaling of EOA and mainstreaming true sustainable farming systems. The overall goal of Organic 3.0 is to enable a widespread uptake of truly sustainable farming systems and markets based on organic principles and imbued with a culture of innovation, of progressive improvement towards best practice, of transparent integrity, of inclusive collaboration, of holistic systems, and of true value pricing.

The concept of Organic 3.0 seeks to address the previously outlined challenges by positioning organic as a modern, innovative system, which puts the results and impacts of farming in the foreground. Diverse priorities and challenges such as climate change resilience and adaptation, access to capital and adequate income, animal welfare, availability of land, water, seed, healthy diets, and avoidance of waste in food and farming systems cannot possibly all be folded into an ever-expanding set of standards and rules. Thus, a more holistic and dynamic model is needed.

At its heart, Organic 3.0 is not prescriptive but descriptive: instead of enforcing a set of minimum rules to achieve a final static result, this model is outcome-based and continuously adaptive to the local context. Organic 3.0 is still grounded upon clearly defined minimum requirements such as the ones maintained by many government regulations and private schemes around the world (and in the objectives of the *IFOAM Standards Requirements*). But it also expands outward from these base requirements: it calls for a culture of continuous improvement through private- and stakeholder-driven initiatives towards best practices based on local priorities (as described in the *IFOAM Best Practices Guidelines*).

The strategy for Organic 3.0 includes six main features, consistently promoting the diversity that lies at the heart of organic and recognizing there is no ‘one-size-fits-all’ approach:

1. **A culture of innovation**, to attract greater farmer conversion, adoption of best practices and to increase overall productivity and quality;
2. **Continuous improvement toward best practice**, at a localized and regionalized level;
3. **Diverse ways to ensure transparent integrity**, to broaden the uptake of organic agriculture beyond third-party assurance and certification;
4. **Inclusiveness of wider sustainability interests**, through alliances with the many movements and organizations that have complementary approaches to truly sustainable food and farming;
5. **Holistic empowerment from the farm to the final product**, to acknowledge the interdependence and real partnerships along value chains and also at the territorial level; and
6. **True value and fair pricing**, to internalize costs, encourage transparency for consumers and policy-makers and to empower farmers as full partners.

As a consequence, Organic 3.0 is innovation-oriented and proactively assesses upcoming technology against evidence-based and scientifically evaluated impact potentials based on the Principles of Organic Agriculture (Culture of Innovation). It expects operators along the whole value chain to be committed to ongoing improvements and to address all of the following dimensions: ecology, society, economy, culture and accountability. (Continuous improvement towards best practice). It provides more options for credible assurance, with more opportunities for inclusive and transparent participation by all, and exposes and mitigates conflict of interest at all levels of the public and private sector. (Diverse ways to ensure transparent integrity). It is

inclusive and proactively builds alliances with like-minded movements based on common visions rather than on competition and differences in detail. However, it also clearly distinguishes itself from unsustainable agriculture systems and ‘greenwashing’ initiatives. (Inclusive of wider sustainability interests). Organic 3.0 takes holistic and system oriented stances for further developments in a community or a region. It particularly acknowledges the core position of smallholding family farmers around the world with a special focus on gender equity and fairness of trade. It realizes the driving potentials of good governance and of putting consumer needs and health in the foreground, particularly in view of a fast changing technology environment and rapid urbanization. (Holistic empowerment from farm to final product). And finally, Organic 3.0 establishes a practical way to implement true cost accounting and strives for true value pricing, for creation of incentives for truly sustainable systems, with increased transparency, internalizing of external costs and benefits, and empowerment of all stakeholders to fair trade relationships. The proof of long-term societal benefit of such pricing models is brought into public policy discussions to correct current market distortions that reward unsustainable practices. (True value and fair pricing).

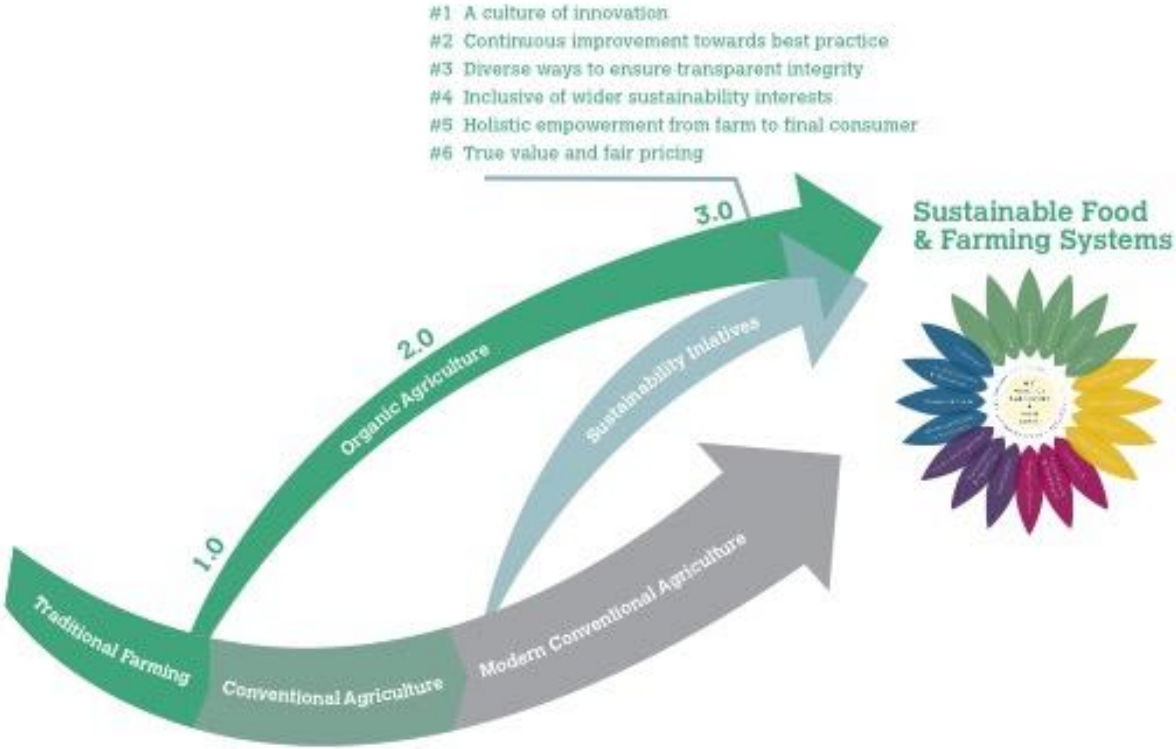


Figure: The worldview from an organic 3.0 perspective

Stepping up the Pace for Women and Youth in Organic Agriculture

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Background

Agriculture is an important engine of economic growth, poverty reduction and development. However, the dependency on oil in many developing countries has led to the neglect of agriculture as a huge resource. The growth in population, increase in unemployment, food insecurity and poverty are the major challenges to development in developing countries. Interestingly agriculture is and remains the crucial opportunity for the youth employment in many developing countries. Many youth are graduates without jobs and some also are drop-outs from school causing insurgency in most parts of several countries. The International Labour Organisation estimated that 60 million young people are unemployed (ILO, 2008) and this keeps on increasing year by year. Youth's unemployment has become the biggest developmental challenge in almost every developing country reaching 52.7 percent in 2015 (USA Bureau of Labor Statistics 2015). Some of them are involved in kidnapping, drug abuse and alcohol addiction causing nuisance in the society. Recently the impact of low oil pricing is having significant effect on both the rural and urban populace. Oil prices continued their downward slide, inching ever closer to the \$60 floor and derailing funding and growth projections in oil-producing economies (Punch 2014). Africa is one of the economies that have been projected to be hardest hit. The fear of the consequence is so much, which leads the stakeholders to the drawing board, focusing on agriculture as the main solution. Agriculture should therefore be promoted now, not only for domestic but also for export. Unfortunately, agricultural production in many countries especially developing world is by the small scale farmers who do not pay much attention on commercialization.

