

Proceeding of the workshop entitled,

"Agroecology Policy Issues Relevant to Ethiopian Agricultural Production System"

Brot für die Welt

the David & Lucile Packard FOUNDATION

MELCA-Ethiopia



Addis Ababa
Ethiopia
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MELCA-Ethiopia

Vision
To see healthy and prosperous people that conserves their bio-cultural diversity.

Mission
To work for healthy ecosystems, resilient communities and critical young generation through developing and institutionalizing innovative approaches and experiences.

Goal
To increase the adaptive capacity to social and ecological shocks of communities and contribute to the creation of a healthy ecosystem and resilient community.

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INTRODUCTION

Who is MELCA Ethiopia?

Movement for Ecological Learning and Community Action (MELCA -Ethiopia), founded in 2004, is a non-profit and non-governmental organization registered with a registration number 0348 with the Agency for Civil Society Organizations on 14 November 2019 as per the new Civil Society Organizations Proclamation No. 1113/2019.

MELCA–Ethiopia envisions seeing healthy and prosperous people that preserve their bio-cultural diversity. Accordingly, its mission is to work for healthy ecosystems, resilient communities and critical young generation through developing and institutionalizing innovative approaches and experiences. MELCA–Ethiopia has four programmatic areas to realize its mission. These thematic areas are: (1) Agroecology, (2) Environmental governance, (3) Livelihoods promotion, and (4) Child and youth empowerment. MELCA-Ethiopia currently operates in 7 project offices in 5 regional states i.e. Oromia, SNNPR, Amhara, Benishangul-Gumuz and Gambela.

As part of its continuing institutional capacity building, MELCA-Ethiopia took the initiative towards developing draft policy framework under its agroecology thematic area with financial support from the Packard foundation. This is to define the vision, objective and strategic policies, technical principles and best practices that will guide its beneficiaries, solicit stakeholder support and engagement in promoting agroecology. To this effect, this national workshop on "**Agroecology Policy Issues Relevant to the Ethiopian Agricultural Production System**" was organized to raise awareness regarding agroecology and share the draft policy framework developed. The event aims to have clear understanding that agroecology is a viable alternative to the conventional industrial agriculture model and helps to transit to ensuring food security, food sovereignty and local community empowerment in equitable, healthy and sustainable manner.

What is agroecology?

Agroecology is '*the application of ecological concepts and principles to the design and management of sustainable agroecosystems*". It has three facets. It is a **scientific discipline** involving holistic study of agroecosystems, including human and environmental elements. It is also a **set of principles and practices** to enhance the resilience and ecological, socio-economic and cultural sustainability of farming systems. Furthermore, it is a **social movement** seeking a new way of considering agriculture and its relationships with society as pertains to food production systems and achieving food security.

Agroecology deals with having sustainable food production systems that are environment-friendly, socially just and culturally appropriate. Nowadays, agroecology is gaining recognition and is becoming more and more evident as an alternative to the high input industrial agriculture model. It is understood that major challenges of today such as energy crisis, food insecurity, environmental crisis, climate

change, and global financial problems are complex and interrelated. That means these are systemic problems that are highly interconnected and, hence, require a set of corresponding systemic solutions. There is no "one-size-fits-all" readymade suite when we think of agroecology given the diverse agroclimatic as well as socio-economic conditions that food producing farmers are confronted with.

Objective of the national workshop

The goal of the national dialogue event was sharing the initiatives taken as preliminary steps for the development of a draft national framework that would contribute towards framing a national policy for mainstreaming agroecology into Ethiopia's agricultural sector development. The specific objectives are:

- to create awareness about the need to transform the current conventional agricultural production model to agroecological production system,
- to pave the way for promoting agroecology through knowledge and skill development and sharing with implementing partners,
- to contribute to sustainable conservation and use of ecosystems focussing on soil, water and biodiversity resources,
- to promote education, research, agricultural extension and technical advice in agroecology, and
- to encourage integration of trans-disciplinary sciences and local (including indigenous) knowledge in participatory innovation processes that transform food systems to be sustainable.

Duration

The national workshop was planned for two days and it took place on 24th and 25th of December 2020.

Venue

This first national workshop on agroecology was held in Addis Ababa, Ethiopia. Initially, it was planned to be held in Bahir Dar and then was changed for practical reasons related to prevailing security issues.

Participants

The national workshop brought together a total of 50 participants drawn from government offices mainly the Ministry of Agriculture (national and regional offices); the Ethiopian Biodiversity Institute, Universities, Non-government development organizations, and international organizations operating in Ethiopia on rural development endeavours. Details are attached as Annex-3.

The Rationale: why mainstream agroecology in agriculture?

The agricultural sector is an important sector for the national economy and is also highly vulnerable to climate related challenges. The National Climate Adaption plan (ETH-NAP), therefore needs to give due consideration and mainstream agroecology as critical component. Ethiopia is one of the most vulnerable countries experiencing drought and floods as a result of climate variability and change. Climate change in the form of higher temperature, reduced rainfall, and increased rainfall variability reduces crop yield and threatens food security like in other low income and agriculture-based economies.

The current Industrial Agricultural model of development path following business-as-usual (BUA) practice has resulted in an increased greenhouse gas (GHG) emission. In Ethiopia, BAU has resulted increased GHG emission as pointed out in Climate Resilient Green Strategy of Ethiopia (CRGE) document, including:

- **Crop husbandry** producing 12Mt CO2e a year in 2010, will increase to 60Mt CO2e a year by 2030.
- **Forestry sector** accounts for 55Mt CO2 eq and will emit 90Mt CO2e by 2030.
- **Livestock,** especially cattle, currently account for 65Mt CO2e a year, which is around 40% of total current national emissions. Furthermore, the population of cattle is expected to increase by almost 30% by 2030 under business as usual, resulting in increased emissions.
- **Economic Justifications for Action:**
  - **Agricultural crops** make up 67% of agricultural GDP (27% of total GDP),
  - **Livestock** contributes 21% of agricultural GDP in 2012/13 (around 9% of total GDP).
  - **Forestry** makes up 9% of agricultural GDP (4% of total GDP). Forest and woodlands contribute to the national economy and to livelihoods.

At the national level the modest cost of climate change could be equivalent to 10% of GDP in 2050.

The Ethiopian government wanted to change this by developing a national climate adaption plan and associated initiatives. It is important to see into its provisions and strategy what has been proposed to address the different crises associated with agriculture and draw lesson from agroecological principles and practices to come up with better recommendations.

Among the proposed adaptation options by NAP, **"enhancing food security by improving agricultural productivity in a climate-smart manner"** is one among others that needs a closer look as the scope and content has not been elaborated. Development of the Draft Agroecology Policy framework is sought to build on these ETH-NAP provisions through further incorporating/mainstreaming agroecological concepts and practical approaches. The development of a National Agroecology Framework is also expected to provide broader guidance to advance and campaign for the mainstreaming of the same. It shall focus on addressing the effects of climate change and building resilience in a comprehensive manner and identifying exit strategies from unhealthy and exploitative relationships that the current conventional agriculture created on communities, traditional knowledge system and practices, local seed diversity, local ecosystem and economy as well as livelihood. In terms of climate change, the focus will be on mapping out the true cause and associated solutions. The discussions are expected to inform participants about review of relevant policies and strategies based on studies of best practices in the country and other countries with similar geographic and socio-economic settings.

Loss of crop biodiversity and increased pollution by agrochemicals and associated dependency

Due to the push and pressure by multinationals lobbying clout that control agricultural production and its extension systems, local varieties of crops have been continually displaced by the so-called "improved" high input hybrid varieties. The push for promoting wider use of these high input varieties

and the subsequent pollution by agrochemicals is on the increase while productivity decreases continually. This in turn calls for increased use of more agrochemicals to raise soil productivity, but that unduly aggravates pollution of the soil, besides adverse effects on important soil microorganisms and pollinators as well as resistant pest population proliferations. Likewise, farmers' dependence on hybrid varieties and the imported chemical inputs lock the farmers out of alternatives/choices.

From genetic resources aspects, the push for single line varieties reduces species genetic elasticity and seriously constrains the opportunity to cope with biotic and physical stresses. It also negatively affects nutrient contents of the food crops. Hence, there is a growing concern that the current Industrial Agriculture (IA) model diminishes the country's ability to be self-sufficient in food and nutritional security, and consequently in seed and food sovereignty. As a result, the current agricultural production system not only siphoned our meagre foreign exchange earning to the purchase of agrochemicals but also food imports as millions of farmers become food insecure and hungry annually. This in turn puts the country to be food insecure, debt- ridden and heavily dependent on external food and humanitarian aid.

A growing push to the introduction of GMO into Ethiopia

Ethiopia is known as one of the twelve Vavilov's centers of biodiversity, especially for crop biodiversity. The country has also set examples by resisting the use of genetically modified seeds that are often adulterated by pesticides, touted as a means to boost agricultural production and ensure food security by the lobbyists. However, through various unholy pressures, including controlling and working through higher learning institutions and agricultural research organizations and the agriculture sector as well as high level lobbying, corporate agents have now managed to make a policy change and deregulate Ethiopia's Biosafety Proclamation to open up for GMO introduction.

Accordingly, the country moved to approve the commercial cultivation of genetically modified insect-resistant BT cotton and field research on GM maize. Another GM crop approved for a confined field trial is, disease-resistant Enset (*Ensete ventricosum*). Enset, commonly called "false banana" is a native crop and is among the earliest food plants domesticated in Ethiopia. This will certainly result in adverse impacts on our biodiversity, public health, livelihood of smallholder farming communities, and uninterrupted access to seeds and other inputs. At macro-economic level, most importantly, it would adversely affect the food sovereignty of millions of Ethiopians who depend on enset as a staple food. For instance, GM crops are patented and will foster dependence on corporate seed supply. This will eventually undermine farmers' rights to use their seeds and, therefore, food sovereignty at local and national levels. In addition, the most common "unexpected effects" and health risks posed by GM foods include toxicity, allergic reactions, antibiotic resistance, immune-suppression, cancer, and loss of nutritional diversity.

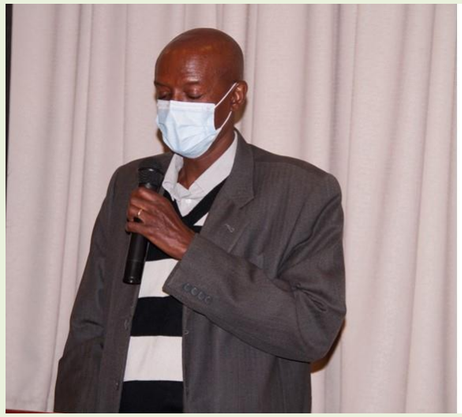
SUMMARY OF THE WORKSHOP ACTIVITIES

The first national workshop to discuss on agroecology policy issues relevant to the national agricultural production systems began by introducing the workshop program scheduled for the coming two days. This was done by Mr. Solomon Kebede, Director of MELCA Ethiopia. Then, brief self-introduction of participants was done. Following that, Associate Prof. Mellese Damte, Chairperson of MELCA Ethiopia's Board made a welcoming speech to participants coming from different regions to be part of this important event to discuss on common issues of concern as agricultural development practitioners. This is a step-forward initiative taken by MELCA Ethiopia to safeguard the agricultural sector from undesirable loss of biodiversity, reduce vulnerability to climate change and undue dependence on external input supplies. Building local capacity for resilience entails increasing production and productivity using resources locally available including relevant community knowledge.



Mr. Solomon Kebede, Director of MELCA Ethiopia, addressing participants

Associate Prof. Mellese thanked the two organizations who co-funded the event i.e. **Bread for the World** and the **Packard Foundation** who are supporting on-going projects of MELCA Ethiopia. For instance, one of the livelihood enhancement projects implemented by MELCA Ethiopia in South Wollo strives to achieve its goal by building the resilience capacity of the ecosystem and the farming communities. On his concluding note, Associate Prof. Mellese thanked all presenters for the time invested to compile presentations and now share relevant knowledge and practices with participants and wished successful deliberations.





(Left) Assoc. Prof. Mellese Damte and (Right) Dr. Feleke Woldeyes making speech



Partial view of workshop participants from the meeting hall

The official opening speech was made by Dr. Feleke Woledyes, Deputy Director General of the Ethiopian Biodiversity Institute (EBI). He mentioned that agroecological practices are in harmony with the principles of EBI in terms of promoting sustainable agriculture and conservation of the natural resources including agrobiodiversity. Agriculture is important sector in the country's economy and forms source of livelihood for the great majority of the population. Agricultural production in Ethiopia is nature-based

and, therefore, the solutions to our food production problems are vested in nature. This is the motto of the Institute regarding the agricultural sector. The approaches to address the need to feed the growing human population and ensure food security should, therefore, vary based on the different contexts. There is no one-size-fits-all solution for agricultural production systems in Ethiopia. The solution should be feasible, environment-friendly, nutrient recycling and sustainable for the long term.

In view of these, the two days sessions are expected to facilitate discussions on different approaches, have fruitful debates and gain common understanding regarding mainstreaming agroecology; and enrich the draft policy framework by exchanging ideas and concerns. With these remarks and wishing the best for all participants in the deliberations to be made during the two days stay, Dr. Feleke declared the workshop officially open.

Day-1, Session One

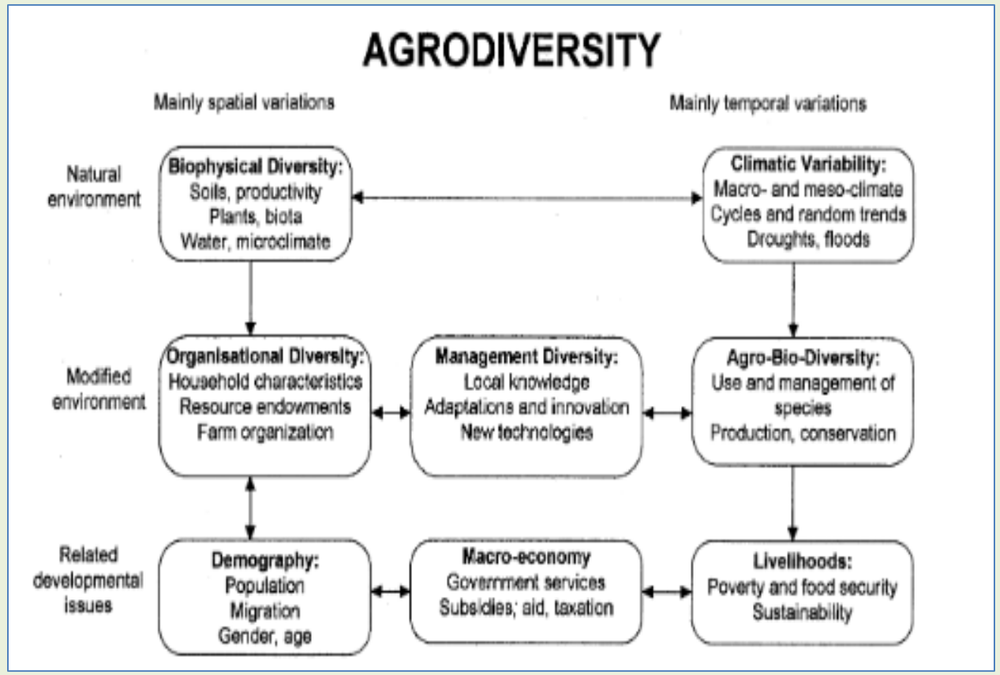
The first session "***The Prospect of Conserving Ethiopian Agrobiodiversity: efforts made so far, opportunities and challenges"*** was presented by Dr. Tamene Yohannes, Director of the Crop and Horticulture Directorate of EBI, Dr. Tamene presented key terminologies related to agrobiodiversity for common understanding among participants and avoid confusions. He also highlighted the position of Ethiopia as a center of origin for many food crops (e.g. tef, noug, safflower, sorghum, enset), coffee as well as some medicinal plants. Ethiopia is known as a secondary enter of diversity for barley, durum wheat, chick pea and linseed, among others.



Dr. Tamene from the Ethiopian Biodiversity Institute making presentation

The tradition of maintaining high degrees of intra and inter-specific crop diversity across time and space is associated with farmers' strategy of sustaining yield through efficient utilization of locally available resources. The benefits of agroecology include: sources of food, sources of disease resistance, sources of drought resistance, hosting diverse gene pool enriched with introgression with wild relatives; as source of genetic materials for breeders to develop new varieties; increasing farmers' resilience to changing agro-climatic conditions; increasing adaptation options to climate change related challenges; getting ecosystem services; as well as socio-cultural benefits.

Agrodiversity is defined as "the many ways in which farmers use the natural diversity of the environment for production, including not only their choice of crops but also their management of land, water, and biota as a whole''. See schematic presentation below for further details.



Regarding **genetic resources conservation activities** done by the Institute, Dr. Tamene mentioned that there are *ex situ* and *in situ* conservation activities going on side by side complementing each other. Regarding ***ex situ* conservation**, the institute hosts 82,000 accessions of 89 crop and horticultural plant species in its national gene bank stored in cold rooms (at -20^{0}C, -10^{0}C and +4^{0}C). Altogether, a total of 85,620 accessions of 576 different plant species including food crops, forest, forage and medicinal plants are being conserved by EBI for the long term, a decade or more. In the mean time, viability is checked and regeneration activities are systematically done to revitalize the germination potential of accessions.

***In situ* (on-farm) conservation** is practiced for plants where it is not possible to conserve seeds for long term. Instead, field gene banks are used to conserve live plants on site. A total of 7245 plants including coffee trees, some root and tuber crops, spices and fruit genetic resources are conserved in 5 field gene banks namely; Choche, Bedessa, Yayu, Angacha and Yirgachefe field gene banks. Furthermore, there are botanical gardens hosting different plants including medicinal plants and herbs based in Shashemene and Jimma as complementary conservation measures.

Dr. Tamene also informed that ***in situ* (on-farm) conservation of crop genetic resources** is also being carried out in four regions: Amhara, Oromia, Tigray and SNNP regions. There are 30 community seed banks distributed across these regions and a total 6,620 farmers are organized in different Farmer Conservators Associations (FCAs). Besides the food crops, *in situ* conservation of some domestic animals (5 local breeds) are also being carried out by the Institute (EBI). For these special local animal breeds, semen is also collected and conserved at the national gene bank.

