



FNI REPORT 7|2019
REGINE ANDERSEN

The Impact of the Development Funds' and EOSA's Community-based Agrobiodiversity Management Programme in Ethiopia



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randersen@fni.no



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The Fridtjof Nansen Institute is a non-profit, independent research institute focusing on international environmental, energy and resource management. The institute has a multi-disciplinary approach, with main emphasis on political science and international law.

Abstract

The Development Fund of Norway (DF) has commissioned an evaluation to analyse the impact, relevance and sustainability of the Community-based Agrobiodiversity Management Programme (CBAM) in Ethiopia, which was implemented by Ethio-Organic Seed Action (EOSA) with DF support from from 2011 until 2016, aimed at sustainable adaptation to climate change in farming communities. Target groups were households of small-scale farmers, including women and youth, in the Oromia and Amhara regions, and, from mid-2014, also in the Southern Nations, Nationalities and Peoples Region (SNNPR). CBAM had profound relevance to the target groups, as it addressed their basic needs with regard to seed and food security, improved nutrition and income generation. The impacts of CBAM have been impressive for most of the 13 EOSA sites. Not only has lost crop diversity in these centres of crop diversity been reintroduced and restored, varieties have also been adapted to climate change and further improved to accommodate the needs of local farmers. Farmers gave impressive accounts of how the programme has transformed their lives from poverty and hunger, to seed security, better food and nutrition security, improved livelihoods, and enhanced capacity and self-esteem. CBAM has also impacted on policies in Ethiopia, most notably as regards seed policies and agricultural policies. The greatest challenge concerns financial sustainability. The evaluation offers recommendations as to how the experiences could be better documented, analysed and shared, how financial sustainability may be secured, and how conditions could be identified for scaling up the model to a national level in Ethiopia and in other countries. Towards this end, it offers recommendations for capacity development, focus of work and long-term commitment.

Acronyms and Abbreviations

CBAM	Community-based Agrobiodiversity Management Programme, Ethiopia
CBD	Convention on Biological Diversity
CBDC	Community Biodiversity Development and Conservation Programme
CBM	Community-based Biodiversity Management
CBM-SA	Community-based Biodiversity Management South Asia Programme
CCA	Crop Conservator Association (in SNNPR)
CSB	Community Seed Bank
CSV	Climate-Smart Village
DF	Development Fund, Norway
EBI	Ethiopian Biodiversity Institute
EOSA	Ethio-Organic Seed Action, Ethiopia
ETC Group	Action Group on Erosion, Technology and Concentration
FCA	Farmer Conservator Association (in the Oromia and Amhara regions)
GEF	Global Environment Facility
GPA	Global Plan of Action on Plant Genetic Resources for Food and Agriculture (FAO)
IPGRI	International Plant Genetic Resources Institute (<i>renamed Bioversity International</i>)
ISSD	Integrated Seed Sector Development Programme, Netherlands
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
LI-BIRD	Local Initiatives for Biodiversity, Research and Development (Nepal-based)
MELCA	Movement for Ecological Learning and Community Action, Ethiopia
NGO	Non-governmental organization
OSE	Oromia Seed Enterprise
PPB	Participatory Plant Breeding
PVS	Participatory Variety Selection
RAFI	Rural Advancement Fund International (now ETC-Group)
SDG	UN Sustainable Development Goals
SNNPR	Southern Nations and Nationalities Peoples Region, Ethiopia
SoS	Seeds of Survival Programme
USC Canada	Unitarian Service Committee of Canada

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Oslo/Lysaker, 15 August 2019
Regine Andersen
Senior Research Fellow (Dr Polit)
Fridtjof Nansen Institute

Summary

The Development Fund of Norway (DF) is among the leading agencies worldwide collaborating with developing-country partners to promote and enhance the sustainable use of crop genetic diversity as a means of poverty alleviation and food security. During the past decade, the DF has worked together with local partners in Ethiopia, Guatemala, Honduras, Nicaragua, Malawi, Nepal, India, Bangladesh, Sri Lanka and Somalia to improve the livelihood security of local communities through programmes for community-based agrobiodiversity management.

DF has commissioned an evaluation to analyse the impact, relevance and sustainability of its agrobiodiversity management programmes over the past decade, also with a view to the effects of climate change on agriculture. This present report presents the findings from the evaluation of the Community-based Agrobiodiversity Management Programme (CBAM) in Ethiopia, which was implemented by Ethio-Organic Seed Action (EOSA) with DF support.

Background

CBAM can trace its roots back to the origins of the community seed bank (CSB) movement in the late 1980s, with USC Canada's Seeds of Survival (SoS) Programme, and the very first community seed banks in developing countries, established in Ethiopia. The pioneers were scientists and directors of the Ethiopian national gene bank. They ensured a solid scientific foundation for programme activities, a quality that has been maintained since 2003 by EOSA, an organization also characterized by high scientific competence. This expertise has been central in developing CBAM as a research-based programme. Thus, CBAM has a rich pre-history and a solid foundation.

CBAM was implemented from 2011 until 2016, after a three-month pilot project in 2010. The overall objective was sustainable adaptation to climate change in farming communities. The programme focused on enhancing the capacity of farming communities to manage, develop and utilize

local agrobiodiversity sustainably, as an adaptive mechanism to climate change in Ethiopia, thereby improving food security and livelihoods. Target groups were households of small-scale farmers, including women and youth, in the programme areas in the Oromia and Amhara regions, and, from mid-2014, also in the Southern Nations, Nationalities and Peoples Region (SNNPR).

Case studies for this evaluation have been conducted in Ejere in Lume District, East Shewa Zone, Oromia and in Sigeda in Soro District, Hadiya Zone, SNNPR. The findings from Ejere are assumed to have relevance for the other EOSA-supported programme sites in Oromia and Amhara, whereas the findings from Sigeda are assumed to have relevance for the other programme sites in SNNPR.

Case study 1:

Ejere Community Seed Bank in Oromia Region

In Ejere, farmers told of the devastating drought and pests in the 1980s, which wiped out most of the once-abundant diversity of durum wheat, teff and other crops. Improved varieties were provided by the Government, together with chemical fertilisers and pesticides at low cost. Initial yields were high, but ever-greater amounts of chemical fertilisers were required to keep yields up, and the prices were rising. Moreover, moneylenders charged high interest rates. As a result, many small-scale farmers in Ejere experienced increasingly frequent food shortages and hardship. When the SoS programme arrived in Ejere in 1990, local farmers were provided with small amounts of seed of the crop varieties they had lost under the conditions of the 1980s, and which they missed. These had been previously collected and stored in the national gene bank. The farmers multiplied and shared the seed, which became the basis of the CSB that was then established in Ejere. Since that time, and particularly through CBAM, the CSB has developed into a highly successful endeavour – indeed, a beacon of its kind. It has become a resource site for visitors from Ethiopia as well as from various parts of the world wishing to learn from the CSB/CBAM experience.

Arriving at Ejere CSB, visitors immediately notice the beautiful white building complex that houses the CSB. It was built in 2013 with DF-support and inaugurated in 2014. The central portion of the building is topped with a turquoise dome, giving the impression of a religious edifice. It houses the seed samples of 142 varieties of 15 species (emphasis on durum wheat, teff and barley), as well as the seed stock of the CSB that is distributed to the farmers through a special revolving seed-loan system. Further, there is a training hall, as well as office space for the CSB. Behind the building is a comprehensive seed diversity block, where one third of all the varieties conserved in the CSB are grown each year, such that they are all grown at intervals of three years. Through a sophisticated method of participatory variety selection, farmers choose preferred varieties for further multiplication on larger plots in the seed diversity block, and for subsequent distribution. The most promising local varieties are further enhanced and developed through participatory variety selection to meet the needs and preferences of the farmers. This work has so far resulted in nine new and popular local varieties, with improved properties: they are considered highly nutritious, tasty, relatively high-yielding with organic methods and resilient to climate change, pests and diseases.

Meetings with the board and members of the Farmer Conservator Association of the CSB gave the impression of a well-functioning, dynamic and strong association with good governance structures and well-established collaboration with district-level agriculture and cooperative offices. Representatives from these offices expressed sincere support to the CSB. Farm visits and focus group interviews confirmed that CBAM has greatly enhanced seed and food security as well as the livelihoods of members of the association. Seed exchange has also helped to enhance seed security among residents of the entire area, and most farmers are now growing varieties distributed from the seed bank, along with commercial varieties to varying degrees. Improved organic methods of farming and home gardening have reduced the dependence on external inputs, while improving yields. Through CBAM, vegetable diversity in Ejere has increased substantially, as access to a wide range of seeds has been facilitated. This too has contributed to improved nutrition. Thanks to increased yields, farmers are producing surpluses which can be sold in the market, thereby providing income that helps families meet their

household needs and enable the children to attend school. Reduced production expenditures and income-generating activities introduced through CBAM round out the picture.

However, financial sustainability is a challenge in Ejere. The CSB is still dependent on support from EOSA/DF. The evaluation indicates potentials for achieving financial sustainability by introducing two measures: (1) utilising the 20% interest paid back by farmers in the form of seed each year as part of the seed-loan system as capital for covering the costs of CSB operations; and (2) introducing a fee for visitors coming to Ejere and who can afford this, to cover the actual costs of their visits and also support the work of the CSB.

Case study 2:

Sigeda Community Seed Bank in the SNNPR

The CSBs of the Southern Nations and Nationalities Peoples Region (SNNPR) have a special history and context. Having noted the achievements in Ejere, the regional government of SNNPR established eight CSBs in different zones between 2011 and 2013, with technical support of EOSA. Exposure visits to Ejere were organized and training facilitated, also of government-assigned biodiversity experts tasked with backstopping the CSBs. The project was fully financed through government sources. As additional funds were needed to improve operations and enable the government to scale out the CSBs to other zones in the SNNPR, EOSA applied for support from the DF as part of CBAM. DF supported activities in SNNPR through the remaining project period, mid-2014 and until the end of 2016. Noteworthy progress was achieved, thanks not least to firm support from the regional government as well as the authorities at zonal and district levels. However, because of new priorities, DF decided not to engage further in the SNNPR. Farmers and representatives from the authorities can still not understand why DF left, after having delivered such good results and having demonstrated how SNNPR could become the first-ever example of out-scaling CSBs to an entire region. The regional government decided to continue without DF, and has since then arranged conferences and meetings on the topic and established CSBs in all zones. Nevertheless, many CSBs must struggle to survive, as support is minimal and not enough to cover continued collaboration with EOSA. Without such backstopping, it has become difficult to succeed. In the view of this evaluator, it was not

a wise decision of the DF to leave the SNNPR after the end of CBAM, to start up CSB activities in other regions of Ethiopia partly with new partners. A more promising site than the SNNPR for demonstrating how CSBs can be scaled out is unlikely to be found anywhere else.

Sigeda CSB was one of the first eight CSBs established in the SNNPR. Although there has been some technical backstopping from district biodiversity experts, it has had no financial support since 2016. Nevertheless, the association is thriving and has managed to keep core functions of the CSB going, maintaining 30 varieties of 12 crop species – including of the highly valuable ‘false banana’ (*ensete ventricosum*), and other root and tuber crops and grain varieties reintroduced from the national gene bank and from other communities. Sigeda CSB has managed to increase its seed stock from an initial 1.8 tonnes to 15.4 tonnes today, a substantial achievement. Farmers in Sigeda have been deeply inspired by farmers in Ejere, and are working to develop Sigeda CSB as a resource site for the SNNPR.

However, it was evident that the backup system for seeds has broken down, due to lack of appropriate storage containers. The capacity of the CSB to store the increasing seed stock has reached the breaking point, due to lack of space and appropriate sacks. The grain diversity block is quite small and is used for multiplication, not regeneration, of seeds. Lack of adequate technical backstopping has prevented the development of new local varieties. Nevertheless, the CSB has managed to conserve and maintain the diversity in the fields of its members. Tubers and root crops are grown in a separate field gene bank. Further, the CSB association facilitates the revolving seed-loan system, which is pivotal to ensuring seed security among its members. It also promotes the sharing of experiences among its members and arranges annual seed fairs for the whole community.

CBAM has enabled training in organic farming and home-gardening methods, boosting yields and improving the quality of the produce in Sigeda. Through crop diversification and new production methods, members have achieved seed security, greatly improved their food security and increased their incomes. Prior to the CSB, there were seasonal periods of food shortage and hunger. Now such periods are considerably less frequent for the

members, and they are shorter. Surplus production is sold in the market; this income together with reduced production expenditures help farming families to meet household needs and send their children to school. Also in Sigeda, training in income-generating activities introduced through CBAM have helped to improve the financial situation of local families.

Relevance of CBAM

The CBAM programme was of profound relevance to the target groups, as it addressed their basic needs with regard to seed and food security, improved nutrition and income generation to meet household needs and to enable families to send their children to school. All the farmers consulted in connection with this evaluation stressed the vital importance of the programme in this regard. They emphasized the importance of reintroducing and restoring local varieties and continuously adapting them to the changing climate and farmers’ preferences as a vital means for food security. Greater vegetable diversity to improve nutrition has been highly appreciated, and the introduction of efficient means of organic production to increase yields and quality of the produce is considered of great relevance not only for these reasons, but also as it improves soil health. Reduced dependency from expensive chemical fertilizers is of crucial relevance to the target groups in economic terms, as they find it very hard to afford to purchase such expensive inputs. Moreover, chemical pesticides are seen as hazardous to health. In addition, the programme has become increasingly relevant to policies, strategies and plans at various governance levels, to which it has also contributed, and to Ethiopia’s commitments to international agreements and goals like the International Treaty on Plant Genetic Resources for Food and Agriculture, the Convention on Biological Diversity, and the Sustainable Development Goals.

Impacts of CBAM

The impacts of CBAM have been impressive. Not only has lost crop diversity in these centres of crop diversity been reintroduced and restored, varieties have also been adapted to climate change and further improved to accommodate the needs of local farmers. Farmers gave impressive accounts of how the programme, with all its various components, has transformed their lives – from poverty and hunger, to seed security, better food and nutrition security, greatly improved livelihoods, and enhanced capacity,

self-esteem and confidence. The CBAM approach serves as a platform for food security, poverty alleviation and development. Women benefit on an equal basis with men. In addition, the arena function of the CSBs is an important benefit for women, enabling them to get out of their houses, develop their own capacities and join forces with other women. The programme has also greatly impacted on policies in Ethiopia, most notably as regards seed policies and agricultural policies. Authorities in various parts of the country wish to scale out the experiences to enable more communities to benefit from this approach, which they recognize as a bottom-up approach to dealing with major challenges related to food security in times of climate change, and to developing livelihoods and building self-esteem.

The sustainability of CBAM

The CBAM model is highly sustainable along several parameters, but not all. Motivation is generally high among members as regards maintaining operations. In institutional terms, the organizational set-up is democratic, legitimate and transparent, and the support of local authorities is ensured. Technical capacity among members is generally high, although perhaps less so in the SNNPR, because of the shorter programme period. Extension services and biodiversity experts (in SNNPR) provide good technical backstopping but need further capacity-building to meet the needs of the CSBs. The greatest challenge concerns financial sustainability. Even well-established CSBs are still dependent on support from EOSA/DF. Those CSBs that do not receive such support any longer suffer, lacking funds to cover their operating costs and expand their revolving seed stocks. Solutions are being proposed in the evaluation, as indicated for Ejere above.

The decision of DF to discontinue its support to the SNNPR represents a special sustainability challenge. Not only was this discouraging and deeply frustrating for those involved in the SNNPR – it was in fact not sustainable with a view to enabling the CSBs to continue operations on their own. That the farmers in most cases have managed to keep their CSBs alive without any external financial support shows their deep-felt commitment and belief in the importance of the CBAM approach for food security and livelihoods in these hunger-prone areas. However, the need for technical backstopping and support to enable the potential of the CSBs to unfold remains critical.

Recommendations

For the CBAM approach to unfold further, a necessary condition is developing necessary institutional capacity on the part of EOSA. On this backdrop, this evaluation offers six sets of recommendations: (1) Experiences should be documented and communicated widely, including through a detailed manual, so that the impressive and valuable results of CBAM do not remain a well-kept secret. This would be of great importance also for further development and expansion of the approach. (2) Financial sustainability should be ensured, as proposed in this evaluation, with an exit strategy for external funding and a network facilitating communication exchange and backstopping. (3) It is important to capitalize on investments made: Ethiopia can show a way for scaling out CSBs. (4) DF made an excellent start in the SNNPR: this should be followed up. (5) It must be recognized that agrobiodiversity work requires long-term commitment and partnership. (6) And finally: learning across borders should be promoted, as DF partners in other countries may benefit greatly from sharing experiences.

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1. Introduction

The Development Fund of Norway (DF) has, in collaboration with local partners in Ethiopia, Guatemala, Honduras, Nicaragua, Malawi, Nepal, India, Bangladesh, Sri Lanka and Somalia worked to strengthen farmers' access and knowledge of locally adapted agrobiodiversity, while seeking to ensure that relevant national institutions and civil society organizations integrate agrobiodiversity management in their own work. DF has commissioned an evaluation to analyse the impact, relevance and sustainability of these programmes with a view to environmental challenges such as climate change. The evaluation was split according to regions. The present report presents the findings from the evaluation of the Community-based Agrobiodiversity Management Programme (CBAM) that was carried out by Ethio-Organic Seed Action as DF's implementing partner.

This evaluation was conducted two years after the programme had been phased out in Ethiopia; for most sites there have been no contact with EOSA since then, whereas EOSA/DF still provide some support to a few sites. The timing of the evaluation offered an excellent opportunity to assess the impact, relevance and sustainability of the programme, while at the same time enabling recommendations that may strengthen long-term sustainability.

1.1 Why this evaluation?

Plant genetic resources for food and agriculture constitute the basis of all food and agricultural production. They provide the essential pool from which plant traits can be found that meet the challenges of crop pests and diseases, drought, marginal soils and other environmental factors, such as climate change. This also makes these resources central in the fight against poverty, as diversity between and within crops is an effective means of spreading the risks of crop failure for small-scale farmers, and for exchanging, selecting and developing varieties that can adapt to changing environmental conditions and nutritional needs.

The Development Fund (DF) of Norway is among the leading agencies worldwide, collaborating since 1989 with developing-country partners to promote and

enhance the sustainable use of crop genetic diversity as a means of poverty alleviation and food security. DF-supported projects on agrobiodiversity have served as best-practice examples in many contexts (see e.g. Andersen and Winge 2013; Global Consultation on Farmers' Rights in Bali, 2017) and provide valuable learning possibilities.

A global effort is underway, led from the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture, aimed at establishing a Joint Programme on Biodiversity in Agriculture for the Sustainable Use of Plant Genetic Resources for Food and Agriculture. It would bring together central actors and boost international efforts. New efforts are also underway to enhance and promote the realization of Farmers' Rights under the International Treaty, in the form of a set of options to guide and assist countries.

In this context, the initiative to evaluate the impact of the DF community-based agrobiodiversity management programmes implemented 2009–2016 in Africa, Asia and Central America is both relevant and timely. It may provide important learning opportunities not only for the DF and its partners, but also as regards enhancing the sustainable use of crop genetic resources globally.

The findings are also relevant for implementation of the Norwegian Government's new plan of action for sustainable food systems in Norway's foreign affairs and development cooperation policy 2019–2023 (Ministry of Foreign Affairs, 2019), which emphasizes access to agrobiodiversity in agriculture as an important tool for achieving climate-resilient agriculture in developing countries.

The DF and its implementing partners will use the learnings from this evaluation to guide the development of future projects and programs.

1.2 Method

As part of this assignment, a 30 pages inception report was prepared, to design the method for the evaluation in the three different regions. This was approved by the DF prior to evaluation fieldwork.

The evaluation is based on qualitative methods, an approach well suited for examining analytical questions like those posed by the DF. Available statistical material has been taken into consideration as appropriate. Case studies from two programme sites in Ethiopia provide the foundation for the analysis. These are representative of the majority of EOSA-managed sites. Drawing also on information from these other sites, this report establishes the conditions under which the findings may have relevance for other sites ('casing'), and it describes the divergent situations at sites which are different. Contextual information has been collected so as to situate the case studies within relevant policies, structures and processes across scales up to the national and international levels.

According to the terms of reference for this evaluation, it should have had a regional approach, covering the three countries where DF has supported CBAM, i.e. Ethiopia, Zambia and Malawi, but with emphasis on Ethiopia. As DF activities in Zambia lasted for only two years and have been phased out, and as the DF-supported CBAM programme in Malawi was evaluated by Dr Ola Westengen of NMBU/Noragric in 2016, it was agreed that the present evaluation focuses on Ethiopia. The relevance of the findings with regard to Malawi is discussed in section 4.5.

Data collection has involved document and literature review. The documents include applications, plans, reports, evaluations, as well as relevant national legislation, policies and strategies from the government of Ethiopia and relevant regional governments. Relevant international agreements were also covered in the document analysis. The literature includes research reports, books and book chapters and articles. See attachment A for list of documents and literature.

Data collection further encompasses semi-structured interviews. Altogether 108 informants in Ethiopia were consulted (23 women and 85 men), through key informant and focus group interviews. Some persons were consulted more than one time. Key informant interviews were conducted with EOSA management and staff; with officials from the government and authorities at various governance levels; and observers/researchers. Focus group interviews were conducted with board representatives of the CSB associations under the programme in the two case-study sites (gender-mixed) and with members of the CSB associations at these sites (gender-mixed), as well as separate focus group interviews for women. Focus

group interviews were also conducted with non-CSB-members affected by programme activities (gender-mixed). All together 70 farmers were consulted: 15 women and 55 men. See Attachment B for a list of interviews and interviewees in Ethiopia.

In connection with the case studies, involved/affected farmers were visited on their farms. The farmers showed the agrobiodiversity at their farms and explained what methods they applied to improve productivity in light of climate change and how they worked to improve soil health and environmental sustainability. Farmers also described how the transformation caused by the programme had affected their lives in terms of seed and food security, livelihoods and living conditions, as well as the empowerment through acquiring knowledge, exchanging experiences and working together. Altogether 3 farm visits were conducted in Ethiopia. More visits were planned in Sigeđa, but due to heavy rains and slippery roads, it was not possible to visit more than one farm there. The names of the farmers visited are included in the list of interviewees in Attachment B.