Uninterestingly, emphasis has been on the use of inorganic agricultural practices and distribution of fertilizers that never get to the small scale farmers, yet agricultural production is low. The non-effective use of these inputs supplied by the government excludes the large majority of small scale farmers from participating in agriculture and also without an alternative to utilize to produce more. The new direction in agriculture all over the world is to produce safe food and not just enough, considering the concept of food security and utilizing the principle of organic agriculture is very important.

Organic agriculture is the production system that sustains the health of the ecosystem biodiversity and people. It relies on the ecological processes and nutrients succession adapted to the local environments, moderately, than the utilization of external inputs, which has adverse effects ecosystem and people. Which means that organic agriculture combines traditional knowledge, innovation and contemporary science to the advantage of the shared environment and promote fair relationships and good quality of life (International Federation of Organic Movement (IFOAM), 2009). Therefore, since some of the farmers are already producing without synthetic fertilizers, practicing organic by default, it will be more beneficial for them to be exposed to the existence of ecological organic agriculture (EOA) initiative. Furthermore, the farmers need to understand that organic production system do not use synthetic fertilizers, artificial pesticides, herbicides, growth regulators, antibiotics, hormone stimulators, domestic and export markets. Besides, family farming system is being encouraged all over the world and women have the

capacity of carrying their families along. Therefore, involving the youths will not pose any difficulty. Providing support to rural populace is a way of breaking the vicious cycle that leads to rural poverty and the expansion of slums in the cities, where the poor get poorer.

The development of EOA strategies should consider rural women and youths as the epicentres, paying special attention to their characteristics and skills within agricultural sector. This will lead to a steady path to economic development through poverty reduction, enhanced revenue and create jobs in many developing countries.

Justification for Women and Youths in Ecological Organic Agriculture (WYEOA)

Despite the important roles women play in agricultural economies, rural women in Africa suffer from the highest illiteracy rates and are the most visible face of poverty and they also lack access to innovative information and materials. The men often grab the materials and innovation before it gets to the women and often times not reach the women. Oyewole, Oloyede and Meludu (2014) discovered that the coverage of organic agricultural news in Nigerian newspapers is very low. Therefore, the establishment of innovative/advancement platform of WYEOA to mainstream women and youth is very crucial and timely since African Ecological Organic Agriculture inventiveness and sensitization started just in 2012. Also, based on the need assessment of women vegetable farmers on ecological organic agriculture, it was revealed that high proportion (89%) of women leafy vegetable farmers in Oyo and Ogun States of Nigeria have high need of training on organic agriculture system (Okanlawon and Meludu 2014). Women and youth need to be exposed to the important facts they should understand on organic agriculture system for example, that the consumer demand for organic agriculture is increasing, with a projected amount of a hundred billion dollars sales in the next few years. The farmers need to know that thousands of corporations are targeting consumers by adding organic foods to their products and that it will take about three years for a conventional farmer to be certified. This will make the farmers to take quick decision on whether to adopt with others or be laggard. The potential farmers must know that organic agriculture has benefit for the producers, consumers and environment when the principle of health, ecology, fairness and care are considered for quality and durability of the environment.

Unfortunately, women are still cultivating with a lot of synthetics which are harmful for the health of humans, endangering food sovereignty, as well as food and nutrition insecurity. Rural women - instead of being treated as mere beneficiaries – should, in other words, be viewed as stakeholders that possess knowledge which complement experts' formal knowledge. The networks operating in rural areas, especially rural women's organizations are partners to be involved in the conceptualization of the development programs.

Uninterestingly, the average age of farmers continue to increase, in 2014 farmer ageing population increased rapidly, worldwide, the average age of farmers is about 60 years, including developing countries. An interesting question every right thinking faculty should be asking is, how will they be replaced? Another challenge facing agriculture is the unwilling attitude of the youth to participate in agriculture. They take careers not related to agriculture such as law, medicine and engineering etcetera. The crux of the matter is how to change the mind-set of women and youths to virtualize farming as a profitable business venture; train them on generating appreciable income to meet domestic and export needs. This will improve their standard of

living-through improved income and the youth will be motivated to stay in rural areas, as inputs will be delivered at their farm gates, on credit basis and interest free, and produce enough food crops, meat and fish using EOA principles and practices.

WYEOA Vision:

Increase women and youth involvement in ecological organic agricultural system that provides: Job opportunities, enhanced income, food and nutrition security and reduced insurgency that will lead to sustainable social and economic development in Africa and the world.

WYEOA Mission:

The mission of WYEOA among others is to promote ecologically organic sound strategies and practices among women and youths; safeguard the environment, enhanced value chain, food and nutrition security, guarantee income generation, reduce poverty and insurgency through innovations, institutional capacity development, market participation, public policies and programmes outreach and information communication networking.



Fig. 1: Inauguration of Women and Youth in Ecological Organic Agriculture in Nigeria



Fig. 2: Inauguration of Women and Youth in Ecological Organic Agriculture in Republic of Benin

The inauguration of Women and Youth in Ecological Agriculture (WYEOA), West Africa took place on August 20, 2014 between 12.00 noon - 2.00 p.m at the Faculty of Agriculture Large Lecture Theatre, University of Ibadan, Ibadan, Oyo state, Nigeria Fig. 1. The programme was organised by Healthy Foods for Consumers Initiative, Nigeria (Hefci) in collaboration with Association of Organic Agriculture Practitioners of Nigeria (NOAN). A total of 155 women and youth participated in the programme including students, academics, farmers (male and female), agronomy club executives, members of the press, researchers and young and old professionals were in attendance. This audience was exposed to the principles and benefits of organic agriculture. After several trainings in 2013, the level of awareness, knowledge, and involvement of the women became encouraging, majority (51.3%) of the respondents have high level of awareness, which is also reflected in their knowledge (69.7%), thus we have majority (53.7%) that are involved in EOA practices.