There are opportunities favoring the conservation of agrobiodiversity and these include the following.

- There are several cultural values, established norms, belief systems which support and favor conservation of agrobiodiversity.
- There are conservation networks in the country.
- Ethiopia is signatory to the global biodiversity conventions and protocols.
- There is national biodiversity strategy and action plan and other international biodiversity related issues and commitments.
- Biodiversity issues are mainstreamed into various sectors.
- There are tools, mechanisms, and institutions for dealing with agrobiodiversity conservation issues.
- Policy and national mandate related to biodiversity is vested to the Ethiopian Biodiversity Institute.
- There is national Climate Resilient Green Economy (CRGE) policy in place.
- Government focus is on biodiversity-based economic development.

Challenges faced:

Dr. Tamene highlighted that agrobiodiversity, is under severe threat due to habitat loss and environmental degradation, exacerbated by climate change, leading to significant loss of these critical genetic resources, and ultimately threatening national food security. The key challenges are categorized into four groups as follows.

1. **The tendency to expand monoculture as a sole means of satisfying the rising food demand**
   - ❖ the use of few crop types was recognized to result in biodiversity decline.

- Since the 1900s, 70% of plant genetic diversity has been lost while 30% of the livestock breeds are on the edge of extinction.
- Many traditional livestock breeds have disappeared as farmers focus on new ones.

2. Technology related limitations/agricultural inputs

- Agrobiodiversity is highly threatened mostly by the spread of modern chemical intensive agriculture (artificial fertilizers, herbicides and pesticides) and the globalization of food markets.
- heavy chemical input use leads to serious degradation of natural resources, including soil nutrient depletion, persistent drought, and loss of agrobiodiversity.

3. Negative incentives/Market factors

- there is no premium price for quality organic product (local varieties).
- there is no official branding of consumer preferred local varieties.

4. Natural disaster and other man-made factors

- Natural disasters such as desertification, drought, floods, earth quakes also contribute to genetic erosion at crop, variety and allele levels.
- Rangeland degradation, overgrazing and overstocking; invasion of rangelands by exotic plants; diseases such as Trypanosomiasis, predators and pests, and application of agrochemicals are among the chief threats to the livestock biodiversity.

The Way Forward

Efforts to increase or conserve biodiversity in agricultural landscapes seem to imply tradeoffs between food production and the provision of other services, but a bigger challenge is to find ways to meet both sets of needs in a sustainable fashion. There are various potential measures that would help to maintain landraces including the following:

a) Promoting participatory crop breeding using local varietal knowledge,

b) creating tourism attraction spots to the local landraces,

c) establishing seed banks to provide the communities with access to diverse landraces,

d) supporting home gardening and the use of landraces for medical and religious uses to promote on-farm conservation and use of landraces,

e) educating farmers and extension agents regarding the need to conserve local germplasm at farm level,

f) promoting participation and empowerment of indigenous peoples, protection of their rights, respect and enhance wise use of their knowledge on biodiversity (CBD, 1992),

g) developing markets and business opportunities for diverse agrobiodiversity products to enhance agrobiodiversity conservation,

h) producing traditional specialty crops for specialized niche markets,

i) introducing payment for agrobiodiversity conservation services, creating a supportive policy environment and ensuring secure tenure,

j) prioritizing agrobiodiversity enhancement in research and development programs, and

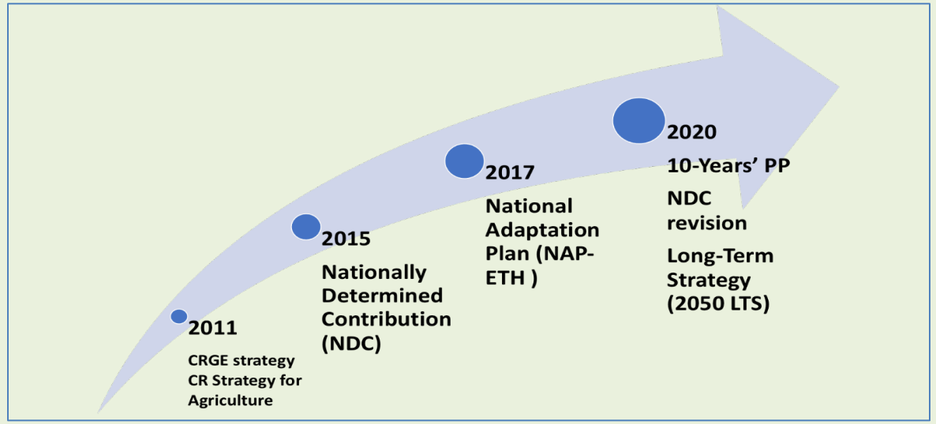
k) increasing farmers' access to landrace diversity through encouraging community seed banking.

Dr. Tamene concluded his presentation by the following statement: "the maintenance of appropriate biological diversity in the right place at the right time in agricultural landscapes is of benefit to all humankind and should be recognized as such by critical evaluation procedures".

Day-1; Session Two

The second session titled as "***Climate Change and Agroecology Policy Nexus in Ethiopia***" was presented by Mr. Muluneh Hedeto, Senior Advisor and National Climate Change Negotiator under the Ethiopian Forest and Climate Change Commission (EFCCC). In his introductory remark, Mr. Muluneh mentioned that Agriculture is an interesting sector both as **contributor to** and as **being heavily influenced by** climate change. Climate change without doubt creates and multiplies existing risks in the food system and creates additional risks for rural livelihoods and for world food security.

Mentioning policies related to agriculture, Mr. Muluneh started with the FDRE constitution of 1995. Soon, it was followed by the Environmental Policy of Ethiopia developed in 1997. Then came the National Adaptation Plan of Action (NAPA) developed in 2007. After 3 years, came Ethiopia's Program of Adaptation to Climate Change (EPACC). The rest of the milestones regarding climate change related policies from 2011 through 2020 are summarized in the following chart.



Major policy milestones from 2011 through 2020

Brief introduction of the key features of these four milestones is presented below.

1) Climate Resilient Green Economy and (CRGE) of 2011

- The objective of CRGE related to agroecology are to:
  - achieve **middle-income** status by 2025 while developing a **green economy**.
  - protect the country and its peoples from the adverse effect of climate change.
- **Among 4 pillars is agriculture:** Improving crop and livestock production practices for higher food security and farmer income while reducing emissions.
- **Climate Resilience strategy for Agriculture and Forestry (2011):** 41 promising Climate Smart Agriculture (CSA) options were identified to build climate resilient agriculture.

2) Nationally Determined Contributions (NDC) of 2015

NDCs are actions that Parties plan to undertake in order to address climate change. Its historical origin stems in the following chronological events: UNFCCC**,** COP 19 (Warsaw, 2013) & COP 20 (Lima, 2014) decisions were passed regarding the preparation of INDC; and COP 21, 2015 **Paris Agreement** (PA). Ethiopia submitted its INDC in 2015. It is anchored on the CRGE strategy and encompasses both **mitigation** and **adaptation** components.

Agriculture is given due attention both in **mitigation** (90Mt CO2e emission reduction from the agriculture) and adaptation (drought, floods and cross-cutting). **Adaptation** incudes increasing agricultural productivity, minimizing food insecurity and increasing incomes irrespective of climate change by breeding and making available improved crop varieties, primarily from among those in Ethiopia that suit all agricultural areas where varieties that were grown in the past have become unsuitable.

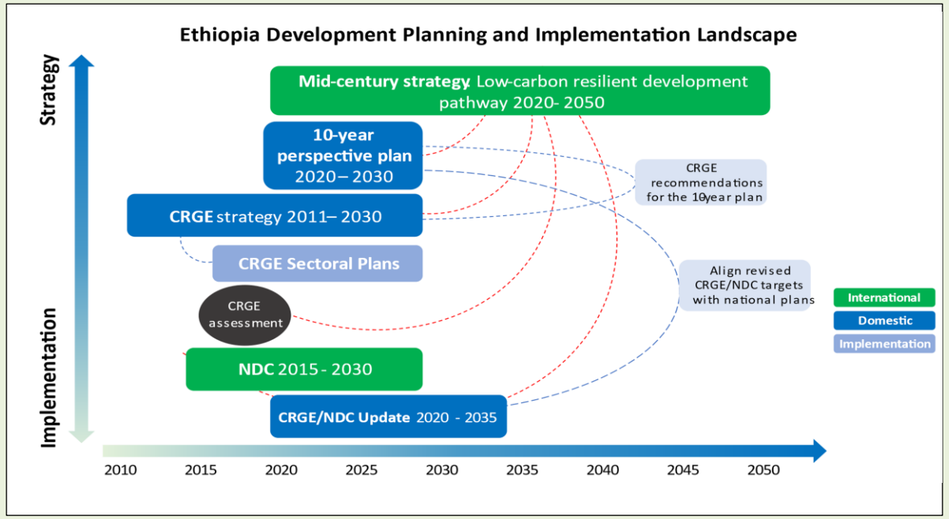
3) National Adaptation Plan of Ethiopia (NAP-ETH) of 2017

It aims to strengthen holistic integration of climate change adaptation in Ethiopia's long-term development pathway. Some **18 adaptation** options were identified in the most vulnerable sectors including agriculture. Among these are: enhancing food security by improving agricultural productivity in a climate-smart manner; strengthening sustainable natural resource management through safeguarding landscapes and watersheds; improving soil and water harvesting and water retention mechanisms; and strengthening drought and crop insurance mechanisms.

4) Ten Years Perspective Plan (NDC 2020-2030) and Long Term Strategy (LTS 2020-2050)

The 10 Years Strategic plan (NDC 2020-2030) is on the process of being developed as a response to **the Paris Agreement**. It has 10 Pillars and among these is developing Climate Resilient Green Economy. **The long-term strategy** (LTS) focuses on **low-carbon resilient economic development**. Both documents are in the finalization stage of the drafts prepared. Efforts are made to entertain agroecology related issues to some extent both in the NDC update and LTS despite various challenges

prevailed in the sector. The policy formulation and implementation landscape for 2010 through 2050 are summarized in the following graphic chart.



Challenges faced on mainstreaming agroecology:

- Lack of data availability based on agroecology classification (data are discrete and are not readily available in complete form categorized in terms of agroecological zones)
- Lack of updated and parameter estimations
- Lack of SMART Indicators and baseline data for most of the agroecological data
- Lack of comprehensive analytical tools and methods, and
- Lack of coherent and consistent reporting mechanisms of sectoral development.

Suggestions for consideration in agroecology policy formulation:

- Disaggregate the national agricultural sample survey based on each agroecology zone.
- Align the frequency of the survey with national monitoring and evaluation framework.
- Identify key SMART agroecological indicators with their intended baseline data.
- Develop comprehensive and integrated analytical tools and methods to assess the progress and formulate appropriate policies and strategies.
- Strengthen vertical and horizontal coordination and communication among implementing entities (institutions).
- Enhance the technical and analytical capability on agroecology policy at each stages of policy design, planning and monitoring and evaluation process.

Day-1; Session Three

The third session titled "**Agriculture Sector Green Growth Policy Directions and the Role of Agroecology as a Policy Response**" was presented by Mr. Berhanu Assefa, Director of Environment and Climate Change Coordination Directorate under the Federal Ministry of Agriculture. In his introductory remark, Mr. Berhanu mentioned the significance of the agricultural sector as main contributor for the national economy by generating about $27.5 Billion (33% of the GDP), the lions' share of export earnings, and being a source of livelihood for about 79% of the population. Despite these, the sector is highly susceptible to climate change challenges. Improper land use system, unsustainable use of natural resources, environmental degradation coupled with climate change (estimated to reach 10% of the national GDP by 2045) are serious threats to sustainable agriculture. According to statistical projections, the population of Ethiopia is estimated to reach 126 million by 2025. Hence, food production by then should increase to 76 million tons (implying a 125% increase from the current level).

The second section of his presentation dealt with the existing policy directions regarding the agricultural sector. These are described as follows.

1. Rural Development Policy and Strategies

A key economic development objective under this is to assure accelerated growth. In order to realize the basic objectives for Ethiopia's economic development, it is necessary to identify, a development path that will guarantee rapid and sustained economic growth.

2. Climate Resilient Green Economy (CRGE)

Ethiopia has initiated green growth development pathway (CRGE) by 2011 in order to protect the country and its peoples from the adverse effect of climate change and realize the vision of attaining a middle income country status by 2025. The CRGE strategy is a bold step towards integration of resilient and low carbon emissions economic development pathway.

3. Agriculture & Forestry Sectors Climate Resilient (CR) Strategy

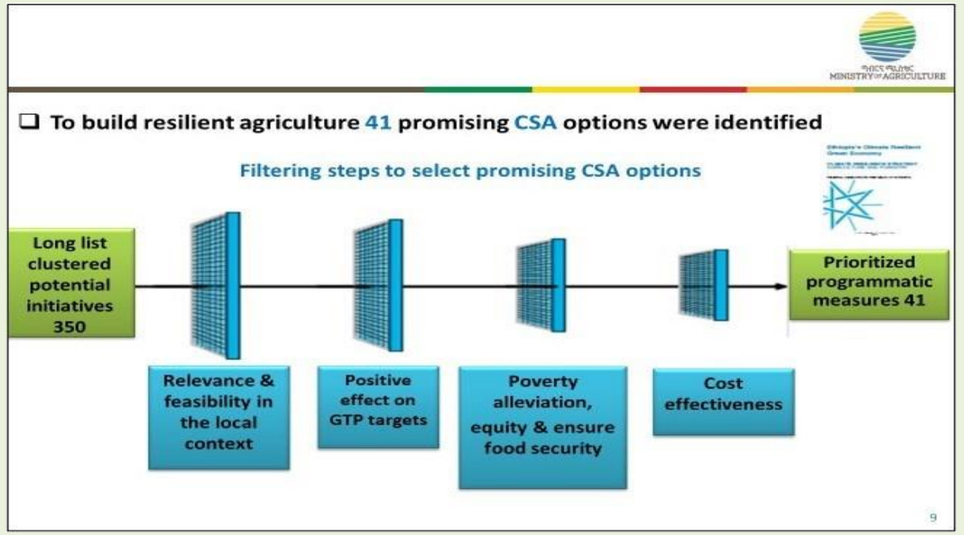
The three key focus areas under this category are:

a) Enhance lower emitting techniques
- Improve soil nutrient and promote best crop management practices, and
- Enhance watershed-based integrated NRM practices.

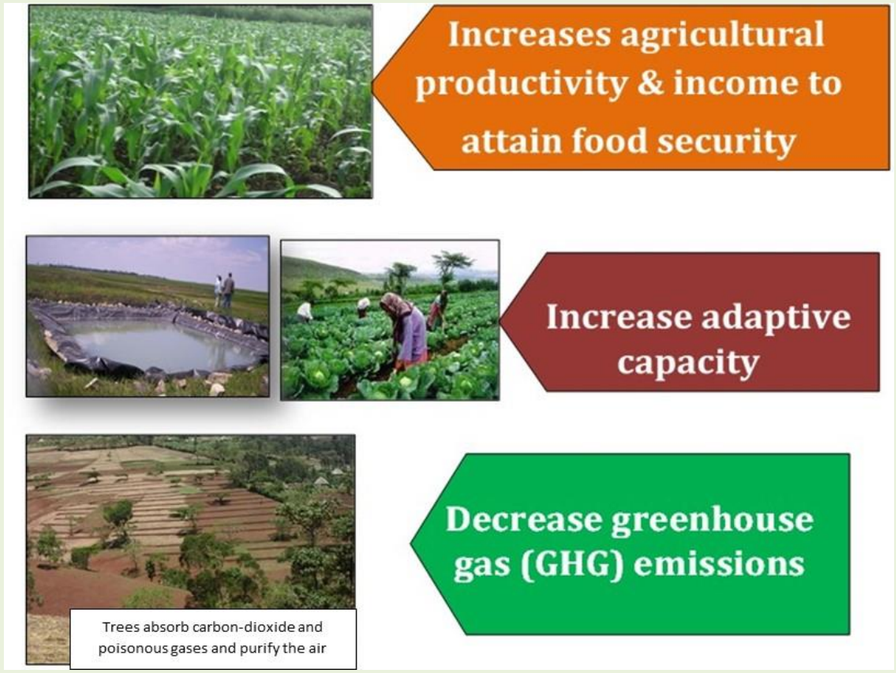
b) Promote yield increasing techniques;
- Promote improved seeds and new technologies, and
- Improve organic and inorganic fertilizer uses.

c) Promote irrigation in arid areas;
- Promote crop production on uncultivated and non-forest lands in arid areas through irrigation.

In line with these, 41 promising Climate Smart Agriculture options were identified by screening 350 listed potential initiatives using a four-steps filtering process against sets of criteria as presented below.



Implementing climate smart agriculture practices realized triple-folds benefits as presented pictorially in the following chart.



The third section of Mr. Berhanu's presentation was highlighting on policy responses where agroecology is mentioned as concept and practices. These are discussed as follows.

- ❑ Agroecology as a concept has been included within the CRGE, NDC, GTPII and NAP documents, though it has not been mentioned explicitly.
- ❑ CRGE document clearly indicates the plan to implement the best agronomic practices. Agroecology applying both ecological and social concepts and principles to the design and management of agricultural systems and supporting the adaptation of agriculture to specific environment, it strengthens the principles of CRGE strategy.
- ❑ Agroecology as a concept could benefit Ethiopia from increasing food production with minimum effects on environment and biodiversity at the same time adapting to changing climate as well as mitigating the ill effects**.**
- ❑ Agroecology builds autonomy and adaptive capacities of farmers to manage their agroecosystems. Agroecological approaches empower people and communities to overcome poverty, hunger and malnutrition.
- ❑ The new narrative recognizes that the current global food system, extended to Ethiopia agroecology/ecological organic production systems are the true future of our continents food systems.

Challenges faced to promote agroecology in Ethiopia:

- Low level of awareness about agroecology;
- Absence of responsible or mandated institution to promote agroecology;
- The need to bring sharp increase in productivity shortly;
- Weak integration and coordination among different stakeholders at all levels to promote agroecology.