All interviews were recorded in the form of memos, and photographs were taken to document findings at the farms visited. Photographs were also taken of groups of interviewees.

Debriefings took place with the boards of the associations visited at the case-study sites, with representatives of EOSA and DF in Ethiopia as well as with the DF in Oslo. These meetings served as important sources of validation of the information presented here. Further, EOSA and DF have commented on this report.

1.3 Structure of the report

The evaluation report starts out with an introduction to the Community-based Agrobiodiversity Management Programme (CBAM), including historical context, objectives and key features of the program. The two case studies are presented; next, the general relevance of the findings from these two sites is discussed as regards the remaining sites in Ethiopia. Diverging sites are described in further detail. Also, a brief discussion is provided as to the relevance of the findings for CBAM in Malawi.

The findings from the case studies, thus, together with considerations of their relevance for the other

programme sites and the document and literature review constitute the foundation for the analysis of the relevance, impact and sustainability of CBAM in Ethiopia. The analysis is structured following a comprehensive set of questions posed by the DF for this evaluation. Finally, conclusions and recommendations are presented.

2. The Community-based Agrobiodiversity Management Programme

To understand the Community-based Agrobiodiversity Management Programme (CBAM) in Ethiopia, it is important to know its roots. Therefore, this chapter starts with a brief history of the developments that led to CBAM. On this backdrop, objectives, target groups and programme sites are highlighted, before key features of CBAM are presented.

2.1 History

The history of community seed banks in Africa started in Ethiopia in the late 1980s, as a response to the catastrophic famine of 1984/85. Farmers had lost considerable crop diversity as a result of the drought, but some farmers seemed to be managing better than others. These were often good seed selectors who had maintained crops that had greater resilience against drought. Such observations were made in Tigray, where DF was active (DF had been active in Ethiopia since 1982), and they were voiced at meetings with farmers (Berg and Abay, 2008). On this backdrop, the Relief Society of Tigray established community seed banks in 1989, with the support of the Development Fund. Although this is not so well known, DF has been part of the history of community seed banks in Ethiopia at the very beginning and has later decisively contributed to their emergence and development, as this report points out.

2.1.1 The pioneers

Better known is the role of USC Canada, which has engaged in community seed banking in Ethiopia and other countries since 1989. It supported the establishment of seed banks in Wollo and North Shewa from 1989, through the Seeds of Survival (SoS) programme (Dalle and Walsh, 2015: 212). Two visionaries – Dr Melaku Worede, director of Ethiopia's national gene bank, the Plant Genetic Resources Centre in Addis Ababa (now named Ethiopian Biodiversity Institute), and Pat Mooney, researcher and activist with the Rural Advancement Fund International (RAFI), now Action Group on Erosion, Technology and Concentration (ETC Group),

had embarked on a mission to rescue genetic material for future harvests. Pat Mooney was the first to formulate the idea of Community Seed Banks: Already in 1986 RAFI produced a 'Community Seed Bank Resource Kit'.¹ Together with Dr Melaku Worede, he convinced the USC Canada to support the SoS programme to pioneer the establishment of community seed banks, of which the first were established in 1989. The first project leader of SoS in Ethiopia was another visionary individual, Hailu Getu, hailed by many Ethiopian farmers. The project was supported by Dr Melaku Worede from the Plant Genetic Resources Centre, Dr Tesfaye Tessema from Debre Zeit Agricultural Research Centre and assisted by Bayush Tsegaye (who received her doctoral degree at Noragric in 2006 and joined EOSA in 2007). The CSB concept developed over time from the practical lessons learned. The SoS-Ethiopia programme continued until 1997 (see also Worede et al.), when it was internationalized.

From 1994, the Global Environment Facility (GEF) supported the Institute of Biodiversity Conservation (now Ethiopian Biodiversity Institute) in a project called 'A Dynamic Farmers Based Approach to the Conservation of Ethiopian Plant Genetic Resources', through which the experiences of the SoS-Ethiopia project were expanded to reach twelve parts of the country. New buildings were constructed for community seed banks at these sites. This project aimed at developing a scientific basis for on-farm conservation and improvement of farmers' varieties, as well as establishing a seed security system under different farming systems. Participatory varietal selection where farmers and researchers worked jointly was one of the major activities of the project.

2.1.2 The Community Biodiversity Development and Conservation Programme (CBDC)

Another development led to a parallel project that collaborated closely with the GEF project. Through the Keystone Dialogues on plant genetic resources

¹ For a description, see: <https://rafiusa.org/blog/tbt-community-seed-bank-resource-kit/>

for food and agriculture in the late 1980s and at an international seminar on local knowledge and agricultural research in Nyanga, Zimbabwe in 1992, representatives of groups and institutions became aware of their common interest in community-level conservation and development of genetic resources. In January 1993, they became partners in a global programme, the Community Biodiversity Development and Conservation Programme (CBDC) (Stegemann, 1995). Among the many partners from North and South involved in this project was the Plant Genetic Resources Centre in Ethiopia, then led by Regassa Feyissa, who also served as National Programme Co-ordinator to the CBDC. From the Norwegian side, Noragric was involved. The CBDC was aimed at understanding and strengthening farmers' systems of plant genetic resources conservation and development in particular, and biodiversity management in general.

2.1.3 Ethio-Organic Seed Action

The first phase of the CBDC programme continued until 1999, whereas GEF support was phased out in 2002. The community seed banks that had received support found themselves in a difficult situation with insufficient support, their operations declining. This funding gap lasted until 2003, when Regassa Feyissa founded Ethio-Organic Seed Action (EOSA), and became its Executive Director.² With a background in physiology and biochemistry, and as a professional in the area of genetic resources conservation and use, he had worked as a germplasm conservation manager at the Plant Genetic Resources Centre, Ethiopia (now Ethiopian Biodiversity Institute), and later as a Director of the Centre (1993–1995), developing the Centre into the Institute of Biodiversity Conservation. Together with the earlier Director of the Centre, Dr Melaku Worede, he developed the scientific basis for on-farm *in situ* conservation and enhancement as well as strategies for linking off-farm/*ex situ* and *in situ* systems for farmers' varieties (landraces), and for restoring genetic diversity.

EOSA was established to promote integrated agrobiodiversity conservation and seed security, and to empower rural youth and women through agricultural-based income-generating activities. EOSA has been a pioneer organization in strengthening participatory methodologies for research and development in agriculture and agro-biodiversity conservation. It

works to promote on-farm conservation of local crop varieties through use; decentralized and participatory crop variety development; enhancing local seed security through strengthening of local seed networks and community seed banking; promoting linkages between local farmers and researchers, food processing industries and consumers; and promoting community participation in integrated natural resources management and use.

In 2003 a new version of the CBDC emerged, now backed by developmental NGOs engaged in community-based agrobiodiversity management. DF was among the founders and partners of this programme, which lasted until 2009 and provided support to EOSA's operations. With support from the CBDC, EOSA took up the work with CSBs, *inter alia* at Ejere and Chefe Donsa.

Enhancement of farmers' varieties through participatory evaluation began during the latter years of the SoS programme. Materials for restoration work were obtained partly from the national gene bank at the Plant Genetic Resources Centre and partly from a collection kept by Dr Tesfaye, assembled during his tenure with the Debre Zeit Agricultural Research Centre. When the initial SoS programme was phased out, the materials were left in the hands of farmers. Regassa continued working with the material as EOSA collected materials from farmers and selected seeds through participatory varietal selection activities. Dr Bayush Tsegaye, who joined EOSA in 2007, developed tools for participatory varietal selection in wheat, maize and sorghum. She engaged researchers from national agricultural research centres, agricultural experts from agriculture offices at district and zone level and extension agents, along with farmers. Through joint evaluation of crop traits, she identified different preferences and developed an evaluation format for use in the field based on the learned experiences. Testing at EOSA sites showed this format to be a useful tool for participatory varietal selection, enabling evaluation through visual observation in the field and easy-to-complete farmer ratings. These data could then be digitalized for analysis using statistical tools. The research and development process of developing these tools took three years. These tools developed by Dr Bayush Tsegaye are still in use by EOSA, but were never published due to lack of budgetary support.

² The following information is gathered from: https://www.sourcewatch.org/index.php/Regassa_Feyissa

2.1.4 The Community-Based Agrobiodiversity Management Programme in Africa

In 2010 DF consulted EOSA about continuation of support after the phasing out of the CBDC Africa programme. A pilot project was conducted in the last three months of 2010. Following from that, EOSA and DF jointly developed the Community-Based Agrobiodiversity Management Programme (CBAM) – a five-year project, 2011–2015, later extended until 2016. This is the programme examined in the present evaluation.

From 2012, DF expanded its agrobiodiversity programme to Zambia and Malawi. Its activities in Zambia lasted for only two years, as Norad recommended DF to focus its scarce resources on fewer countries. The decision by Norad could have been interesting to study through this evaluation, as deciding to support starting up activities in Zambia and then to close down only two years later, after what seems to have been good progress, raises questions related to the sustainability of these decisions. However, such an analysis would exceed the limits of this evaluation.

By the end of the period under scrutiny for this evaluation (2011–2016), DF agrobiodiversity management programs in Africa were confined to Ethiopia and Malawi.

2.2 Objectives, target groups and programme sites

Here follows a brief overview of objectives, target groups and programme sites.

2.2.1 Objectives of the Community-Based Agrobiodiversity Management Programme

The overall objective of the Community-based Agrobiodiversity Management Programme (CBAM) was sustainable climate change adaptation among farmer communities. The programme focused on enhancing the capacity of farming communities to manage, develop and utilize local agrobiodiversity sustainably, as an adaptive mechanism to climate change in Ethiopia.

In particular, CBAM aimed to increase the occurrence and number of crop varieties on farms; the number of households with access to seeds of different crops/

varieties; the number of farmers participating in plant variety selection (PVS) and the development of crop varieties through this process; further, to improve awareness of, and promote further options and practices for adaptation to climate change; to increase the number of women/youth who conserve, develop and utilize agrobiodiversity, and achieve improved sources of income; and to promote inter-generational transfer of knowledge on agrobiodiversity management and climate change.

It is not within the mandate of this evaluation to assess the objectives as such. However, some reflection is pertinent, in light of the objectives defined for the similar programme carried out by LI-BIRD, Nepal and supported by DF, the Community-based Biodiversity Management South Asia Programme (CBM-SA).³ In Ethiopia, the objective has focused on the capacity of farming communities to manage, develop and utilize local agro-biodiversity sustainably, as an adaptive mechanism in the face of climate change in Ethiopia. In Nepal, the focus has been on greater 'biodiversity-based' livelihood security of local communities. The outcomes are more or less the same, but with greater focus on empowerment and policy work in the Nepal and South Asia case. In practice, CBAM in Ethiopia has been deeply concerned with livelihood security. Communicating this aspect is essential, in order to underscore how important the project approach is for securing the livelihoods of small-scale farmers in the project areas. Empowerment of farmers and policy work towards the authorities are also elements of the project, but are not reflected in the objectives. In other words, several important aspects have been inadequately communicated in the project objectives. This is noted here with a view to potential future project plans, where these crucially important aspects should be better reflected in the objectives and overall plans.

2.2.2 Target groups and programme sites of CBAM

The target groups were households of small-scale farmers, including women and youth, in the programme areas in Ethiopia.

It proved difficult to identify the exact programme sites and support periods, drawing on official programme applications and reports made available for this evaluation. The formats and templates have focused on aggregate levels of information, with minimal

³ Regine Andersen (2019): The Impact of the Development Fund's and LI-BIRD's Community-based Agrobiodiversity Programme in South Asia – with emphasis on Nepal. Lysaker: FNI

attention to specific sites, or indeed any mention of sites. Moreover, the portfolio of programme sites evolved in the course of the programme period. No complete overview of CBAM programme sites could be found in the documentation provided. If there are no other documents reporting progress from the various sites, it must be difficult for DF to trace the information provided in the various reports back to the programme sites for validation. It may be advantageous for DF to review its planning and reporting templates in view of this point. This evaluation – based on interviews and the documents made available – has identified the following sites and support periods within CBAM.

The first five CSBs have a longer history, some of them dating back to 1990, and EOSA has followed them closely for many years.

The CSBs of the Southern Nations and Nationalities Peoples Region (SNNPR) have a special history and context, as presented in a feasibility study prepared for DF by Teshome Hunduma Mulesa, DF, and Samson Gashu, EOSA in May 2013, and further deepened in communication with Fikerte Assefa Kebede, Director of the Hawassa Biodiversity Centre (interview 5 November in Hawassa). During her studies of agronomy in India, Fikerte came across a book about community seed banks.

She learned about the achievements of EOSA in Ethiopia, found them highly inspiring, and decided to visit its Director Regassa Feyissa when she came home. So she did in 2010. As she was employed at the Biodiversity Development and Conservation Directorate of the SNNPR in Hawassa, she had the opportunity to propose a project for support by the regional government to promote CSBs in SNNPR, in collaboration with EOSA. EOSA followed up by organizing a seminar in SNNPR for 50 officials.

The project was approved, and according to Fikerte, the regional government contributed 2.5 million Birr. This project, supported solely by regional public funds, established eight community seed banks in different zones of the SNNPR from 2011 until 2013 to increase local crop genetic diversity and ensure local seed security among small-scale farmers. EOSA offered technical support, training and arranged exposure visits to Ejere. For each CSB, a Crop Conservator Association (CCA) was organized to manage activities. At the outset, each CSB had 60 members, registered at the cooperative office in their respective districts. The CSBs were equipped with some basic facilities to start seed collection and multiplication; and farmers were trained in CSB management, seed handling and multiplication. CSB executive committee members visited EOSA's CSB sites to share experiences.

Nr.	Kebele	Woreda	Zone	Region	Period	DF Partner
1	Ejere	Lume	East Shewa	Oromia	2011–2016	EOSA
2	Chefe Donsa	Gimbichu	East Shewa	Oromia	2011–2016	EOSA
3	Ollenkomi	Ejersa Lefo	West Shewa	Oromia	2014–2016	EOSA
4	Siya Debir	Wayu ena Siya Debir	North Shewa	Amhara	2014–2016	EOSA
5	Ankober	Ankober	North Shewa	Amhara	2014–2016	EOSA
6	Sigeda	Soro	Hadiya	SNNPR	2014–2016	EOSA
7	Ganjiro Chicho	Hula	Sidama	SNNPR	2014–2016	EOSA
8	Gozamba Musha	Mareka	Dawro	SNNPR	2014–2016	EOSA
9	Mino	Kacha Birra	Kambata Tambaro	SNNPR	2014–2016	EOSA
10	Wita	Meskan	Gurage	SNNPR	2014–2016	EOSA
11	Bayide	Konso	Segen Area Peoples' Zone	SNNPR	2014–2016	EOSA
12	Shiyamba Kalene	Damot Sore	Wolayita	SNNPR	2014–2016	EOSA
13	Andegna Akuru (Horsenso CSB)	Bule	Gedeo	SNNPR	2014–2016	EOSA
14	Haro Berbabo	Gindeberet	West Shewa	Oromia	2012–2016	MELCA
15	Telecho	Welmera	Finfinne Area Special Zone	Oromia	2012–2016	MELCA

Table 1: DF-supported sites, location, support periods and partners under the CBAM programme

However, more support was required. In 2014, Fikerte visited DF in Oslo and made a presentation about the comprehensive achievements made in SNNPR and the commitment of the regional government with regard to CSBs. Based on this presentation and an application for funding through EOSA, DF approved supporting the activities through an expansion of CBAM.

What is special with SNNPR is that the regional government has established structural units for agrobiodiversity management at regional, zone and district level and with experts assigned at all levels. Except for that, agrobiodiversity issues are managed at the national level, by EBI. The SNNPR government is the first in Ethiopia to establish these structural units at all its governance levels to deal with agrobiodiversity. This feature, combined with the willingness to support community-based agrobiodiversity management through public funding, as shown with the eight CSBs, and backstopping by biodiversity experts, provided a solid foundation for DF engagement in SNNPR within the CBAM framework.

The last two CSBs of CBAM in Table 1 were established during the period 2012–2016, supported by the Movement for Ecological Learning and Community Action (MELCA) and supervised by EOSA. These are not dealt with in this evaluation, as DF support to MELCAs agrobiodiversity work has been discontinued. However, a sub-chapter on the MELCA activities is provided for the sake of overview.

2.3 Key features of CBAM

EOSA's approach to community-based agrobiodiversity management focuses on seed security for small-scale farmers. Central here is the reintroduction of local varieties that farmers wish to grow, and the enhancement of these varieties through participatory varietal selection to adapt them to climate change and farmers' preferences. A part of EOSA's approach involve stimulating local production of the seeds of commercial varieties. This two-pronged approach, together with the introduction of organic methods for the production of local varieties of grain and for home-gardening, as well as specific income-generating projects, is geared towards strengthening food security and livelihoods among farming households.

2.3.1 Typical CBAM measures

At each site, CBAM practices include:

- awareness-raising among farmers as to experiences with different crops and varieties

- reintroduction of local varieties that farmers wish to grow, thereby increasing the genetic diversity available to farmers
- establishment of a community seed bank (CSB), for storage of seeds of the maintained varieties and as a platform for the work of the FCAs (in some areas, complemented with a field gene bank for tubers and other crops that are not multiplied through seeds)
- establishment of (a) seed diversity block(s) with a sophisticated system of maintenance of local varieties; enhancement/development of these varieties through participatory varietal selection, to adapt them to changing environmental conditions and farmers' preferences
- training in participatory variety selection (PVS) as a means for farmers to enhance crop varieties, with a focus on developing more climate-resilient varieties
- establishment and operation of a Farmer Conservator Association (FCA) to manage activities, based on a shareholder system where each member buys one to two shares with a fixed amount of seed (the number of shares per farmer is subject to discussion in the FCA)
- a revolving seed loan system (also called 'revolving seed fund' in this report) based on shares provided by the shareholders (above), to receive a fixed amount of seeds annually, according to their shares. Shareholders are obliged to return the same amount of seeds back to the community seed bank by the end of the season, with 20% interest in seeds. The interest rate is fixed by the General Assembly and may vary from one FCA to another. This way, the seed revolving fund grows and enables the association to invite more members if they want. Parts of the surplus may also be sold in the market, to provide income for the community seed bank to cover investments or running costs
- fall-back options for agricultural production in case a crop fails early in the growing season, enabling farmers to start again, with crops that require shorter time for maturing
- seed fairs to display and share seeds of a wide diversity of crops
- income-generation activities for groups of members, such as women groups and youth groups, with e.g. joint production and distribution of fuel-saving stoves or honey production
- promotion of vegetable seeds for diversified

-
- home-gardening production
- trainings in organic home-gardening and farming methods, such as manure composting and crop rotation, to enhance productivity
 - introduction of new crops from the national gene bank and elsewhere, for greater crop diversity
 - facilitating experience-sharing among farmers; exposure visits to other sites
 - training and capacity building on topics related to the above.

2.3.2 Membership criteria

Concerning membership in the Farmer Conservator Associations (FCA) established for community-based agrobiodiversity management and CSBs, certain criteria have been developed by the FCAs in collaboration with EOSA. The member must:

- be a farmer
- live in the area which is covered by the CSB
- have farmland
- be a good farmer (i.e. able to return borrowed seed with interest)
- allocate a farm plot for the conservation of at least one local variety
- maintain the farmland, e.g. by tree plantation and other conducive practices

3. Two embedded case studies: Ejere in Oromia and Sigeda in SNNPR

The evaluation team visited Ejere Community Seed Bank in Lume District, East Shewa Zone in Oromia; and Sigeda Community Seed Bank in Soro District, Hadiya Zone in Southern Nations, Nationalities and Peoples Region. Here the findings from the field visit are presented, followed by a discussion of the general relevance of these findings for the other EOSA project sites.

3.1 Ejere Community Seed Bank, Lume District, East Shewa Zone, Oromia Region

Ejere Community Seed Bank is located in Lume District, covering also neighbouring *woredas* to Ejere in Lume. The area is known as a centre of diversity for different species, including species of durum wheat (in taxonomic terms, wheat is a family with several species). The area is slightly hilly, but with broad plains suitable for agriculture, and good soil. There is agricultural land as far as the eye can see, with few trees or bushes between the fields, and grassland only where the hills are too steep or stony. Access to fodder for livestock is limited, making livestock production dependent on straw, stubble and other crop residues. Agricultural lands are rainfed, but a major challenge is access to water for household and livestock needs. Groundwater levels are decreasing, probably as a result of reduced vegetation cover, prolonged drought periods and population increase. Moreover, some water sources have been polluted by pesticides and cattle manure, and people try to avoid them (DF has supported improvement of water sources in some villages). Irrigated agriculture is clearly not an option in this area.⁴

The visitor arriving at Ejere Community Seed Bank immediately notes the beautiful white building complex that is housing the CSB, and which was supported by the DF. The central portion of the building is topped with a turquoise dome, giving the impression of a religious edifice. This is the part of the building that houses the seeds. The ground storey is the actual seed bank (germplasm unit), with bottles of seed samples of all the varieties maintained in the CSB in shelves along the walls.

This is a medium-term conservation unit (3-4 years) as a security backup to replenish seeds if crops planted in the field fail. The upper storey is used to stock seeds for distribution to the farmer members. From this centre of the complex, two one-storey side buildings form an L: they provide a training and meeting hall with facilities, office spaces for the FCA and its sister association Biftu Seed Producers' Association and group rooms for the women's group and the youth group.

The next impression is the seed diversity block behind the building complex. Within a quite comprehensive area, all varieties maintained by the CSB are grown on small plots of land at intervals of three years (one third of all the varieties being grown each year). Through participatory variety selection, varieties are selected for further multiplication on larger plots in the seed diversity block, and for subsequent distribution. The most promising local varieties are further developed through participatory selection to meet the needs and preferences of the farmers. For some varieties, this work has resulted in new varieties, with improved properties. Small and large plots of land are all well-kept; together they display an impressive diversity of crop varieties – mainly of cereal crops (varieties of wheat, barley and teff) planted in rotation with pulses (varieties of chickpea, faba beans and lentil). Also impressive is the continuum established through this way of conserving local varieties and developing them to adapt to changing environmental conditions and farmers' preferences. Ejere is not a museum of old crop varieties: it functions as a living experimental site for the development of locally adapted varieties according to the needs defined by farmers in view of climate change, thereby linking farmers with genebanks and plant breeders.