The inception meeting of Women and Youth in Ecological Organic Agriculture (WYEOA) West Africa was held during the health break of the 2nd Day of the 3rd West African Conference on Organic Agriculture, Republic Benin October 10, 2014. The meeting started with the introduction of the Organization (Women and Youth in Ecological Organic Agriculture (WYEOA)) to all representatives and to include other African countries present at the conference. It was resolved at the end of the meeting that the association should cover the totality of Africa, and that participants should conduct activities in their respective countries and report during 3rd African Organic Agriculture Conference, October 2015. Over 100 women and youth registered with their e-mails.

Membership

It was resolved at the Republic of Benin meeting that membership should be open to all youths and women in Africa. It was agreed that the members of the steering committee must be limited to youths and women and organizations that are members of the National Organic Agriculture bodies in different countries in Africa. The meeting left the coordinating right of WYEOA organization to Healthy Foods for Consumer Initiatives in Nigeria for time been. The meetings and conferences should be based on the location of every African organic agriculture conferences.

Healthy Foods for Consumers Initiative (hefci) is registered (TIN: 12127375-0001, Registration No: RC50287) charity/non-government organization (NGO) in Nigeria, which was initiated in 2004 focusing on food and nutrition security, agricultural diversification, value addition and the adoption of best practices in selected rural areas of Nigeria. Good health and long life with quality food consumption is our crucial policy. Emphatically you are what you eat, which means that what you eat today will tell of your health the next day/future. Information is very important of which the consumers and producers could utilize if available on the daily basis. Consumers should make more efficient eating habit through the activities of hefci for good health and sustainable living. Hefci vision is to promote the adoption of healthy and adequate food consumption habits for long life as well as income generating opportunities from plant and animal in an ecological and sustainable environment. Strategically with the mission to develop resources and dissemination of information that will assist consumers in making better food choices thereby embracing ecologically, socially and economically acceptable food consumption pattern and improve agricultural system based on the principles of environmental friendly system. Hefci target audience include: school pupils and students, those who prepare school meals, youths, farmer groups, Agricultural Extension Agents, women, elderly, vulnerable groups (HIV/AIDS, malaria, hypertensive and diabetic patients) and prisoners.



Fig. 3: Youth Organic Summer School (YOSS) 2015 Fig. 4: The Youth Forum and International Association of Students in Agriculture

Activities after the Republic of Benin Meeting

After the meeting at the Republic of Benin the coordinating organization hefci continued to reach out to members within the country (Nigeria) and other African countries through e-mail. From August through September, 2015 hefci inaugurated and established Youth Organic Summer School within University of Ibadan Oyo State Nigeria (fig. 3). Trained about 150 youth on ecological organic agriculture system (fig. 4). The youth were provided with T-shirts with the inscription organic agriculture is life at the back. Our vision is to promote safe agricultural production value chain and healthy food consumption habits of youth, which will subsequently influence their friends, parents, neighbours, and teachers. Our Mission is to ensure a healthier and safer nation by educating the youth on concept, benefits, principles of organic agriculture and adequate food choices by “catching them young”. At the end of YOSS certificates were issued to the participants. The learning content include: concept of organic agriculture, differences between traditional, conventional and ecological organic agricultural practices, principles of ecological organic agriculture, benefits of ecological organic agriculture, use of agricultural tools, implements and machineries, compost manure preparation and application, planting in nursery bags, vegetable bed preparation, seed selection and planting, organic pest (use of marigold & neem), organic weed control, certification of organic products, marketing of agricultural products, value addition of organic products and followed by excursions to selected agricultural sectors –fishery and rabbit pen.

Interestingly, hefci discovered the prominence of music and drama to facilitate rapid adoption of organic agricultural system, therefore keyboard lesson was organized within the program. Subsequently, an anthem on organic agriculture was produced and documented during YOSS program in August 2015 in Nigeria fig. 3. The anthem below was launched during the third African Organic Conference in Nigeria, 2015 and it was song as an anthem in all the West African Cluster meetings and during one of the plenaries. This suggests that it should be adopted for all organic agriculture meetings worldwide.

The Anthem

Organic is life (2ice)
 Every day I learn new things, organic is life
 Every day I learn new things, organic is life
 Organic is life (2ice)

Farming without synthetics, organic is life
Organic is life (2ice)

Using Organic Standards, organic is life
Organic is life (2ice)

For higher income, organic is life
Organic is life (2ice)

For healthy producers, organic is life
Organic is life (2ice)

For healthy consumers, organic is life
Organic is life (2ice)

For healthy environment, organic is life
Organic is life (2ice)

That is why I am saying that organic is life
Organic is life (2ice)

That is why I am saying that organic is life
Organic is life (2ice)

That—is—why—I- am- saying---that---organic----is--life

Stepping up the pace and forward witnessing of EOA

Time is of essence in stepping up the pace for women and youth participation in organic agriculture movement. Therefore, this is a crucial period to enhance the dissemination, adoption and diffusion of organic agriculture system movement initiatives with great focus on women and youth.

It is important to note that most of the developmental initiatives promoted throughout the world was done through establishment of platforms such as Women in Agriculture (WIA) focus has been on conventional agricultural practices, Association of Women in Development (AWID) Youth in Agriculture (YA), American Business Women Association (ABWA), American Medical Women Association, Women Marines Association, American Association of University Women (AAUW), Agricultural Youth Organizations, Young Professionals Platform on Agricultural Research for Development (YPARD) just to mention but a few. It is imperative now, due to the fact that agriculture is facing serious transformation in many countries, especially in the developing countries where poverty, food and nutrition insecurity, unemployment and certain serious non-communicable diseases are ravaging the population.

Hefci has conceptualized a proposal apart from the establishment of a functional innovative platform for the sensitization of Women and Youths (WY) in Nigeria on ecological organic agricultural (EOA) principles and practices but also by the use of three local languages for increase participation and safe food production. This project proposed to compile a metalanguage

for EOA discourse in three major Nigerian languages, namely Hausa, Igbo and Yoruba in order to facilitate communication performances for easy and faster dissemination, adoption, utilization and diffusion of EOA system with the aim of reducing synthetic input hazards in food production (sponsorship is needed for the implementation). This fits in so well in a country like Nigeria which is made up of six geopolitical zones, though with three major national languages which more than 70 percent of the population (especially the farmers) speak and communicate with on a daily basis. A compilation of a metalanguage for EOA channel of communication in the three major languages will therefore have a widespread impact on nearly the entire Nigerian population. The country has population of over 173.6 million (NPC, 2012) and there is an increasing challenge in meeting the demand of quality fruits and vegetable supply in the area. It is high time that Nigeria should reverse from decades of short-sighted neglect of agriculture that enslaved her to crude oil and gas, due to the fact that dependence has now caught up with the country on the recent events in the world. This situation I believe is not quite very different from many other developing countries.