Opportunities for promoting agroecology:

- Existing extension system and institutional setup reaches grassroots level;
- Availability of agroecologically spread agricultural research centres and universities;
- Availability traditional agricultural practices and values related to agroecology;
- Favourable national policies, strategies and programmes that promote agroecology practices within the country.

After these, Mr. Berhanu concluded that agroecology can be one of the entry points to realize sustainable agricultural development in Ethiopia. The agricultural policy formulation, project design and implementation, and institutional arrangements may remain ineffectual if they are not addressing the complex issues in agricultural production associated with agroecological variations.

In view of this, Mr. Berhanu suggests the following points to be taken into consideration for mainstreaming agroecology.

1) Incorporating agroecology in to a long-term development agenda and planning process;
2) Building into existing institutional arrangements and systems;
3) Mainstreaming into existing plans, programs and frameworks of development activities;
4) Establish stakeholder engagement platform to keep the ball rolling; and
5) Engage Civil Society Organizations in implementing and scaling out agroecology. CSOs also play a key role in developing and implementing agroecological innovations that enhance sustainable agriculture and food system. CSOs are pivotal in creating awareness and capacity building, empowering local community, advocacy, implementing developmental activities, resource mobilization, experience sharing, innovations piloting and demonstration.

The former three sessions were on conceptual aspects of agroecology, the rationale for mainstreaming agroecology and assessing existing policy environments and efforts made at policy level. The following two sessions deal with practical examples of agroecological practices that are supported by documented evidences so that others can learn and scale out in their respective operational areas. These are important to share the specific practices and their effectiveness in bringing positive impacts in the lives of communities in terms of increased food security, enhanced capacity for resilience by rehabilitating degraded lands and improving productive capacity of the land as well as using locally available agricultural inputs.

Day-1; Session Four

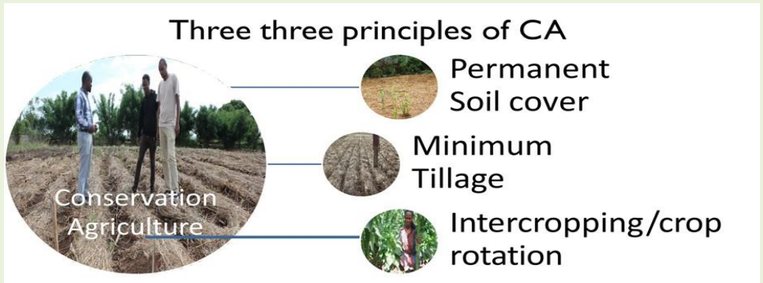
The fourth session of the day was presentation on **Conservation Agriculture Nexus in Agroecology: experiences and lessons of Food for the Hungry Ethiopia in scaling up conservation agriculture**. Mr. Tesfahun Eyoel, Climate Resilience Manager for the Conservation Agriculture Program of FH Ethiopia, made the presentation. In his introductory remark, Mr. Tesfahun mentioned that agroecological perspectives may be applied to the management of soils, crops and livestock, as well as to broader societal, environmental and food system issues. Agroecology emphasizes the idea of 'system redesign' rather than 'input substitution' for maximum benefit.



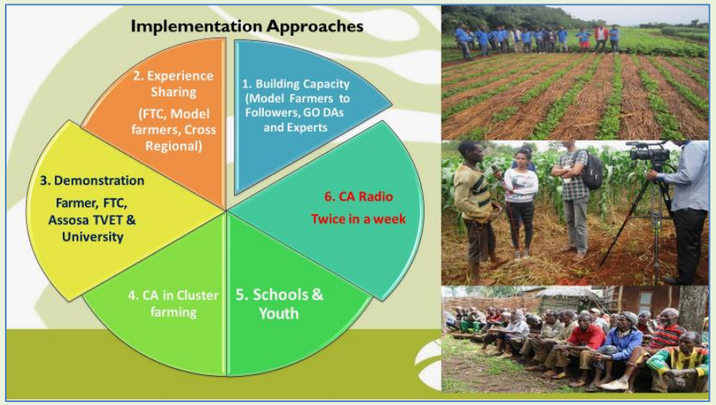

Mr. Tesfahun Eyoel from FHI Ethiopia making presentation

Discussing as to why agroecology is important, Mr. Tesfahun emphasized that it helps to give due attention to ecosystem services and biological processes such as biological pest control, symbiotic nitrogen fixation, soil fertility management, agrobiodiversity and habitat diversity as well as integration of crop and livestock production, agroecosystem integrity etc. Agroecology offers technical and organizational innovations to lead the way to a restorative, adaptable, inclusive and resource use-efficient agricultural models. It aims to manage and increase production in a sustainable and resilient way that will maintain and improve the natural capital in the long term. With the increasing challenges emerging from time to time, agroecology offers a viable alternative path for agricultural transformation.

According to FAO, **Conservation Agriculture** is a farming system designed to enhance the sustainability of agricultural production by conserving and protecting soil, water and biological resources so that external inputs can be kept to a minimum. In line with this, the three principles of conservation agriculture that FH Ethiopia practices are the following.



The six-step implementation approaches of FH Ethiopia are the following: (1) Capacity building for farmers, agricultural Development Agents and government staffs (agricultural experts); (2) experience sharing; (3) demonstrations on farmers' fields, vocational schools and universities; (4) conservation agriculture in cluster farming; (5) focus on schools and youth; and (6) radio broadcast program twice a week (see figure below).



Impacts of conservation agriculture as learned from FH Ethiopia's experience:

i) **Conservation agriculture (CA) favours crop diversification**. Farmers are able to grow a wider variety of crops because of better water retention condition of the soils. Crops grown include: maize, sorghum, soybean, and vegetables. Some 89% of the program participant households experienced adequate food throughout the year. Farmers also included forage species to feed their animals.



Conservation agriculture favours diversification (cereal grains, forage species, fruit trees and others



Mulching conserves soil moisture and adds organic matter to the soil through decomposition

ii) **Practicing CA brought production increase**: Major crop, maize yield increased by 20 to 25 quintal/ha from the base line. 99% of the households confirmed that conservation agriculture saves time (labor) as compared to the time they spend on plots where conservation agriculture is not practiced.

iii) **CA resulted in better resilience to diseases and pests**. Farmers experienced low level of infestation from maize stalk borer and fall-armyworm as a result of practicing conservation agriculture.

iv) **CA benefits farmers not having oxen, particularly female-headed famers.** With the conventional method land is plowed repeatedly (4-5 rounds) and it is not possible to do it timely without a pair of oxen. Hence, the women household heads are forced to give away their land to sharecroppers and then get half of the produce.





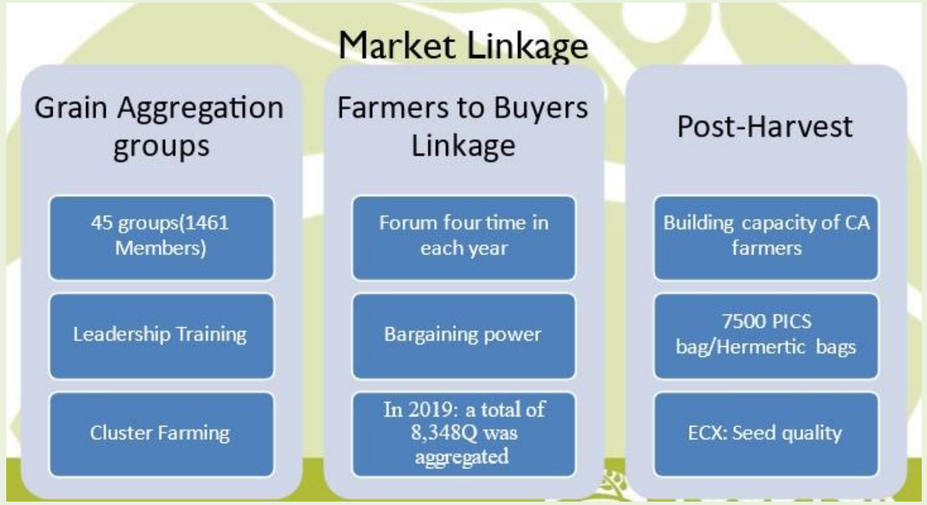
v) **Practicing CA reduced soil erosion, improved soil fertility and soil organic matter content**.





vi) **CA resulted in significant reduction in the practice wild fire in the target localities**.

vii) **CA contributed to gender empowerment**: 32.7% of the conservation agriculture farmers are women. There are 68 Self-Help Groups formed and there are 1,418 women members. This opened new opportunity for the women to access saving and credit services. They use the credit accessed to buy seed, fertilizer, conservation agriculture inputs, and engage in small scale business activities such as petty trade, rearing small ruminants, and establishing flour mill. Being organized in groups brought social integration and developed the culture of saving among others. Efforts were also made to create market links and the chart below summarizes achievements.



The women (group members) also received training on nutrition-sensitive agriculture, vegetable production, food preparation to improve family nutrition, as well as sanitation and personal hygiene as part of the rural development scheme.

Integration of conservation agriculture with natural resources management created positive synergy and the main ones include: improvement in soil fertility and yield; reduction in soil erosion; reduced soil moisture loss; as well as reduced competition of weeds and reduced soil moisture loss because of the mulch.





(Left) Cassava and (Right) taro production by practicing conservation agriculture in Wolayta

Lessons learned from implementing conservation agriculture

The key lessons from the experience of FH Ethiopia are summarized as follows.

1) **Increases the productivity of land**: conservation agriculture improves soil structure and protects the soil from erosion and nutrient losses by maintaining a permanent soil cover and minimizing soil disturbance, greatly reduce surface evaporation.



Farmer expressing his joy of bumper harvest from practicing conservation agriculture

2) **Requires low labour**: because of the minimum-tillage practices and the establishment of permanent soil cover and/or crop rotations, the need for weeding and pest problems were reduced significantly.

3) **Favours nutrient recycling**: Soil nutrient recycling are enhanced by the biochemical decomposition of organic crop residues remaining on the soil surface.

4) **Increases economic benefits**: Farmers using conservation agriculture technologies typically report higher yields (up to 20-25% higher) with fewer inputs in terms of water, fertilizer and labour, thereby resulting in higher overall economic gains.

5) **Brings environment benefits**: Using conservation agriculture techniques reduced the applications of agrochemicals and that significantly lessened pollution levels on air, soil and water resources.

6) **Addresses equity considerations**: Conservation agriculture also has the benefit of being accessible to many small scale farmers who strive to obtain the highest possible yields with limited land area and inputs.

7) **Could be applied to cluster Farming**: Conservation agriculture is using agricultural principles and practices that can be applied either individually or collectively.

8) **Suitable for adopting model farmers approaches**: The approach of focussing on Model farmers initially facilitates a lot in scaling up and scaling out the practices of conservation agriculture.

9) **FTCs could be used for demonstration**: Developing, improving, standardizing equipment for seeding, fertilizer placement and harvesting, and other technologies can be applied using Farmers Training Centers.

Challenges faced

1. **Absence of well-defined enabling government policies:** Food production policies in Ethiopia promote practices that seem to go against agroecological principles, resulting in severe negative impacts on farmers.

2. **New and emerging pests and diseases**: as a result of climate change and environmental degradation, new pests and diseases emerge and pose more threats on food production. Some diseases and pest species develop resistance or undergo mutation and tend to cause serious infestations than before.

3. **Lack of capacity within extension services available to farmers**: This includes both a direct lack of access to extension services as well as a lack of current up-to-date practical information within the extension services regarding conservation agriculture, and inadequate fund allocation for farmer training on the subject

4. **Absence of good resource database:** Having systematically organized database helps agencies involved to access and deposit relevant agroecology related information and complement each-others' work**.**

5. **Unnecessary sectoral competitions:** For instance, there are unnecessary competitions among soil, livestock, environment, crop and social science experts while collaboration is needed for their efforts to be a success. Agroecology is by its very nature is multi-sectoral and competitions lead to failures by denying mutual support and synergy.

Recommendations

- Build local and national capacity in agroecological research, extension and education.
- Train human resources at grassroots level, as it is one of the major limiting factors in adoption of conservation agriculture/agroecological practice.
- Conservation agriculture/agroecology should be included in school curricula from primary school to university levels, including agricultural colleges.
- Institutionalizing conservation agriculture into relevant government ministries and departments and regional institutions is required for sustainability of the technology.
- Support the development, adaptation and validation of conservation agriculture technologies under local contexts.

- Conduct research on fall army worm and other pests in conservation agriculture and conventional system for comparative analysis.
- Promote practices of integrated agricultural production system.

Day-1; Session Five

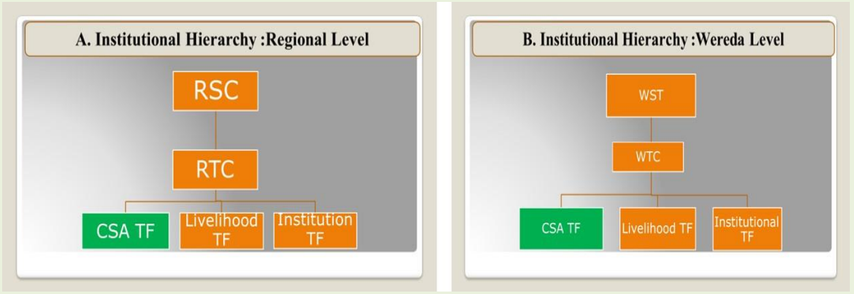
The last session for the day was presentation on "**Sustainable agricultural practices in the context of agroecology: challenges and opportunities**". Mr. Markos Wonde, Vice Head of the Bureau of Agriculture of Amhara Regional State presented different agroecological practices implemented in the region with supporting facts and figures as well as interesting photos showing the results.




Mr. Markos Wonde from Amhara Region Bureau of Agriculture making presentation

Institutional set up

CSA task forces are established at regional level and in all 18 weredas covering 11 watersheds. The CSA specialist and Crop Development Expert at the regional level, and the woreda focal and crop development/soil fertility experts at woreda level, are the chairpersons and secretary of the taskforce respectively. See chart below for details.



Climate Smart Agriculture (CSA) interventions have been addressed in all SLMP-I and SLMP-II micro-watersheds. However, CSA is implemented as a pilot in 43 micro-watersheds (>=75% biophysically treated). SLMP-I covered 40 micro-watersheds and SLMP-II covered 3 micro-watersheds. About 15,910 ha of the target land is expected to implement CSA in the five years of project duration. To this effect, 266 CSA farmers groups have been established under 11 pilot watersheds reaching 6064 beneficiaries. Conservation Farming practices are recruited in all 11 Pilot CSA watersheds except M/Estie and Dega Damot because they didn't include their plan.



Rehabilitation of degraded lands using physical structures and planting tree species

Capacity Development and Technical support

- Regional level trainings were held;
- Vermicompost training delivered for 46 soil fertility experts;
- Berken Maresha training given for 18 Agronomists and 18 model farmers; and
- Provided field level technical support for all target woredas.

Summary of Plan and Achievements of Capacity Development and Technical Support

No.	Activities	Unit	SLMP-I			SLMP-II			Regional Sum		
			Plan	Achiv.	%	Plan	Achiv.	%	Plan	Achiv.	%
1	Training for beneficiary on CSA/CF farmers	No. of partcip.	833	428	51.4	640	653	102	1473	1081	73.4
2	Skill enhancement training on CSA for woreda experts	No. of particip.	175	50	28.6	328	427	130.2	503	477	94.8
3	Technical support	No. of expert days	1616	582	36	782	268	34.3	2398	850	35.4
4	Organizing farmer field days	No. of events	71	68	95.8	-	-	-	71	68	95.8
5	Experience sharing visit on CSA technologies	No. of events	73	11	15	-	-	-	73	11	15

Achievements of Climate Smart Agriculture (CSA) implementation

1. Soil and Water Management

Examples of these activities are the following:

- Leaving crop residue in the field implemented in Bure Zuria wereda, Chenetali micro-watershed; Machakel Quacheri and Basoliben;



Leaving crop residue in the field gives soil cover during the dry season and adds organic matter when plowed under and decomposes

- Practicing conservation agriculture implemented in Bure Zuria wereda, Chenetali micro-watershed;





Conservation tillage practiced in South Achefer

- Household level water harvesting (making ponds) implemented in Anstokia Gimza woreda;



Rain water stored in the ponds is used to grow vegetables

- Developing irrigation canals and installing motor pumps implemented in Angib river; and







- Using mung bean as cover crop implemented in Shoa Robit, Salaysh Bronz micro-watershed.

Summary of Plan and Achievements of Soil and Water Management Activities

No.	Activities	Unit	SLMP-I			SLMP-II			Regional Sum		
			Plan	Achiv.	%	Plan	Achiv.	%	Plan	Achiv.	%
1	Conservation agriculture (CA)	Ha	1392.8	1554.6	111.6	2227.3	1117.4	50.2	3620.1	2672	73.8
2	Mulching/permanent soil cover	Ha	-	-	-	165	10	6.1	165	10	6.1
3	Road water harvesting (pond)	No.	22	9	40.9	3	0	0	25	9	36
4	Cut-off drain for excess water drainage	Km	6.05	3.8	62.3	-	-	-	6.05	3.8	62.3
5	Farm water management/ shallow wells and springs	No.	-	-	-	6	0	0	6	0	0

2. Integrated Soil Fertility and Soil Health

Examples mentioned were:

- vermicompost making implemented in Shoa Robit, Salaysh bronz micro-watershed; Machakel, Quacheri micro-watershed;
- faba bean production using improved compost practiced in Bure, Chenetali micro-watershed; and
- agroforestry and cover crop practices implemented in Antsokia Abuar fecho micro-watershed.



Vermicompost making at Shoa Robit, Salaysh bronz micro-watershed



Agroforestry combined with fruit trees practiced in Antsokia

The following table presents summary of achievements under SLMP-1 and SLMP-2.