Meeting with the board of the Farmer Conservators Association of Ejere, with members, women's group and also with non-members gave the impression of a well-functioning, dynamic and strong association with good governance structures and

⁴ This paragraph is based on interviews with farmers, EOSA staff and officials in Ejere and the evaluators own observations.

well-established collaboration with district-level agriculture and cooperative offices. Representatives from these offices expressed sincere support to the CSB; the Lume District Agricultural Office even proposed upscaling the experiences from Ejere to the whole district. Through farm visits and focus group interviews, we were shown how the programme has greatly enhanced seed and food security as well as the livelihoods of members of the association. Seed exchange has helped to enhance seed security among residents of the entire area, and most farmers are now growing varieties distributed from the seed bank, along with commercial varieties (to varying

degrees). These are substantial achievements of the project.

Some of the local varieties that have been maintained and/or further developed by the farmers have clear commercial potentials. For example, there is a high-yielding purple variety of durum wheat (also called black wheat), developed through participatory variety selection, that is highly nutritious and tasty, and should have good chances on the commercial market. Also certain varieties of teff could have good market potentials. FCA members indicated that the market price for such produce would be higher

BOX 1: BASIC FACTS ABOUT

Ejere Farmer Conservator Association (FCA) and Community Seed Bank

Origin of activities: 1990, when Hailu Getu, the project leader of the SoS Programme of USC Canada, provided a small amount of seed from the National Gene Bank of the Ethiopian Plant Genetic Resources Centre to a local farmer, Alemu Tulema, of local varieties that had been lost in Ejere. Alemu Tulema started growing and multiplying these varieties, with great success, and more farmers joined.

Supported by EOSA/DF 2011–2016, after that limited funding from the DF to maintain Ejere as a source site for seed banking. Before 2011, DF had supported EOSA indirectly as part of the CBDC programme.

Community Seed Bank: Established by the Ethiopian Plant Genetic Resources Centre in the 1990s with support from GEF. New building financed by DF, inaugurated in 2013, with representation by the ambassador of Norway.

Registered as a cooperative.

Organized with Board/ Executive Committee and eight village-level groups, each with one leader. The general assembly is the highest decision body. One staff-member from EOSA.

Members: Some 600 households from eight villages which have all together 2,800 households. Thus, the Ejere FCA covers around 21% of the households in the area.

Crop varieties conserved: 142 varieties of 15 species

Crop varieties developed through participatory variety selection (PVS): Nine varieties of grain, the most popular being a purple durum wheat, G5. All varieties developed are in use today.

Seed production: Ejere FCA produces seed of local varieties and locally adapted varieties for distribution among its members. Members continue the production of seed of the varieties they wish to keep and provide an agreed share of these seeds back to the CSB. The members are free to exchange seeds of these varieties with neighbours and other interested farmers, and also sell them at the market. Local and locally adapted varieties are now produced on almost every farm in the whole area, generally along with commercial varieties. Some members of Ejere FCA have formed a seed producer association called BIFTU, with support from EOSA/DF. BIFTU has now 160 members and produces seeds of commercial varieties for Oromia Seed Enterprise. All members of BIFTU are members of Ejere FCA, and there is close collaboration.

Revolving Seed Loan System: All members are entitled to a share of seeds for each season, which they repay at 20% interest. The interest collected is to be used for recruiting new members and/or cover the costs of the operations of the FCA.

Income-generating activities: Joint activities include production of fuel-saving stoves (for women) and honey production (for youth); trainings are offered for other individual income-generating activities.

than for mainstream improved varieties; they would appreciate support for developing market access for the most promising local and locally adapted varieties, to boost their income from growing diversity.

From a donor perspective, it is important to ensure the financial sustainability of FCAS, and to document its achievements – which appear to be a well-kept secret. In particular, it would be useful to explore the observations made by some farmers that some of their locally adapted grain varieties produce yields that can compete with the yields of commercial varieties. These aspects will be further elaborated below.

3.1.1 Conservation and crop development work

Ejere is a beacon in terms of participatory conservation and development of local varieties. The heart of this work is the community seed bank where seeds of all maintained varieties are properly stored in bottles. Each year the germination of all seeds is tested. Every three years they are regenerated in the seed diversity block, and new seeds are filled into the bottles. In connection with regenerating, the bottles are never emptied – there is always a reserve in the bottle until it can be refilled.

The seed diversity block, also called research site, is used for regeneration, multiplication and development purposes. As there are 90 varieties of grain in the CSB, 30 are grown each year. They are grown in an area of 3 x 3 meters. The seeds are refilled in the bottle. The conservation work is also development work: varieties are grown at the research site not only for conservation purpose, but also with a view to assessment and possible improvement by selection. For this purpose, each year 30 farmers are selected, according to various parameters, including gender (at least 10 women), age and experience. These farmers are trained in participatory variety selection and how to evaluate agronomical data, and they participate throughout the entire process. They work together on the farmland of the seed diversity block, preparing the land, sowing and maintaining the crop, under the supervision of EOSA and an extension service expert from the district agricultural office.

At several stages the plants are evaluated by the farmers, using criteria from EOSA as well as criteria decided by the farmers, in combination. For each selection criterion a scale from 1 – 5 is used, where 5 is the best. Typical criteria evaluated include uniformity, germination, risk of lodging and number

of tillers. The PVS team members walk through all the trial plots, make observations on performance and rank them for each criterion.

Before harvesting, new parameters are discussed, and added if required. Then the farmers revisit the field and rank each plot (variety), this time using green and red cards. The varieties with the highest numbers of green cards will be selected for multiplication on larger plots of the seed diversity block. The seeds harvested from these larger diversity blocs are in turn distributed to selected lead farmers for multiplication. The CSB arranges to buy back seed harvested by farmer members who were tasked to carry out the seed multiplication on their own farms. This is then stored in the seed stock of the CSB for distribution to farmers as part of the regular seed loan system. The financial support for these transactions comes from the project (now from the CARD project supported by DF), and this is done to broaden the distribution of the newly multiplied seeds. The CSB purchases substantial quantities, which can then be distributed through the revolving seed loan system of the CSB the next year. This is also important in view of the high number of applications from farmers wanting to join: only if there is sufficient capacity to provide them with seed loans according to the shares, can they be taken up as members in the association (see ‘institutional matters’, section 3.1.6).

The selection of seeds along certain parameters – climate resistance, for instance – contributes to developing the varieties in desired directions. Some varieties have been selected for more focused development work. This has resulted in nine new varieties of locally adapted durum wheat.

Aside from grain, also legumes are grown at the seed diversity block – in particular faba beans, lentils, fenugreek, grass pea and chickpeas. This is part of the crop rotation system.

From time to time, new varieties are introduced from the National Gene Bank and other sites in Ethiopia, in order to increase the diversity of crops available to farmers.

Sharing of experience between and among farmers, training and capacity building are central elements of the approach to conservation and development of crop diversity.

3.1.2 Success story: The reintroduction of local varieties

The oldest farmers in Ejere can remember the abundance of crop varieties that were still grown when they were small children. They told of times when Ethiopia was self-sufficient in food production in normal years. However, much of the grain diversity in Ejere was wiped out by a terrible drought and following pests and diseases many years ago, they explain. The government introduced improved varieties in the area. These seeds came with chemical fertilizers and pesticides, whereas the local varieties had needed only manure. The fertilizers were first provided free of charge and were later highly subsidized. The government probably put some pressure to bear on the farmers to grow the improved varieties there, as in so many other parts of the country. The improved varieties were promoted as the best means of boosting food production and meeting the needs of the ever-increasing Ethiopian population. This policy contributed to further wiping out the once-abundant local crop diversity in Ejere and surroundings.

In the first years, the improved varieties produced very well, but then less and less, unless the farmers could steadily increase the use of chemical fertilizers. That was something they could hardly afford, so the economic return from production of these new varieties declined.

In 1990, a farmer in Ejere, Alemu Tulema received a visitor at his farm. This was Hailu Getu, then project leader of the SoS Programme of USC Canada. Hailu Getu brought with him some very small amounts of seed of some crop varieties. For each variety, the seed amount was not more than what could easily be held in one hand. He showed these seeds to Mr Tulema and asked: Do you know these seeds? The farmer was astonished, as these were the seeds of varieties that had been lost in Ejere years back. He asked Mr Hailu where he got the seed from, and Mr Hailu answered that he had brought it from the National Gene Bank. He asked Mr Tulema if he could provide a plot on his farm to grow these seeds. Mr Tulema was very happy to see the seeds of the old varieties again, and was more than willing to grow them in his field.

Mr Hailu then brought seeds of more varieties, and other farmers joined Mr Tulema in multiplying the seed, distributing them to further farmers, and bringing the crops back to Ejere. Altogether, the many

small seed samples brought by Mr Hailu amounted to 10 kilos, covering a broad range of the crops once grown in Ejere. In particular, there were many varieties of wheat, barley, teff, lentils and chickpea. The older farmers now say that they have regained all the local varieties that they remember from their childhoods. They find these indigenous varieties more nutritious and tastier, as well as being more resilient to climate change and other environmental factors. By developing the indigenous varieties through participatory varietal selection, they have also managed to improve the crops to increase the yields, which makes the local varieties attractive also in economic terms. These reintroduced and adapted varieties are popular throughout the area. Farmers we spoke with consider it a crime that they nearly lost their crop genetic heritage, and declare that no component of CBAM is more important than the seed.

Farmers in Ejere keep telling of how Mr Hailu came with only one small handful of seeds of each variety they had lost and asked them to grow these – and how the seeds have been multiplied to such an extent that the varieties are now being grown all over Ejere and the neighbouring *woredas*, often in adapted and developed forms. Most farmers now grow local varieties along with improved ones, choosing within a diversity of crops as abundant as in former days. It seems like a miracle.

3.1.3 Seed production

An important objective of Ejere FCA is to increase the seed volumes available to members, thereby making it possible to include new members. There are long lists of farmers who have applied to join Ejere FCA; each year, depending on the volume of the revolving seed stock, new members can be invited. The community seed bank provides seeds only on a loan basis; members must bring back the same amount (in-kind), with 20% interest (in seed). This is a huge improvement as compared to the seed market in Ejere, where farmers had to pay back with 100 % interest – double the original amount of seed. As seed is also food, this was a heavy burden for many small-scale resource-poor farmers. The interest they now pay goes back to their own organization and contributes to strengthening its capacity.

After the farmers have paid back the seeds with interest, the remaining seeds may be used for home consumption, but also for exchange with other

farmers, or they can be sold in the market. This is how non-members get access to seeds from the CSB. There is a special market for farmers' varieties in Ejere, and people may come from far away to obtain these seeds. Most important, however, is the exchange system between farmers. Farmers want to be able to trust the person they buy from to ensure seed quality. Hence exchange of seed is more usual and a more trusted source than trading seed in the market.

Ejere FCA occasionally organizes seed diversity fairs to exhibit and demonstrate the crop diversity in Ejere and surroundings. This also provides an opportunity to exchange seeds as well as experiences and knowledge among farmers.

It has not been possible to register farmers' varieties under the current law, so none of the varieties kept in the CSB in Ejere are registered. The legislation was, however, said to have changed in 2018, but at the time of the evaluation no documents on this were available in English, so it was not possible for the evaluator to confirm this allegation. As it has not been allowed to market the seed of local varieties as certified seed, Ejere CSB has been hesitant to sell seeds of local varieties in the market. Nevertheless, farmers have been allowed to sell seed of local varieties in the market – only not as certified seed. New legislation under preparation may enable FCA to register local varieties. EOSA has supported such a development. In the case of a change in legislation, new possibilities for marketing seeds of varieties developed in Ejere will arise. In any case, the legislation should be revisited, as it seems that the CSB is more cautious with seed sales than necessary. Income from seed sales could provide an important economic source to support the operations of Ejere FCA.

Some members of Ejere FCA have formed a new association, in close collaboration with Ejere FCA, to produce certified seed of improved varieties. This is a good source of income for the farmer members, and EOSA/DF have supported this development. The association, called BIFTU (meaning sun/sunrise in the local language), now has 160 members. It produces seeds for Oromia Seed Enterprise (OSE) from foundation seed received from OSE. OSE is working to reduce the gap between seed demand and supply by providing technical support and building small-scale farmers' capacity for production

and commercialization of quality seed; it is supported by the Ethiopian government and by Integrated Seed Sector Development Programme (ISSD) of the Netherlands.⁵ OSE is part of the partly decentralized governmental seed distribution system of Ethiopia. BIFTU produces seed for the government system in Oromia.

BIFTU is organized into clusters of farmers who grow different improved varieties, each cluster typically specializing in one variety. OSE fixes the price in advance and communicates this to BIFTU. Their farmer clusters then decide what to grow. OSE controls the seed quality, in particular ensuring that seeds of one variety are not mixed with seeds of another variety. If the seed does not comply with the quality criteria, it will not be bought by OSE. EOSA and OSE have trained the BIFTU farmers in high quality seed production.

BIFTU has now taken up a loan of 1 million Birr (approx. 313,000 NOK) to enter into seed trade. With this amount, they will be able to purchase seeds from their farmer producers and withhold it from the market when the price is low, in order to sell it when prices rise again.

BIFTU is a shareholding company. The major benefit for its participating farmers is increased income. BIFTU buys seeds from the farmers at rates somewhat lower than the prices set by OSE. Then they sell to OSE for the fixed price. The surplus is used to run the operations of BIFTU, and can be paid to members as a dividend on their shares or invested in new BIFTU operations. Farmers can earn considerable amounts this way, with the security of knowing that their seed will be bought at a fixed price. This protects them from exploitation by profit-seeking merchants. The seed producing farmers have a secure income, markedly higher than what they would have earned if they had produced grain for sale. This increased income of the farmers is used to finance the children's education, improve housing, perhaps a grain mill or a small truck – there are many ways to use the money, depending on family needs and priorities.

3.1.4 Income-generating activities

Income-generating activities are organized on a group basis in Ejere. There is a women's group that is engaged in the production of fuel-saving stoves,

⁵ For more information, see ISSD website: <https://issdethiopia.org/category/oromia-south-west/>

which brought significant improvement in working conditions at home, as these stoves have chimneys that conduct the smoke out of the house. Cooking over open fires indoors represents a health hazard in Ethiopia, so the new stoves are very popular. The women's group has learnt how to produce them, and sells them to members of Ejere FCA. The income is saved in a joint bank account, administered by the women.

However, production is limited by the lack of access to raw materials needed to construct these stoves – which is frustrating for the women's group. One may ask why the women's group chose to settle on only one commodity for income generation. Of course, such stoves make a vital contribution to improving the health and lives of women and their families. But there should have been a Plan B, for the eventuality of running out of construction material. Providing more possibilities for income generation would be desirable.

The youth group has engaged in beekeeping, but with less success, again due to shortage of bee forage and partly due to farmers' use of pesticides killing the bees that feed on flowers of sprayed plants. Again, looking for other possibilities for income generation would probably be advantageous.

In addition, regular training is provided for other income-generating activities, such as livestock rearing and vegetable production (see next section). These trainings have enabled many farmers to engage in income-generating activities, decisively improving their income situation. However, the costs of investments must normally be covered by the farmers themselves; there is as yet no well-functioning micro-credit scheme or other support to those wishing to start up income-generating activities (even though the women's group aims at providing micro-credits). Many farmers do manage to develop such activities from scratch, but some sort of micro-credit scheme might well enable more farmers to engage in income-generating activities. EOSA may learn from LI-BIRD in Nepal, as they, supported by DF, have established micro-credit schemes with great success.

3.1.5 Use of organic methods

The training in organic home gardening and farming methods and promotion of seeds for diversified vegetable and fruit production has been highly

valuable – especially measures for composting manure and farm waste as fertilizers, and crop rotation. Farmers have increased their production of vegetables, and the increased yields allow them to sell the surplus in the market from time to time. Importantly, the enhanced diversity and higher yields of vegetables have also meant better nutrition, not least for children. Improved organic methods have also been applied in the production of local grain varieties, thereby increasing yields. Some farmers reported substantial increases in the yields of some locally adapted and enhanced varieties of traditional highly nutritional durum wheat, comparable to the yields of improved commercial varieties. Such allegations are highly interesting, and it would be an important task to explore and document them. Should they be confirmed, then these varieties and production methods represent a most promising potential for food security and livelihoods at a wider scale.

3.1.6 Institutional and economic matters

According to the by-laws, the highest decision body of Ejere FCA is the General Assembly, consisting of all members. It convenes once a year and elects the members of the Executive Committee (the Board), as well as of other committees, such as the Quality Control Committee. It also adopts the annual plan of work with budget and the annual report with audit. Moreover, the General Assembly approves new memberships proposed by the Executive Committee.

Each member of the Executive Committee serves for a period of three years. To ensure good communication and coordination of activities, it has representatives from all committees and groups under Ejere FCA, including the women's and the youth groups. The Executive Committee convenes monthly, prepares the annual plan for the General Assembly, and ensures that it is executed, once adopted. It also provides for the annual audit.

The work of the Executive Committee follows approved routines and is said to run smoothly. The greatest challenges come when members are not able to pay back the seeds they have borrowed. Then the Executive Committee seeks to help the person in question; if there is no basis for help, they demand the seeds back. If that fails, the member is excluded from Ejere FCA and will not receive new seeds from the Community Seed Bank. Such cases are infrequent, but have occurred.

An important question concerns the financial sustainability of Ejere FCA and its activities, including the community seed bank and the many visits and trainings held because Ejere has status as a resource site for community-based agrobiodiversity management. Ejere FCA has managed to cover some of the costs, but is dependent on support from EOSA/DF to continue its operations at the same level as today.

Ejere FCA is shareholder-based: each farmer has one or two shares, costing 25 kg of seeds, paid in-kind at the beginning. Recently the by-laws were revised, enabling new member to choose whether to pay their share(s) in seeds or money. If a new member chooses to pay as money, the price is 500 Birr per share, including a registration fee of 250 Birr. The annual meeting has also decided to increase the number of shares by at least one for each member and up to a maximum of 10 shares for each member. One share entitles the farmer to receive 50 kg of seed annually. If all members add one share, the association will have seeds for a value of additional 300,000 Birr. This will be achieved after the 2018 harvest. The seed will be withheld from the market until prices rise, and sold at a higher price then. This way, the association will enter into grain trading, in an effort to earn money to cover its running costs.

Another aspect concerns the use of the 20% interest from members, generated through the seed loan system of the CSB. It appears that in practice the seeds are re-distributed to the members the next spring, and that only a limited amount of the surplus is actually used to recruit new members or cover investments or running costs. Whether, and to what extent, this is so, would need careful investigation. Currently, new members are recruited by buying seeds from farmers, provided to the new members as a loan, at 20% interest. The money to buy this additional seed stock is provided from EOSA/DF. Thus, the revolving seed fund does not seem to be functioning as planned. It is the impression of this evaluator that there is potential to improve this situation. If the rules are followed, and the entire 20% surplus is used according the original intention behind the revolving seed fund, that should make it possible to invite new members and to generate funds for covering investments and some operating costs. Also, there may be lessons to be gained from LI-BIRD/DF-supported CSBs in Nepal, where revolving funds work very well. However, they

are organized differently.

A possible reason why Ejere FCAs may not be more eager to save the returned interest for inviting new members, is that the association already has many members and there might be a limit to growth. Should it grow further, then it might need other governance structures and more administrative capacity. The evaluator did not raise this issue with the FCA, but got an impression that this could be considerations shared among members of the FCA. This is a question could thus be explored. In case there is low/no motivation to increase membership, other possibilities of reaching out to non-member farmers in Ejere could be considered, such as seed fairs, trainings, and enabling these farmers to buy seeds from the CSB. The latter could serve the purpose of utilizing the 20% interest paid by the members for generating income to cover the operating costs of Ejere FCA. At the same time the crop diversity of the CSB would become more directly accessible for farmers in Ejere.

Visitors have been welcomed at Ejere, without payment. Members of Ejere FCA, including the Executive Committee, share experiences and provide trainings and capacity building, with the help of EOSA's support. Ejere FCA is not paid for their services. It could be argued that, after having received so much support, they should share their knowledge for free. Also, the farmers appreciate the attention, the exchange, and the possibility to contribute to such knowledge sharing. On the other hand, increased exposure and frequent visits may interfere with the work of the members on their own farms. Consideration could be given to introducing some kind of fee for exposure visits and trainings, which could partly compensate the involved farmers for the time they spend and food they share as well as helping to contribute to the revenues of Ejere FCA. Such a proposal would need thorough discussion – for example, whether there should be a flat rate for different kinds of events, or be differential rates for visitors with and without external support.⁶ It would be important not to exclude visitors that do not have external support. Along with this, measures could be considered to ensure that presentations in the media from visits at Ejere are correct and acknowledge those who should be acknowledged.

If Ejere FCA should manage to become financially

⁶ The evaluator was told that Bill Gates once visited Ejere CSB. If this is right, he was probably not invited to cover any costs or contribute otherwise. That could be regarded as a lost opportunity.

sustainable, there will still be a need for some kind of insurance in case of crop failure. Whether and how to organize that should be considered, and EOSA/DF could have a role to play. Preparedness in this regard is important.

Finally, it should be noted that Ejere FCA is not a member of the local farmers' Cooperative Union. This union is a member of Oromia Agricultural Cooperatives Federation Ltd, which is owned and democratically organized by 40 Agricultural Cooperative Unions in Oromia and 1407 affiliated primary cooperatives societies throughout Oromia regional state engaged in agricultural activities (<http://www.oromiaagcoopfederation.org/index.php/en/about-us-2>). Ejere FCA plans to join, which will give the association a range of advantages, including access to credits, facilitated marketing of farmers' produce and other services that may increase the income of Ejere FCA and its members. Furthermore, the Union represents its associations vis-a-vis the government: the government negotiates with the Union, not with individual associations. All in all, membership in the Cooperative Union is expected to strengthen the economic situation of Ejere FCA.