Shaping our future from the ground up (fig. 4) began with the sensitization of The Youth Forum, University of Ibadan and the International Association of Student in Agriculture (Nigeria Branch) on the concept of OA. It is no longer fashionable for youth to rely on government jobs, of which self-employment or private participation employing the youth is the fresh direction. Women comprise about 43 percent of the agricultural labour force globally and even more in developing countries, up to 75 percent. Women also, are the backbone of the development of rural and national economies. In Africa, 80% of the agricultural production comes from small scale farmers, who are mostly rural women. Women comprise the largest percentage of the workforce in agricultural sector, but do not have access and control over land and productive resources and decision on management practices. During the last ten years, many African countries have adopted new land laws in order to strengthen women's land ownership rights. This has helped to improve the situation of rural women on access to land but not compared to men. It is very important to re-strategize to facilitate stepping up of women and youth to adequately participate in organic agriculture through:

- Support from all the agencies in OA movement such AU, AfroNet, SDC FiBil as well as regional and national organizations to establish women and youth (WY) in organic agriculture platform.
- Organize yearly meeting of women and youth in organic agriculture stirring committee in West, East, South and North Africa to share success stories and way forward in OA dissemination and diffusion in Africa.
- Conduct sensitization, training workshops, organize seminars to promote information communication/develop capacity and resource management for WY on OA system.
- Organize conferences to showcase success stories on best practices from WYEOA and present scientific papers.
- Network with government agencies and non-governmental organizations in promoting EOA.
- Research development and documentation on EOA (through website, Facebook, You tube, tweeter and information hubs).
- Develop market outlets for ecological organic products.

- Make provision for WYOEAF conference to be conducted a day to every African Organic agriculture meetings and conferences.

Conclusion

This article indicates that promoting women and youth in ecological organic agriculture is additional way of engaging the teeming unemployed youth, which will assist in reducing crime and insurgency. Empowering women will also lead to repackaging agriculture through value chain for commercial and a boost in food security, food sovereignty and promotion of organic agriculture system worldwide. There hasn't been enough documentation of women and youth organic agriculture in Africa, which is required for OA promotion. Establishment of women and youth in OA platform should be a great concern. This will enhance the achievement of social and economic development using OA as an alternative. Together we will make sustainable impact eat organic foods, for healthy life.

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Development of EOA Enabling Policies

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Introducing organic agriculture

Agro Eco worked/works mainly on export oriented value chains. Because of its quick volumes and value, it is often through exports that organic starts making an impression on governments. Not because it is a sustainable way of agriculture, but because the country earns foreign currency. Profitability allows, drives sustainability.

We always contact and promote national organic stakeholders, national platforms. We visit local research institutes to exchange information about for example biological control or nitrogen fixation. We sometimes collaborate with universities. Students can do a practical or a thesis, and we use young graduates for social research, and sometimes employ them.

Working with the public sector

I am speaking from a private sector experience, be it companies or NGOs. We, and the producer groups or the buyers do not work with ministries when they don't have to. Ministries of Agriculture traditionally are pretty conservative. Ministries of Trade and Industry, of Environment, of Tourism are more open-minded. We sometimes involve MinAgri extension staff, pay top ups, or take them over, but more often it is better to employ and train young people who are not yet programmed to advertise chemicals and fertilisers only. The value chains we set up usually have the farmers' organisation or the buyers themselves providing agric extension.

In Africa there is some overregulation and bureaucracy than in Latin America or Asia. Many African countries are in the process to reduce the regulatory burden to create a more enabling, market oriented environment with fewer and more appropriate regulations that are correctly enforced. From my perspective, the farmers, the trade and the NGOs are the ones that make organic agriculture possible. The Ministry of Agriculture is normally perceived as a kind of stand in the way. Unfortunately, a lot of farmers, small NGOs and also its own staff still believe that the Ministry of Agriculture is omnipotent and needs to approve of organic activities, or have a policy about it before they may take place. Our experience is that organic agriculture takes off when it is a viable business, not because there is a policy about it.

Organic Agriculture

So far I spoke about organic agriculture as that is how it is called in the export markets. We know what that is. If I may, it is originally Eurocentred but spread to the US and Japan which became the biggest markets, while Brazil, China and India are catching up. These big producers-importers-exporters have regulations defining what organic agriculture is and how it should be labelled. Besides the public regulations there are, in Europe, the historical private sector standards that may still dominate some markets (and bring better prices). Private and public standards dictate that organic products should be third party certified, whereas in some domestic markets (e.g. Brazil) participatory guarantee systems are applied. These countries trade with each other, and also import from other parts of the world. Organic trade, organic business is growing year after year.

The African Union has recognised that often, export oriented organic agriculture is single commodity oriented. It forgets about the entire farming system, ignores the role of animals, of the community and the wider ecology it operates in. It is not as bad as ‘chemical’ agriculture which makes Africa ever more dependent on imported, expensive inputs but it is an imported, an imposed farming system. I believe that the ministers wanted an African version of organic agriculture when they wrote their decree and they called it Ecological Organic Agriculture.

Ecological Organic Agriculture

The EOA Continental Steering Committee mentioned in its meeting in August 2015 that EAO is about:

- Reclaiming the lost environmental integrity;
- Embracing biodiversity and respect for nature for Africa to feed itself;
- Partnering with communities, respecting their wisdom and knowledge;
- Engaging women and particularly youth to move forward into the future;
- Believing in the right of all Africans to nutritious and healthy foods;
- No GMO & GE.

Put differently, it is an African version of organic agriculture. One for communities, for landscapes. One that focuses on the smallholder farmers who produce the majority of the food in Africa. One that is independent from Western/Chinese imports. Working with millions of farmers, a 10-20% change has a big impact, bigger than a doubling of production among 5% of the farming population. As an organic person I like and support that. I like EOA. But we have to be careful not to confuse each other about what we are advertising, or quarrel about this in public, as speaking with one voice is important. Before you know, organic advocates and adversaries, and government departments get stuck in the standards definition and certification thing, and there is no progress in expanding the subsector. That is not what the African Union Heads of States Decision EX.CL/Dec.621 (XVII) wanted.

The value chain

Development of organic agriculture is not only about farming, farmers. I take the opportunity to advertise the value chain approach. See the picture. In the middle is the primary value chain. The top segment, the business or enabling environment, is where governments, in policy or practice, have a lot of influence. In the bottom part, the service providers who are to support the value chain actors, there are some government agencies, like extension and quality inspection. Most service provision is increasingly delegated to the private sector. Identifying all stakeholders, seeing where bottlenecks are, where changes should be made, is a good exercise when working in or on a value chain. It is also a tool to identify all instances where policies and the regulatory environment play a role, what and when government agencies should support.

The primary and extended value chain

Business environment

Agribusiness culture Climate change Donors support Govt programs
Electricity Telecom Land tenure Education Transportsystem
Regulations Standards Permits Corruption Subsidies

Value chain

Inputs → Farmers → Collector → Trader → Market

Farm&Co advisory CBs NGOs MFI Banks Labs Research Vets
Investors Universities Govt agencies Sector org. Media Tradefairs

Services

I am showing this because the development of OA depends on A) the market and down & upstream linkages in the primary value chain, on B) the enabling -or frustrating- environment and C) on the presence, quality and cost of agencies that provide services to the value chain actors. Its development does not depend on a policy but on a whole conducive environment. It does not only need a change in policy, it needs a National Action Plan.