Summary of Plan and Achievements of Integrated Soil Fertility and Soil Health Management

No.	Activities	Unit	SLMP-I			SLMP-II			Regional Sum		
			Plan	Achiv.	%	Plan	Achiv.	%	Plan	Achiv.	%
1	Improved compost	Ha	3507.1	1640.2	46.8	3213.8	1753.25	54.6	6720.9	3393.5	50.5
2	Vermicompost	Ha	167.9	57.5	34.2	114	27.2	23.9	281.9	84.7	30.1
3	Lime application	Ha	222	3.9	1.8	545.8	34.3	6.3	767.8	38.2	4.9
4	Agroforestry	Ha	235.5	243.3	103.3	387.9	51	13.1	623.4	294.3	47.2

3. Crop Development

Major activities planned and implemented under crop improvement program includes promotion of cereal, pulses, vegetables, variety selection and integrated pest management. are summarized in the table below. Data for SLMP-2 were not available.

Plan and Achievements of Crop Development Activities of SLMP-1

No.	Activities	Unit	Plan	Achievement	%
1	Variety selection	No.	23.0	3.0	13
2	Cereal crop promotion	Qt.	263.5	114.5	43.5
3	Pulse crop promotion	Qt.	94.0	45.3	48.2
4	Vegetable crop promotion	Qt.	257.6	129.6	50.3
5	IPM/Pest identification	Cases	19.0	9.0	47.4



Tomato and head cabbage production with conservation agriculture

4. Forage development and management

Major activities under this category include:

- Forage development from closure area (Bibugn wereda, Belman and Babicha micro watersheds); and
- Desho grass seedling production (Bure and Antsokia)



Desho grass seedling production at Bure micro watershed

Summary of plan and achievements of forage development under SLMP-1 and SLMP-2

No.	Activities	Unit	SLMP-I			SMP-II			Regional Sum		
			Plan	Achiv.	%	Plan	Achiv.	%	Plan	Achiv.	%
1	Production of improved forage using different strategies	tons	1163.2	543.7	46.7	2405.8	360.1	14.9	3569	903.8	25.3
3	Efficient use of livestock feed resources	House holds	-	-	-	1664	435	26.1	1664	435	26.1

5. Improved Farm Tools and Machinery

a) **Berken Maresha technology**:- Berken Maresha was distributed in 6 weredas namely; Bure zuria, Guagusa, Gonji, Antsokia, Shoa Robit, and Bibugn. Effectiveness assessment was done by wereda focal units and the results indicated that, the technology is effective and accepted by most CSA farmers group

b) **Other farm tools and Machinery assessment**. The concerned Directorate from Bureau of Agriculture (BoA) confirmed that there is no functional improved farm tools and machinery available in BoA stock as such. However, there are tractors and combiners which are in use by farmers, introduced by different Unions from Adam farm machinery enterprise. There are walking tractors introduced by GIZ-ISFM and these are found to be effective and highly preferred by farmers.

PASDEP Program Achievements

IFAD Investing in rural people

INTEGRATED SOIL FERTILITY MANAGEMENT (ISFM)

SFM and CA	Hectare of land		beneficiaries (No)	
	planed	achieved	planned	achieved
1.Liming	75	36	60	74
2.Vermin composting	36	4.5	720	404
3.Green Manuring	45	15	360	32
4.Bio-fertilizer	150	225	300	900
5.Agroforestry	150	102	740	699
6.CA	196	106	568	194
	652	**484**	**2748**	**2229**

❖ **Inputs used .**

✓Vermin, 900 Qt, planned 611qt produced and 108Qt used .
✓Bio-fertilizer 900 sachet utilized
✓Green manure seed 21Qt used
✓Lime1200 qt used

Other activities included:

- Capacitate the Performance Efficiency of Watershed Technical Committee;
- Organizing field days, and
- Delivering practical training on vermicompost preparation.



Farmers visiting fields on a field day event



Farmers attending training session in a meeting hall

Vermicomposting

The annual plan was to address 720 households, to produce 900 quintal vermin compost and to cultivate 36 hectares of land through utilization of 1440 kg of worms. The achievements were: a total of 611 quintal vermicompost was produced involving 584 farmers (534 male, 58females). It was implemented in 21weredas and covered 31 micro-watersheds. Regarding vermiculture, 764 kg of worms were produced and a total of Eth. Birr 305,200 was generated from worm selling. economic benefit realized in terms of saves expenses on chemical fertilizers (DAP and Urea) was Eth. Birr 125,000.



Vermicompost ready to apply and stock stored in sacks under shade

Integrated Soil Fertility Management (ISFM)

Treating acid soils

Lime treatment activities were done in Asagirt, Mojja, Goncha, m.sayient, Wereilu and Ggedan watersheds where acid soils are prevalent. After treatment, an average of 15Qt per hectare yield increment was obtained. Out of 75 hectares planned to be treated, 36 hectares of land was treated covering 74 households (70 male and 4 female). A total of 1200 quintal of lime was used for the treatment.

SWOT Analysis

The following charts show results of the analysis i.e. strengths, challenges, opportunities and threats.

Strengths	Challenges
Established Plat forms (Task forces, CSA FG, CF)	Except the pilot watersheds, most lack of a clear awareness on CSA/CA • Principles • Objectives/benefits • Approaches of implementation /the triple win in CSA, the three CA pillars
• Provide field level technical support and through continuous phone and email	
• Better adoption of retaining crop residue though limited (both SLMP-I and II wereda)	
• Practically supported Trainings (vermicompost, Berken maresha)	

Strengths	Challenges
• Quick implementation and adoption of vermi-compost	• Lack of adequate support on capacity building
• Better adoption of Berken maresha after training (Bure, Gonji, Antsokia, Guagusa, Bibugn)	• Weak stream and Technical team/task force
• Better adoption of minimum tillage (most minimized to 2) –due to controlled grazing	• Poor coordination with the concerned stakeholders/sector offices
• Increasing crop rotation with pulses/legumes	• Lack of continuous follow up, and technical support at field level
• Increasing adoption of lupine green manuring	
• Minimizing free grazing effect	

Opportunities	Threats
• Existence of model CSA micro watersheds (Bure zuria, Antsokia) for sharing the experience	• Covid-19
• Existence of well award focal in pilot CSA micro watersheds	• Turn-over of well trained and equipped focal staffs
• Existence of stake holders working in CA and ISFM (Markos Migbare Senay, GIZ- ISFM)	• Organizational arrangement
	• Lack of investment in Agriculture

Day-2, Session One

The first session of the day was presentation on "***Reflections on fundamentals to transition to Agroecology***" presented by Mr. Solomon Kebede, Director of MELCA Ethiopia. In his introductory remarks, Mr. Solomon highlighted the facts on why industrial agriculture failed to bring food security and the rationale for transition to agroecology. Among these are the following.

- ❑ Over the last 50 years, 140 million ha of fertile land has been taken over by 4 big industrial monocultures producing soybeans, oil palm, canola and sugarcane.
- ❑ 50 to 75% of the world's food is produced by small farmers, even though they only control 25-30% of the land, and use 30 % of the water and 20% of the fossil fuels used in agriculture.
- ❑ Peasants breed and nurture 40 livestock species, almost 8000 breeds and 5000 domesticated crops. In addition, 2/3 of all seed planted are farmer varieties.
- ❑ Globally, more than 90 per cent of the world farms are small, less than 2 ha.



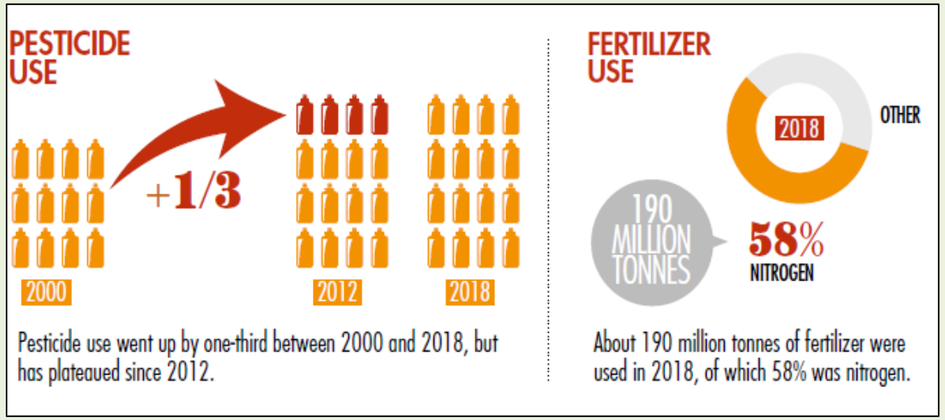
Mr. Solomon Kebede making presentation

Among the key challenges for non-sustainability of industrial agriculture model are the following.

a) Increased use of agrochemicals from year to year;
b) Cash crop production-oriented approach;
c) Change in land use;
d) Growing greenhouse gas emissions; and
e) The paradox of increased volume of food production globally and increasing level of hunger.

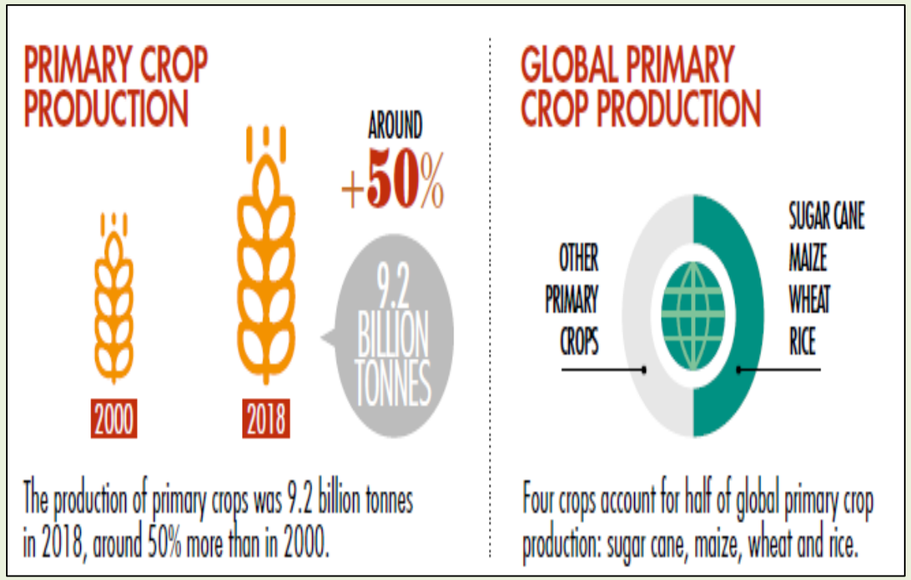
For better understanding, some data highlighting their significance are presented below.

a) **Increase in the use of agrochemicals:-** The following chart shows the level of increase in the use of chemical fertilizers and pesticides from 2000 through 2018.



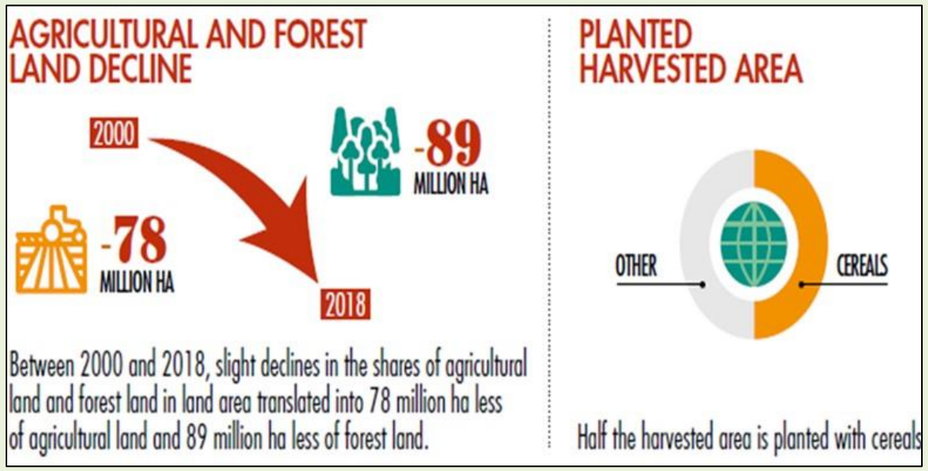
Changes observed in chemical fertilizer and pesticide use from 2000 to 2018

b) **Cash crop production-oriented approach**: only four crops account for half of the global primary food production including wheat, rice, maize and sugar cane. See the following chart for the changes observed from 2000 to 2018.

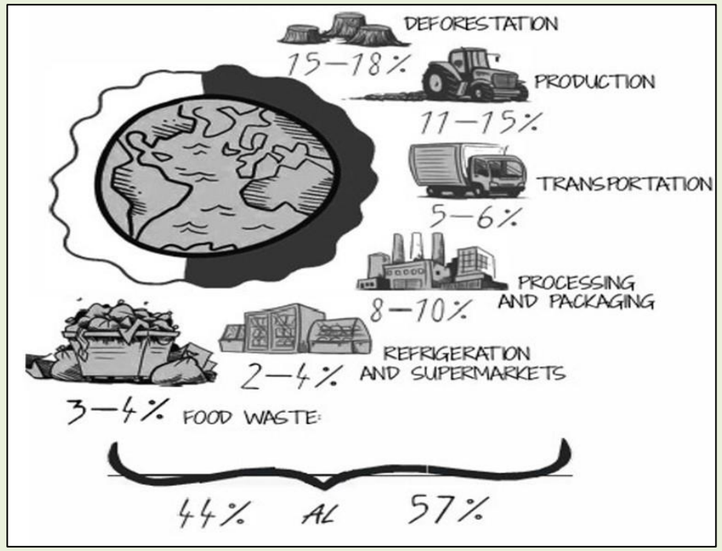


Changes observed in global volume of food production from 2000 to 2018

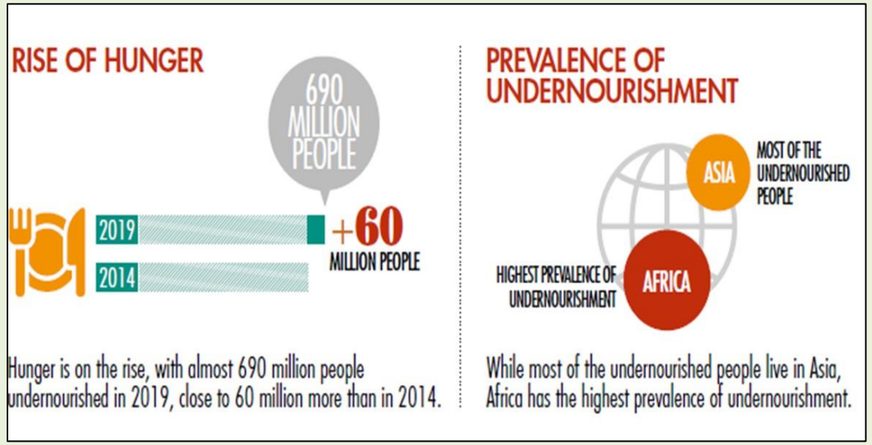
c) **Change in and use:-** data show that both agricultural land and forest areas are declining from time to time. Changes observed over 18 years (from 2000 to 2018) are presented in the chart below.



d) **Greenhouse gases emissions from industrial agriculture**:- industrial agriculture is the main cause for climate change and the contributions of the different food production related sectors are shown in the chart below. For instance, producing one kg of cattle meat emits 45 times more greenhouse gases than producing a kilo of chicken meat. The following chart summarizes emission levels from different elements from preparation, production through processing.

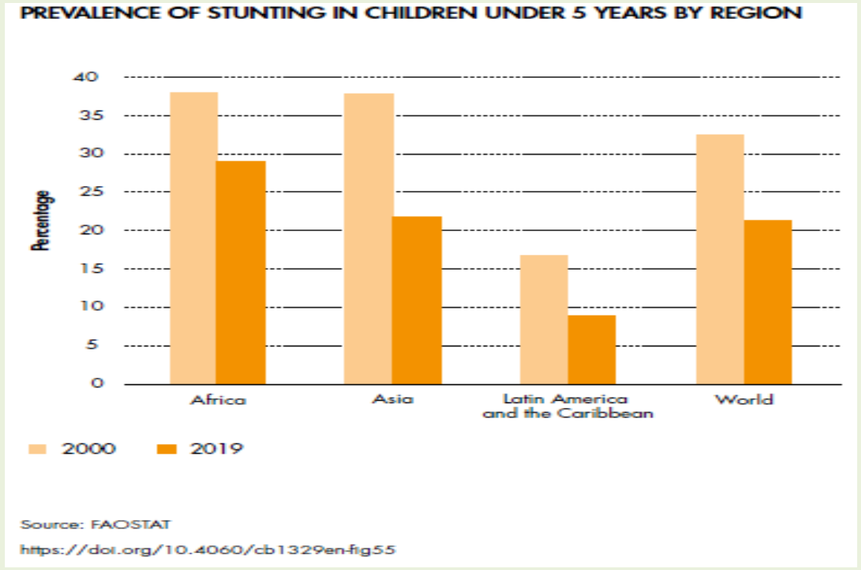


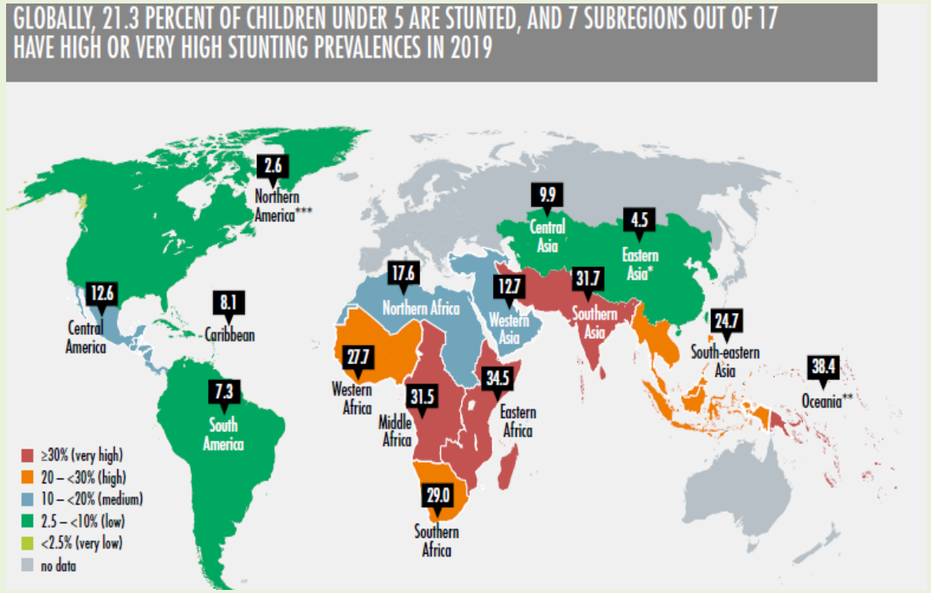
e) **The paradox of increased food production and increased hungry people:-** the following chart shows some evidences.