3.1.7 Training and capacity building

Training and capacity building are inherent components of all the activities elaborated above. For many farmers these are the most important elements of CBAM, aside from the seeds.

3.1.8 Messages to the DF

The members of Ejere FCA are most grateful to EOSA and DF for their support, and wish to express their sincere gratitude to Regassa and Dr Bayush for their long-standing commitments, and to Bedilu for his commitment in recent years. They are deeply committed to continuing the work and to serve as a resource site for new CSB initiatives. They sincerely hope that the DF and EOSA will continue supporting Ejere FCA for this purpose.

3.2 Sigeda Community Seed Bank, Soro District, Hadiya Zone, SNNPR

Sigeda Community Seed Bank is located in a hilly area of the Southern Nations, Nationalities, and Peoples' Region (SNNPR) with fertile soil and lush vegetation. The area is part of the centre of origin of several crops, including enset (*Ensete ventricosum*),

commonly known as false banana, a life-saver in times of hunger, and a plant of which there are 68 varieties in Hadiya Zone. Among other crops grown in the area are wheat, teff and barley, various pulses, cabbages and not least various root and tuber crops of great nutritional importance. The water situation is more favourable than in Ejere, with generally higher rainfall. Overpopulation has become the most pressing problem: there are simply too many people for the small farm plots to feed. Most farms are too small to feed all family members throughout the year, leading to food shortages in parts of the year and severely limited access to food in some seasons. All children below the age of five years observed by the evaluator in Sigeda and surroundings had visible signs of malnutrition. The contrast is immense between this paradise-like landscape with flourishing farmland – and the fact that people are starving due to lack of food in some periods of the year.⁷

Arriving at Sigeda Community Seed Bank was a special experience. Some 60 people were present to welcome the evaluation team and participate in the evaluation. Among them were the Executive Committee, representatives of other committees and groups, many members of Sigeda Farmer Conservator Association, and several biodiversity experts who support the Sigeda Community Seed Bank with backstopping. In fact, the new Director of the Biodiversity Development and Conservation Directorate of the SNNPR, Mr Melaku Bafa Tumiso, had travelled all the way from the regional capital Hawassa (a journey of some 10 hours) to participate. The arrival of the evaluation team was considered a major event for the CSB.

Focus group interviews with the Executive Committee, members of Sigeda Crop Conservator Association (CCA) and the women's group provided a picture of a strong association that has managed to keep core functions of the CSB going, maintaining 30 varieties of 12 crop species, reintroduced to Sigeda from EBI and from other communities in the district. They have managed to increase their seed stocks from an initial 1.8 tonnes to 15.4 tonnes today – all this despite the lack of funding over the past two years. This is a substantial achievement. Support from EOSA/DF was phased out in 2016, and the SNNPR funds for community seed banking have been directed towards new projects in other zones, leaving the already-established community seed

⁷ This paragraph is based on interviews with farmers, EOSA staff, officials in SNNPR and the evaluators own observations.

bank without funding. The only support that Sigeda CSB receives is some back-stopping from biodiversity experts under the Biodiversity Development and Conservation Directorate.

Nevertheless, Sigeda CCA aspires to become a resource site for the development of CSBs in the region, as Ejere is in Oromia, and has been working steadily to achieve this aim. These intense efforts are motivated by the important benefits that the farmers have experienced through their engagement in community-based agrobiodiversity management, the long lists of farmers wishing to join the association, and the shared hope that all farmers in Soro District may someday have the opportunity to take part in this development. Membership has increased from 60 at the beginning to 94 today thanks to sustained efforts to increase their seed stocks as required to expand membership. However, there is still considerable pressure from farmers who want to join the association.

Seed security is the most important benefit for the farmers: they get the seeds they need when they need them, which in turn is of immense importance to food security. They only have to repay 20% interest for the seed, and can save the rest of their harvests for own consumption, for exchange or for sale. The interest they pay for seed loans goes to strengthen the capacity of their own seed bank. The farmers we spoke with emphasize the huge difference between local and improved varieties: local varieties are more adaptable to climate change, pests and diseases. Local varieties are far more nutritious and tastier; some also have medicinal properties. In economic terms, traditional varieties are seen as the best choice, as they can be grown organically, saving money while also producing high yields, the farmers stated.

Organic methods represent an important benefit as such. The farmers are happy to avoid the use of chemical pesticides, as those used in Sigeda are considered a great health risk. Some farmers told about vomiting after having used these chemicals; others explained that people get ill from using them. There was high pressure from the regional government for using improved varieties of crops together with chemical fertilizers and pesticides. This is changing, and the regional government has begun to follow a two-pronged goal: while continuing to promote improved varieties, they now also promote organic cultivation of more climate-resistant local crops, a development which we got

confirmed from all levels of the governance system. Organic cultivation is not only a great relief for the members of Sigeda CCA in terms of health issues, but also more economic, as there is no need to buy expensive 'modern' seeds, fertilizers and pesticides. Moreover, they have learned how to increase their yields with organic methods, resulting in substantial savings. With the money thus saved and the money earned from selling surplus produce due to increased yields, it is easier to cover household expenditures, buy food when needed – and ensure their children's education. All in all, this constitutes a huge improvement of the living conditions for farmer-members of CCA in Sigeda.

The trainings and exposure visits with exchange of experiences have greatly improved the ability of the farmers to select seeds, boosting agricultural productivity and the quality of their produce, as well as their income-generating capacity. Fuel-saving stoves have benefitted the households and reduced the health hazards to women in particular. By producing and selling these stoves, women have been able to earn some money, which they save jointly. Finally, storing the seeds jointly in the storage facility of the CSB is much safer and substantially reduces post-harvest losses.

For farmers in the area, the CSB has offered a pathway to poverty alleviation, seed and food security in times of climate change, as well as income generation, development and hope for the future.

The first impression of the CSB itself was of a relatively small building, with one room for storing seeds and one office. The storage room had shelves with attractive blue traditional clay bottles for storage of seeds. However, as elaborated further below, the back-up system for seeds seems to have broken down due to lack of resources, and the association has been focusing on systematically regenerating the seeds in farmers' fields, without back-up. They also use the near-by seed diversity block to support this activity, adding to the seeds produced by the farmers in a collective effort. The CSB storage room lacks basic storage facilities like sufficient amounts of sisal/jute sacs and floor grates for ventilation, and is too small for the rapidly increasing seed stocks that the farmers are now producing. Also, other basic equipment for running a CSB and office facilities are lacking. There are no meeting room or training facilities: the focus group meetings for this evaluation were held

outdoors, under a tree in the garden.

Sigeda CCA has shown impressive results, given their situation. They did not get enough time to become sufficiently familiar with all the practices necessary to operate a CSB in line with EOSA principles; they lack basic facilities, and have not received the funding needed to get activities up and going. Nevertheless, they have achieved much, as described here, and have the potential for achieving much more – if they can receive support. Their achievements have shown how this could substantially improve the living conditions of current and future members, with spin-off effects for the whole area. This is further confirmed by the high pressure from non-members from Sigeda and surroundings wanting to join the association. It is also the conviction of this evaluator.

3.2.1 Conservation and development of local varieties

Sigeda CCA is currently conserving and using 30 varieties of 12 species: faba bean (1 variety), field pea (1 variety), lentils (1 variety), teff (3 varieties), naked barley (1 variety), 'covered' barley (2 varieties), wheat (2 varieties), sorghum (2 varieties), cabbage (2 varieties), enset/false banana (11 varieties), potato (2 varieties) and taro (2 varieties).

Conservation work at Sigeda takes place mainly in farmers' fields. CSB back-up does not appear to be functioning very well. As noted, the CSB has traditional blue-clay bottles for seed storage, but the seed stored in them seems not to have been regenerated for a while. There are only nine such clay bottles, whereas the CSB has 15 varieties of crops that they store as seed (in addition, 15 varieties of root and tuber crops are conserved in the field gene bank). The system of storing small amounts of seed as back-up seems to have broken down, and Sigeda CCA has been focusing on maintaining its varieties through active use in farmers' fields. This is done every year for all varieties; the Executive Committee ensures that sufficient amounts of seed are brought back for storage until the next season, when it is all distributed to the farmer members again. This point was explained by the farmers and confirmed by several experts in focus group interviews.

There may be several reasons for the break-down of the CSB back-up system: lack of clay bottles or other suitable air-tight storage containers, inadequate know-how due to turnover in the Executive Committee, project period too short for establishing and internalising the required knowledge among

BOX 2: BASIC FACTS ABOUT

Sigeda Crop Conservator Association (CCA) and Community Seed Bank

Origin of activities: 2011, when SNNP regional Directorate of Biodiversity Development and Conservation started constructing the CSB and establishing a CCA, with technical support from EOSA.

Association registered in 2013

Supported by EOSA/DF 2014–2016; however, no support from any source after that, except for some backstopping from biodiversity experts from the district office.

Organized: Executive Committee in charge of operations. The General Assembly is the highest decision body. There is no field-based technical staff.

Members: Some 94 households from Sigeda and surroundings.

Crop varieties conserved: 30 varieties of 12 species

Crop varieties developed through participatory variety selection (PVS): None as yet.

Seed production: Members of Sigeda CCA produce seeds of local varieties for distribution among the members and for conservation purposes. Most seed is produced in farmers' fields; for a few varieties, the seed is produced in the seed diversity block.

Revolving Seed Fund: Has increased from 1.8 tonnes at the beginning and until 15.4 tonnes as of 2018

Income-generating activities: Fuel-saving stoves (produced by the women's group, very popular but lack of material hinders progress), beekeeping and honey production (carried out by the youth group, but lack of material hinders progress also here; as yet, only approx. 10 beehives are active), vegetable production (on-farm on an individual basis)

members and supervisors, and lack of basic equipment for regeneration and maintenance of seeds. All of this stems from the lack of support in the initial phase of the CSB. Given this situation, it is admirable that Sigeda CCA has managed to conserve its varieties on-farm until now.

The seeds grown by farmers as part of the conservation effort are also actively used for crop production. They are part of the seed revolving stock that is stored in sisal/jute sacks in the CSB when brought back from the farms. The storage facility is safe from animals and other threats of post-harvest loss. Appropriate storage facilities are important. The farmers find sisal/jute sacks the only suitable way of keeping the seeds; sisal is important for maintaining the seed quality, as it ensures ventilation. However, the number of sisal/jute sacks is limited and cannot cover the needs of the rapidly increasing volume of the revolving seed stock. Sacks available in the market are all polythene bags: as they cannot provide ventilation, the members do not want to use them for storing seeds. Moreover, the sacks must rest on wooden floor grates to ensure air movement from below, but the number of grates is limited, so not all sacks can be stored this way. Finally, the storage room has become too small to store all the seeds of the increasing revolving seed stock of the CSB – a severely limiting factor. The compound for the CSB has been provided by Soro District Agriculture and Natural Resources Development Office. Representatives of this office told the evaluation team that they would be willing to help identify farmland for expanding the seed diversity block, the field gene bank and the CSB housing facilities, if funding could be arranged to lease such land.

Compared to the one in Ejere, the Sigeda seed diversity block/research site is quite small (1050 m²), and it is used differently than in Ejere. When the evaluation team visited, four varieties were grown to multiply seeds for use by farmers: one plot for naked barley (10 x 15 meters); two plots for barley, one variety for each (10 x 15 meters each); and one plot for a variety of wheat (25 x 15 meters). Unlike in Ejere, there were no small plots for regenerating seeds for the CSB, which is done on-farm in Sigeda (as explained above). The seed diversity block is mainly used to multiply seed, done jointly by farmers and with supervision by biodiversity expert from the district. As yet, there is no targeted participatory

varietal selection (PVS), but farmers who have received training practise what they learnt when they select seeds in their fields.

In addition to the seed diversity block, there was a field gene bank for tubers and other crops that are not regenerated from seeds, such as enset/false banana, taro and potato. Unfortunately, heavy rains and slippery roads prevented the evaluation team from visiting this field.

3.2.2 Success story: How lost varieties were brought back to Sigeda

When Sigeda CCA started up, the 60 pioneer farmers gathered to talk about the varieties they had lost due to the modernization of agriculture and how they could get them back. They assumed that some of the varieties might still be grown in other parts of the district. The dynamic chairman of the Executive Committee at the time (who has since left Ethiopia) decided to travel to other villages in Soro District, often quite far away, to talk with older farmers there and enquire about the varieties. Indeed, he managed to find many of the varieties he was looking for. He received small amounts of seeds, which he brought home. The seeds were distributed to the farmer members for multiplication. The travels of the chairman were supported by EOSA/DF and when the farmers had multiplied the seed, it was bought back to the CSB with money from the project, to be distributed to more farmers through the revolving seed loan system of the CSB. Thereby the seed quantities increased. The chairman also obtained some root crops which were distributed to the field gene bank and to farmers for multiplication. In this way many of the 'lost' varieties were brought back to Sigeda.

3.2.3 Seed production

Seed production in Sigeda is currently part of the conservation effort described above. Even if the seed revolving fund is increasing rapidly, this is not enough to meet the demand from the many non-members who wish to join the association. Sigeda CCA would like to be able to welcome all farmers in the area who wish to join the association, but that is not yet possible. According to the Executive Committee, if there were external funding, they would be able to ask farmer members to produce extra seed, buy the seed from them and provide it to new members, who could then join the system – and the association could expand at a faster pace than today.

Each year, the International Day for Biological Diversity, institutionalized by the Parties of the Convention on Biological Diversity, is celebrated at all CSBs in SNNPR. Originally the CSBs organized seed fairs once a year. From 2015, the seed days were shifted to 22 May, the International Day for Biological Diversity. At Sigeda, farmers use the opportunity to sell surplus seed if possible, thus continuing the practice of a seed fair. The celebration is open for everyone in Sigeda, thereby providing an opportunity for spreading the varieties grown by members of Sigeda CCA to non-members.

3.2.4 Income-generating activities

A women's group was established and has engaged in fuel-saving stove production, for which there is high local demand. Such stoves save fuel, but also conduct the smoke from the fire out of the house through a chimney, thereby relieving the women and other family members of the health-hazardous smoke. However, there is a lack of materials to produce the stoves, and these materials have become too expensive for the women to buy from their small savings accumulated thus far. Stove production has now stopped, and cannot continue until the problem is solved. The women are unhappy about this: they invested considerable time in training and learning how to produce the stoves, and in starting up production – then the funds stopped, and production came to a halt. They have the training and possess the required knowledge, and they regard it as a great waste that they cannot use these skills. The stoves are especially needed among women; support is needed for production to continue.

The youth group formed is highly motivated for engaging in income-generating activities. With its beekeeping activities, 10 beehives were established – and then the support ended. The group has no resources to buy material needed for further beehives. Training and start-up materials were provided, but at that point project support stopped, and the activity could not really get up and going. These young people need more material and further technical backstopping to continue.

The income-generating activities discussed above are organized in groups (conditional on support). There are other income generating activities conducted at the individual household level. In particular, many women members have engaged in

organic home gardening, growing vegetables and producing surplus for sale.

The women and youth would like to engage in more income-generating activities, provided the activities that they have already started can be continued. As for future activities, they are interested in sheep fattening and poultry production, which could further strengthen income generation and improve their livelihoods. In addition, women in the area have traditional ways of rearing cattle. They save the milk together, for joint production of dairy products. This could also be strengthened as an income-generating project.

3.2.5 Use of organic methods

Visiting the farmer Alamu Lafamu was very useful for getting an impression of how organic methods have been introduced through Sigeda CCA and how they are applied.

Alamu Lafamu is a quite representative farmer of the area as regards farm size and household. His household counts nine members. His soil is fertile and thriving, including fields of grain, pulses and tuber crops, as well as an abundant home garden with vegetables, herbs, spices, sugar cane and medicinal plants. There are also some cattle. Nevertheless, the landholding is too small to feed the family throughout the year. Hunger periods affects the health situation, particularly of the children.

Mr. Alamu explained that after joining the association, he changed his farm practices substantially, which resulted in profound changes in living conditions for his family. His is the story of many of the members of CCA.

First, the family changed the crops they grew, starting to use the varieties provided by the association, and introducing much greater diversity. They found that the varieties from the CSB were far more resistant to attacks by pests and diseases, and to climate change. Now he only grows one improved variety of bread wheat: otherwise, all his crops are local. He explained that he has learnt a lot, especially from having the opportunity to share experiences with other farmers within the association. There have been group discussions of the sowing calendar, crop types, seed selection, and other matters of interest. He has found this very rewarding.

Through the project Mr Alamu learned methods

that he had not known about before – including row making, crop rotation, fallow, horizontal (not vertical) ploughing, using soybean as green manure, and two types of composting: pit-preparation with fermentation and heap-preparation aboveground.

The new methods considerably improved the yields and the quality of the produce. As for the quality, you can see it in the colours, Mr Alamu said. ‘Leafy plants get a deeper green colour, with better quality. Also the seed quality is better, and the seeds are more resistant to weather conditions and insect pests. As for productivity, it is not only high for one season, but – more importantly – the yields stay high, over the years. That isn’t the case with improved varieties, where yields drop after few years.’

As a result, the family has been able to produce more food from the same area, even with surplus to sell at the end of the season. And the health situation of the family has improved. Not only that: soil fertility has increased, Mr Alamu pointed out. This is important to enable his descendants to grow the food they need on the farm in future. Furthermore, the costs of production have been reduced substantially. Before they had to buy seed from the market, together with fertilizers and pesticides – which was a heavy financial burden. Now they can save their own seed, put it into the community seed bank – and can get it back and grow it on their own land. The money saved by not having to buy expensive improved seed with fertilizers and pesticides and the money earned from selling surplus produce can be used for other purposes. The family uses it for household needs and their children’s education. Indeed, one of the children completed college last year. As Mr Alamu explained, if he had not been a member of the association, he would not have managed to pay for this.

However, they still experience occasional food gaps: theirs is a big family, and the land does not always provide enough food for the whole year. They still have health problems because of food shortages. But the overall situation of the family has improved greatly since he joined the association.

This story of farmer Alamu Lafamu has been confirmed by other members of CCA. Members of the women’s group say that training has been very important. They have learned how to cultivate their home gardens organically with vegetables, herbs and spices, how to select seed and how to grow

grain and tubers organically. Now they grow more diversity in a more productive and healthy way. Their home gardens have become much more productive than before, and are now helping to fill the food gaps. Moreover, after the introduction of the new methods of production, there is normally a surplus to sell in the market.

3.2.6 Trainings and capacity building

More than ten trainings were held during the three years of the project duration, normally for one day each. They were conducted for the Executive Committee, farmer members and experts, and covered topics such as CSB management, financial management, on-farm conservation, the role of CSBs, how to maintain seed quality, participatory variety selection, and crop diversification for climate-change resilience and food security. As shown above, the trainings have been crucial to improving the living conditions of the members of Sigeda CCA and to the sustainability of its operations, despite the abrupt ending of the project and the discontinuation of funding. Several exposure visits to other CSBs were also conducted for farmers from Sigeda, including impressive visits to Ejere. In turn, Sigeda received visits from other CSBs and is increasingly regarded as a resource site in SNNPR.

All farmers consulted emphasized the need for more training and education, especially for new members, but also for the more established members. This is important for further developing the CSB towards improved food security and the livelihoods of the farmer members through community-based agrobiodiversity management. Farmers welcome visitors to Sigeda, and also stress the need for further exchange visits to share experiences with members of other CSBs.

3.2.7 Institutional matters

Sigeda CCA is the first CSB visited by the evaluator that has no field-based technical staff. However, they manage to operate the CSB, despite the severe limitations noted above and with some supervision from district level biodiversity experts. As also indicated above, basic equipment for CSB operations is lacking. The office itself is small, with a shelf and a table, but no chair. Files and records were kept there; some paper and a few pens were in evidence, but otherwise nothing. Members of the Executive Committee said it was very difficult to operate a CSB with so limited resources. Although they did

not complain about workload, it is obvious that the Executive Committee is heavily burdened by having responsibility for operations without any staff.

The most pressing issue for the Executive Committee concerns membership. There is high pressure from farmers, from Sigeda as well as other areas, who wish to join. The Executive Committee cannot accept them, simply because it has not been possible to expand the revolving seed stock quickly enough. This they see as a great problem. Demand for local varieties is very high, and increasing. That, they explain, is an important reason why so many want to join the organization.

The members of Sigeda CCA share the ambition of expanding and becoming the 'new Ejere' for SNNPR. To this end, they have established cooperation with local offices for biodiversity, agriculture and cooperatives. They see their organization as strong, with everything in place for take-off. But they need support in terms of funding, training, and technical backstopping to realize their plans.

3.2.8 Messages to the DF

The members of Sigeda CCA wish to say to the DF that they have worked so hard, invested so much hope, and performed so well. They cannot understand why EOSA/DF left after only three years, when they were just about to get started. Their key message is: *Please come back!*

That said, there is deep appreciation of EOSA and the DF, as well as the biodiversity experts involved. They also appreciate that the DF sent an evaluator to visit them two years later.

When invited to specify their needs for funding and support, the Executive Committee and Sigeda CCA members came up with the following list:

- expanding the storage capacity for seeds and the farmland for demonstration and experimentation
- ensure sufficient supply of sisal/jute sacs and proper wooden grates for seed storage within the CSB facility
- have trainings to improve the operations of the CSB and further develop the productivity and quality of production on-farm, including more technical backstopping in this regard
- conduct and invite exposure visits (new members should be able to visit Ejere)
- facilitate access to more local varieties from the National Gene Bank, other CSBs and other

- locations, to increase the diversity available in the Sigeda CSB, and thus to the farmer members
- facilitate the production of higher volumes of seed, so as to enable more farmers to become members of the association through the revolving seed stock
- strengthen the women's group, in particular with regard to their fuel-saving stove production, but also for other income-generating activities, *inter alia* through training and by offering office space
- strengthen the youth group, in particular with regard to their bee-keeping activities, but also for other income generating activities, *inter alia* through training and by offering office space.