Getting organic enabling policies

It is understandable that organic advocates want recognition of organic agriculture, or ecological organic agriculture. They want it to be recognised, appreciated, made possible, supported, they like it to be the way forward. That is quite a goal at a time when OA or EOA is not even mentioned in current agrarian policy. That is quite a process needing awareness-raising, dialogue, trust building. For some, OA is a niche market thing, for others a different view on agriculture, and it is a paradigm shift for others. It is a process of change. That is quite a job. That can only be achieved when it is possible to show good results in-country (no dramas with pests and diseases, decent yields, lower cost of production, better marketing). Should this be achieved by working on politicians who are to vote on a next policy bill? Or rather through consumers who question the safety of their food after scandal X with pesticides, or an EU or Japanese ban on imports from the country? Or do we have the economic data so that the business community demands for it? What is important is that one can show in-country that (many) farmers do it and benefit from it. It is not the promise but performance that should sell. The Ministry of Agriculture will follow; do not expect it to lead. Organic agriculture should take off without subsidies and policies.

Even when there is no mention of organic agriculture in the national policies, organic projects already fit in most rural development, food security, agri-business private sector, non-traditional exports, value chain development, climate smart, additional income generation and/or gender and future youth empowerment programs. There are donors which finance important bits and pieces of the national budget or agricultural sector development programs who are very sympathetic to more sustainable agriculture. They won't entertain an exclusive organic project, but would like to see some of them happening within the existing programmes.

Obstructive and discriminating policies (or practices)

Sometimes there are obstructive policies like that all coffee and cocoa exports need to be fumigated or that all sowing seeds must be treated. However, every law should have an opportunity for exceptions or exemptions. When there is a subsidy on fertilisers or pesticides, it is frustrating that it would not apply for organic fertilisers or botanicals in a bottle. It is frustrating when compost needs to be approved as a fertiliser. There are few limitations though to what farmers may make and use on their own farm. Tackling obstructive or discriminating policies comes first. They should be addressed in a private-public sector dialogue. But rather with a local authority who has visited organic farms than a politician type of mover and shaker.

Am not sure that we need mention of organic agriculture in national agrarian policy to be allowed to use untreated seed, or naturally occurring micro-organisms for pest control, and that also organic fertilisers should be subject to a subsidy when there still is such a scheme, or that the extension officers should give up their chemicals only message. True, all agro input dealers will speak against you, many in the public sector do not like to be criticised. It needs an investment in personal relationships to work with staff and heads of the relevant Ministry of Agriculture (local) departments when you want to overcome this or that obstructive or discriminating policies.

Limited need for research

Organic NGOs always state a great need in research in organic issues. In practice there are not that many problems that cannot be solved, have not yet been solved elsewhere. The traditional research apparatus is not very helpful, and it is changing only very slowly towards farmer demand driven, on-farm research. Research in organic agriculture is not for academics in white coats. When working with farmers, mixing what they know with modern science that you can find on the internet, you can solve most problems with some farmers, in a participatory process. That is where the organic movement is still a frontrunner, that we solve the problems of the farmers with the farmers. Rather than channelling funds to organic research, prefer funds to become available for NGOs to organise, train, work with farmers to solve their problems.

Education

More pressing in our view is the inclusion of ecological organic agriculture in the education system, including vocational training. We look more and more towards the new generation to grow the agriculture sector in Africa, rather than the old generation. Organic projects should be open for students to visit, to do a practical or write a thesis about.

One of the first tasks of a national organic platform is information exchange among the organic stakeholders, and beyond. It is great when a contact person from the Ministry, or persons from

relevant different directorates participate in that, as observers. Workshops and conferences are important communication tools.

Of particular importance is consumer education. A scandal or two about pesticides (or GMOs) in foods can do much more than farmer groups asking for a subsidy. A scandal or two (a year) about false labelling of organic products is great for getting in the press, for getting name recognition. Only when there are enough scandals, there will be a law protecting the use of the organic word in labelling, and a national logo.

The private sector

While there is a lot of work to do for organic advocates, there is also an important role for the commercial sector. They should communicate that organic agriculture is good business. Agro Eco prefers to work with smaller companies, but big ones make more impression.

Free advice

There is a whole lot of policymaking, strategizing to be done by the organic movement in a country, to enable the growth of the organic sector. Much of it is internal, among the stakeholders in the organic value chains and those supposedly supporting them. Through public-private sector dialogue the ministry is informed of the bottlenecks to growth. It should be primarily the business sector that exerts the pressure on governments, local authorities, to allow organic to grow. Cooperate with each other. Speak with one voice. Come with simple messages. Show good examples. Have physical evidence to visit: farms, shops, markets, and products. Don't spend too much time on defining a national production standard (there are plenty of examples) and on developing certification (it will come when there is business in it). Have a vision, lay that down in a National Organic Action Plan. Prioritize. Have patience and stamina. Getting an organic sector off the ground takes 30 years. Success.

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Institutional Innovations in Ecological Organic Agriculture in Africa

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Introduction

A common method of agri-food system innovation has been to develop and advocate the adoption of productivity-enhancing technology, underpinned by improved research and development (Lyson and Welsh, 1993). Recent theories of innovation and socio-technical change recognize the importance of institutions (including markets) and techno-economic networks in the adoption and diffusion of innovation (Grin et al., 2010; Smith et al., 2005; Callon, 1991). Studies of grassroots and social innovations are beginning to illustrate the importance of organizational and spatial arrangements, identities, mobilizations, knowledge and practices (Smith and Seyfang, 2013; Moulaert, 2013). If we take this broader view of agri-food system innovation, we find evidence of smallholders who are able to innovate, to organize themselves for accessing new market opportunities, to upgrade into processing activities and to increase their power in market negotiations (HLPE, 2012). Put simply, innovations for sustainable agriculture are both technological and institutional.

Recent experimentation in these systems push the boundaries of the traditional roles of institutional and market intermediaries who are taking on a wider range of roles in linking farmers with markets for their produce (cf. Vorley, 2013). These intermediaries are part of local infrastructural and institutional environments and include a range of organizations that provide support to producers to learn sustainable techniques and market sustainably produced products and services (Hamann and April, 2013; Klerkx and Leeuwis, 2009; Steyaert et al., 2014). For example, within organic agriculture systems, an emerging approach is the participatory guarantee system (PGS), whereby the oversight systems are created by producers, researchers and consumers who collectively ensure that the sustainable practices are adopted (IFOAM, 2008; FAO, 2013). In other contexts, well-established farmer-supported marketing cooperatives are taking on new roles in supporting the adoption of more sustainable practices and technologies. We also see instances where public research and extension organizations are beginning to incorporate marketing aspects to the farmer field school methodology and private traders are also beginning to invest upstream in their value chains to provide infrastructural and organizational support for small-scale producers.