Changes observed in the level of malnutrition between 2014 and 2019

Another aspect to look into is the human health related challenges and level of incidence of malnutrition expressed as stunting in children are still very high in the developing world. See the following charts for more information.





From 2000 to 2016, child stunting rate fell from 58% to 38% while the share of children that are underweight declined from 41% to 24% over the same period (Ethiopia, CSA and ICF 2016; NPC 2017). However, wasting only declined by 2% during the time 2000 to 2016.

The major consequences of the **industrial agriculture model** of development are summarized as follows:



Note: M = million, b = billion, GHG = green house gas

Regarding national level data, a total of 12.2 M Qt of inorganic fertilized were used in 2017/2018 crop season. Some details are seen in the table below. In 2019/2020 crop season, planned agricultural inputs were: inorganic fertilizers = 47.96 MQT; and agrochemicals (pesticides, insecticides, herbicides) = 5,266, 165 lt. **plus** additional chemicals used to control desert locust infestations that prevailed during the crop season.

Crop land by fertilizer and crop category, small holder farmers, main season 2017/18

Crop Type	All Cultivated land area(Ha)	All Fertilized area Ha)	Organic fertilizer (Ha)	Inorganic fetilizer (Ha)
All	14,582,195	8,277,524	1,376,896 (16.6% of all fertilized areas	6,900,628 (83.4%, of all fertilized areas)
Cereals	10,232,582	6,981,097	749,786 (12.3 %)	6,231,311 (87.7%)
Pulse	1,598,807	448,569	121,15	327,419
Oil seeds	846,494	103,957	33,258	70,699
Other Crops	1,904,312	743,901	472,702	271,199

- Under business-as-usual system, **crop husbandry** produced **12 MtCO2e** a year in 2010, will increase to 60 MtCO2e a year by 2030. **Forest sector** accounts for 55 Mt CO2 eq and will emit 90MtCO2e by 2030.
- **Livestock,** especially cattle, currently account for 65 MtCO2e a year (40% of total current national emissions). Further, the population of cattle is expected to increase by almost 30% by 2030 under business as usual, resulting in increased emissions.

Economic Justifications for action to transit to Agroecology:

- **Agricultural crops** make up 67% of agricultural GDP (27% of total GDP).
- **Livestock** contributes 21% of agricultural GDP in 2012/13 (around 9% of total GDP).
- **Forestry** makes up 9% of agricultural GDP (4% of total GDP). Forest and woodlands contribute to the national economy and to livelihoods.
- At the national level. the modest cost of climate change could be equivalent to 10% of GDP in 2050.
- Level of food security and undernourishment is high.

Gaps in the Ethiopian Agricultural Sector in Food and Nutrition

According to the Ethiopian Nutrition-Sensitive agriculture Strategy document of 2016, the gaps are:

i) It focuses on productivity, on high value crops for market and income, and mono-cropping.

(ii) Lacked the integration of nutrition objectives.

(iii) Food security programs have not adequately addressing nutrition issues.

(iv) Lack of sufficient supportive efforts on livestock and fishery development.

(vi) Low coverage and quality of implementation of the agricultural extension system.

(Vii) There is a lack of food safety standards and guidelines.

(Viii) Nutrition is not integrated into the curriculum of agricultural colleges and universities.

A significant decline in the diversity and richness of the agroecology resources (food, feed and landscape diversity) affects the basis upon which Ethiopia's agriculture is founded**.**

- Access to planting materials of choice is constrained due to weakened traditional farmers' seed systems.
- The capacity of formal seed system is limited even to meet the seed demand of a few major crops.
- The focus is on specialization than diversification.
- The move to monoculture, wider use of agrochemicals, introduction of GMOs, promoting cluster and contract farming, and "tree culture" pose serious risks to diversity.
- Little or no investment on supporting sustainable agriculture**.**

Why and How Industrial Agriculture Survives?

1. **PATH DEPENDENCY:** Industrial agriculture is encouraged by high labour costs, subsidies, specialization and high investment, IPR, a web of interlocking market and political incentives.
2. **EXPORT ORIENTATION:** Trade and development, improvements in water and railway transportation, urbanization, and the need for cheap food, subsidies/**agricultural development aid** for a particular food crop by supplying with superficially low price that actually doesn't work for the poor developing countries.
3. **THE EXPECTATION OF CHEAP FOOD:** Consumers have become accustomed to cheap abundant food, consumers disconnected and disengaged from food systems, **physically, economic** (more intermediaries) and **cognitive** (decreasing knowledge of how food is produced and processed). **The relative devaluation of food has gone** hand in hand with **major food waste in industrialized** countries.
4. **COMPARTMENTALIZED THINKING:** little attention is given to the complex interactions between the natural environment and human society that underpin food systems (Francis et al., 2003).
5. **SHORT-TERM THINKING:** pushing short-term solutions to business and political actors in spite of increasing problems.

6. **'FEED THE WORLD' NARRATIVES:** Delivering food security by **increasing total food production.** Public policies have often made this objective explicit, increased production of commodity crops**,** and complementary policies to increase agricultural trade flows. 'Feed the world' narratives fail to address: **problems of poverty and access**, **social equity and power relations,** root causes of insufficient diets, where and by whom additional food must be produced, as well as the interconnections between food systems problems.

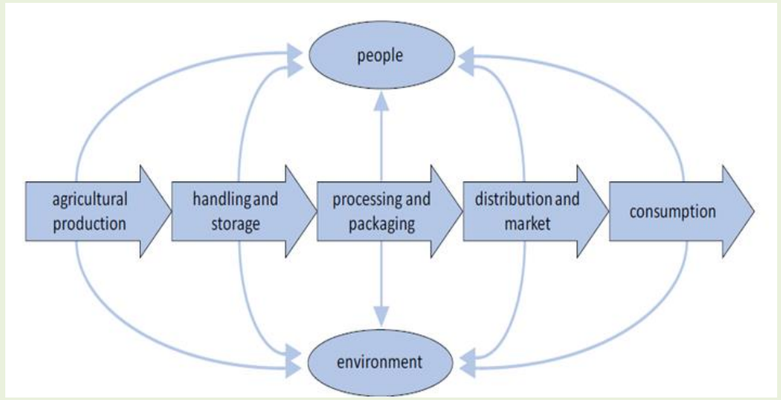
7. **MEASURES OF SUCCESS:** the common parameters used to measure success such as net calorie production, yield per hectare (considering grain output and leaving out byproducts that are valued and used by farmers), productivity per worker, and financial income have shortcomings in addressing the social equity and access aspects, distribution issues, the ecosystem services delivered and livelihood resilience aspects.

8. **CONCENTRATION OF POWER:** data show that only 3 companies control 50% of the commercial seed market globally; 7 companies control nearly 100% of the fertilizer sales; 5 companies share 68% of agrochemical market; only 4 firms account for 97% of private research and development in poultry; while 4 firms control up to 90% of the global grain trade.

What does it take to transit to agroecology?

- **Agriculture must meet the challenges of hunger and malnutrition** – against a backdrop of population growth, increased pressure on natural resources, loss of biodiversity, and climate change, but industrial agriculture is has failed on a number of counts.
- **We need to shift to more sustainable food systems** that produce more, with less environmental and social costs in a just, locally and culturally appropriate manner that **meets multiple co-benefits.**

A food system is a holistic concept that describes all the elements, activities, and institutions that are required to feed people, and their related consequences (FAO. 2014).



Conceptual representation of a food system

What is agroecology?

As science: is the **integrative study of agronomic, ecological, economic and social dimensions** or the ecology of the food system (Francis et al., 2003);

As practices: promoting implementation of practices that work in harmony with nature.

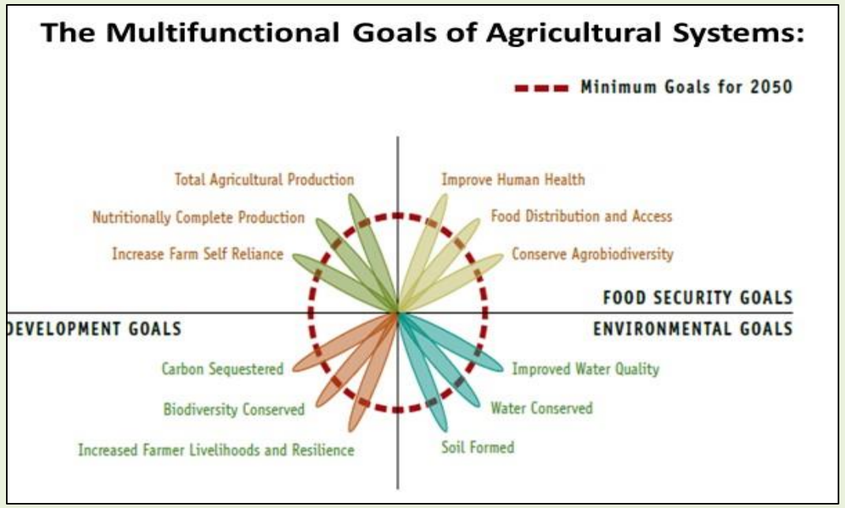
As Social Movement – promotes **social justice, local identity and culture, indigenous rights for seeds and breeds, and food sovereignty** (Altieri and Toledo, 2011; Rosset et al., 2011; Nyéléni, 2015).

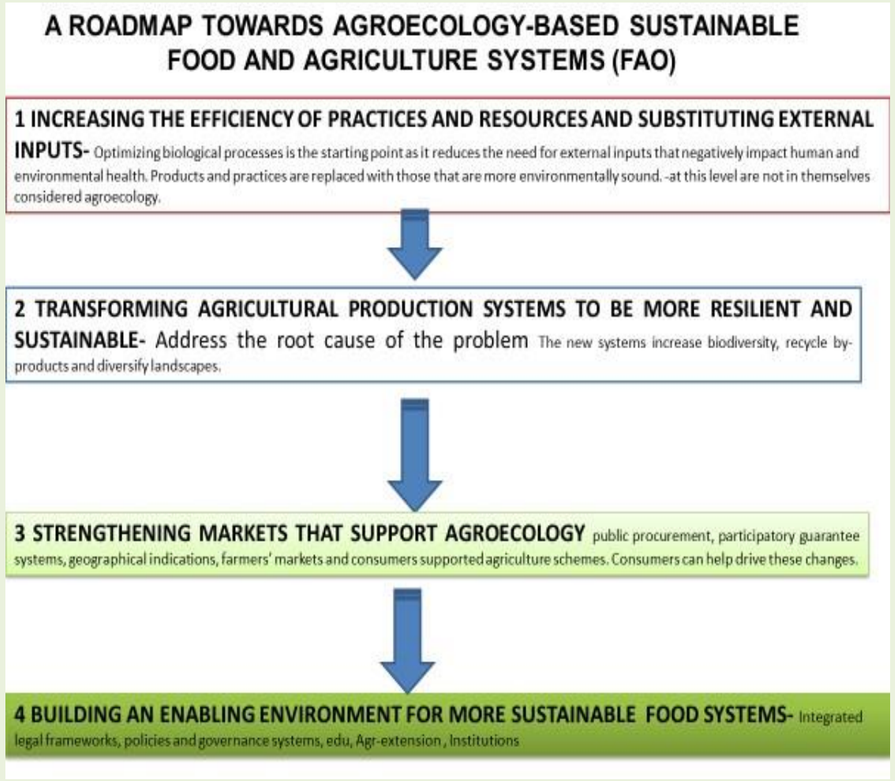
The rationale why Agroecology is sustainable system:

- ❑ Agroecology relies on diversity in knowledge.
- ❑ It is regenerative and restorative in nature, enhancing soil fertility and health and increasing agroecological biodiversity.
- ❑ Agroecology products are healthy and nutritious.
- ❑ It is about reciprocity, balance with nature and enhancing the cyclical nature of life.
- ❑ Agroecology advocates for trade and market equitability.
- ❑ It promotes the decentralization of power by empowering all actors.
- ❑ Agroecology favors ensuring cross learning and collaboration.
- ❑ Its focus is to increase overall productivity at farm rather than crop level, and reduce dependency on external and unaccountable corporations.
- ❑ Agroecology promotes sustainable land use by allocating land to production and other ecosystem services, diversify food products and household diets, and
- ❑ Increase or preserve labor in farms (smallholders) and in rural areas.

Agroecology is about **food sovereignty** and the main pillars of food sovereignty movement include*:*

1. **Focuses on food for the people:** – focus on need and culture of the community.
2. **Values food providers:** – respect food producers and value sustainable livelihood.
3. **Localizes food systems:** – reducing distance between producer and consumers, resisting dependency on external entity.
4. **Places control at a local level**: – local food supplies, reject privatization of natural resource by multinationals, including seed.
5. **Promotes knowledge and skills**: – building traditional knowledge and rejecting technologies that undermine local food system.
6. **Works with nature**: – maximizing ecosystem contribution, improving resilience and diversity, and nurturing soil health.





Future Food System Scenarios according to Global Food Systems: An Outlook to 2050:

Scenario-1. **The Production-based Vision**:– Envisions reducing hunger by increasing agricultural production through the expansion of industrial agricultural systems in low-income countries.

Scenario-2. **Consumption based vision:–** Envisions reducing hunger by reducing consumption through changes in consumer behavior in high- and middle-income countries.

Scenario 3**. The Regenerative-based Vision:–** envisions reducing hunger by transforming the nature of the global food system to one that is not just sustainable but also regenerative.

Scenario 4**. The Innovation-based Vision:–** The fourth scenario envisions reducing hunger through a new agricultural revolution based on biotechnology.



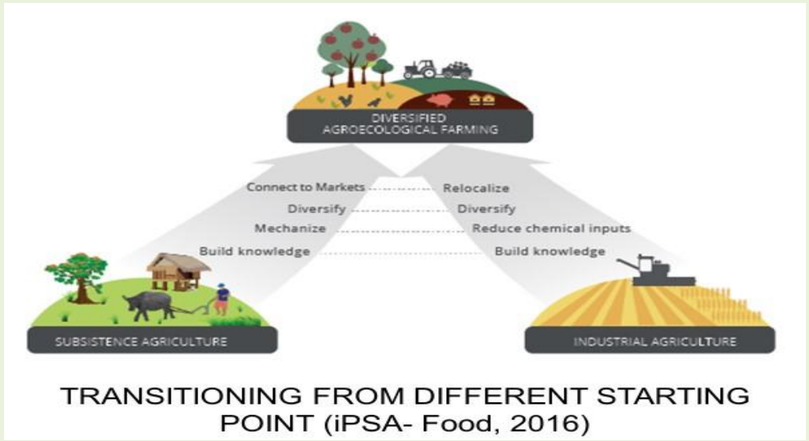
The new architecture for future sustainable food system

As shown in the chart above, **the new architecture for future sustainable food systems** has five pillars:

1. Ensuring access to land, water and healthy soils.
2. Rebuilding climate resilient healthy agroecosystems.
3. Promoting sufficient, healthy and sustainable diets for all.
4. Building faster, shorter and cleaner supply chains, and
5. Putting trade in the service of sustainable agriculture.

The recommendations suggested for effective transition to agroecology-based food system include the following.

1. Creating enabling political, policy, institutional, fiscal/budgetary support environment and common vision.
2. Strengthening the central role of farmers including youth and women.
3. Fostering collaborative research and co-creation of knowledge, innovation and sharing.
4. Building connections and partnership.
5. Support short circuits and alternative retail infrastructures.
6. Strengthen movements that unify diverse constituencies around agroecology policy and governance.
7. Mainstream agroecology and holistic food systems approaches into education and research agendas.
8. Develop food planning processes and 'food policies' at all levels.
9. Develop new indicators for sustainable food systems.



TRANSITIONING FROM DIFFERENT STARTING POINT (iPSA- Food, 2016)

Day-2, Session Two

The last presentation of the workshop was "Draft policy framework for mainstreaming agroecology approaches in Ethiopia" presented by Mr. Regassa Feyissa. In his introductory remarks, Mr. Regassa mentioned that the level of understanding about the concept of agroecology varies significantly. Agroecology emerged as a result of the failure of single disciplinary approaches to address the challenges in agricultural food production and the undesired challenges that emerged from practicing industrial agriculture mainly the environmental crisis and the failure to sustain agricultural production. The need for intra-disciplinary and cross-disciplinary approaches and seeing the system as a whole became a necessity.




Mr. Regassa Feyissa making presentation of the draft policy framework

Agroecology or agricultural ecology in its literal disciplinary expression is a natural environmental system under which agriculture is practiced. Its studies involve multi- and trans-disciplinary fields of knowledge that combine sets of principles deriving from different scientific fields. Currently, agroecology is increasingly becoming a common term in describing sustainable agriculture, as Mr. Regassa mentioned.

- **As a scientific discipline,** agroecology studies how different components of agroecosystems interact.
- **As ecological practices (*ecological agriculture*),** it looks for sustainable farming systems that optimize and stabilize yields.
- **As a means for socio-economic balance/justice:** pursues new ways of considering agriculture and its relationships with societies, focusing on issues such as food sovereignty and multifunctional roles for agriculture.

Agroecology: is defined as the application of ecological concepts and principles to the design and sustainable management of agroecosystems in order to ensure healthy socio-economic and environmental services and just agricultural and food systems.

- **According to FAO**, **agroecology** is about responses to sustainable agriculture, to ensure food security, and to build resilience to the climate change related instability.

- **According to UN Sustainable Development Goal (SDG):** is about strategies for (a) sustainable management of ecosystems; (b) for halting and reversing desertification; (c) for terminating biodiversity loss; and (d) strategy for protecting water resources.