4. General relevance of the findings

The project sites supported under the project differ markedly in such factors as their agro-ecologies, crop foci, culture and socio-economic conditions. However, they all share the same approaches to community-based agrobiodiversity management. Nevertheless, they have different ‘ages’. Some were established a long time ago and have received much support. Others were started only recently and have received substantially less support. The project sites in EOSA/DF-supported project sites in Oromia and Amhara fall under the first category, whereas the project sites in SNNPR fall under the latter category.

Based on information gathered from the other project sites, there are good reasons to assume that the findings from the two project sites visited have relevance for the other EOSA-supported project sites in the programme. In particular, the CSB in Ejere has relevance for the CSBs in Chefe Donsa, Ollenkomi, Siya Debir and Ankober; and the CSB in Sigeda has relevance for the other seven CSBs in SNNPR supported under the programme – Ganjiro Chicho (Hula district in Sidama), Gozamba Musha (Mareka district in Dawro), Mino (Kacha Birra district in Kambata Tambaro), Wita (Meskan district in Gurage), Bayide (Konso district in Segen Area Peoples’ Zone), Shiyamba Kalene (Damot Sore district in Wolayita) and Andegna Akuru (Bule district in Gedeo). The situation is different with the MELCA-supported CSBs, dealt with separately in section 4.4.

In the following, the general relevance of the findings for the other EOSA/DF supported sites in Ethiopia is further elaborated, based on information provided by Bedilu Tafesse, EOSA’s project leader of CBAM during the past three years of implementation. Some information has also been provided by the previous project leader from EOSA, Dr Bayush Tsegaye.

4.1 General relevance for the CSBs in Oromia (Ejere, Chefe Donsa, Ollenkomi)

The main differences among these three CSBs relate to the framework conditions. There are differences with regard to agro-ecology (one CSB is situated in the highlands; the other two in the mid-hills), micro-

climates, planting seasons, the crops grown, diversity between and within crops, seed volumes, cultural aspects, membership numbers and geographic coverage in terms of number of villages covered by the associations.

There also are similarities: the three CSBs share the same objectives and approach, and have the same target group – small-scale farmers. Also, the regulatory framework is the same for all.

We can therefore assume that the findings from Ejere should have relevance for the CSBs in Chefe Donsa and Ollenkomi. Further, experiences from the other CSBs may have relevance for Ejere, and here the CSB in Chefe Donsa is of particular interest.

Chefe Donsa, situated at 2,800 meters above sea level, has been very successful, perhaps even more than Ejere, according to Bedilu. It has 1,200 members and a huge seed stock. Farmers here are far more dependent on agrobiodiversity than in many other places, and this provides top motivation for the CSB. Farmer interest in joining is much higher than the CSB has been able to accommodate, due to limitations of the revolving seed fund, according to information from the two CSBs.

However, it became clear that the way in which the revolving seed loan system has been practised in Ejere and Chefe Donsa is not quite in line with the conditions for the revolving seed fund, as laid out their by-laws. The farmers receive more seeds than their actual shares; they may receive almost all the seed they contributed the year before, including the interest. This practice limits the seed stock available for inviting new members or for sale for income to cover the operational costs for the CSB.

In Chefe Donsa, this is now about to change. The association has a new strong chairman, who has decided that no members shall get more seeds than their share, and that the extra seeds are to be used for increasing the membership or other purposes determined by the association. Members who

had taken a too-large share of seeds and failed to repay what they should have taken to the district court and had to repay, with penalty. They were also suspended from the association for two years.

This experience in Chefe Donsa offers a new perspective on the operations of the revolving seed loan system in Ejere, and might be used to develop a practice in Ejere more in line with the intentions behind the revolving seed fund. The CSB in Chefe Donsa is now poised to become financially sustainable, and Ejere needs to learn from that.

However, financial sustainability is vulnerable to bad harvests. For example, when there was frost in Chefe Donsa, particularly the pulse crops were seriously affected (nearly total harvest loss). Therefore, seed return was postponed for one year. Preparedness for such situations is important, to ensure continuation of CSB operations.

4.2 General relevance for the CSBs in Amhara (Siya Debir and Ankober)

The CSBs in Oromia and Amhara regions were both established by the Centre of Plant Genetic Resources (now EBI) through GEF support at around the same time, and they share the same history of external support.

Whereas one of the CSBs in Amhara is in the cold highlands (Ankober) and is based on barley, faba bean and other legumes, the other CSB (Siya Debir) is also situated at a quite high elevation, but durum wheat predominates there.

Ankober CSB is situated in a very fragile and marginalized part of the country. It is difficult to work there for logistical reasons, and EOSA had to stop its support after one year. For the CSB in Siya Debir, support continued throughout 2016, before it came to an end. The EBI has since decided to support both CSBs with experimental plots.

The findings from Ejere may have relevance for these two CSBs, the one in Siya Debir in particular.

4.3 General relevance for the CSBs in SNNPR

As the eight CSBs supported by EOSA/DF in SNNPR are located in different zones, there are many differences – in agroecology, agricultural systems,

crops, seed volumes, local ethnic groups, and membership numbers. The similarities are as above: the same objectives and approach, and same type of target group: small-scale farmers. In addition, the regulatory framework is the same for all, albeit practised somewhat differently in different zones.

The CSB in Shiyamba Kalene, in Damot Sore District in Wolayita Zone was the strongest CSB during the project implementation phase. It was highly organized and well-functioning. As regards crops, the focus was on teff, wheat, tubers (including taro and sweet potato) and various pulses (e.g. haricot beans). The youth group was involved in beekeeping; the women's group produced fuel-saving stoves. A diversity block was maintained, as well as a field gene bank. The whole system worked well, and the CSB performed very well, with substantial growth in seed stocks and membership.

After the EOSA-DF support was phased out, however, the CSB became considerably weakened. A central cause has been staff turnover in the District Cooperative Office. Unfamiliar with the functions of a CSB, the new staff in charge of follow-up demanded that the CSB should pay dividends to its shareholders by selling its seed, the multiplied seed from the seed bank. The argument was that the cooperative must be profitable for its shareholders. Some of the members adopted this argumentation and started demanding profits also from within, which led to internal conflicts over the seed stocks. There were also conflicts between the biodiversity experts and the cooperative office due to this demand. In 2017 the CSB sold half of the seed stocks and paid out a dividend to the shareholders. Since then the CSB has been much weaker, but still functions. Activities have continued, but at a much slower pace. The cooperative office does not understand the benefit concept of CSBs. The problems would have been avoided through training by EOSA, if DF/EOSA had still been active in the region. Instead of supporting the Shiyamba Kalene CSB in line with its by-laws (as highlighted in the case of Ejere above), the cooperative office has exceeded its mandate by intervening in basic principles of the operations of this CSB, which is officially registered with by-laws clearly specifying how the members are to benefit. Here it might be noted that the CSB collaborates with Wolayita University in exploring medicinal plants.

The CSB in Wita, in Meskan District, Gurage Zone, specializes in teff, sorghum, wheat and maize. It has the same approach as the other CSBs, but there are no women's or youth groups. Initially, it was on a good track, and operations developed well during the project implementation period. With this particular CSB, a link was established to another organization that was engaged in improving traditional houses. This organization work with farmers and built three traditional homes with modern solutions for families in the area, highly appreciated by the inhabitants. The CSB had a farmers' training centre and a small plot for growing farmers' varieties. Eight varieties of maize were grown there, multiplied and distributed to the farmers. The seed stock increased and membership rose, from around 60 households at the beginning of the project to around 90 households by the end of 2016. Today there are some activities, but quite limited. There is no field gene bank.

Horsenso CSB in Andegna Akuru (Bule District in Gedeo Zone) is located in the highlands at high elevations. Barley is staple crop, with false banana as an important additional crop. There is some wheat diversity. In addition to the diversity block for grain (experimental/multiplication field), the CSB maintains a field gene bank for all their varieties of ensete/false banana, which is planted in a circle around the CSB building.

They work hard and have a strong chairman, who has personally sacrificed much for the success of the CSB. He was deeply engaged in traveling around to collect seeds of traditional varieties of crops among old farmers in other villages, to reintroduce them in Horsenso. For this purpose, he used his own horse, but that proved exhausting for the animal – which unfortunately died on one of the collection missions. For this he became a hero of the association. The story is an important element in the narrative about this CSB.

The CSB is doing well. In October 2018, they organized a workshop, with an exposure visit from a newly established CSB. There is some support from the regional government for maintenance of the CSB building, and for conducting participatory varietal selection together with experts.

Through collection missions and PVS activities, the Horsenso CSB has continued to increase its

diversity, also acting as providers of diversity to other CSBs, including Sigeda. Each year, the International World Biodiversity Day is celebrated.

Hula CSB is located in Ganjiro Chicho kebele, in Hula district, Sidama Zone, about 200 km from the regional capital of SNNPR, Hawassa. Sorghum and barley are major food grains, and they also have some wheat. Enset (false banana) is the main staple food crops along with other tuber crops, to ensure the highest possible food security in difficult times. The performance of this CSB has differed from that of the others. It was not so active during the project period. Nevertheless, all activities of the programme were attempted, including the revolving seed loan system. However, it was decided to focus on a limited selection of crops, barley in particular. Membership numbers increased slightly in the course of the project, but not much. This CSB is currently considered almost non-functional by the regional authorities.

The remaining three CSBs in SNNPR supported by ESOA/DF from 2014 until 2016 (Gozamba Musha in Mareka, Dawro; Mino in Kacha Birra, Kambata Tambaro; and Bayide in Konso, Segen Area Peoples' Zone) are all functioning to some degree. They have not had problems with the cooperative offices like those experienced at Shiyamba Kalene in Wolayita Zone, and farmer interest is high. Lack of financial resources constitute a limitation on expanding the activities. Biodiversity experts have tried to help but have limited knowledge and understanding of agrobiodiversity and the CSB approach.

SNNPR is a pioneer at the regional level, and the only regional government wing upscaling CSBs. Strategy and structures are in place from the region and down to the district level. Budget allocations follow, but are very limited and in line with the priorities set in the strategy, which focuses on establishing new CSBs. Many of the employees involved have had relevant training, but biodiversity experts tend to have little awareness of the specifics of agrobiodiversity and CBAM practices. On the other hand, these experts have a knowledge foundation which provides a good basis for training in issues related to CSBs. Altogether the staff on biodiversity in the region (potentially available for backstopping CSBs) numbers approximately 250. There is substantial attention to biodiversity, including agrobiodiversity from the government

side. Among farmers, demand for local varieties is high and increasing.

All in all, it seems that the experiences from Sigeda may have great relevance for the other CSBs in SNNPR and vice versa, despite the differences highlighted here.

4.4 Some words about MELCA's involvement in CBAM

MELCA (Movement for Ecological Learning and Community Action) is an organization working for healthy ecosystems, resilient communities and a critical young generation through developing and institutionalizing innovative approaches based on bio-cultural diversity. It was registered in 2004 as a membership-based association. It has a broad membership base, comprising, foresters, lawyers, ecologists, sociologists, environmentalists, youth groups and women's associations. Currently MELCA has 60 members.

In Amharic and Afan Oromo, 'melca' means a crossing point on a river. Used as metaphor, it means to connect the past with the present generation. MELCA is concerned about the biocultural heritage and indigenous knowledge and seeks to contribute to development in Ethiopia on this basis. The organization works to maintain cultural and biological biodiversity, as the two are highly interconnected. The aim is to integrate this approach with modern scientific knowledge in order to create synergies.

MELCA is working in five regions of Ethiopia, with six project offices in those regions and 43 permanent staff (including project staff). There are four interrelated programmatic areas: agroecology, empowerment (women and youth), livelihood promotion, and environmental governance.

Community-based agrobiodiversity sorts under the agroecology programme of MELCA. MELCA applied for funding from the DF and was invited to collaborate with EOSA within the framework of CBAM 2012–2015, later extended until the end of 2016 (as for the whole of CBAM). Central elements of MELCA's contribution to the project involved constructing and establishing two community seed banks, developing organizational structures, establishing conservation practices as well as introducing conducive agricultural methods. This

was to be done with technical support from EOSA.

MELCA accomplished these tasks. In November 2013 a community seed bank was established in Telecho in Welmera District, Finfinne Area Special Zone, Oromia region (close to Addis). In December 2016, just before the end of the project, the CSB in Haro Berbabo, Gindeberet, West Shewa in Oromia, was inaugurated: however, there were not enough funds to purchase furniture and equipment. The sites organized altogether 586 farmers, producing 1.8 tonnes of seed for the seed loan system by the end of the project, covering 50 varieties of 5 species, and it provided 1736 farmers with training of various kinds, as reported by MELCA. There were several kinds of income-generating activities, including sheep and goat rearing.

MELCA sees what was achieved during those five years as a means and not an end. Construction is not what takes the most time, it takes more to learn the practices. Such capacity building had just started, but CBAM could not be demonstrated in practice before the facilities were there. Thus, and because of security situation in Telecho, there has been very limited capacity building with regard to conservation and sustainable use of crop genetic resources in the two sites.

This was a challenging project due to political turmoil in the area, so implementation was slow. The first CSB ended up being quite small. This was however mainly due to irregularities regarding the use of funds, which was later detected and handled by DF. The second CSB had a conducive size, and is in fact larger than the CSB in Ejere. Basically, the pace of project implementation was very slow. Now MELCA reports some activity in the CSBs, but it is the impression of this evaluator that the level of activity must be quite limited.

As the Development Fund decided not to continue its collaboration with MELCA on agrobiodiversity issues, MELCA is not a focus of this evaluation. The information provided here is meant to complete the wider picture of the CBAM programme. Generally, conducting community-based agrobiodiversity management interventions is knowledge-intensive. It requires competence, know-how and good management. Organizations engaging in such interventions need to have experts on the area directly engaged in the processes to succeed.

4.5 Relevance of case-study findings for the agrobiodiversity programme in Malawi

As this evaluation was initially envisaged as a regional evaluation, it is useful at this stage to consider the relevance of the findings for DF-supported agrobiodiversity work in Malawi. The interventions in Malawi were evaluated in 2016 by Dr Ola Westengen of Noragric. Here we discuss the relevance of the findings from Ethiopia in light of the findings from the evaluation in Malawi. In this context it is important to note that the two evaluations were carried out with a three-year gap and at very different points in time of their project cycles. The CBAM-programme in Malawi was less than four years old. The programme has probably developed further after the evaluation, and possibly also based on the evaluation. However, this is not possible to take into account in this evaluation, and thus we will here take the 2016-evaluation from Malawi as point of departure.

The CBAM programme in Malawi was conducted in the northern region of the country through the local partner, Biodiversity Conservation Institute (BCI), which received direct financial and technical support from the DF. An advisor from the DF office in Oslo was responsible for providing technical backstopping. The main objective was to ensure that farmers had access to diverse seeds well suited to local conditions, and quality seeds that had high germination rates and would perform well. The seed banks stored and distributed seeds to members through a revolving seed fund, and acted as backup storage in times of crisis. A key activity connected to the seed banks was the multiplication of improved seeds obtained from national breeding programmes, the national gene bank, and selection from farmers' own fields.

The overall conclusion of the evaluation conducted by Westengen is that the CSBs represented a valuable effort to increase community seed security in the context of Malawian agricultural development. The CSBs evaluated showed satisfactory performance, given the short time-span (only three growing seasons) since the start of the programme.

The programme in Malawi seems to have differed considerably from that in Ethiopia. At the time of Westengen's evaluation it had been active for less than four years, and the associations were still

relatively small, with few members. There was a strong focus on conservation and multiplication of crop genetic resources, but the features of the holistic approach that has been applied in Ethiopia are not evident from the Malawi evaluation. There appears to have been little emphasis on dynamic adaptation of crops to climate change and to farmers' preferences leading to the improvement of local varieties. Nor do the important capacity-building and empowering components of these PVS activities for farmers seem to have been in focus. Further, diversification of vegetables and other crops for better nutrition appears to have received little attention. The Westengen evaluation did not deal with agricultural methods for improving yields and quality: perhaps these were not a topic specified in the programme. Income generation was not in focus. The programme appears to have struggled to provide adequate training on such issues. It also seems that the programme struggled to establish the organizational structures required for the associations, and to promote the participation of women and youth, which in turn could have promoted empowerment of the farmers involved. Again, it is important to stress that the programme had been active for less than four years.

The CBAM approach in Ethiopia has been holistic, embracing agricultural, economic and social development. This is a key factor for understanding its achievements. In Ethiopia, community seed banks have served as platforms for agrobiodiversity management and food security, as well as for poverty alleviation, empowerment and development. Although experiences in the two countries differ greatly, the DF and its partner institution in Malawi could benefit from closer contact with EOSA and more learning from Ethiopian experiences. Also more contact with LI-BIRD in Nepal could be fruitful for further developments in Malawi.

5. Relevance of the CBAM programme in Ethiopia

CBAM has been of crucial relevance to the needs of the target groups in Ethiopia and has also been relevant to the needs of affected groups in programme areas. Further, it has become increasingly relevant to policies, strategies and plans at various governance levels, to which it has also contributed, and to Ethiopia's commitments to international agreements and goals like the International Treaty on Plant Genetic Resources for Food and Agriculture, the Convention on Biological Diversity and the Sustainable Development Goals. These points are further elaborated here, followed by a discussion of the specific relevance of the programme to agrobiodiversity conservation and farmers' seed systems, and an assessment of whether the programme objectives are still valid.

5.1 Relevance to target groups

When asked whether the programme was relevant to their needs, the members of the CSBs in Ejere and Sigeda were highly surprised that such a question could be raised at all. Some almost shouted 'YES!': others added loudly 'OF COURSE!'. Basically, the programme responded to their most pressing needs: for seed and food security, better nutrition, less dependence on expensive chemical fertilizers and pesticides considered hazardous to health, and improved family economies. There should be no doubt about the profound relevance of the project to the target groups. The programme also responded to specific needs of women related to improved cooking stoves as well as the need to have their own financial means, to community and to capacity development, as elaborated below.

However, there was one pressing need to which the programme did not respond. In Ejere, *water scarcity* has become serious in recent years. It is caused by long periods of drought (exacerbated by reduced vegetation cover), combined with flooding that carries pesticides into streams and ponds, reducing the number of water sources available for use by a growing population. There have also been problems with cattle polluting the ponds used by humans. CBAM was not designed to address this problem, but the DF is supporting measures to improve the water

supply situation in Ejere through its current project.

Otherwise, the programme addressed all the needs considered the most pressing by the target groups, as elaborated here.

5.1.1 Relevance with regard to seed security

Before Mr Hailu arrived at Ejere and reintroduced lost varieties, farmers in the area were almost totally dependent on seeds of improved varieties. After a drought and a heavy pest attack had caused the loss of local varieties, the government had provided improved varieties, as part of its policy of promoting improved varieties in order to increase national capacity to feed the rapidly growing population. However, these improved varieties (e.g. of bread wheat) could not easily adapt to the environmental conditions in Ejere, in particular the changing and unpredictable climate, and were vulnerable to diseases and pests. Wheat rust became particularly problematic: sometimes farmers lost their entire harvest due to rust. By bringing back local diversity and continuing to develop the most promising local varieties in line with local farmers' preferences, the programme has enabled farmers to achieve seed security of all food crops they consider important.

A decisive aspect of seed security is *accessibility*: seed must be available, but also accessible for the farmers. As improved seeds are expensive, farmers would often buy from other farmers when they needed new seed, but then had to pay back double the amount of seed – a heavy burden, made worse because the improved commercial varieties require chemical fertilizers and pesticides as well. With CBAM, farmers who are members of the association get seed of developed local varieties from the seed bank and pay back after harvest with 20% interest, in-kind, in the form of seed. These varieties do not require chemical fertilizers or pesticides, thereby substantially reducing the economic burden. Farmers normally exchange seed with relatives and neighbours, spreading diversity, or can sell in the market.

Farmers continue growing improved and enhanced

local varieties in combination, where improved varieties are mainly produced as cash crops whereas local varieties are preferred for home consumption. Interviewed farmers stress that if they were to choose between traditional and improved varieties, they would opt for the former, as they are more resilient, have preferred traits and because they can serve as the parents of improved varieties, i.e. they can be improved with all these properties, adapted to local conditions.

Whereas most of the varieties grown in Ejere today were reintroduced before the arrival of the DF (although some were reintroduced later), the achievement of CBAM is the continued conservation of these varieties, their further improvement through PVS, thereby making them relevant choices for local farmers, and the systematic multiplication of the seed for distribution among members (and indirectly among other local farmers through exchange with, and purchase from, members). Thus, CBAM has been highly relevant to farmers in Ejere in terms of seed security.

We may assume that these findings apply, to varying degrees, also to the other sites in Oromia and Amhara, as the same approach has been followed in all these cases.

In the Southern Nations, Nationalities and Peoples' Region (SNNPR) the approach was the same, but it could not be fully developed, due to the short duration of the project (only close to three years). Nevertheless, farmers in Sigeda continue the operation of the CSB seed loan system and say that they can get the seeds they want when they need them. They contributed many of the arguments for choosing local varieties (see box 3 below). In particular they stress that improved commercial varieties, while expensive to buy, are susceptible to rust, so growing them is associated with great risk of crop failure. They also mention seasonal fluctuations for improved varieties, which perform better in some seasons and worse in others. The traditional varieties sometimes outperform the improved ones, and the farmers find local crops more stable with regard to performance.

5.1.2 Relevance with regard to food security and better nutrition

By improving the seed security, farmers are able to diversify their crops, thereby spreading the

risks of crop failure. In addition, the programme has introduced a kind of 'insurance' by enabling a change of crops: if an early-sown crop fails, it can still be replaced by a faster-maturing one. This is an important contribution to food security. For Sigeda, the reintroduction of crops (such as an increasing diversity of enset/false banana) that are particularly resilient to pests, diseases and the effects of climate change has been an important measure for ensuring food security. Enset/false banana is among the tubers and root crops that can resist most challenges; it can be eaten when everything else fails or when food stocks are empty.