The study presented in this chapter focused on these institutional and market intermediaries and illustrated *how markets work to create incentives for the adoption of sustainable practices* (Loconto et al., 2016). This chapter presents a summary of the core results of this study, with a specific focus on the six African experiences included in the study. First, we summarize the study methodology and present the concept of ‘institutional innovations’. Second, we introduce the six African experiences from Benin, Namibia, Nigeria, Tanzania and Uganda and present the core elements of the innovative mechanisms that are at work in these cases (multi-actor innovation platforms (IP) and participatory guarantee systems (PGS)). We conclude with the policy recommendations that were developed through a participatory researcher-practitioner workshop that was held in Bogotá, Colombia in 2015.

Methods

Following a case study method of qualitative research (Maxwell, 2005), in 2013, the authors launched a call for case study proposals on institutional innovations that link sustainable practices with markets for sustainable products. We received 87 proposals, of which 42 were considered relevant for the study. We then evaluated these based on 10 criteria that ranged from geographical priority to quality and innovativeness. Fifteen detailed case studies were finally selected on innovative approaches (public, private and/or civil society) designed to link sustainable agriculture practices with markets for sustainable products in developing countries across the globe (4 Latin American, 6 African and 5 Asian). The authors are primarily the implementing organizations (10), southern researchers with implementing partners (4), an implementing donor organization (1) and a northern researcher with the implementing organization (1) – put differently, the innovators themselves.

Since the focus of the study was on understanding how institutions are changing in order to accommodate the linkages between sustainable agricultural practices and markets for their products, we categorized the cases according to the sustainable practices and institutional innovations for linking farmers to markets. The cases included more than 32 different sustainable agriculture practices, which were identified by the case study authors as part of organic farming systems (ten), IPM approaches (two), and integrated production systems (IPS) (three). The bias towards organic agriculture in our case studies is a selection bias that comes from the distribution of the call for case studies, which was sent through FAO; organic, sustainability standards; and academic networks where there is generally greater attention paid to organic farming than to other sustainable agriculture techniques.³³

The case development process was iterative where the authors developed a structured outline with guiding analytical questions for the case studies. The first drafts received detailed comments by the authors and followed up consisted of either field visits (for 8 of the cases in 2014), where the authors conducted interviews with the case study authors and the other institutional actors who were identified in each case, or by video conference with the authors. In the six cases where field visits were not possible, peer reviewers who were knowledgeable about the case and its context were identified to review the cases in 2014-2015.

Institutional Innovations in Africa

We developed an analytical framework that helps to characterize the 15 case studies as innovations, and to determine the roles of different actors in providing the functions that make these institutional innovations work as incentives to transition to sustainable agriculture. By focusing on the actors and strategic realignments (Callon, 1986; Genus and Coles, 2008), institutional innovation is a process of designing and redesigning how actors see the problems of sustainability in their local contexts and the mechanisms they use to mobilize and guide their collective action in the market. In other words, *institutional innovations are when people and*

³³ We announced the call through the following LISTSERVs: FAO departmental lists, ISEAL IMPACTS, IFOAM (PGS list), INRA (UMR Sad-Apt, UR Sens), CIRAD, EGFAR, Altersyal, Rural Finance Learning Centre, ISA RC40 (Research Committee on Agriculture), Food for the Cities, PRODARNET, Global FFS Review, E-forum 2, POET Com, East African Organic Movement Organizations.

organizations (actors) strategically mobilize others through network relationships in order to redesign or replace institutions.

Analyzing institutional innovations according to four dynamic processes (problem framing, building networks, enacting institutional arrangements and collective action) (Hargrave and Van De Ven, 2006) provides us with an account of why actors have innovated and how these innovations in market-related institutions have been able to incentivize the use of sustainable agriculture practices on the farm. In order to analyze how market-driven mechanisms were created, we combined this descriptive analysis with the analysis of Hekkert *et al.* (2007) of “*innovation system functions*” (Entrepreneurship, Knowledge creation, Knowledge sharing, Guiding the innovative process, Creating spaces for market exchanges, Resources mobilization, and Legitimation activities). This enables us to describe both how actors build *networks* and *enact institutional arrangements* by identifying actors and the roles they play in the functioning of these networks. The main focus of the approach of Hekkert *et al.* (2007) is through the analysis of resource availability and mobilization. In this context, resources are not only financial, but also human, social, physical, political and natural. By identifying these functions, it can be seen how actors are mobilizing different strategies that effectively redefine the institutions. The six cases that we collected from Africa are illustrative of innovation platforms (IPs) and participatory guarantee systems (PGS).

Innovation Platforms

An IP is a “multi-actor configuration deliberately set up to facilitate and undertake various activities around identified agricultural innovation challenges and opportunities, at different levels in agricultural systems (e.g. village, country, sector or value chain)” (Kilelu et al., 2013: p. 66). Put differently, stakeholders in IPs gather together to facilitate and plan activities connected with the adoption of a specific agricultural technology. The IP begins with partnerships located within local research, training or extension bodies and includes farmers. It uses national and international knowledge to promote organic or sustainable agriculture practices. Initial legitimacy comes from outside of the group, usually related to the technology, then builds internally among the actors. The focus in these cases is on specific technologies and farmer-led experimentation. Since the focus is on introducing specific technologies to the production system, new local markets are created as an outlet for the new sustainable supply, usually in the form of on-farm sales. We observe changes seen in the rules for training, extension, production, and the allocation of responsibilities among these actors, thus qualifying the IP as an institutional innovation.

There is no set configuration for an IP – it can be centralized or decentralized and focus on research and/or development activities. We see examples of this among the four African IP case studies. The Songhai Centre in Benin, the community-based farming scheme in Nigeria and the Kangulumira Area Cooperative Enterprise (KACE) in Uganda are centralized models focused on research, extension services, training and development. In the United Republic of Tanzania, national-level government agencies collaborate with the Tea Research Institute of Tanzania (TRIT), private companies and NGOs to develop new technologies, exchange knowledge and provide services to smallholder farmers for RA-certified production practices.

Songhai Centre in Benin: An Innovation Platform promoting an integrated development model

Adapted from: Gaston Agossou, Gualbert Gbehounou, Godfrey Nzamujo, Anne-Sophie Poisot, Allison Loconto, and Caterina Batello, 'Songhai Model model of Integrated integrated Productionproduction in Benin' in Loconto et al. 2016.

In 1985 a Dominican priest, together with others Africans partners, founded the Songhai Centre. During the following years, three more facilities had been created around Benin. Through the construction of an innovative community that leverages on cardinal values of courage, creativity, sense of the common good, discipline and solidarity among African young people, the Centre promoted a system of integrated development both to develop a sustainable, effective and competitive agricultural system, and to provide services and trainings to young agro-entrepreneurs. Songhai Centre implemented a production model composed of three basic factors: primary production, agribusiness and services. Primary production included annual crops, perennial crops, livestock and fish farming. This integrated farm system provided synergies and technical complementarities among the production nodes. The agribusiness activities included the transformation of agricultural products as well as waste recycling. Songhai agro-processing units not only create employment but also create a market for sustainable products produced by farmers. To sell its products, Songhai Centre developed a marketing plan that takes into account consumer requirements and focuses on direct communication, direct sales and a network of distributors. The Centre was also able to directly manage logistics and supply book outlets, supermarkets and wholesalers with its trucks. Furthermore, by developing a Songhai label for all products, consumers identified Songhai products as more sustainable. As part of the integrated development model, one of biggest tasks of the center was to provide trainings and extension services to young agro-entrepreneurs in order to strengthen their capabilities. The approach used for business training was that of learning by doing. During 30 years, Songhai Centre trained 7,500 people and the beneficiary population can be estimated at more than 100,000 people. Furthermore, the center annually received more than 20,000 visitors, mostly from Benin and near countries, who came to learn more about Songhai integrated development model.