- **The Millennium Development Goals (MDG):** is about hunger and poverty eradication; ensuring access to clean water and sanitation; and attaining environmental sustainability.
- **Millennium Ecosystem Assessment (MEA):** deals with (a) conserving and enhancing specific ecosystem services within agricultural landscapes; (b) Integration of ecosystem management goals with other sectors and within broader development planning frameworks; (c) investing in cross-sectoral institutions that support stakeholders to manage landscapes; (d) Enhancing and restoring traditional indigenous knowledge systems; and (e) effective ecosystem management through coordinated responses at multiple scales.

The concept of sustainable agriculture

The concept of sustainable agriculture and what it entails remains unclear to many. As a result, some standardized views such as *sustainable agricultural intensification* (SAI), *ecological agriculture* (EA), *agroecological intensification* (AEI), etc. remain subjects of debates.

As it is hard to standardize agriculture, the practical approach for sustainable agriculture is better left for **self-determined context specific practices.** Each approach for sustainable agriculture may depend on the economic, social and ecological dimensions of specific farming, production and livelihood systems. The **common denominator** though is tackling the biological, ecological and socio-economic deficits brought by unsustainable management and use of ecological, biological and social capital in the societies.

Stakes of sustainability

- Halting the disruption of agroecological and farming systems and erosion of a range of sources of food;
- Reversing the disruptive approaches and stopping the distractive impacts on agrobiodiversity resources and to food systems;
- Promotion of sustainable management and utilization of agrobiodiversity resources;
- Protection of agroecosystems that harbor agrobiodiversity resources;
- Recognition, promotion and protection of knowledge, practices and culture that nurture the resources; and
- Promotion of fair, balanced, equitable, just and responsible access to and use of natural/biodiversity resources.

Why ecological agriculture?

The goal of ecological agriculture is:

- *to maintain local biodiversity and ecosystem services;*
- *to manage agricultural production sustainably; and*
- *to contribute to improved livelihood among rural people.*

It should be noted here that these cannot be achieved at just a single farm or plot level, but at a landscape level as a whole. How landscape is defined depends on the local context as landscapes can vary in size and may incorporate different features.

What is the practicing of agroecology?

Ecological agriculture is about managing agricultural systems but with the entire mosaics of land use encompassing vegetations/forests, human settlement, mini-ecological units/boundaries, waterways/ riverine; and others. The key aspects that need attention include:

- a landscape level resource management and development;
- fostering synergies between conservation and production;
- coordination and collaboration between **land users** and **managers**; and
- collaboration of diverse stakeholders for coordinated management of landscapes for **agroecological planning** (local governance, extension, etc.).

Key challenges of Ethiopian agriculture

1) Degradation of Farm Environments

- *De-vegetation of farm environments and conversion of communal lands and riverine agro-ecologies to other uses have become common features that describe Ethiopia's agroecology.*
- *farm soil erosion and depletion of soil organic matters are common across many farming and production systems.*

2) Erosion of agrobiodiversity resources

- *erosion of genetic diversity as well as loss of practices and knowledge that manage agroecosystems.*
- *negative impacts of population pressure and monoculture-based agriculture system.*
- *the economy of scale of monoculture system is significantly reducing the potential of indigenous agrobiodiversity, narrowing down options for food sources at local level.*
- *political and economic tendencies still influence the devotion of large agricultural fields to monoculture.*

3) Vulnerability to seed and food insecurity

Farmer-based seed production and distribution mechanisms provide farmers with access to seed of both traditional and modern varieties.

- *the potential use of seeds of formal varieties (high input varieties) under most of the conditions of small-holder farmers is limited.*
- *the economic valuation of agricultural productivity does not provide enough space for farmers seed system.*
- *indigenous farmers' crop varieties are locked out of the interest scene of policies, research and investment for its improvement.*
- *there is a direct link between the declining investment on the enhancement of indigenous crops and diversification, and a decline in household level farm productivity and food security.*

4) Local vulnerability to climate change

- *Spatially and temporally varying challenges posed by climate change are exacerbating food insecurity and uncertainties.*
- *The most affected in all cases are small holder farmers who are with limited resources and options to survive the challenges.*

5) Decline in local agroecological services

- *eco-logical resources that are considered public goods are misused or are not cared for.*
- *communal ecological resources are overused to the extent that the resources can no longer provide functional, economic and social values.*

6) Relevant policies are short of space for agroecology and diversification and lack space for cross sectoral links, strategies, actions and for institutional division of tasks.

- *Agricultural policy lacks space for embracing diversity and agroecological norms and requirements;*
- *Forestry policy hardly bases itself on vegetation level thinking and ecological links;*
- *Biodiversity policy lacks space and action across sectors and at local levels;*
- *The seed policy does not link the formal and the informal seed systems;*
- *Agricultural research and extension policies are narrow option based with little or no focus on native resources.*
- *Practices, knowledge and approaches are standardized horizontally while they need to be decentralized spatially and according to specific conditions.*

Opportunities available

- Widening the scopes of relevant sectoral policies to include agroecological thinking and approaches as it is essential and is economically and ecologically beneficial;
- Agricultural policy that mainstreams agroecology and provides space for planning at farming and production systems is sustainable;
- Strategic approaches based on landscape and farm scale level approaches including diversification on farms and on farm environments.

There are ample lessons that show that agricultural production that is based on agroecological approaches/practices and on diversity farming are resilient to shocks caused by various socio-economic, climatic, environmental and health related factors.

- Agricultural policy should have space for the conservation of crop/plant genetic diversity and for recognizing.
- It should have a room for supporting and rewarding farmers and communities for the efforts they make to retain and enhance the diversity on which the present and future generations depend.
- Agricultural policy should have a room for incentivizing enhancement of local ecological services.
- Economic incentives for ecologically sound and healthy food sources.
- Setting country level strategy to ensure farmers access to seeds of a range of locally adapted crop types.
- Building local livelihood resilience and persistence under the condition of climate change depends on diversification of options and alternatives.
- Rehabilitation of local agroecology through landscape management and revegetation of farm environments is required.
- The current environment greening initiatives may be drawn upon and extended to farm environments to enhance local ecological services.

The draft framework has the following **eight pillars**. For further details on what is included under each pillar, see the full document attached as Annex-1.

1. Provision of frameworks for relevant sectoral policies to encourage agroecological approaches and innovations in order to contribute to sustainable agriculture and food systems that enhance food and nutrition security and ecological services.
2. Re-directing existing public budgets and incentives from innovations and practices that lead to the diminishing and misuse of agroecological resources to those that reduce negative impacts on the resources while contributing to multiple sustainability goals.

3. Adoption of public policies and accounting methods that promote agroecologically sound agricultural and healthy food systems.
4. Strengthening of research, training and education, and reconfigure knowledge generation and sharing practices/systems to foster co-learning to promote and support area specific agroecological learning and practices.
5. Support transitions to resilient, diversified and integrated agriculture and food systems through agroecological and other innovative approaches.
6. Strengthening of policy instruments and coherence for the conservation and sustainable use of biodiversity for food and agriculture and support the important past, present and future contributions of farmers in the development, conservation and improvement of biodiversity.
7. Encourage market and non-market incentives as supportive to sustainable management and use of agroecological resources and services.
8. Creation of an enabling environment for empowering vulnerable and marginalized groups for fair access to means to practice agriculture and to produce food sources of their needs, culture and interest.

Highlights from Discussion Sessions

General comments:

As institution, there is **no mandated organization/institution** who is officially tasked as responsible body to take the lead for mainstreaming agroecology. How shall this arrangement be made to make the issue handled properly for the long term? Having such an officially mandated institution will help to collect relevant information (now scattered at different institutions), develop as a database and share with interested organizations (GO & NGOs) as and when needed.

The suggestion to promote agroecology is "**to work in harmony with nature, not against nature**". Agroecological practices should be sensitive to local context, hence vary from one agroecological zone to the other as appropriate.

It is also important to have **stakeholder engagement forum** to learn from organizations already implementing agroecological practices on regular basis. In this regard, engaging Civil Society Organizations (CSOs) will contribute significantly to scale out best practices and make concerted effort for lobbying in favor of developing national agroecological policy. Such events are important to have thorough discussions and have common understanding about agroecology and what is relevant for the Ethiopian context. In line with this, it is suggested to define key terminologies related to agrobiodiversity and agroecology.

Effective coordination and synergy among agricultural experts require moving out of their disciplinary box. Cross-disciplinary approaches are encouraged to deal with the complex processes of food production systems in the country. Agricultural research centers have potential and the capacity to do research and document best agroecological practices with sufficient supporting data for sharing with relevant stakeholders.

Having **public debate events** is important to raise awareness and share what the expert group has done towards mainstreaming agroecology for sustainable food production. To this effect, **developing communication tools** that could be easily understood by the farmer communities is equally important. Having this helps to have clear and common understanding of what agroecology is all about.

Using organic fertilizers, it is possible to minimize dependency on external sources to import chemical fertilizers. It is even possible to completely replace gradually if we follow the right path by setting demonstrations and engaging community members out of their own interest. The success of Food for the Hungry Ethiopia in promoting conservation agriculture is an example that followed this approach.

Documenting local knowledge and practices related to agroecology is important to fill generational knowledge gap. Currently, the knowledge exists among the elderly and the youth miss most of these as the new generation focus on the high input technology. Youth engagement is vital element that needs attention as: (a) the great majority are not interested in farming, (b) they assume that agriculture is not profitable as business activity; (c) there is land shortage (farm land) and youth unemployment is growing even in rural areas, and (d) youth migration to urban centers and abroad in search of employment are among the main social challenges of the agricultural sector. Therefore, it is essential to **make agriculture youth-friendly** and demonstrate that it is possible to generate meaningful financial income from agriculture as family business. For instance, conservation agriculture and vermicompost making are less labor intensive than the conventional system and could easily attract the attention of youth.

Regarding sustainable natural resources management, the Amhara Bureau of Agriculture informed participants that there is a **manual developed on integrated watershed management for communities** that gives due attention to agroecological practices. It is produced in Amharic and could be translated to other languages and used by interested organizations.

There are evidences regarding some agroecological practices implemented by various government and non-government organizations through different project supports. These could be adopted and can

become part of the agricultural extension package. Hence, with **adequate budget and human resource allocation**, the government can easily integrate these tested best agroecological practices into the formal extension package as appropriate to reach localities with similar agroecological zones.

To raise awareness and better understanding, it was suggested to **include agroecology as part of the curriculum** in high schools, vocational technical colleges, and universities progressively.

Research and documentation is an integral element of development initiatives generating data and assessing adoption rates by community as well as documenting key challenges faced and gaps observed along with the positive changes achieved. Hence, future research shall **focus on participatory approaches by engaging local communities** for the planned improvement of local crops and animal breeds.

The current presentations focused on crops plus soil and water management practices. That means, the **interdependence and interrelatedness of crop and livestock sectors** is not given adequate coverage. Therefore, it is important to document experiences on this and share in the future events.

Major challenges to mainstream agroecology were listed as follows:

- The need to boost volume of production very shortly (compromises long term needs);
- Inadequate and variable understanding regarding agroecology;
- Confusion of the concept of food security (often seen as one season production when promoting the use of high input high yielding varieties coming from external sources);
- Promotion of monoculture cash crop as the only way to ensure food security (recommendations at times forget the issue of seed security – for instance hybrid seeds are good only for one season production and the farmers have to look for new seed supply from external source next season);
- Lack of coordination and effective collaboration among different government organizations and/or institutions working on agroecology related activities;
- Absence of officially mandated national institution to deal with agroecology; and
- Information regarding local knowledge on good practices on agroecology is not documented properly. Mostly, this knowledge available in the minds of community members and remains undocumented. It is suggested to document and capitalize on such community knowledge and local practices than looking for external solutions that unduly result in creating dependency.

Questions and Answers

Q1. Can we manage to feed the growing population of Ethiopia by practicing agroecological agriculture?

Answer. First of all, agroecology is not about making agriculture static. As mentioned in one of the sessions, it **favors dynamism** and **the transition to agroecology involves additions, reductions, and innovations**. Local knowledge itself is also a result of dynamic interactions and is enriched as it evolves over time. Therefore, it is possible to produce sustainably by practicing suitable agroecological practices as these fit to the local context.

Food security involves more than one season harvest and practicing **diversity-based food production** helps to produce different types of food crops and ensure nutrition security, farmers are able to spread potential risks and build their capacity for resilience. Without diversity, the risk of managing climate change related challenges is nearly difficult.

Agroecological practices ensure long term soil fertility enhancement through nutrient recycling, favor better soil and water management, improve vegetation cover, and support soil microorganisms and beneficial insects, among others. By **minimizing dependency on external input sources,** agroecology helps to ensure sustainable harvest and brings no health risks to humans, animals and the environment. **Practicing multiple cropping and adopting integrated pest management**, for instance, are agroecological practices that are less costly and are easily managed by the farmers using locally available resources.

It is an undeniable fact that the high input conventional agriculture is not applicable everywhere as there are preconditions to make the system economically feasible. Low potential areas prone to various production risks are not conducive for high input commercial agriculture. Hence, the narrative of producing more using high input conventional agriculture is not always effective as promised. Hence, such areas need alternative production system to produce food sustainably.

Honestly speaking, raising production alone doesn't solve localized food insecurity challenges. There are cases where farmers managed to produce large volumes of surplus harvest, but failed to sell

their produce even at prices lower than cost recovery level. Therefore, **creating good marketing links** will solve the localized food insecurity cases in risk-prone areas by transporting produce from surplus producing areas.

Another point to give priority attention in order to achieve the national food security goal is working on **reducing post-harvest losses**. Studies show that as high as 30% of the harvest is lost during post-harvest handling. Managing this alone will make available significant volume food stock every year. Hence, rather than looking for high external input use (that drains, it is wise and effective to focus on what is already at hand and can be controlled. However, this doesn't exclude innovations and research on improving production and productivity.

As learned so far, **incentives for investment** favor the spread of commercial agriculture which is export-oriented and didn't contribute to support the local food supply. Interestingly, the private investors get government support in terms of duty-free privileges to import machineries and also get tax holidays as incentives. **The small-scale farmers, who actually produce food and feed the national population are never given any incentive**. This needs to be revisited by policy makers if the production and productivity of the small-scale farmer sector has to be raised and manage to feed the population sustainably.

Q2. Is agroecology adequately addressed in any of the national policy documents? If so, which are these?

Answer: Although detailed account is not made, agroecology as a concept is mentioned in the Climate Resilient Green Economy (CRGE), Nationally Determined Commitments (NDC), Growth and Transformation Plan Phase II (GTP II), and National Adaptation Plan (NAP) documents, among others. These give room for further elaboration and inclusion of sustainable agroecological practices as fitting to the various contexts. For instance, best agronomic practices that favor nutrient recycling as well as soil and water conservation are embraced by the CRGE strategies.

Q3. Is Climate Smart Agriculture linked to agroecology? Is it excluding or supporting agroecology?

Answer: There are various agroecological practices that are in harmony with nature and support the promotion of climate smart agriculture strategies. Examples here would be: practicing conservation agriculture for instance by having permanent soil cover (mulching, growing cover crops, agroforestry, etc.); practicing minimum tillage, and promoting multiple cropping practices including

intercropping and crop rotation. Moreover, rehabilitation of degraded lands through various soil and water conservation practices that enhance land productivity, improve soil fertility and moisture retention capacity, improve soil health, and favor the functionality of beneficial soil microorganisms are in line with Climate Smart Agriculture principles. The lessons from best practices of various implementing organizations could be compiled and shared for scaling up. These offer safe entry points and promote agroecological practices for sustainable food production.

Q4. Some of the indigenous food crops do not have quality standards. For the common crops, the standard is globally known and the Ethiopian Standards Agency (ESA) also uses that for calibration. For instance, "kocho" and "*anchote*" are good examples where ESA failed to make standard calibrations. How can we handle this?

Answer. It is quite clear that it should be the responsibility of the national research institutes and the Ethiopian Public Health Institute to do research and collaboratively set out the quality standard as it meets the local needs. These food crops are indigenous and we cannot get standards from elsewhere. Therefore, due attention should be given by the institutions mentioned above as these crops are sources of livelihood and have wider socio-economic importance to millions of farmer communities in Ethiopia. Once the standards are set, it would possibly open up new market opportunities abroad.

Day-2, Session Three

The third session of the day was **group work** and participants formed three groups. The discussion questions were the following.

Q1. What major policy pillars that need to be added or included in the proposed draft National Policy Framework for mainstreaming agroecology in Ethiopia?

Q2. What specific policy statements should be stated under the newly proposed major policy pillars by the groups?

Q3. Any other suggestions for improvement of the proposed draft document of agroecology policy framework?

After the group work was plenary discussion session where group rapporteurs made presentations and others made comments and asked questions for clarification. The following pictures show participants discussing in small groups and then rapporteurs making presentations on the plenary.





Group-1 members discussing and group rapporteur making presentation





Group-2 members discussing and group rapporteur making presentation





Group-3 members discussing and group rapporteur making presentation

Summary points of the group discussions

Result of Group-1

The team suggested to rephrase the title of the draft document to read as "***Draft Policy Framework for Mainstreaming Agroecology in Ethiopia***" and include the rationale and objective/purpose of having the policy framework.

Issues suggested to be added/considered as part of the draft framework document include the following:

- land use policy related challenges;
- best/good practices from different parts of the country should be included along with key challenges encountered;
- Intellectual Property Right issues to protect indigenous knowledge; ownership/patent issues;
- Registration of local landraces (crops) and breeds (animals);
- Documentation of local knowledge (need for documentation of primary data for use as a reference i.e. first-hand information from the area under consideration; use local knowledge and practices as reference in describing agroecology)
- Ethical issues of indigenous knowledge – those who conduct study or research must acknowledge/ mention the source of indigenous/local knowledge.