Local varieties and improved local varieties of crops are normally more nutritious than the commercial varieties – sometimes far more so. Production of these crops for home consumption contributes greatly to improved nutrition in the areas of well-established CSBs in Oromia and Amhara. In the SNNPR, more work needs to be done to reintroduce lost varieties and to improve the most promising ones, as the project lasted for only three years there. Regardless, farmers in Sigeda maintain that the local varieties are highly attractive for household consumption, due to nutrition, taste, texture, their many uses and because they can be grown without chemical fertilizers and pesticides. They are generally considered healthier. As to approach, the CBAM interventions are at least equally relevant in the SNNPR, due to food-scarcity periods in parts of the region.

In addition, there has been a focus on increasing vegetable diversity, introducing seed of various vegetable varieties. This has served to boost and diversify vegetable production in home gardens, contributing to improved nutrition in all areas where CBAM was active, including the SNNPR.

The introduction of organic methods of production, like natural compost and crop rotation with (e.g. rotating cereals with pulses) and green manure, has boosted soil quality as well as the produce. Not only has nutritional quality improved markedly, but also the yields have increased significantly, according to farmers as well as observers from cooperative and agricultural offices in the district. This effect can be seen in all areas where CBAM was active.

In Sigeda, farmer Alamu Lafamu presented his farm to the evaluation team. He explained how he shifted his practice to methods introduced by CBAM, a story quite representative of the project:

BOX 3:**Farmer Alamu Lafamu explains how CBAM changed his farming methods:**

At our farm, we changed almost all our crops to varieties we got from Sigeda CSB. In that way, we diversified production, with many more crops and varieties. These varieties turned out to be much more resistant to attacks by pests and diseases and to climate change, and we were able to spread the risk of crop failure. Now we grow only one improved variety of bread wheat in a small field, side by side with the other crops.

We learned a lot, especially by sharing experiences within the association. We discussed the sowing calendar, crop types, seed selection, and other questions of interest in the group. This was very useful. We were also offered training. In particular, we learned new agricultural methods, such as contour ploughing, row making, crop rotation, fallow, green manure and two types of composting: pit-preparation with fermentation and heap preparation above the ground. I applied all these methods, and got crops of much better quality. You can see it in the colours. Green plants get a deep green colour. Productivity is high. And the yields stay high, year after year – not like with improved commercial varieties, where you get much lower yields after a few years.

So now we have more grain and flour, as well as vegetables and other crops. Moreover, soil fertility has improved, and so has soil structure. With the new system we can produce more food from the same fields, and of better quality. That's important for our health, too. Finally, seed quality is better now, as the seeds are less affected by changing weather conditions and pests.

The association protects me and my family against poverty. Now we often have a surplus that we can sell, and the money can be spent for household needs and sending our children to school. Still, there are food gaps at times – my family is a big one, and our land can't always provide enough food for the whole year. And we still have health problems because of the food shortages. But really, things are much better for us since we joined the association. Because of the reduced expenditures for production and the money we earn from selling our surplus in the market, I've been able to send one of my kids all the way through college. That is a great achievement! I'd never have managed that if I hadn't joined the association.

Farmer Alamu Lafamu's story tells a lot, not only about the relevance of the programme with regard to food security and better nutrition – it shows the importance of the holistic approach to seed management and the impact of the programme as well.

To sum up: CBAM has contributed to food security in all areas where it was active. In areas where CBAM was well-established, this contribution was comprehensive, while it may have varied in other areas. In all cases, the approach has definitely been relevant to food security.

5.1.3 Relevance with regard to reduced dependency on expensive chemical fertilizers

Chemical fertilizers are getting more and more expensive, according to farmers in Ejere. Also, they find that they need more and more chemical fertilizers to achieve the same yields of improved

commercial varieties year after year. With the financial burden getting steadily heavier, farmers are highly motivated to escape from this spiral.

Some farmers also stress that chemical fertilizers are harmful to the soil, as they are more acidic than the soil itself, and may contain harmful substances (probably referring to cadmium, which often contaminates chemical fertilizers sold in developing countries). Also, chemical fertilizers are applied instead of organic matter, the beneficial soil organisms cannot 'feed' and thrive, thereby reducing their number and diversity. A healthy soil with sufficient of soil organisms has a good structure capable of retaining water and reducing soil erosion, it is fertile, and contains fungi and bacteria that enhance the ability and capacity of the plants to take up necessary nutrients. Many farmers are deeply concerned about the soil, and explain that they

want to apply methods that can make it possible for their descendants to grow the food they need from the same fields.

By reintroducing crop varieties that do not tolerate chemical fertilizers (crop properties change, they grow too quickly, their straw or stems are prone to breaking and the straw becomes less palatable to cattle if chemical fertilizers are applied), by developing the most promising varieties to become more productive, and by introducing organic methods to boost production, the programme has significantly reduced dependency on chemical fertilizers among members as well as the indirect beneficiaries of the programme (those who grow varieties that originally came from the CSB, obtained from members of the CSBs, often with explanations of organic methods of cultivation).

This applies to all programme sites, but in the SNNPR there is still a need for access to more local varieties, and to improve these.

5.1.4 Relevance with regard to reduced dependency on chemical pesticides

Farmers in Ejere and Sigeđa spoke of the hazardous effects of chemical pesticides. The evaluation team could observe how, after spraying chemical pesticides, one man came back from the fields to the farm we were visiting. He had no protection whatsoever, and was barefoot. This was said to be common. At both sites, farmers said that they vomited after using chemical pesticides. We were also told that that people who sprayed chemical pesticides sometimes became severely ill. Also, officials from the district agricultural and cooperative offices expressed concern about the dangers of the pesticides in use, for human beings as well as soil life. In addition, there was general concern about wells/ponds in Ejere being poisoned by pesticides after flooding – especially serious in an area prone to seasonal water shortages. However, the evaluation team did not verify which pesticides were in use in the two districts we visited.

By reintroducing varieties less vulnerable to crop pests and diseases, organic production methods that prevent crop pests and diseases from attacking, and agricultural systems more resilient to climate change in general, the programme has significantly reduced the dependency on chemical pesticides in areas with well-established CSBs. The effects may

vary from site to site, depending on how thoroughly the approach has been implemented. In all cases, the approach has proven highly relevant for reducing dependency on chemical pesticides.

5.1.5 Relevance with regard to the need for improved family economies

A specific feature of the CBAM model developed by ESOA, unique in Ethiopia and probably little-known elsewhere, is that farmers can buy shares in-kind in order to join the association: they pay in-kind with seeds, not with money. This enables farmers who would otherwise not be able to afford to buy shares to participate in the association. By becoming members, farmers get access to high-quality seed of local farmer varieties and locally improved farmer varieties, as well as knowledge and methods that improve their production and thus their yields and the quality of what they produce. In addition to improving seed and food security, this enables the farmers to produce surplus that can be sold in the market, resulting in income. They save considerable sums by not having to buy expensive improved seed, fertilizers and pesticides; and various income-generating activities facilitated through the project bring further income.

All this serve to improve the family financial situation. Farmers we interviewed explained that the money they save and earn is used mainly for meeting household expenses and for their children's education. Many pointed out that their lives had been considerably improved, thanks to the economic benefits of the programme.

5.1.6 Relevance with regard to improved living conditions for women

Women from the two sites stress that seed is the central factor for all members of the family. Training was also important, providing them with new skills. This is of particular relevance for women, as it gives them recognition, thereby improving their social status. Before the programme started, they were confined to their homes. Now they get out, socialise and learn new skills and practices. Exposure visits to other areas with exchange of experiences were described as 'eye-openers'. As one woman put it: 'Before I lived in the dark. Now I live in the light'.

Especially important for improving the living conditions of women has been the production and distribution of fuel-saving stoves, a major

improvement in domestic life. The stoves are economical, using less wood or dried dung for fuel, thereby also reducing the workload for women. Moreover, the smoke is conducted out of the house through a chimney, so women and children staying indoors are no longer exposed to the health-hazardous smoke, soot particles and fumes from open fires. For the women who produce these stoves, selling stoves provides an income which they save jointly for micro-credit purposes aimed at promoting income-generating activities. In Ejere, 14 women have benefited from this opportunity thus far. There is also the matter of self-esteem: the stoves are highly appreciated by the buyers, and the women-producers experience being able to contribute something important to the common good of their community. As noted, a limiting factor concerns the availability of production materials. There have been severe shortages in several CSBs, so it is imperative to improve access to these materials.

Through income-generating activities, these women earn supplementary incomes, and no longer have to ask their husbands for money for everything. They have the liberty to decide on how to spend their own income. There is also social recognition. In Ejere, the women group has its own office, also appreciated as showing great recognition of their efforts.

Men are in the majority in the executive committees of most CSB associations, although women are always represented. The women we interviewed explain that the households are FCA/CCA-members, but since the heads of the households are normally males, they are the ones to represent the households, except when a woman is a widow— then it is natural for her to represent the household. The women interviewed stress that they do participate in decision-making, and they are heard. If they don't volunteer to speak, they will be asked to express their opinions.

It should be added that all CSBs have a social profile, and seek to help in particular families of widowed women and other needy families.

5.1.7 Relevance with regard to the needs of affected non-member farmers

The programme was also relevant to those who benefited indirectly through seed exchange or purchase and who learned agricultural practices from members, improving the productivity and quality of

their own produce. Non-members interviewed in Ejere tell of following the association ever since the beginning: first they were reluctant to the association, but then they realized its accomplishments, which are immense and are deeply felt, as they say. The association is considered open and inclusive, with a special focus on women and needy persons. It is well known and has a high standing in the area.

CBAM is obviously relevant also for the many farmers who wish to join but have not yet been accepted as members. Most varieties reintroduced and restored through the programme are now grown on almost all farms in the area, showing that the programme has been relevant to the entire local community.

One aspect of this relevance is the huge pressure from farmers who want to join the associations. For this to be possible, there must be enough seed to provide them with seed loans based on their share contributions. In case a household is not able to pay its membership share initially, it is accepted that they receive a loan on provisional condition to pay the share contribution along with the 20 percent interest (in seed) after harvest. The idea of having the 20% interest (in the case of Ejere for example), was initially to have an additional seed stock from which also new members could be recruited. In practice, however, money has been provided from EOSA/DF to buy seed from members, to enable new farmers to join. The evaluation team found indications that the 20% interest is currently rarely used for inviting new members, and that it may be distributed among the members instead as part of the loan system. This seems to have evolved as a practice. Whether or to what extent this is the case needs to be examined, as it was not possible for the evaluation team to find out the details. Such a practice may be understandable, but would not be in line with the intentions of the revolving seed loan system. Perhaps the way the revolving seed stock is organized does not provide incentives for recruiting new members. The association does already have many members, and there might be limits to growth for CSB associations, in order to ensure that they can be safely managed. It would be important to raise these issues for the FCAs/CCAs and to make decisions as to how the interest is to be used. For example, it is relevant to use it for covering the operational costs of the FCAs/CCAs, by selling this 'surplus' seed in the market. That way, non-member farmers would also have access to seeds directly from the CSB.

Further, the women's groups within the associations have a particular set-up that does not provide incentives to invite new members. The women save capital in their respective group bank account to be used for micro-credits aimed at income-generating activities. The more they save, the more difficult it is to get new members, who would have to pay a share equivalent to the shares the other women have contributed through collective work. This is a topic under discussion in the associations. Members of the women's group in Ejere have suggested that other women should form new groups, and that these groups could collaborate. They are more than willing to teach their skills to others and would welcome new women's groups, hoping that more women can benefit as they have done.

5.2 Relevance of public policies, strategies and plans in Ethiopia

Community-based agrobiodiversity management and community seed banks are highly relevant with regard to policies in Ethiopia – to its biodiversity policy and policies related to farmers' rights, but recently also to agricultural policies. The relevance transcends all policy levels, but is especially clear with regard to agricultural policies at the local level in areas that have been exposed to CSBs, as will be explained here. Generally, the Ethiopian authorities involved in CSBs at various levels are very committed to this approach and are considering ways of out-scaling the best experiences. However, in view of the lack of funds, several authorities have stressed the importance of strengthening the already established CSBs before further expansion.

5.2.1 Relevance at the national level

Ethiopia, which hosts the African Union, has been a beacon as regards policies relating to biodiversity issues and farmers' rights to crop-genetic resources. It has a relatively well-functioning National Gene Bank and is among the African countries that has based its legislation on the African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources of 2000.

Basic legislation related to farmers' and community rights and biodiversity management: The role of farmers and the importance of their varieties were officially recognized already in 1992 the

National Seed Industry Policy (updated in 2018 but not translated into English), which in both versions acknowledges farmers' participation in the seed industry for promoting the sustainable use of local plant varieties, and also emphasizes farmers' right to share benefits arising from the use of local varieties they have developed over generations (Feyissa, 2006, and communication with Teshome Hunduma Mulesa 6 March 2019).⁸ Several policies that recognize farmers' and community rights have been formulated since then. The Environmental Policy (1997) and the National Policy on Biodiversity Conservation and Research (1998) recognize community rights to biodiversity resource ownership and use, as well as their rights to share benefits deriving from such use, and to participate in planning and decision-making on the conservation and use of these resources.

The proclamation on Access to Genetic Resources and Community Knowledge, and Community Rights (2006) as well as the 2006 Plant Breeder's Rights Proclamation represent progressive steps taken to address issues of community and farmers' rights. As per the former proclamation, communities have the right to decide over access to their knowledge, whereas the state has the authority to decide over access to genetic resources – on behalf of the communities. However, communities have the right to disagree in cases where access to genetic resources affects their culture and their livelihood. The Plant Breeders' Rights Proclamation upholds farmers rights to save, use, multiply, exchange and sell farm-saved seed of protected varieties, but not to sell seed that is protected under plant breeders' rights on a commercial scale. A new bill on plant breeders' rights has been proposed but had not yet been adopted as of November 2018. Concerning farmers' rights related to seed and propagating material, the current draft is favourable to the practices and needs of farmers, and thereby also to management of crop genetic diversity in Ethiopia.

5.2.2 Implementing international agreements

Ethiopia has indeed been a pioneer in legislation on biodiversity management in Africa, including community-based agrobiodiversity management. It ratified the International Treaty on Plant Genetic Resources for Food and Agriculture already in 2003, and was a party when the Treaty entered into force on 29 June 2004. Represented by the Institute of Biodiversity Conservation (now Ethiopian

⁸ This and the next paragraphs are based on Regassa Feyissa, 2006.

Biodiversity Institute), Ethiopia has been a defender of farmers' rights in the Governing Body of the Treaty; it hosted the Global Consultation on Farmers' Rights in Addis Ababa in 2010 (co-organized with the Fridtjof Nansen Institute, with the support of *inter alia* the Development Fund). Ethiopia became a Party to the Nagoya Protocol in 2012.

5.2.3 Seed legislation

Ethiopia follows a pluralistic approach (as expressed by Teshome Hunduma Mulesa, Noragric, NMBU, interview, 6 December 2018), seeking to accommodate the needs of the formal and informal seed sectors, as well as a third sector – identified by the government as the intermediate seed sector (see below). As per the Seed Proclamation (2013), only authorized persons may sell seed on a commercial basis in Ethiopia. Certain requirements must be met, and the person must be authorized by the designated government body. Persons authorized to sell seed may lose their authorization if they infringe the rules set out in the Seed Proclamation Act. In particular, only registered seed can be sold, and any authorized person selling unregistered seed will lose his/her authorization.

For varieties to be registered, certain criteria must be met, as specified in the Quality Declared Seed Directive (2015). The text is not available in English, but, according to Teshome Hunduma Mulesa, the Directive provides for a minimum control of seed quality at the community level for those wishing to engage in seed business. He explained that there are close to 400 seed cooperatives in Ethiopia; the QDS Directive provides for their needs as an *intermediate* seed sector, i.e. a sector which is farmer-based, producing seed for the market, often with a focus on plant varieties not produced by the formal sector (private and public companies). Further, he noted, the QDS Directive opens for the possibility of registering *elite or superior farmers' varieties* and *PVS varieties* (developed through Participatory Variety Selection), so these varieties may enter the QDS-controlled seed market. He maintains that CSBs can combine their revolving seed loan system with engagement in seed business for local and locally developed varieties at the same time – a possibility that does not seem to have been (fully) acknowledged by CSBs in Ethiopia, except for BIFTU, which was established as a kind of cooperative wing of Ejere CSB. This evaluation could not follow up on this point, but recommends that EOSA/DF investigate and consider this possibility.

The evaluator was informed that new legislation currently under development may enable farmers' varieties to be registered. Whether and how this relates to the QDS Directive is not known, as it was not possible to obtain a draft of the proposed legislation. If adopted, such legislation might improve the possibilities for marketing seeds of farmers' varieties on a commercial basis and could promote a more enabling environment for greater agrobiodiversity-related income among farmers.

No one may sell unregistered seed on a commercial scale. This means that farmers' varieties that do not meet the standards for marketing set out in the QDS Directive, or have not been registered for other reasons, cannot be sold commercially. However, the Seed Proclamation of 2013 makes a clear exception for the use of farm-saved seed by anyone, and for the exchange and sale of farm-saved seed among smallholder farmers and pastoralists. Thus, farmers may continue using, exchanging and selling seed (including seed of improved varieties) among themselves – an important guarantee for legal space for farmers' rights to save, use, exchange and sell farm-saved seed.

The actions of the CSBs in Ethiopia conform with the seed rules; however, the CSBs seem to limit themselves to sharing the seeds among their members, after which members are free to share or sell farm-saved seeds of these varieties as they wish. Within legislation pertaining to the intermediate seed sector, there may be opportunities for the seed market for local and locally developed varieties. As relevant legislation is not available in English, these opportunities could not be further explored for this evaluation. It is recommended that they are explored as a follow-up of the evaluation.

5.2.4 The agricultural policy

The agricultural policy of Ethiopia, adopted in 2003, focused on enabling access to improved varieties of seed and modern technologies like chemical fertilizers and pesticides, in order to boost production as well as productivity. Integrated approaches and environmental issues were also mentioned, but the focus was nevertheless clear. According to our interviewees at various governance levels, there used to be considerable pressure on farmers to adopt the use of improved varieties with the associated technology package. Only during the present decade has this started to change, at least

in the areas exposed to CSB operations where there is a firm commitment to supporting agrobiodiversity along with organic agriculture (see below). This development must also be regarded as an impact of the programme.

However, it is difficult to say whether there has been a shift also at the national level as regards including crop genetic diversity and organic production methods along with improved varieties and technologies. According to the Ethiopian government⁹, the vision is to create a market-led modern agriculture and a society free from poverty. The mission of the government is to create a modern and highly productive agricultural system that uses advanced technology to combat the scourge of poverty. Towards this end, a set of objectives have been developed, which include the conservation, development and sustainable use of natural resources. The latter may be interpreted to cover activities such as CSBs and also to provide the necessary assistance to regional and local governments to support such activities.

5.2.5 The role of the Ethiopian Biodiversity Institute in promoting community seed banks

Community Seed Banks are part of official policy, and the Ethiopian Biodiversity Institute (EBI) is vested with the responsibility for coordinating such efforts in Ethiopia. In the SNNPR, however, the regional biodiversity authorities have assumed specific responsibility for promoting CSBs (see below). In all other parts of the country, the EBI works directly at the local level.

Dr Tamene Yohannes, Director at the Ethiopian Biodiversity Institute (EBI) for the Crop and Horticulture Directorate, together with Mr Wubeshet Teshome, leader of the Community Seed Bank and On-farm Conservation Case Team of the EBI, explained that there are currently 27 CSBs in Ethiopia, including those under EOSA, and that three more are under construction. Of these, 23 CSBs are organized under the EBI. Bioversity International is supporting the construction of two additional CSBs in Tigray.

In general, the EBI approach for establishing CSBs has followed these steps:

- construct the Community Seed Bank
- together with the farmers, conduct an inventory

- of farmers' varieties and landraces in the area
- establish a farmers' Crop Conservator Association (CCA)
- establish a revolving fund for the multiplication and distribution of seeds (in-kind), with a minimum interest in return; for this purpose, the EBI has provided some cash to purchase seed from farmers in order to establish the seed stock for the revolving seed loan system.
- provide trainings and exposure visits.
- support the CSBs with hired technicians (in some cases) and provide jute sacks and seed containers to them; in some cases provide farming equipment to reward model farmers, or to the CCA for conducting these activities (e.g. in the experimental field).

According to Dr Tamene and Mr Wubeshet, the EBI has continued to collect threatened species and varieties for the National Gene Bank. These are offered to CSBs for multiplication. Aside from this, the contributions of the EBI to the CSBs include (to differing degrees, particularly due to shortage of funds): technicians/experts, running costs for motorbikes and other equipment, technical backstopping and annual trainings for farmers. These trainings are organized in collaboration with the cooperative offices, agricultural offices, land management offices (land for CSBs), administrative offices (overall governor). There is also experience-sharing using Ejere CSB as a resource centre: all members of the Executive Committees of the CSBs supervised by EBI were invited to Ejere in 2016, and, on returning home, they trained their respective members. The associations have all been legally registered.

Moreover, Ejere has become a centre for experience-sharing and training. By demonstrating activities and engaging visitors in joint activities, Ejere contributes to capacity-building of the CSBs supervised by EBI.

The CSBs supervised by EBI are not as strong as those supervised by EOSA, according to Dr Tamene and Mr Wubeshet. Lack of resources means that support is limited; there is a shortage of experts, vehicles, storage facilities, equipment, etc. Thus, the CSBs under the supervision of the EBI cannot be compared with those under the supervision of EOSA. Success also depends on location and how strong the committees of the associations are. The

⁹ Presentation available on the website of the Ministry of Agriculture: <https://web.archive.org/web/20131006042344/http://www.moa.gov.et/web/pages/vision-mission-and-objective>

problem is sustainability: not all CSBs survive after project end. Those that are able to generate capital through income generation and thus to support their association have better chances of continuing.

The EBI wants to have a strategy for the whole country. They have received a grant for the Benefit Sharing Fund of the ITPGRFA, for creating a platform for CSBs, including EOSA and other NGOs. The platform will enhance experience exchange and capacity building in the country.