The Community-based-farming scheme (COBFAS) in Nigeria: Linking Universities with the surrounding communities.

Adapted from: Joseph Atungwu, Mure U. Agbonlahor, Isaac O.O. Aiyelaagbe and Victor Olowe, "Community-based farming scheme in Nigeria: enhancing sustainable agriculture" in Loconto et al. 2016.

This innovation began in 1988 when the Government of Nigeria established two specialized agriculture-based universities, including the Federal University of Agriculture, Abeokuta (FUNAAB) with the triple mandate of teaching, research and extension. In 2008, taking advantage of the enabling environment created for sustainable agriculture issues that had developed in the country before this date, FUNAAB, together with the Government of the United Kingdom and Coventry University (UK), conceived the Work, Earn, Learn Programme (WELP). In 2009, the curriculum for teaching organic agriculture at the B.A. level in higher education institutions in Nigeria was revised to give it a West African regional outlook. This motivated FUNAAB to initiate an innovative strategy by taking the WELP experience and establishing COBFAS in December 2010. The COBFAS approach involves lectures, practical skills acquisition sessions, practical attachments with farmers and operation of an organic produce kiosk that sells trainee produce (e.g. vegetables, fruit, medicinal plants, and poultry). Under

COBFAS, FUNAAB provides the institutional framework and support for the students to undertake the one-year mandatory internship in four rural/peri-urban communities in Ogun state. Annually, student trainees farm on 180 ha provided by the host communities free of charge. The student training programme is a blend between traditional and modern agriculture so that students gain hands-on experience in farm management in the rural setting where most Nigerian farmers live. Interactions between the students and farmers at community level provide avenues for technology verification and updating knowledge on farm management in such a way that smallholder farmers adopt sustainable agricultural practices that increase their capacities to access high-value markets for their produce. The scheme is a new way of training agricultural students by exposing them to the challenges of agriculture in Nigeria. It is innovative because the students work alongside rural farmers and compare notes on technologies and entrepreneurship. To date, more than 80 students (modern future farmers) have been trained through these programs.

A Cooperative approach to expanding the organic pineapple market

Adapted from: Sylvia Nalubwama, Stephen Anecho, Muhammad Kiggundu, Norman Kwikiriza and Yahaya Wafana, "Role of cooperatives in linking sustainable agro-ecological farming practices to markets. Kangulumira Area Cooperative Enterprise (KACE) in Uganda" in Loconto et al. 2016.

Kangulumira Area Cooperative Enterprise (KACE) was established in 2003. The objectives of its formation were to: (i) organize small producers to enhance market opportunities; (ii) train farmers on sustainable farming practices; (iii) create linkages with development partners; and (iv) engage farmers in a credit and savings scheme. It was envisaged that through KACE farmers would access better markets and bargain collectively for better prices for their organic pineapple produce. It was also envisaged that through KACE farmers could obtain training on sustainable production and be linked to preferential markets. KACE currently comprises 32 smallholder farmer groups, also known as rural producer organizations (RPOs), which includes a total of 3,234 individual farmers: 1,068 male adults, 687 male youth; and 973 female adults and 506 female youth. The cooperative gives pineapple farmers avenues for bulking, processing and marketing their produce. KACE works in partnership with other institutions, and works through committees to extend services to its members. Over time, the cooperative has provided demonstrable results in providing a viable avenue for greater developmental impact in terms of improved farmer incomes and livelihoods. This has been a result of various factors such as a strong internal control system, organic premium prices, fair-trade certification, improved productivity resulting from sustainable agro-ecological practices, organized marketing and product value addition. KACE enables its members to diversify their products through processing and enabling them to access local markets for fresh pineapples and pineapple wine, and regional and international markets for their dried pineapples.

Tea sector in Tanzania: Private actors implementing the adoption of sustainable standard for export markets

Adapted from: Filbert Kavia, 'Institutional collaboration for sustainable agriculture: learning from the tea sector in the southern highlands of Tanzania' in Loconto et al. 2016.

The institutional innovation showed private actors in the tea industries that, starting from 2009, conducted trainings and extension programs to implement Rainforest Alliance (RA) certification among smallholder tea farmers. Smallholders, that are organized in groups through the Tanzanian

Smallholder Tea Development Agency (TSHTDA), delivered their leaf to one of the 9 tea processing factories certified by Rainforest Alliance standards (RA) owned by 3 private companies on a contract farming basis (MTC, UNILEVER, & WATCO). The mission of the companies was to provide effective management services to smallholder groups for efficient production, processing and marketing of high quality teas through the Rainforest Alliance (RA) standard thus strengthening and increasing their sustainable suppliers. Companies, that create a market for sustainable smallholders, were motivated to upscale and embed smallholder farmers into sustainable tea production through RA standards for export markets because RA standard increase product quantity and quality and enhanced market recognition of responsible farming (and thus RA certified teas). This helped the companies to maintain their markets and tap into new markets and thus one of the ways for the companies to maintain and improve their market.

Participatory Guarantee Systems

PGS are networks created within local communities and consist of farmers, researchers, public sector officials, food service providers and consumers. They are “locally focused quality assurance systems. They certify producers’ [farming practices] based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange”. The role of this type of network is to create a local system of production and consumption whereby multiple stakeholders experiment with sustainable agriculture technologies (Rosegrant et al., 2014), but also collectively ensure that the techniques are adopted by setting standards and verifying their compliance (i.e. governance arrangements) (IFOAM, 2008). PGS therefore both ensure the diffusion of the innovation and are the means through which the innovation process is governed. PGS emerged as an experiment in organic agriculture in the 1970s in the United States of America, Japan and Brazil, but are now found in 26 countries around the world. In developing countries, they arose in response to protests against the dominant paradigm of standard setting by corporate and northern NGO actors using third-party certification systems, which were seen as too costly for many small-scale producers and not applicable to local agro-ecological and sociotechnical conditions. PGS serve to provide a direct guarantee, through the formation of a market, for sustainably produced food and agriculture products. Each PGS is different, as the model promotes local adaptation. In Uganda, the FreshVeggies PGS is a private initiative applying the regional East African Organic Product Standard and its corresponding Kilimo Hai label, and adapting the regionally recognized PGS model. The Namibian Organic PGS is also a private initiative, which is based on the Namibian Organic Associations’ private standard and uses the private label.