- Establish and/or strengthen national **agroecology center of excellence** – to coordinate research, demonstration, and serve as education/training center. This should be owned by a national institution such as the Ethiopian Biodiversity Institute.
- Include agroecology as part of school curricula (high schools and tertiary levels).
- Define agroecology within the local context taking landscape approach into consideration. Have a standard agroecological zonation taking into consideration the local contexts.
- Creating consumer awareness (raising awareness towards safe food, organic foods, certified products, healthy food, nutritional security, etc.)
- Production of organic fertilizer at wider scale - a need for searching a new technology that would help to produce organic fertilizers in bulk.
- Promotion of urban agriculture giving attention to agroecological practices.
- Using Farmers Training Center (FTC) for awareness creation to promote urban agroecological practices.
- Addressing agroecology locally in line with the global agroecological understanding without compromising the national benefits.

Result of Group-2

- Give emphasis to livestock and fishery sectors i.e. quality improvement aspects as well;
- Give attention to improvement of local crops and animal breeds also;
- Include land tenure aspect; who owns the resources? This has serious influence in terms of promoting or constraining agroecology;
- Innovation and technology development should focus on local contexts;
- Link to employment creation opportunities for youth and women, particularly on inclusion of the disadvantaged ones;
- Access to rural credit services will support the employment creation options on small scale agribusiness enterprises;
- Link and strengthen local markets in cases of emergency conditions (to focus on buying local foods that are easily available, are known to be nutritious, are culturally appropriate, and socially acceptable rather than importing food that has no information on how it is produced, where and its source);

- Establish database on community knowledge. This links with the right of communities as well as food and seed sovereignty issues. It also helps for sharing information and knowledge among local implementing partners;
- Due attention should be given to the conservation of not only natural forest but also farm-based forests.

Result of Group-3

General comment: The draft policy framework paper was circulated today and needs to be read well for comment and suggesting inputs. It is good to qualify the title (use the one mentioned as workshop title) and circulate to wider audience focussing on technical expertise on policy formulation as well as lawyers and those who know the essential components content-wise to finalize as a policy framework document and subsequently produce policy briefs for policy makers.

- Include objectives of the policy framework.
- Strengthen the introductory section with best practices (homely examples are available; it is not sufficient and right to always reference external sources when we have ample documented evidences) and present the multiple benefits of agroecology to emphasize the rationale.
- Local community knowledge (both agriculturalists and pastoralists) needs adequate emphasis.
- Inter-generational knowledge transfer needs to be included in the framework.
- Revisit sections that overlap and avoid redundancy.
- Land use could be one of the pillars as it is a determining factor in the food system.
- Limited capacity of agricultural research centers could be mentioned as one of the challenges to mainstream agroecology.
- Awareness regarding agroecology is far from being adequate. Some wrongly assume that agroecology is excluding innovation and improvement. Agroecology is not about traditional only or about a static thing, but is dynamic and complex process evolving through local innovations and adaptations over time. Hence, this illusion of static belief needs to be clarified.
- The current research focus is biased towards promotion of conventional industrial agriculture path and this is a challenge to mainstream agroecology.
- Marketing of agricultural products is critical in promoting agroecology. Challenges related to the marketing aspect need to be highlighted.
- Institutional ownership to hold on to this agroecology mainstreaming endeavor and take the lead to move forward with the next steps ahead is essential. Doing this is also important for

effective coordination and mobilizing support for such national follow-up events and others. Who should be this lead institution?

What is Next?/ the Way Forward

It was an open discussion forum to hear from participants regarding what they would like to see next until the final National Agroecology Mainstreaming Policy is in place for Ethiopia.

These were the comments and suggestions raised by participants.

- The initiative taken by MELCA and all efforts made to organize this national dialogue event is highly appreciated. It brought together different expert groups and proved that it is a common national agenda for those involved and other like-minded organizations who are not present here today for various reasons.

- The draft policy framework is good as a starting point and it can be enriched and strengthened with inputs from others. Therefore, it is advised to form a **core task force** to move this forward after this two-days event. Circulate the electronic version of the draft to all participants and others who might be interested to comment and provide feedback. The small group task force can finalize the document taking the leadership and incorporating inputs from the others.

- Engage more stakeholders covering all regions, have a follow-up event, and come up with a common ground to promote agroecology as a viable alternative to industrial agriculture.

- Review relevant policies that are linked to agroecology and explore ways to work for synergy.

- Carry out stakeholder analysis to identify potential allies and opponents clearly for taking the next steps strategically. Be prepared and devise ways on how to deal with potential opponents.

- Engage women and men farmers and capture their opinions in the development of the policy brief in the future. Individual case stories regarding the benefits of practicing agroecology would strengthen and substantiate the key arguments.

- Submit the policy brief to relevant government offices and other institutions to keep the momentum.

- Agroecology is not a stand-alone issue or a task of a single organization as such and, hence, needs the collaboration and concerted synergetic efforts of different sectors as well as both government and non-government institutions.

On his closing remark, Dr. Feleke pointed out that the two days event went well and all participants have gained better understanding about agroecology. Surely, there will be follow-up events with wider stakeholder participation. Government organizations like EBI and MoA have been already working

closely so far and are committed to take it further. There is growing interest among all participant institutions and that is very encouraging. Agroecology is holistic in its very nature and the transition is a progressive process in due course involving dynamic approaches where additions, reductions and innovations take place over time as appropriate. Dr. Feleke mentioned that EBI in collaboration with MELCA and the Federal Ministry of Agriculture office are committed to take the task of revising and finalizing the draft policy framework and share with all. Inputs from current participants are welcome to be received by email to keep the ball rolling.

Finally, Dr. Feleke thanked MELCA (the lead) and collaborating organizers, all presenters and participants for the efforts made to make the national workshop event a success and declared the workshop officially closed.

Annex-1

(DRAFT)

A NATIONAL POLICY FRAMEWORK

FOR

MAINSTREAMING AGRO-ECOLOGY

IN ETHIOPIA

Regassa Feyissa

October 2020

Background

Agriculture and food systems are embedded in wider environmental and socio-economic systems, impacting them and being impacted by them. Bothe agriculture and food systems are therefore deeply inter-twined with economies, cultures, societies, health, climate and the environment. Due to such complex nature of agricultural and food systems challenges it face also are highly complex and context-specific *(6).* To date, challenges brought by changes in socio-economic and environmental balances are posing problems of wide range impacts in almost all corners of the world. Erosion of biological, ecological and social capitals at higher pace and impacts of climate change on agriculture, food and health systems are all the consequences of shifts in socio-economic and environmental balances.

One of the major drivers is the unsustainable agriculture that exerts pressure on natural ecosystems, accelerates loss of biodiversity *(1*) and emits about 23% of the total anthropogenic greenhouse gas (GHG) emission *(2).* The impact is heavier and the most vulnerable are small-scale food producer farmers *(3).* Over 80% of Ethiopia's farmers who still produce food for all and support the rural sectors fall in this category of farmers. A range of unpredictable factors such as drought, pests and diseases, for example, usually bring risks and fragilities to such farming communities *(4,5*). Food insecurity emanates from the consequences of some or all of these factors combined and achieving sustainable agriculture and food security under such circumstance would remain an overwhelming challenge. Increasing population coupled with evolving shifts in climatic conditions and accompanied with the depletion of natural resources by encroaching on land and water resources worsens the situation.

The challenge is increasing agricultural productivity while reducing agricultural damage to the ecological and biological capital essential for the present and the future. The Sustainable Development Goal (SDG) of the United Nations (UN) agenda of protecting, restoring and promoting the sustainable use of both the terrestrial and aquatic ecosystem resources bases itself on addressing challenges that negatively affect these resources. This is the set as a basis for ensuring food security for all but through the promotion of sustainable agriculture. Sustainably managing ecosystems, combating desertification, halting and reverting desertification, stopping biodiversity loss, protecting water resources and achieving water consumption and energy use are all closely linked with agriculture.

However, the concept of sustainable agriculture and what it entails remains unclear to many although some standardized views such as *sustainable agricultural intensification* (SAI), *eco-agriculture* (EA), *ago-ecological intensification* (AEI), etc. have become subjects of debates. Nevertheless, as hard to standardize agriculture and as efforts made so far in this regard have been consequential, the practical approach for sustainable agriculture is better left for self-determined context specific practices. Each approach for sustainable agriculture may depend on the economic, social and ecological dimensions of specific farming, production and livelihood systems. The common denominator though would be tackling the biological, ecological and socio-economic deficits brought by unsustainable management and use of ecological, biological and social capital in the societies.

From Ethiopia's perspective therefore, shift of agricultural practices towards multi-functional approaches that regard the complexity of Ethiopia's socioeconomic and ago-ecological sets is fundamental. Policy

frameworks for national level ago-ecological approaches need to be mainstreamed being framed within relevant sectoral policies but with visible space and long-term perspectives to ensure healthy and resilient environment, socio-economic and food systems. Widening the scopes of relevant sectoral policies to include agroecological thinking and approaches is essential and is economically and ecologically beneficial *(7).* An agricultural policy that mainstreams agroecology and provides space for planning at farming and production systems is required. The strategic approaches should be based on farm scale level approaches including diversification *(6).*

There are ample lessons that show that agriculture that is based on agroecological approaches and on diversity is resilient to shocks caused by various socio-economic, climatic, environmental and health factors. In recognition of this fact, ecological agriculture is one of the strategies that at present is explicitly endorsed globally in order to overcome agricultural, environmental and food crisis brought by unsustainable agriculture and the climate change *(5).* It should be underscored though that as ecological relationships and social interactions are central for ecological agriculture, innovations and technologies to meet the challenges in practicing it are also distinct from those applied in many unsustainable agricultural practices.

Key challenges to the Ethiopian Agriculture

Ethiopia's agroecological systems are pools of diverse biological, ecological and social capital. Thus, the agriculture systems are diversity based that are practiced under different socioeconomic, cultural, farming and production systems. The systems still harbor enormous genetic diversity of crops/plants, livestock and other agroecological resources that Ethiopia is known for. However, despite its potential values for enhancing socio-economic benefits and ecological services, the condition of biodiversity and agro-ecological resources in almost all farming systems is deteriorating. There are many factors that are the drivers of deterioration of biodiversity resources, agroecological systems as well as food and socio-economic security.

Degradation of Farm Environments

There are a range of forced disruptive changes that induce deterioration of agroecosystems. Devegetation of farm environments and conversion of communal lands and riverine agroecologies to other uses have become common features that describe Ethiopia's agroecology. Farm soil erosion and depletion of soil organic matters are common across many farming and production systems. Rural food, economic, health and environmental crisis usually emanate from deterioration of agroecological resources.

Erosion of agrobiodiversity resources

Agrobiodiversity resources are complex of varying biological, ecological and social assets characterized by the genetic diversity it is harboring, by the agroecologies and climatic conditions it is functioning under, by the cultural and socio-economic practices that manages it, and by the farming and production systems that it supports. Among the current challenges agrobiodiversity resources face are erosion of genetic diversity as well as loss of practices and knowledge that manage agroecosystems. Population pressure and monoculture-based agriculture are among accountable causes for loss of complex

agrobiodiversity resources. Despite such risks however, political and economic tendencies still influence the devotion of large agricultural fields to monoculture. The economy of scale of such system is significantly reducing the potential of indigenous agrobiodiversity, narrowing down options for food sources at local level.

Vulnerability to seed and food insecurity

While the potential use of seeds of formal varieties under most of the conditions of small-holder farmers is limited, farmer-based seed production and distribution mechanisms provide farmers with access to seed of both traditional and modern varieties, in the quantities they require, in time for planting and at a cost they can afford. However, regardless of the huge potential of the informal seed system, the economic valuation of agricultural productivity does not provide enough space for its important contributions. This causes shortage of seeds of locally adapted crop varieties and exacerbates the situations of local and national food insecurity.

Indigenous farmers' crop varieties are locked out of the interest scene of policies, research and investment for its improvement. There is a direct link between the declining investment on the enhancement of indigenous crops and diversification, and a decline in household level farm productivity and food security. At the same time, there are a few formal crop varieties that are available for less favourable environments, while many of them are genetically narrow based and are limited to favourable conditions. In general, lack of adaptable formal crop varieties to frequently diverse agroecologies, displacement of the locally adapted indigenous crop varieties, and little or no investment on the improvement of farmers' varieties remain bottlenecks for increased productivity.

Local vulnerability to climate change

Spatially and temporally varying challenges posed by climate change are exacerbating food insecurity and uncertainties. The most affected in all cases are small holder farmers who are with limited resources and options to survive the challenges. The fear is that as temperature and rainfall are spatially and temporally continue to be erratic, agricultural productivity would continue to be affected and many local communities may face difficulty in sustaining viable production. Farmers may require access to a range of sequential crops and their varieties to increase adaptation capacity. There is a need for country level strategy to ensure farmers access to seeds of a range of locally adapted crop types.

Adaptation to climate change neither has standards nor technologies that could be applied horizontally, especially under frequently diverse agroecological requirements such as those of Ethiopia. Any approach to enhance climate change adaptation potential depends on the local specific conditions which farmers under diverse conditions can manage with proper support and locality specific approaches. External interventions therefore should aim at increasing farm productivity through proper provision of alternatives and options for farmers that minimize harms to agroecosystems. Indiscriminate application of technologies that in short and long-terms pose ecological damages can no longer be a solution if not it brings more problems. Building local livelihood resilience and persistence under the condition of climate change rather depends on diversification of options and alternatives.

Decline in local agroecological services

It has become quite common that eco-logical resources that are considered public goods are misused or are not cared for. The tradition of collective responsibility and management of resources on communal lands, for example, has declined and communal ecological resources are overused to the extent that the resources can no longer provide functional values. Vegetation on communal lands, farms and reverine environments that have multiple ecological functions are no longer there in many cases. There are practices that deplete soil organic matters which need to be restricted and should be replaced by those that increase soil organic matters and enrich the soil with nutrients. Legal provisions and cultural norms that directly or indirectly obligate and force protection of farm soils and farm environments as public goods is needed to reverse the trend of deterioration of local agroecological services.

As measures for the reversal of the crisis, farm environments including communal lands and riverine ecologies require rehabilitation and protection. Rehabilitation of local agroecologies through landscape management and revegetation of farm environments with vegetations that host pollinators and serve as sources of feed and energy is required. The current environment greening initiatives may be drawn upon and extended to farm environments to enhance local ecological services.

Relevant policies short of space for agroecology and diversification

Implementation of various natural resources development policies lacks space for cross sectoral links, strategies, actions and institutional division of tasks. Agricultural policy lacks space for embracing diversity and agroecological norms and requirements; forestry policy hardly bases itself on vegetation level thinking and ecological links; biodiversity policy lacks space and action across sectors and at local levels; the seed policy does not link the formal and the informal seed systems; agricultural research and extension policies are narrow option based with little or no focus on native resources; practices and knowledge, and approaches are standardized horizontally while they need to be decentralized spatially and according to specific conditions.

Agricultural policy should also have space for the conservation of crop/plant genetic diversity and for recognizing, supporting and rewarding farmers and communities for the efforts they make to retain and enhance the diversity on which the present and future generations depend. Economic incentives for ecologically sound and healthy food sources, for example, would encourage producers to invest more time and labor on increasing productivity and on the practices that protect agroecological resources. Agricultural policy should also have a room for incentivizing enhancement of local ecological services.

Frameworks for mainstreaming agroecology in Ethiopia

Mainstreaming agroecology should be framed within a wider policy scope and should also take a long-term perspective *(9).* Due to the complexity and cross sectoral nature of agroecological resources management, sectoral policies should consider enough space for agroecology within sectors and institutions that in one way or another have agroecology relevant tasks. This includes the agricultural and the food sectors, academic and research institutions as well as policies that govern land use systems at all

levels. Ensuring policy coherence across sectors and strengthening inter-sectoral policy-making and planning, for example, between agricultural, environmental, trade, health and nutrition policies is important. This involves ensuring of coordination and coherence with respect to their sectoral strategies, policies and programs on agroecological and other innovative approaches, including the scaling up of agroecological resources enhancement related initiatives.

Attempts to achieve food security under frequently diverse agroecological and cultural practices of Ethiopia but with extreme dependency on narrow options for certain cannot be a solution. Agricultural policy should reconsider diversification and redirect and implement strategies in such a way that all diverse farming and production systems are addressed accordingly and with appropriate investments on the enhancement of local resources and agroecological services. Promotion and application of technologies as well as services through extension programs should be local agroecological and socio-economic context-specific. The agricultural policy should also provide space for mechanisms that help in sustaining farmers' access to seeds of crop varieties of their interest and space for investment on building farmers capacity as seed producers.

There are a few formal research crop varieties that are available for diverse small hold level production as the focus is more on technologies that are for a few major crops for which techniques are well established. Strategies for enhancing lesser known to research but locally important staple indigenous crops/plants are not there. There is a need for policy considerations and proper investments to improve research for making use of local agroecological and indigenous crop genetic resources and to support farmers' practices and knowledge in developing varieties suitable to local agroecological conditions.

The aim of the following recommended policy objectives is to provide the wider scope in which Ethiopia's rich biodiversity and agroecological resources as well as the diverse culture and empirical knowledge are made use of to sustain the agricultural and food systems and to enhance agroecological services and its sustainability.

1. ***Provide frameworks for relevant sectoral policies to encourage agroecological approaches and innovations in order to contribute to sustainable agriculture and food systems that enhance food and nutrition security and ecological services***

This policy target is cross sectoral with the major aim to promote policies that encourage diversification and agroecological approaches and discourage genetic erosion, degradation of farms and farm environments. Relevant sectors may consider the following interventions based on the responsibilities of a give sector:

a. Institutions/authorities at all levels should recognize the need for context-appropriate approaches to move towards sustainable agriculture and food systems while regulating approaches that convert ecological systems to *less valuable and unsustainable uses across sectors;*

b. Reforming existing public policies that invite the diminishing and misuse of agroecological resources;

c. Strengthening public policies to encourage market incentives to enable sustainable conservation and utilization of indigenous biodiversity, to encourage ecological agriculture and food systems by factoring environmental, social and public health values into prices;

d. Encouraging sustainable consumption patterns that maintain and enhance – rather than deplete – natural resources, and encourage relevant stakeholders to have roles in generating economic incentives for indigenous agroecological resources and management practices.

e. Establishing public mechanisms to assess the impacts of agroecological and other innovative approaches and specific innovations on key aspects of sustainable agriculture and food systems, such as resilience, food security and nutrition, the right to food, producers' revenues, the environment and public health;

f. Ensuring policy coherence across sectors and strengthening inter-sectoral policy-making and planning, in particular between agricultural, environmental, trade, health and nutrition policies.