Dr Tamene Yohannes and Mr Wubeshet Teshome stressed the importance of strengthening already-established seed banks before starting new ones, adding that there is a good policy environment for CSBs in Ethiopia. If financial resources can be allocated, the EBI plans to seek to strengthen the capacities of the CSBs that have been established. The idea is to have a brand for their produce (not necessarily as organic, but as farmers' varieties) to achieve premium prices. The EBI also works to enable farmers to register their varieties, to protect them against misappropriation, and so that benefit sharing can accrue to farming communities where relevant, according to the EBI.

The EBI considers the main problem to be marketing the produce at fair prices. Some CSBs are members of the farmers' Cooperative Union, which purchases farmers' varieties at the same price as for improved varieties. The EBI stresses that farmers who produce these traditional varieties should get better prices, which would encourage involvement. The CSBs need to develop market access. The EBI intends to continue supporting the CSBs in producing quality seeds of farmers' varieties, and is in dialogue with the Cooperative Union to enable purchasing at fair prices.

5.2.6 Relevance at the regional level: Oromia and the SNNPR

CSB policy in Oromia region falls directly under the auspices of the EBI, but in the Southern Nations, Nationalities and Peoples' Region (SNNPR) responsibility lies with the Biodiversity Development and Conservation Directorate of the SNNPR. This is an expression of the special importance accorded to community-based agrobiodiversity management and community seed banks in the SNNPR, where CSBs have higher policy relevance than in elsewhere in Ethiopia.

Officials at various levels of governance in the SNNPR

stressed that the region is rich in diversity, but there is rapid genetic erosion: improved varieties are attacked by pests and diseases, the climate is changing, and there is more drought. 'We need resistant and resilient crops', they explained. They wanted to restore/reintroduce farmers' varieties, which are adapted to local environments. Further, they confirmed the importance of promoting the sustainable use of these varieties and increasing on-farm diversity.

The SNNPR now has a five-year strategy applicable all the way down from the regional level to the zones and then the districts. Biodiversity is the backbone of this strategy, which aims at supporting the establishment of CSBs in all zones, as basic hubs for seed and food security and for livelihood development at the local level. Experts on crop, animal and forest genetic resources are central. In each zone and each district there shall be at least five experts on these issues, dealing with all three groups of crop genetic resources. For the central zones of SNNPR, 100% coverage has been achieved. Elsewhere, the districts now have at least two or three experts. The experts are to receive regular training, and there is quarterly monitoring of their activities.

Despite these conducive policies there are serious challenges in some few districts: here the experts from the cooperative offices do not fully understand the purpose and set-up of the CSB. In connection with their audits, they enquire about the profits of the CSBs. They want to see money, and try to force CSBs to sell their seed stock, which is their operating capital, in order to generate money to distribute to the shareholders. This upsets some farmers, who were led into assuming that they are entitled to money, although the by-laws of their association prescribe other benefits. One seed bank followed their advice and, as described above, sold half of the seed stock, greatly weakening that CSB in terms of performance. There is a need to follow up on this, as the officials clearly misunderstood their mandate. Therefore, having a clear understanding of the operational modalities of the CSBs is not only important for farmers, but is also necessary for all relevant stakeholders.

5.2.7 Relevance at the local level: Ejere and Lume District

According to farmer Tadesse Reta from Ejere, 'before, everybody discouraged organic production, but this has changed, and nowadays even researchers say we

must conserve our local seeds. The traditional varieties are the source of all seed.’ Representatives from the cooperative office in Ejere are supportive of this stand and collaborate closely with the CSB in Ejere.

The Agricultural Office in Ejere advocates expanding the approach from Ejere to other localities in the district, because of the rapid genetic erosion, particularly in the lowlands. The Agricultural Office has proposed three steps: (1) field visit/exposure visit for development agents, extension service experts, selected farmers and leaders from the associations in other places; (2) providing information to the associations, advice, planning resources etc.; (3) demonstration with field visits and training at farmer training centres for the individual farmer-members of the associations.

5.2.8 Relevance at the local level: Sigeda and Soro District

Tamire Tadesse, Vice Administrator, Soro Woreda and Head of Agriculture and Natural Resources Development Office, together with Tamirat Bobodo, Vice Head, Soro Woreda Agriculture and Natural Resources Development Office explained their office had long focused on grain yield as the sole objective. Since the CSB started, this attitude has changed: ‘Now we believe in the importance of agrobiodiversity for climate change adaptation.’ The production of farmers’ varieties is now being promoted side by side with the production of improved varieties. Land had been provided for the community seed bank; they were ready to help in identifying farmland for seed multiplication and PVS. Financial resources are needed to rent such land, as the present experimental field is too small. Mr Tadesse envisaged scaling up the activities from Sigeda to other villages through training and experience exchange, including farmers’ field days, to enhance the genetic diversity in agriculture.

Mr Desalegn Siraj, Vice Head of the Natural Resources Development Office in Hadiya Zone Agriculture and Natural Resource Development Directorate explained that the agriculture development authorities used to be deeply opposed to the conservation and sustainable use of traditional varieties: there was a high pressure to use high-yielding varieties with chemical fertilizers and other chemicals, as that was seen as the only way increase yields. This has changed. Now the value of traditional varieties is generally recognized at all levels among the agriculture authorities of the SNNPR. Both approaches are promoted, mainly because of climate

change. Traditional varieties are more climate-resilient, he noted, so it is safer for farmers to grow traditional varieties, or to balance the two.

Things have improved also with regard to extension services, Mr Desalegn Siraj continued. Agricultural extension services now have two officers in each village, and they promote both approaches – including organic methods like composting. In addition to the need to adapt crop to climate change, the prices of chemical fertilizers are soaring, making them unaffordable for many farmers. Also, after maximum three years, the improved varieties lose their vigour and are often attacked by pests and diseases; this is a risky business, especially for farmers with small plots.

In his view, the experiences from Sigeda should be expanded to all districts of Hadiya Zone. The commitment is strong, the institutional set-up is there, experts are ready – but financial support and technical backstopping are required.

5.3 Relevance to international agreements and goals

CBAM has been highly relevant to international agreements, plans and goals, including the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the Global Plan of Action on Plant Genetic Resources for Food and Agriculture (GPA) under the FAO, the Convention on Biological Diversity (CBD) and the Sustainable Development Goals (SDG). Experiences from the CBAM project have been presented on various occasions as examples of the implementation of Farmers’ Rights as set out in the Treaty. For example, farmer Tadesse Reta, previous chairperson and now member of the Executive Committee of the Ejere CSB, together with Dr Bayush Tsegaye from EOSA, gave a presentation of experiences from Ejere at the Global Consultation on Farmers’ Rights in Bali, Indonesia, in 2016. Travel was supported by the Development Fund, on request from the organizers.

5.3.1 The International Treaty on Plant Genetic Resources for Food and Agriculture

The ITPGRFA is aimed at the conservation and sustainable use of crop genetic resources, and the equitable sharing of benefits arising out of their use. CBAM is particularly relevant to Articles 5, 6 and 9. According to Article 5, the contracting parties

(countries that have ratified the treaty) shall promote or support, as appropriate, the efforts of farmers and local communities to manage and conserve on-farm their plant genetic resources for food and agriculture. Article 6 provides that the contracting parties shall develop and maintain appropriate policy and legal measures that promote the sustainable use of plant genetic resources for food and agriculture, and may include such measures as promoting plant breeding efforts which, with farmer participation, strengthen the capacity to develop varieties particularly adapted to local social, economic and ecological conditions, including in marginal areas; broadening the genetic base of crops and increasing the range of genetic diversity available to farmers; promoting the expanded use of local and locally adapted crops, varieties and underutilized species; and supporting the wider use of diversity of varieties and species in on-farm management, conservation and sustainable use of crops. Article 9 addresses farmers' rights related to crop genetic resources and sets out optional measures, *inter alia* as to benefit-sharing. The CBAM project is a good example of the latter, in particular through the collaboration between breeders/scientists and farmers, and the financial support provided from the Development Fund for this purpose.¹⁰ CBAM also provides good examples of how farmers' rights related to traditional knowledge and the participation in decision-making can be supported, and making clear the importance of farmers' rights to save, use, exchange and sell farm-saved seed for the conservation and sustainable use of crop genetic resources.

Also worth mentioning is Article 8 of the Treaty, which is not so often referred to: 'Contracting Parties agree to promote the provision of technical assistance to Contracting Parties, especially those that are developing countries or countries with economies in transition, either bilaterally or through the appropriate international organizations, with the objective of facilitating the implementation of this Treaty'. DF support is highly relevant in this regard.

5.3.2 The Global Plan of Action on Plant Genetic Resources for Food and Agriculture

The GPA aims to promote efforts to conserve and sustainably use PGRFA, to link conservation with use, for greater use of plant germplasm, to strengthen crop improvement and seed systems to foster economic development, to create capacities, strengthen national programmes and

widen partnerships for PGRFA management, and to strengthen implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture. It is beyond the scope of this evaluation to quote all the relevant provisions of the GPA, which are voluntary and can be seen as kind of guidelines. However, the successful sites of the CBAM programme provide excellent examples of how these provisions can be set out in practice, underscoring the relevance of the CBAM approach.

5.3.3 The Convention on Biological Diversity

The CBD is aimed at the conservation and sustainable use of biological diversity, and the equitable sharing of the benefits arising out of their use. Biological diversity covers includes agrobiodiversity and all diversity, except for human beings. The ITPGRFA was negotiated as a consequence of the CBD (see Andersen, 2008). As the ITPGRFA is the more specific treaty with regard to agrobiodiversity, the CBD is not explored at further length here.

5.3.4 The Sustainable Development Goals

The SDGs are important international goals for national and international policies. The CBAM programme is relevant to several SDGs, in particular 'no poverty' (SDG 1), 'zero hunger' (SDG 2) and 'sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss' (SDG 15). The CBAM programme provides good examples of how these goals can be approached from the community level.

5.4 Relevance with regard to agrobiodiversity conservation and farmers' seed systems

An important question for this evaluation has been whether CBAM has addressed the actual needs/gaps of the target groups in terms of agrobiodiversity conservation and farmers' seed systems. The short answer is 'yes'; indeed, the CBAM approach stands out internationally as well.

Most local varieties were reintroduced and restored before the involvement of DF in Oromia and Amhara. In SNNPR, this process developed partly before and partly with DF support. Reintroduction ensued after dialogues with farmers who were asked to identify lost crops and indicate whether they would be interested in growing them again. That these were varieties the

¹⁰ On benefit sharing as a concept in this context, see p. 133 and 138–142 in Andersen, 2016.

farmers said they missed explains the local relevance of the programme. An important contribution of the DF has been to support the continued systematic conservation of these varieties. Bringing back older varieties and conserving them for future use have been of central importance to improving seed security in these areas. The farmers feel very strongly about these varieties they lost and got back. 'It shall never happen again that we lose them', some say. Whereas most varieties that can be restored have been brought back to areas surrounding the well-established CSBs, the situation is different in SNNPR. Here this process had just begun. During the almost three CBAM years, many local varieties had been identified in neighbouring areas and brought back, but many more can still be gathered and perhaps reintroduced from the national gene bank.

The CBAM approach, developed by EOSA with

DF support, creates a continuum from systematic conservation and through to the sustainable use and improvement of crop genetic resources. The system of checking vigour annually, regenerating seed every third year, thereby exploring the plants and selecting seeds of the most promising varieties for further larger-scale improvement through participatory methods serves to make the most out of the diversity at hand. This has taken place in the well-established CSBs. By contrast, the process had only begun in SNNPR, where much remains to be done in order to achieve the same standards of seed management.

Access to local and locally adapted varieties is becoming increasingly important to farmers in Ethiopia, as also reflected in policies and strategies at various levels of governance (see above). In box 4, farmers in Ejere and Sigeda explain why local and locally adapted varieties are important:

BOX 4: WHY GROW TRADITIONAL VARIETIES OF CROPS?

Farmers in Ejere and Sigeda explain why they choose local varieties

- **Seed security:** With access to the traditional varieties we used to grow, we have a much greater diversity to choose from. If one crop fails, we can choose another crop with shorter maturity period, which can still succeed.
- **Food security:** Spreading the risks this way provides better food security.
- **Resilience to climate change:** The traditional varieties are much better adapted to climate change and environment challenges than are the 'improved' ones.
- **Controlling crop pests and diseases:** Improved varieties are much more prone to pests and diseases than local ones.
- **Reducing expenditures for agricultural input:** With local varieties we don't have to buy expensive seed, chemical fertilizers and pesticides. This is a great relief for the family budget.
- **Better yields sometimes:** For some local varieties that have been further developed through participatory varietal selection, we get yields comparable with those from improved varieties, if organic methods are used correctly. With vegetable crops, organic methods give higher yields and better quality. Moreover, yields tend to be more stable.
- **Better economy:** All of this brings better household economy.
- **Reducing the dependency on chemical fertilizers:** Local varieties don't need chemical fertilizers, but using chemical fertilizers in commercial crops makes you dependent. We have to use bigger and bigger amounts of fertilizer to get the same yields of commercial varieties. Chemical fertilizers are getting more expensive, but if we can't afford to keep buying fertilizer, we may lose our harvest. And finally: chemical fertilizers are acidic and do not promote healthy soil.
- **Avoiding chemical pesticides:** Chemical pesticides are hazardous to our health, as we farmers have no protection when spraying them in the fields, where we are walking around barefoot. Several farmers have experienced vomiting afterwards, and certain illnesses were reported, which seem to be related to the use of chemical pesticides.
- **Better nutrition:** More diversity is healthy, and traditional grain varieties are often much more nutritious. Eating more vegetables of many kinds is also healthy. Also, our produce has better quality when we use the new organic methods – you can see this in the colour of the plants, green vegetables get deeper green.
- **Better health:** It is much healthier to avoid pesticides, and to eat more diverse food with better nutritional quality.

- **Better taste/aroma:** The traditional varieties are more tasty and simply have much better aroma.
- **Injera substitute:** Organically grown wheat of local varieties can replace teff when making injera since teff is more expensive, this can save money and cut down family consumption of the stocks of self-produced teff.
- **Important fodder for livestock:** Livestock prefer the straw of traditional varieties. There is otherwise little fodder around, and the improved varieties have straw that is very hard and unpleasant for animal feed. We are dependent on straw that our livestock will eat.
- **Better storage capacity of produce:** The crops of local varieties store well, thanks not least to the better quality we get by using organic methods.
- **Self-sufficiency in seed:** We can save seed for the next season, again and again.
- **Less seed needed:** We need less seed for sowing than with improved varieties
- **Improved soil fertility and structure:** When we grow local varieties with organic methods, the soil structure is much better than with improved varieties. The soil can retain water better, and fertility increases when organic methods are applied properly.

5.5 Present and future validity of the programme objectives in Ethiopia

Seed and food security and increased income are among the core needs of most farming households in Ethiopia. CBAM has been a great success in this regard, making the CBAM approach highly relevant in Ethiopia also for the future. Further expansion would enable more farming families to benefit from the approach.

Concerning the established CSB in Ejere, continuation is most important, but the members also wish to see further development. In particular, they feel confident that some of the varieties they have developed based on the traditional material they have received would have market value; they have high nutritional content, preferred taste, long storage capacity and generally high quality. The farmers expect to be able to get higher market prices than for the commercial varieties they now grow as cash crops – and, since the local varieties do not require expensive chemical fertilizers and pesticides, market access for improved local varieties would considerably improve the economic situation of the farmers in Ejere. They feel that, in future, the programme should include facilitation of market access as well.

Farmers in Ejere are also concerned about equipment for agricultural production. They wish that the programme could facilitate access to equipment that would reduce the workload of production. Finally, they would welcome more emphasis on income-generating projects and support schemes for improved, diversified livestock production.

In SNNPR, the programme is seen as critically relevant,

by the farmers themselves as well as the authorities. Here, people go hungry for certain periods of the year, due to shortage of land for food production and overpopulation. For some time now, the government has heavily promoted the use of improved varieties as a means to increase productivity. As a result, many older varieties have been lost from local communities. As farmers observe that the improved varieties are more prone to pests and diseases, and climate changes, than the traditional varieties and crop systems, they found the programme highly relevant. Maintaining and continuing to develop the traditional varieties are recognized as crucially important for seed and food security. Moreover, the CSBs provide platforms for income generation and collective action of various kinds. This is governed by the farmers themselves – a sustainable solution, as they will not depend on external financial support when fully established, although technical back-stopping would be advantageous.

In the larger CSBs there are discussions relating to decentralization of specific functions, because of the expansion of the associations and the geographical distance between villages covered by the CSBs. In particular, seed quality control and seed storage appear to be relevant factors for decentralization. As there are already groups at the village level, these functions could be delegated to the groups. Such delegation is especially relevant for villages located far from the CSBs.

All in all, the programme has proven highly relevant in Ethiopia, with great potential for scaling out as well as for further development. Prospects are further elaborated under ‘recommendations’ below.

6. Impact of the CBAM programme in Ethiopia

The impacts of the CBAM programme have been both impressive and touching. They are impressive because of the many crops and varieties that have been reintroduced and restored to localities from which they had disappeared, because of how the most promising varieties have been further developed and adapted to the changing climate and farmers' preferences, and how the CBAM approach has substantially improved the livelihoods of the involved farmers and helped many others indirectly. The impact is touching because the programme has helped farming families that had lived in severe poverty and periodic hunger, by substantially improving their living conditions, finding strength in collaborative action, and developing hope for the future. Through the programme they have been able to reduce their expenses for agricultural production, while boosting the yields of traditional varieties and diversifying production for home consumption. CBAM has helped them to achieve seed security as well as greater food security, including improved nutrition, and has generated sizable revenues to meet household needs and support their children's schooling.

The CSB in Ejere was noteworthy for its well-functioning system of conservation and participatory varietal selection, adapting and developing crops for the future, greatly benefiting farmers already today. In Sigateda the CSB was impressive because it had managed to sustain the achieved impacts two years after the project was phased out, after a short project duration, in an area of severe poverty.

In the following section, the impacts are summarized based on the above, with a view to the questions set out in the Terms of Reference for this evaluation.¹¹

6.1 Impact on on-farm management of agrobiodiversity

As a result of CBAM, farmers involved in the programme have achieved a high degree of seed security. All farmers consulted confirm that this has been the greatest benefit of the programme,

from which all other impacts derive. As regards seed security, the programme has enabled farmers to have access to the seed they want when they need it – and with a kind of 'seed guarantee' or 'crop insurance': the possibility to obtain seed of faster-maturing crops in case the first crops fail early in the season. This enables them to diversify crop production, to spread the risk of crop failure.

By constantly adapting their local crops to the changing environmental conditions, farmers develop crop resilience to climate change and related environmental factors, thereby enhancing the robustness of their agricultural production. The farmers consulted claim that the improved conventional varieties are risky: far more prone to the effects of climate change and related environmental challenges, such as pests and diseases. Even if farmers may choose to grow a field or two with improved conventional varieties, they are not dependent on them, and the crop mix helps to make their production robust and resilient.

By constant improving promising local varieties through PVS combined with improved organic methods, farmers have boosted the yields of local varieties and improved their quality. Some farmers report that, for some very nutritious varieties, yields have increased to levels that can compete with improved varieties, on condition that organic methods are applied properly for these local varieties. This point should be carefully documented, as such results would be of utmost importance for future agricultural strategies and policies for achieving food and nutrition security.

An important impact has been high-quality seed, thanks not least to trainings and technical backstopping, and the control system seems efficient. Also important are the good CSB storage systems, which greatly reduce post-harvest losses.

A noteworthy element in on-farm management has been capacity building and better knowledge among

¹¹ See also 'relevance' above, as details relevant to impact are explained there.

farmers with regard to seed growing, selection and management, as well as organic agricultural methods. Many of the farmers we interviewed stress that as a major important benefit of the project. With their new knowledge, they are better equipped to manage their seeds and varieties on-farm, and to increase the yields as well as the quality of their produce. Many farmers stressed that this has meant a major change in their lives, and they are deeply grateful to the project. Farmers are now also aware of the great value of their local crops, and feel committed to maintaining them and further developing their locally adapted crop genetic diversity. They state that they will never allow their crop genetic heritage to disappear again. Through the acquired knowledge, together with the access to seeds, farmers have substantially increased their agricultural production in quantity as well as quality.

These impacts are most evident in areas with well-established community seed banks, and to a lesser degree in areas with new initiatives. In the SNNPR, for example, there is less crop diversity available than in Ejere, and there is less work underway on further developing and adapting these varieties. Also, the members, new ones in particular, have had less access to training than in Ejere.

Nevertheless, the impacts in Sigeda have been impressive, especially when taking into account that the support lasted for less than three years, that no support was provided after 2016, and given the general poverty in the area. Farmers in Sigeda explain that before the seed bank, they were facing serious problems. Often, they could not afford to buy the improved seed and the required associated input factors, due to increasing prices. Now, they report, they have access to seed of their own choice, and that has greatly improved the food and income situation. There is reason to assume that basically similar impacts can be found at six of the seven other programme sites in SNNPR.

6.2 Improved livelihoods, including food and nutrition security and income

Farmers' livelihoods have improved considerably as a result of the programme. Food security has increased substantially, the nutrition has improved greatly, and the economic situation is decidedly better among the farmers involved in the community seed banks. As a result of improved family finances, farmers are

now able to meet household needs and to send their children to school, in some cases even through college. Farmers explained how the programme has profoundly changed their lives, enabling them to live more dignified lives. The programme has indeed contributed greatly to poverty alleviation.

This improved food and nutrition security has been achieved through a combination of access to high-quality seeds of valuable local and locally adapted varieties – and improved organic agricultural methods.

An important point here is that farmers have achieved self-sufficiency in vegetable consumption. Through CBAM vegetable seeds of various species and varieties were purchased from Addis, and provided to the farmers at the program sites to diversify and improve local vegetable production and availability. These additional vegetable crops are not maintained in the CSB but are offered directly to the farmers as a measure for improving home gardening along with organic methods, for better nutrition. Farmers stress that being self-sufficient in vegetables not only reduces their household expenses (no need to buy vegetables), but also improves family nutrition. Moreover, any surplus produce can be sold in the market, thereby generating supplementary cash income.