A PGS begins with partnerships between farmers, consumers and intermediaries (including service providers, organic movements). It uses local and national knowledge (and harmonized international organic standards). Alternatively from the IP model, the initial legitimacy comes from within the group, then outside recognition is received from private and public actors. The technology focus of the PGS is the collective creation of an alternative form of certification (based on free or low-cost peer review) and farmer-led experimentation. New local markets are created based on direct contact with consumers: farm visits, farmers’ markets, internet sales and supermarkets. The very nature of the PGS mechanism that extends beyond the classical supply chain links (e.g. researchers and public officials are not usually considered part of the supply chain) in order to create a unique link between producers and consumers. These work together in the maintenance of PGS, and thus the PGS mechanism itself becomes the market. In other words,

the creation of a market is not the principal objective of PGS actors, but rather an outcome of their activities. Producers involved in PGS often sell their products through third-party certified organic markets or through conventional markets. With the involvement of consumers, researchers and public officials within PGS, these actors also begin to purchase products from farmer members of PGS. Thus, new markets emerge as an outcome of setting up a new means for producers, consumers and other interested parties to certify sustainable practices. There is also evidence in the case studies that market outlets go beyond the members of PGS (even to national-level markets). Finally, changes are seen in the rules for organic production, internal organization and the sharing of roles and responsibilities among different people within the groups, which exemplify how the PGS is an institutional innovation.

Developing a PGS that can work for large-scale and small-scale alike

Adapted from: Manjo Smith and Stephen Barrow, "Namibian Organic Association's Participatory Guarantee System" in Loconto et al. 2016.

The development of the Namibian Organic Association's PGS was based on a requirement to formalize the sector. Consumers wanted to make informed purchasing decisions and required labelled organic food, while farmers wanted to receive recognition for the fact that their products are different from conventional products. PGS addressed the situation in which, without appropriate Namibian legislation, standards and a certification structure, the organic market was exposed to misleading claims and subsequent abuse of consumers' trust in organic food. The organic production sector and domestic market were too small to justify the general promotion and adoption of third-party certification. Consequently, NOA initiated a project in mid-2009 aimed at the formation and implementation of IFOAM's concept of PGS. This alternative to third-party certification was attractive given its local nature and reduced costs compared with sourcing international third-party certification, as well as its being an effective basis for the development and dissemination of Namibian specific organic knowledge and experience. This specific knowledge is based on concepts of holistic resource management in large-scale grasslands and small-scale farming in drought-prone environments. This innovation resulted in the fact that NOA PGS is unique within Namibia in all aspects. It was a chance to formalize the concept of organics, to obtain "buy-in" from producers, retailers, farmers' markets and consumers alike within a physically and numerically small, widely spread community. It was also an opportunity to adopt a leading role in the development of organic agriculture, promoting sustainable, climate-smart agriculture to government and the formal agricultural sector. NOA received official IFOAM PGS recognition in March 2013, which means that this PGS is endorsed by IFOAM because it operates in accordance with IFOAM's key PGS elements and features, and integrity vis-à-vis the principles of organic agriculture is verified.

Delivering Fresh Fruits and Veggies to the Urban Centre

Adapted from: Julie M. Nakalanda and Irene B. Kugonza, "Facilitating social networks by linking smallholder organic farmers in Uganda to markets for sustainable products. The Freshveggies Participatory Guarantee System" in Loconto et al. 2016.

After working with several smallholder farming communities in different parts of the country and experiencing the challenges of low yields and incomes; poor access to markets; failure to realize required marketable volumes; dominance of third-party certification models for export such as internal control systems (ICS); low levels of farmers' participation in decision-making; and no member ownership by farmers, the founder of Freshveggies was inspired by the PGS approach

during training organized by the National Organic Agriculture Movement of Uganda (NOGAMU). Freshveggies is a loose network of organic smallholder farmers working in autonomous community groups in the peri-urban areas of Kampala under a common production and marketing model. They handle small volumes but, because of growing demand, they are in the process of expanding their producer network. The initiative began as a response to promote healthy feeding and sustainable farming practices among members, but also to promote sustainable household incomes from sales and delivery of fresh organic produce to consumers in the Kampala business district and those in areas where member farmers are located. In addition to in-house training and collective sales, Freshveggies PGS offers information on nutritional values of different products and may provide recipe suggestions for clients. In Wakiso (on the outskirts of Kampala), members carry fresh food crops, fruit and vegetables from their fields to the main office/collection point on a weekly basis. Those with bulky supplies can be helped by the provisional supply vehicle. From other locations (Bushenyi, Kayunga, etc.), they order produce directly from participating farmers, who send it via trusted transporters (using public transportation), who deliver to other collection centres from which Freshveggies packs/redistributes according to the orders placed. At each cluster level, there is a marketing team of three people in charge of sales, rejects and payment records for individual members. The delivery team makes office and home deliveries, invoices sales and/or receives cash payments or sometimes mobile money via available cell phone networks.

Conclusions

When examining these institutional innovations in Africa, our first finding is that the innovations are particularly good at creating greater communication between producers and consumers. The actors (private, civic and public) have been successful in identifying and communicating market demand for specific ‘qualities’ of sustainable products (e.g., safe, organic, GAP), which is important for the emergence of local markets.

With regards to the multi-Actor IPs, it is clear that flexible platforms facilitate collective problem solving around technologies. The incentives are found in the creation of local networks that integrate knowledge (creation and sharing), markets, resources and policy support at multiple levels (municipal, national, international trade). For the PGS, it is clear that the alternative certification mechanisms reduce the costs of compliance with standards for smallholder and marginalized farmers. One very important feature of PGS renders the underlying organic standards much more inclusive, that is the inclusion of smallholders not only as a producer in a value chain, but as an auditor and researcher in a food system. This type of inclusion increases trust between actors in these systems, which improves the market relations. Finally, shifting roles and sharing responsibilities between producers, consumers, researchers, intermediaries and public officials fosters a culture of reciprocity, which builds upon a notion of solidarity, but provides the opportunity for a wider variety of actors to participate in the creation of local markets for sustainable practices.

As a result, incentives for adopting sustainable practices can come from the autonomy created when local actors develop innovative rules for market interactions. Local actors rely upon social values (e.g., trustworthiness, health (nutrition and safety), food sovereignty, youth development, farmer and community livelihoods) to adapt sustainable practices to local contexts and create new market outlets for their products, which are core components of institutional innovations. Even

when private actors (farmers, consumers, cooperatives, firms, etc.) are leading the innovations, partnerships with public actors and civil society are fundamental for legitimating political and physical spaces where sustainable agricultural knowledge, practices and products are exchanged through market interactions.

Policies that are conducive to these types of innovations need to have flexibility built into different levels of governance. The following five policy recommendations were developed in a participatory workshop with the case study authors in 2015 (FAO, 2016):

1. Promote learning-by-doing to enhance technical and market knowledge
2. Strengthen farmers' innovations in strategic market negotiation
3. Encourage communication and trust among farmers, intermediaries and consumers, starting in the field
4. Improve public infrastructure for value chain logistics
5. Legitimate innovative initiatives so that they can be scaled up

Finally, it is important to remember that these are long-term processes that require significant commitments and collaboration from all stakeholders

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