2. Re-direct existing public budgets and incentives from innovations and practices that lead to the diminishing and misuse of agroecological resources to those that reduce negative impacts on the resources while contributing to multiple sustainability goals.

Policy directions and actions that explicitly invite the degradation and misuse of agroecological resources should be corrected and those that are on a narrow track for the ambitions to achieve healthy and sustainable livelihoods need to be redirected. Some areas of focus may include:

a. Raising public awareness about responsible promotion and use of agrochemicals among producers, consumers and distributors for the protection and improvement of human, animal and environmental health;

b. Creation of awareness on the use of ecological alternatives to pesticides and promotion of integration of biodiversity for the prevention of pest outbreaks. Phasing out pesticide use in the long-term should be one of the projections. It is essential to recognize the rights of farmers and people working in rural areas not to use or being exposed to hazardous agrochemicals;

c. Putting in place code of conduct for safe and sustainable use of agrochemicals with the aim to reduce pollution from excess use is required. Sustainable management of farm soils should be encouraged and supported for maximizing the recycling of nutrients and for minimizing the use of external inputs by promoting and rewarding innovative ecological alternatives.

d. Strengthening and enforcing stricter national regulations on the use of antimicrobials, including the use of growth promoters in agriculture and food systems;

e. Strengthening policies, programs and actions that address and support women's role, knowledge, practices and contributions in nurturing agrobiodiversity, management of unique nutritional and medicinal foods and ecologies that harbor them;

f. Ensuring coordination and coherence of sectoral policies, strategies and programs on agro-ecological produce marketing, in promoting ecologically sound innovative approaches and in scaling out of agroecological initiatives;

3. Adopt public policies and accounting methods that promote agroecologically sound agricultural and healthy food systems

Agroecological approach is about a system of agriculture that increases biodiversity, equity, security and sustainability in the face of rapid environmental and socio-economic changes and uncertainties *(9,10).* Promotion of sustainably produced and affordable healthy diets would encourage increasing sources of diverse and healthy foods. Among measures to be considered are:

a. Adopting agricultural and food policies that address diverse ago-ecological, farming, production and food systems as well as cultural, nutritional and socio-economic needs of the rural and urban populations;

b. Adopting policies that encourage diversification and agroecological approaches and discourage genetic erosion; degradation and conversion of farms, farm environments, riverine agroecologies and communal lands to other less valuable and unsustainable uses;

c. Correcting the imbalances in the control of land and resources that cause losses of agrobiodiversity, agroecosystem degradation, conversion of farm landscapes and develop new resource management partnerships between government and local communities;

d. Strengthening the national legal framework for the conservation, management and development of agroecological resources such as local farm landscapes and for integrating development of such resources into national economic policies;

e. Promoting sustainably produced, affordable and healthy diets, considering local context and cultural values including the values of indigenous and local diets;

4. Strengthen research, training and education, and reconfigure knowledge generation and sharing practices/systems to foster co-learning to promote and support area specific agroecological learning and practices,

Promoting trans-and multi-disciplinary learning in agricultural and environmental development science, participatory approaches to research and dissemination of knowledge and information for understanding and shaping the complex socio-ecological systems in agriculture and food systems play crucial roles *(10).* It is essential that research organizations and academic institutions; educational, training and extension programs; the private sector, producers' organizations, civil society, regional and local development actions are encouraged to promote ecologically sound resource development and utilization strategies.

Necessary measures would include the followings:

a. Developing and supporting problem-oriented trans-disciplinary research, encouraging its integration with local and indigenous knowledge, engaging farmers and other relevant stakeholders in agriculture and food system programs for participatory innovative processes;

b. Reforming agricultural knowledge, information and innovation systems to support agroecological and other innovative approaches by ensuring that research, extension/dissemination and education/capacity building are integrated in an inclusive, participatory, and problem-oriented approach;

c. Redesigning agricultural research, knowledge, technology and extension systems to enable trans-disciplinary science with research priorities set to ensure local needs while accommodating and valuing the local knowledge;

d. Encouraging basic and applied research for developing and promoting tools for agroecology and agrobiodiversity conservation, management and development practices;

e. Ensuring that agricultural knowledge, information and innovation systems are holistic and have enough space for participatory decision making and proper orientation to local problems

f. Prioritizing problem-oriented research that addressing the needs of vulnerable groups focusing on the local dimensions of livelihood challenges such as climate change adaptation and mitigation, on ecological footprint of different production systems and value chains, on biodiversity conservation and sustainable use, on enhancing local ecosystem services and incentives for local ecological produces, and on impacts of positive and negative externalities to agriculture and food systems;

g. Investing in promoting ecological alternatives to agrochemical use through agricultural extension, and encourage explicit coverage of achieving sustainable agriculture and food systems in curricula of educational institutions at all levels by integrating hands-on experiential learning;

h. Supporting capacity development for small-scale farmers and other producers on agroecological and other innovative approaches, and promoting technologies and practices suited to local contexts and needs;

i. Increasing responsible investments and redressing the relative under-investment in agroecological approaches with priorities for strengthening public research to address the needs of small-scale food producer farmers including the women and the youth;

5. Support transitions to resilient, diversified and integrated agriculture and food systems through agroecological and other innovative approaches

Ethiopia's system of agriculture cannot survive without diversity, and sustainability and resilience of the system can better be ensured when productivity bases itself on diversity. Building local adaptive capacity

to climate change and ensuring of food security but in the absence of diversity is unthinkable in the context of Ethiopia. The following would be approaches that are important to consider:

a. Encouraging regional and local development initiatives implemented by different actors to recognize resilience, diversification, and integration as key foundations of sustainable agriculture and food systems.

b. Raising public awareness about the importance of diversified production systems that integrate livestock, aquaculture, cropping and agroforestry, as appropriate - for sustainable production, healthy diets and resilient livelihoods;

c. Promoting an enabling environment for agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition;

d. Encouraging and incentivizing producers for diversification and integration of agricultural production, including support during the process of transitioning to more sustainable systems;

e. Strengthening public policies to harness market mechanisms to enable sustainable agriculture and food systems by factoring environmental, social and public health externalities into prices;

6. Strengthen policy instruments and coherence for the conservation and sustainable use of biodiversity for food and agriculture and support the important past, present and future contributions of farmers in the development, conservation and improvement of biodiversity.

Conservation of genetic resources is the task of a responsible society and governance. The conserved resources are treasures of the present and of the future and conserving it in its dynamic state requires public investment and is the responsibility of all. Smallholder farmers have been serving as both conservators and food producers, managing enormous agricultural genetic resources for which Ethiopia is known as a world center of origin and diversity. However, as situations change farmers can no longer shoulder the huge tasks of conserving and producing food at the same time, but without proper support through investments.

Agricultural research and development as well as biodiversity and other relevant policies should consider support to farmer conservators through sustainable public investments. Farmers also need to be supported with technologies that enable them enhance the use values of the diversity they conserve and to increase the local ecological services. The very backward perceptions of putting conservation of agricultural genetic diversity as against agricultural development, and agricultural development as an enemy to conservation is a stance of ignorance and should be halted. The following are among the important measures that would be considered to make changes in this regard:

a. *Incorporating agroecology and agrobiodiversity conservation and management into agricultural development strategies as an essential action* for achieving production increase and food security under healthy agroecosystems;

b. Prioritizing the use of local resources and invest in increasing the potential values of the resources. Restoration of degraded farms and farm environments to enhance local

productivity and biodiversity and ecological services is an important component of the approach;

c. Encouraging farm ecology and landscape-based planning for the management of local agro-ecosystems and for diversifying production in a holistic manner that enable responding to local needs, enhancing the provision of ecosystem services, protecting biodiversity-rich habitats, and for responding to the local impacts of climate change and other negative factors;

d. Encouraging responsible investments and innovations in local community-led small and medium sized enterprises that support sustainable agriculture and food systems and retain values locally;

e. Encouraging the realization of Farmers Rights according to the provisions of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), to which Ethiopia is a signatory *(11);*

f. Encouraging policies that incentivize the youth to remain on farms and attract them to move to rural areas by creating decent and dignified work opportunities. This may include access to land and credits and to other services that may contribute to generation of economic incentives;

g. Promoting innovative and integrated approaches to human, animal, and environmental health in order to enhance resilience and prevent outbreaks of diseases and pandemics;

7. *Encourage market and non-market incentives as supportive to sustainable management and use of agroecological resources and services*

Promotion of the economic values and ecological services of local agroecological resources encourages sustainable management and utilization of the resources *(12).* It also encourages development-oriented land use planning by local communities in order to explore opportunities for developing larger agroecological benefits by protecting local natural resources. This requires strengthening of market and non-market incentives that encourage sustainable biodiversity resource utilization and local ecosystem management. The economic valuation of ecologically sound and healthy food sources encourages investing more time and labor on the practices of ecological agriculture. The following may be interventions that would be considered to promote market and non-market incentives:

a. Recognizing the multiple functions of markets and the need to promote innovative approaches to ensure that markets respond to the needs of resilient, health and nutrition sensitive, diversified and culture and identity sensitive and integrated production systems;

b. Encouraging the private sector to promote local, national and global markets for ecological products, but with concrete contributions to the social, environmental and economic sustainability of ecological agriculture and food systems, and enhances food security and nutrition without negatively impacting on environment, equity and rights;

c. Increasing the resilience of food systems to shocks such as pandemics and climate change by promoting diverse market incentives for diverse food sources with arrangements that have greater

flexibility in the face of disruptions. This involves addressing connectivity challenges in food supply chains and strengthening it to support local challenges, autonomy and resilience;

d. Supporting market innovations that strengthen linkages between urban communities and food producers, but in compliance with public policy and safety standards, for providing sustainably produced healthy food to all consumers while providing dignified livelihoods to producers;

e. Supporting innovative public policies such as school feeding programs, other safety nets, food assistance and public regulatory and preparedness mechanisms that give preference to locally and sustainably produced food while it supports rural development objectives;

8. *Create an enabling environment for empowering vulnerable and marginalized groups for fair access to means to practice agriculture and to produce food sources of their needs, culture and interest*

It is widely considered that agroecological and other innovative approaches are more likely to contribute to sustainable agriculture and food systems that enhance food security and nutrition. This however requires support to local communities and food producers in order to ensure sustainable, healthy and productive local agroecological systems. Issues to be considered include:

a. Supporting inclusive and democratic decision-making mechanisms at all levels in agriculture and food systems as well as in local resources management and utilization;

b. Creating and strengthening producers and consumers links and negotiating capacity of producers;

c. Facilitating the use of appropriate media and networking to promote agroecologically produced healthy and nutritious indigenous sources of food;

d. Providing enough role to the marginalized and vulnerable groups that are at risk of food insecurity and malnutrition;

e. Reinforcing the autonomy of women farmers and their organizations, their collective action and negotiation and leadership skills, and in producing and promoting agroecological, healthy and nutritious foods;

f. Supporting the women farmer groups with appropriate trainings and gender-friendly technologies through extension services and strengthening their full participation in related policy processes;

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Program of the National Dialogue on Agroecology Policy Issues Relevant to Ethiopian Agricultural Production System

Time	Activity	Presenter/Facilitator
Day One: **December 24, 2020**		
08:30 – 09:00	Registration of participants	MELCA Ethiopia
09:00 – 09:10	Introduction of workshop program	MELCA Ethiopia
09:10 – 09:20	Self-introduction of participants	MELCA Ethiopia
09:20 – 09:30	Welcome Speech	Associate Prof. Mellese Damte, Chairperson of MELCA Ethiopia's Board
09:30 – 09:40	Opening Remarks	Dr. Feleke Woldeyes; Deputy Director General of the Ethiopian Biodiversity Institute (EBI)
	Session Chair: Dr. Feleke Woldeyes	
09:40 – 10:15	The Prospect of Conserving Ethiopian Agrobiodiversity: Efforts made so far, Opportunities and Challenges	Dr. Tamene Yohannes, Crop and Horticulture Directorate Director, EBI
10:15 – 10:30	Health break and networking	Organizers
	Session Chair: Mr. Alemayehu Ayalew	
10:30 – 11:10	Climate Change and Agroecology Policy Nexus in Ethiopia	Mr. Muluneh Hedeto, Senior Advisor and National Climate Change Negotiator, EFCCC
11:10 – 11:50	Agriculture Sector Green Growth Policy Directions and the Role of Agroecology as a Policy Response	Mr. Berhanu Assefa, Director of Environment and Climate Change Coordination Directorate, Ministry of Agriculture
11:50 – 12:30	Discussion sessions	Mr. Alemayehu Ayalew, Vice Chairperson of MELCA Ethiopia General Assembly

12:30 – 13:30	Lunch break	Organizers
13:30 – 14:20	Conservation Agriculture Nexus in Agroecology: experiences and lessons of Food for the Hungry Ethiopia in scaling up conservation agriculture program	Mr. Tesfahun Eyoel, Climate Resilience Manager for Conservation Agriculture Program of FH Ethiopia
14:20 – 15:00	Sustainable Agricultural Practices in the context of Agroecology: the case of Amhara Regional State	Mr. Markos Wonde, Vice Head of Bureau of Agriculture, Amhara Regional State
15:00 – 15:20	Health break	Organizers
15:20 – 16:30	Discussion session	Mr. Alemayehu Ayalew, Vice Chairperson of MELCA Ethiopia General Assembly
Day two: **December 25, 2020**		
08:15 – 8:30	Registration of participants	MELCA Ethiopia
08:30 – 08:40	Recap of day-one	Workshop rapporteur
	Session Chair: Dr. Feleke Woldeyes	
08:40 – 9:20	Fundamentals for transition to agroecology	Mr. Solomon Kebede, Director of MELCA Ethiopia
09:20 – 10:20	Draft national policy framework for mainstreaming agroecology in Ethiopia	Mr. Regassa Feyissa, Individual Consultant
10:20 – 10:35	Health break	Organizers
10:35 – 11:30	Group work	Participants
11:30 – 12:00	Presentation of group work and plenary discussion	Group Rapporteurs
12:00 – 12:25	The way forward	Dr. Feleke Woldeyes
12:25 – 12:30	Closing Remark	Dr. Feleke Woldeyes, Deputy Director General of EBI
12:30 – 13:30	Lunch break	Organizers
13:30 -	End of workshop and departure	

List of participants of the national dialogue event

S.N.	Name of participant	Organization	Phone No.
1	*Alemayehu Ayalew*	Amanawi Citizen Organization	0911 662401
2	*Hana Gizaw*	Protestant Agency for Diaconia & Development (PADD)/Bread for the World (BFFW)	0983 858636
3	*Gebremedhin BIrega*	Ethiopian Society for Consumer Protection (ETHIOSCOP)	0911 945616
4	*Hailu Araya*	PELUM Ethiopia	0911 246046
5	*Melaku Temeselew*	Ethiopian Public Health Institute (EPHI)	0913 606225
6	*Ashenafi Hailu*	Ethiopian Institute of Agricultural Research	090474 4344
7	*Mellese Damte*	MELCA Ethiopia Board	0911 171687
8	*Tesfaye Endrias*	MELCA Ethiopia Board	0913 539699
9	*Solomon Kebede*	MELCA Ethiopia	0911 412983
10	*Feleke Woldeyes*	Ethiopian Biodiversity Institute (EBI)	0930 069201
11	*Bayush Tsegaye*	Freelance Consultant	0901 673301
12	*Tesfahun Eyoel*	Food for the Hungry (FH) Ethiopia	0911 551912
13	*Alemu Getu*	Ethiopian Institute of Agricultural Research (EIAR)	0913 235195
14	*Fassil Gebeyehu*	African Biodiversity Network (ABN)	0911 235721
15	*Hiwot Hibiste*	Ethiopian Standards Authority (ESA)	0911 458759
16	*Mersha Yilma*	MELCA Ethiopia	0911 141742
17	*Regassa Feyissa*	Ethio Organic Seed Action (EOSA)	0911 248340
18	*Tamene Yohannes*	Ethiopian Biodiversity Institute	0911 399341
19	*Tekalign Ayisse*	Institute for Sustainable Development (ISD)	0911 937672
20	*Ahmed Mohammed*	Population Health and Environmental Education Consortium (PHEEC)	0911 462904
21	*Ghebremedhin Belay*	Institute of Sustainable Development	0911 753538
22	*Muluneh Hedeto*	Ethiopian Forest and Climate Change Commission (EFCCC)	0912 499802

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30	*Abebaw Gefie*	Amahara Region, Bureau of Agriculture	0918 701201
31	*Melaku Zerga*	SNNP Region, Bureau of Agriculture & Natural Resources	0911 729972
32	*Ali Seid*	Amhara Region, South Wollo Zone, Department of Agriculture	0914 063544
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34	*Tassew Mustefa*	Amhara Region, Bureau of Agriculture	0918 702014
35	*Markos Wondie*	Amhara Region, Bureau of Agriculture	0920 478404
36	*Endalew Takele*	Amhara Region, Bureau of Agriculture	0918 017764
37	*Banchamlak Molla*	Amhara Region, Bureau of Agriculture	0918 784694
38	*Anteneh Adane*	Amhara Region, Bureau of Agriculture	0924 398918
39	*Gashaw Habtewold*	Amhara Region, Bureau of Agriculture	0918 717302
40	*Suleyman Mohamed*	Amhara Region, Bureau of Agriculture	0938 900902
41	*Habtamu Yalew*	Amhara Region, Bureau of Agriculture	0918 302630
42	*Yimer Seid*	Amhara Region, South Wollo zone, Agricultural Development office	0922 890523
43	*Zerihun Gashaw*	Amhara Region, Bureau of Agriculture	0911 942281

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45	*Elsabeth Abebe*	MELCA Ethiopia	0911 319311
46	*Abraham Getachew*	MELCA Ethiopia	0911 161495
47	*Etefa Debo*	MELCA Ethiopia	0920 550926
48	*Dessaelegn Alemu*	MELCA Ethiopia	0911 352374
49	*Sitotaw Birhanu*	MELCA Ethiopia	0911 882106
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