The improved economic situation among farmers has been achieved thanks to cost reductions regarding agricultural inputs like expensive seeds of improved conventional varieties and the increasingly expensive chemical fertilizers and pesticides – together with improved yields of local and locally adapted varieties, supplemented by income-generating activities, also from vegetables. The farmers consulted stress how local and locally adapted varieties are better than improved conventional ones, because the latter are so expensive in terms of necessary agricultural inputs.

Farmers also stressed the importance of no longer being dependent on seed merchants and money lenders, who operate with excessive interest rates. This has been a huge burden for many resource poor families. By contrast, the 20% interest paid to the revolving seed loan system for increasing the capacity of their own association, is therefore rewarding, the farmers explain.

Importantly, farmers highlight how training, exposure visits and technical backstopping have

improved their agricultural and income-generating capacities.

Livelihoods have improved markedly for women who produce or receive fuel-saving stoves. With such stoves they can save fuel, often dried cattle manure, which can then be used for fertilizing the soil instead. They save time and effort by not having to gather so much fuel. Most important are the health benefits, as they no longer have to breathe in the heavy smoke and fumes from open indoor fires. The women organized in the groups that make and sell these stoves earn money which they deposit in a shared bank account which is used for micro-credits among their members, in turn making it possible to start further income-generating activities.

The combination of seed security, efficient organic methods and income-generating activities as developed under CBAM has proved effective for achieving the impacts identified in this evaluation report.

6.3 Empowerment of local communities/farmers' organizations

An important impact of CBAM is the arena created for farmers to meet, exchange experiences and reflections, learn from each other and jointly organize their associations with EOSA/DF support. This has greatly boosted self-esteem among local farmers. Furthermore, farmers consider training and exposure visits particularly important for developing their capacities, knowledge and knowhow, and thereby also raising their self-esteem. In addition, farmers in Ejere and Sigeda enjoy having visitors coming to learn from their achievements; this too contributes to greater self-esteem and motivation.

Through the programme, farmers have seen how they can change and enhance their situation, through jointly generated seed, new knowledge and by supporting each other. This provides not only hope for the future, but also a sense of collectiveness and empowerment.

For women, the improvement is particularly evident. Previously confined to their houses, they can now experience being part of a community of people helping one another to improve their livelihoods. Women have their own groups with their own income-generating projects – in Ejere they even have

their own office – all of which contributes greatly to their empowerment. Farmer Tigist Alemayehu, head of the women's group of Ejere FCA and member of the Executive Committee of FCA expressed it this way: 'Before, I lived in the dark. Now I live in the light.'

6.4 Distribution of benefits between and among women and men

The women stress that the benefits achieved through the project benefit men and women alike. Seed and food security is important for the whole household – no gender difference here. Both men and women generate income through the project, and also here there is equity. For the women, having an income is a new experience, and they appreciate not having to ask their husbands for money to buy things on their own. This new situation, they explain, provides them with increased social recognition.

An important benefit for women is the possibility to meet, depending on whether they are involved in the work of the association. Generally, more men are represented than women. Thus, there is a scope for higher representation of women in the associations. Men are over-represented because there is normally one person from each household representing the families in the association – usually the head of the household: a man. However, sometimes the head of the household is a woman – perhaps she is widowed, or her husband is not able to take on the role of representing the household. There is a special focus on helping such woman to improve their living conditions. Nevertheless, more could be done to mobilize women in the association. Probably the representativity-model could be made more flexible, so that women and youth could be invited to participate along with the representatives of the households. For annual meetings, the principle of one representative from each household is important; but, for other activities, broader engagement would be desirable.

Regarding formal decision-making, women are in the minority, e. g. in the executive committees and the annual meetings. However, they are listened to, and they are explicitly consulted, according to the female members of the executive committees. As they represent the women's groups, the views of these groups are invited. The women with whom we spoke emphasized that they always feel listened to

and that they are actively invited to contribute their views. They do not see it as problematic that there are not more women members on the executive committee – but they wish that more women would participate in and benefit from the activities in general, and that more women’s groups could be formed.

6.5 Dissemination of seeds beyond the target communities

It was impressive to see how the varieties developed by Ejere FCA had spread throughout the whole area. Non-member farmers confirmed that the best local and locally adapted varieties are now grown on almost all farms in the area. In general, local farmers choose to grow these varieties along with improved conventional varieties, for the reasons mentioned in this report. Moreover, the varieties kept by the FCA in Sigeda are also spreading among farmers in the area.

The mechanisms for disseminating seed beyond the target groups follow this pattern: The seeds produced through the community seed banks are distributed between and among the members. Thereafter, the members are expected to continue growing and saving seeds from the varieties they have received, if they wish to continue growing these varieties. For this purpose, they use the techniques they have learned for harvesting high-quality seed of their preferred varieties. The members are then free to use the seed as they wish, and many choose to exchange with their relatives and neighbours and/or sell in the market. In this way, the varieties can be spread throughout the area.

Similarly, farmers exchange information on methods with their neighbours and relatives, thereby spreading the knowledge of improved organic methods to boost the production of the local and locally adapted varieties.

As the same approach is applied for all EOSA/DF-supported sites, we can assume that seed is spread in similar ways.

The CSBs supported through CBAM are open to new members, upon application and approval by the annual meeting, and on condition that their revolving seed stock is enough to accommodate the new members within the seed loan system. Thus, it is possible for farmers who wish so to

join the associations. However, this can take time, largely because there is not always enough seed to accommodate new members, as explained by representatives of the FCA in Ejere and the CCA in Sigeda. To this evaluator, it seems that one reason why the seed stock is not sufficient, is that the 20% interest paid by the members in order to allow new members to join is in practice variously distributed among the existing members the next season. Such a practice seems to have evolved, making it difficult to offer membership to farmers on the waiting list. This evaluator did not have the time or means to prove this assumption, and the degree to which it may apply will probably differ from site to site. The matter needs further exploration, as it is basic to the ability of the associations to grow to the extent that they wish to grow, as well as to ensure financial sustainability.

6.6 Unintended or unexpected impacts

It was not possible to identify any negative unintended or unexpected impacts, although the evaluator tried to identify persons who had observed or experienced such impacts. Many questions were asked to non-members and to observers, but no negative impacts were mentioned. Mainly, the non-members and observers told of how they had initially considered the initiative, not believing that it could achieve much and that it would be a waste of resources. They have since then changed their minds, observing what immense impacts the programme has not only in the lives of the members, but for the community at large. Most non-members consulted said they wished to be able to join the associations.

Mention should also be made of two other effects which were not directly intended in the project, but which the farmers see as important impacts, both concerning health.

Farmers tell of improved *human health* conditions through the project. In particular, they have substantially reduced, or even stopped, the use of chemical pesticides. They tell how the pesticides used to make many farmers vomit and that some became ill. They also said that seemed to die earlier and that they assumed this to be related to the use of pesticides. Local farmers have no protective gear, and walk barefoot through the fields, spraying. Having to use pesticides is seen as a heavy burden,

not least as regards health: farmers are greatly relieved at not having to use them, or use them only to a very limited extent. In addition, they consider the diversity of crops, the quality of their produce and the resultant nutritional qualities to be health-promoting.

Also *soil health* is improving as a result of the programme. The combination of local and locally adapted crops together with organic methods has improved the soil structure on many farms: increasing the capacity to retain water, counter erosion, and accommodate more micro-organisms all improve the soil further. Through organic manure of various kinds, through crop rotation and other organic methods, the micro-organisms produce humus, thereby improving the fertility of the soil. Better soil structure, water holding capacity and fertility does more than improve the growing conditions for the plants, thereby boosting yields and quality: the farmers consulted appreciate that the improved soil is likely to remain fertile enough to feed future generations as well.

6.7 Impact on relevant local, national or international policies

As shown in section 5.2, the programme has greatly contributed to changing local agricultural policies to be supportive to community-based agrobiodiversity management. Whereas the local agricultural authorities used to promote only the high-yielding improved varieties, they are now following a two-pronged strategy of promoting local and locally adapted varieties along with organic methods on the one hand, and high-yielding improved varieties along with chemical input on the other. In Ejere, the local authorities wish to extend their experiences to the whole district. In SNNPR, the regional authorities have decided to establish community seed banks in all zones, and to further expand community seed banking from there.

The latter is an impact of Ejere CSB, which served as the source of inspiration for the initiators of the programme in SNNPR. In several rounds, they invited officials, experts and farmers to Ejere, partly through CBAM. In late 2016, the regional authorities of SNNPR took 286 farmers and CSB leaders as well as experts from the district, zone and regional levels to Ejere for exposure and training, for two days each (field visits, training and discussion), supported by

the regional government and EOSA/DF. This proved extremely inspiring and motivating, according to officials consulted. In 2017, the regional authorities organized a regional conference to discuss follow-up. This led to the preparation of a strategy which has now become official policy of the regional government of SNNPR, aimed at strengthening and scaling-out community seed banks in SNNPR, following the example of Ejere. A first step has been to ensure that each zone has its own CSB. Eight zones were already covered; it was decided to build four more CSBs. This was achieved in 2017.

The strategy had also envisaged strengthening the first eight CSBs, but there was no funding for that – budget allocations went into the establishment of new CSBs. This was quite frustrating for the first eight CSBs, one of which was no longer functioning. The region has now allocated a budget for experience exchange among the eight first CSBs in the region. There are currently twelve CSBs, each in a different zone (including Konso woreda, which is not included in the zonal structure). The last three zones are requesting budget allocations to establish CSBs. Indeed, there is great interest in CSBs in the whole region.

Under the new agrobiodiversity strategy, the agricultural authorities in SNNPR are now supporting organic methods along with conventional methods, drawing largely on the achievements of CBAM.

At the national level, CBAM seems to have had an effect on the formulation of the Quality Declared Seed Directive of 2015, in which an intermediate seed sector was defined to accommodate the needs of CSBs and to recognize the importance of this contribution to the Ethiopian seed system and agricultural production.

The CBAM approach has also helped to guide the EBI in their efforts to establish and follow up CSBs.

6.8 Impact on methodologies, plans or strategies of relevant institutions

As elaborated above, the CBAM approach has contributed to a general change in attitude towards traditional varieties of crops and organic agriculture – along with conventional technologies. This has resulted in conducive policies and strategies for CSBs and initiatives to establish CSBs in line with EOSA principles.

7. Sustainability of the programme in Ethiopia

To what extent can the achievements and impacts of the programme be regarded as sustainable? What are the opportunities or constraints as regards strengthening the sustainability of the DF's agrobiodiversity interventions? These are the questions dealt with in this chapter.

7.1 Sustainability of achievements/impacts

The sustainability of the associations and their activities depends on several factors, including motivation among the members as well as institutional, financial and technical aspects. An important question is also whether the intervention has provided a sufficient knowledge basis within the target group and procedures for the association to maintain and further develop operations after the phase-out of EOSA/DF support.

7.1.1 Motivation and institutional sustainability

In terms of motivation, the associations are generally very sustainable. There is deep commitment to the associations and their activities, and members experience them as highly beneficial.

In terms of institutional sustainability, the associations are also very well equipped, with conducive organizational systems and procedures, and normally support and backstopping from the cooperative offices. The general assembly of each association meets annually and elects the executive committee, along with the adoption of an annual plan, approval of new memberships and other typical items. Executive committees normally meet monthly and carry out the decisions of the general assemblies. There is also a seed quality control committee for each association. Women's groups and youth groups are self-organized; the former are also represented in the executive committees. An annual audit for each association is conducted by the respective cooperative office. Institutional structure and procedures are regulated by bylaws, which are democratic, legitimate and transparent. The cooperative offices assist in institutional and economic matters, also in the rare cases when farmers do not feel able to meet their seed repayment obligation.

Support from the cooperative offices requires that they understand the ideas and principles governing community seed banks as organized by EOSA. In Ejere, such support has been provided with great commitment, by officers who identified deeply with the ideas and principles of FCA, and who knew the history of the CSB from the very beginning. In Sigateda, there was also ample support. However, in Wolayita in the SNNPR, the cooperative office failed to understand the principles of the revolving seed loan management practice, and demanded that the CCA there should sell seeds in order to enable revenue payment to the shareholders. Half of the revolving seed stock of the CCA was sold, which meant a considerable loss to the CSBs in terms of operating capital, as well as engendering a conflict in consequence of the demand made by the cooperative office. That conflict arose after EOSA/DF support had been phased out. If EOSA had still been accessible with continued support or technical backstopping through collaboration or, for instance, through a network, the problem would probably have been solved at an early stage. EOSA might have proposed an exposure visit for those responsible in the cooperative office, or found other ways to help.

It is important for institutional sustainability to have good relations with the cooperative office, and that established institutional structures and procedures are followed. This is the case for most associations organized by EOSA. Wolayita is the exception – and, as noted, the problem would probably not have erupted if the CSB had had continued access to technical backstopping from EOSA.

7.1.2 Financial sustainability

The CBAM model has some weaknesses in terms of financial sustainability. It is not clear how already-established associations are to survive without support from EOSA/DF, as there is no phasing-out strategy. In those cases where support has stopped, the associations have been struggling: they manage largely thanks to the deep-felt motivation and commitment among their members, and the strong institutional set-up.

It is essential to develop a plan for how associations are to become financially independent and sustainable, *before* support is phased out. There are three points to note in this regard:

- The revolving seed loan system foresees that the members borrow seeds and return them with 20% interest (or any interest rate decided by the FCA). This interest is to be used for the purpose of expanding the membership, but can also be used to finance administrative costs if part of the seed is sold. Ideally, the interest should be used for both purposes. As of today, however, it seems that the interest is distributed to the existing members and is fully or partly used for sowing the next season – not as originally intended. This needs further investigation; there is probably a potential here for strengthening the financial sustainability of the associations.
- Some CSBs are used as demonstration sites and receive visitors. At Ejere there are many visitors, and that requires substantial attention from central members of the FCA. Consideration could be given to charging a fee for visiting, especially with donor-funded visits. In cases where there are no external donors involved, the fee – if any – should be lower. It is reasonable to expect some income from the services provided, so consideration could also be given to whether and how to organize this. Obviously, this possibility applies only to the CSBs that have something to show. On the other hand, all CSBs have the potential to become resources sites in their areas.
- Income-generating projects could contribute to keeping the associations self-sustaining. Fuel-saving stoves are one example of an income-generating project with the potential to contribute financially to CSB operations. Today this is a women's group project, fully benefitting those who belong to such groups – and perhaps it should continue like that. Another possibility could be entering into the seed business; current legislation should be consulted, as it seems that the new QDS directive (available only in Amharic) may allow the sales of seeds of local varieties from community seed banks. If a market can be created for particularly esteemed local varieties, this could provide good potentials for earning incomes, as has been the case with community seed banks in Nepal.

It is essential to explore these possibilities with a view to developing full financial sustainability. Nepal's LI-BIRD organized community seed banks may serve as good examples: not only are they financially sustainable – they are also experiencing economic growth.

7.1.3 Technical sustainability

Technical sustainability relates to the continuation and further development of technical activities, such as seed banks, participatory variety selection, trainings and exposure visits, as well as income-generating projects. Here, well-established CSBs are better positioned than those with a short history, as the members of the latter have not been able to generate the required knowledge and practical knowhow. It will remain important to have access to experts from EOSA who can continue technical backstopping, with trainings and exposure visits, also after direct support to the CSBs has been phased out. If others, such as biodiversity experts in the SNNPR, are suitably trained, they may also assume this role, preferably in cooperation with EOSA. It would be useful to have established a network to facilitate training of the trainers and backstopping. Also emerging needs should be taken into account, not least regarding access to markets for local and locally developed varieties.

In SNNPR, the community seed banks and the related associations had just been established, and the required capacity-building activities were only getting underway, when the project ended. This was far too early, and there was not an adequate foundation for the CSBs to continue their work. When they did continue, that was due to the conviction that such seed banks were an answer to the challenges facing the local farmers, and that they would do their best to keep the system alive and seek to develop it further. However, it was evident that basic skills were lacking, e.g. in community seed banking and participatory variety selection. In the view of this evaluator, these initiatives were very promising, with deeply committed members and comprehensive policy support from the regional level, up through the zones and districts. However, the decision to start supporting these initiatives without providing a sufficient basis for continuing on their own was, in the view of this evaluator, neither responsible nor in any way sustainable.

Initiatives in SNNPR were not supported after 2016

because of a change in DF priorities. New partners had been identified, and EOSA was invited to collaborate with them in spreading the establishment of CSBs in the areas where they were working, which was not SNNPR. Profoundly opposed to this, EOSA wanted to carry on with what they had already started in the SNNPR and which needed continuation. They also felt that an immense opportunity was being wasted. They were also not convinced that the new DF partners were motivated to adopt the EOSA approach, as they were not acquainted with CSB work. EOSA finally agreed, but that was because they were left with no other choice.

In the view of this evaluator, the decision to abandon SNNPR and instead develop CSBs from scratch in other regions where policies were far less conducive, and with partners less clearly motivated and with limited experience in the field, was unsustainable. It resulted in EOSA leaving the SNNPR before the initiatives had become sufficiently established.

The new situation poses severe challenges for EOSA, as they were never convinced about the new DF approach and it is hard to have to travel far to work with partners who have difficulties in following up for various reasons, including motivation. As the evaluator considers these constraints to be beyond the scope of this evaluation, these issues were not investigated further. However, fatigue was evident on the side of EOSA, partly related to this situation, but also to the general collaboration with donors who they felt are not attentive to their situation and advice.

7.1.4 Some reflections on requirements before interventions like these can be phased out

What needs to be in place before the DF decides to phase out its support and how long does it take to establish that? These questions were raised by the DF in discussions relating to this evaluation. A project like CBAM involves physical infrastructure, seeds, organizational set-up, institutional network, financial capital and – importantly – human commitment, knowledge and practical knowhow. Drawing on experience, this evaluator holds that the following should be in place before a donor decides to phase out its support to such an initiative:

- Motivated farmers who have received sufficient training and exposure visits to know how to best select seeds, adapt and improve crop varieties in view of shifting environmental conditions and

their own preferences, and who can maintain the accessions in their community seed banks. Further, they need to have a sufficient grounding in organic methods of agriculture. Establishing local demonstration farms, as seen in Nepal, is one way of ensuring that the competence is maintained and shared locally, and can help to anchor relevant knowledge and knowhow locally.

- A well-functioning association with by-laws, established procedures of operations and decision-making and some years of experience, to establish these as routines. There must be a sufficient number of persons involved in the governance of the association, well-versed in such procedures.
- A good network of supportive institutions – including the cooperative office, the agricultural office, offices relating to biodiversity, and research, if possible. It is important that technical and institutional backstopping, invitations for exposure visits and trainings can be continued under the umbrella of a network or through the services of some of these offices.
- A storage and office building for the CSB, enabling samples as well as multiplied seed to be stored under optimal conditions; there should be basic equipment, offices for the association, and, preferably, meeting/training facilities.
- Well-established procedures for storing samples of varieties and populations in the CSBs, for maintaining the collection and for developing the most promising varieties through participatory varietal selection. Some cycles of participatory varietal selection should already have been implemented, to establish good routines.
- The association needs to have enough capital to provide sufficient interest to help to finance the continued operations of the CSB. This capital is currently the revolving seed stock. Regardless of whether it remains organized in this way also in future, or through a fund like the model organized by LI-BIRD in Nepal, it is important for the donor to contribute sufficient capital at the outset to enable each CSB to cover its operating costs from accruing interest, along with any other sources of income (e.g. visitors fee, as explained above or other income generating measures).

In the experience of this evaluator, establishing and developing a community seed bank with a farmer association as described here takes about

5 to 8 years – unless extraordinary circumstances intervene, such as political turmoil, environmental disasters or other unexpected factors.

7.2 Opportunities/constraints for strengthening the sustainability of DF interventions

Here we examine opportunities for strengthening the sustainability of the associations that have been successful thus far, and then derive some lessons concerning the conditions for success for future interventions in Ethiopia as regards sustainability.

7.2.1 Opportunities for strengthening the sustainability of well-established associations

For the well-established community seed banks in Oromia and Amhara, the constraints and opportunities for strengthening the sustainability of DF's agrobiodiversity interventions concerned financial sustainability and marketing opportunities, along with continued income-generating activities. This has been described above. If the difficulties can be dealt with, it will greatly enhance the prospects for the CSBs to become independent from EOSA/DF, to develop activities on their own and to prosper. This does not mean that they should not have contact with EOSA – it would be advantageous to have some sort of backstopping, training and exposure visits, as in the context of a network, but there should be no financial dependency.

7.2.2 Strengthening the sustainability of newly started associations in SNNPR

With the community seed banks in the SNNPR, the main constraint was the very short project duration – a point that came up in all interviews in the SNNPR, some of which have been reported in the section on Sigeda. Here follow some reflections from officials at various levels in the SNNPR:

- Mr Desalegn Siraj, Vice Head of the Hadiya Zone Agriculture and Natural Resource Development Office of the Natural Resource Department of Hadiya, said that CBAM was perhaps the most successful project in Hadiya, but, as he put it, DF had behaved like a small child who builds a beautiful play-castle, only to destroy it. He was very sad. He felt sure that if the project had continued, it would have achieved great results by now, as the authorities and farmers had been so motivated, and conducive policies and structures were in place. By now, it would

probably have been possible to scale out to other districts, he added, and then noted that in Hadiya, most development projects collapse once the support is phased out. That was not the case in Sigeda, the CSB in Hadiya Zone, because it was so strong, he said. He could not understand why DF had stopped support, in such a situation and with such good prospects of success. However, he appreciated that the DF had sent an evaluator to look into the project two years after the end of the support; this, he saw as moral encouragement after the demoralization felt when the DF left.

- Mr Melaku Bafa Tumiso, Director of the Biodiversity Development and Conservation Directorate of the SNNPR in Hawassa, stated: 'When engaging in a process like this, there is a moral obligation towards the poor farmers who invest so much of their time and hope. It is not correct to ignore this moral obligation.' He found it difficult to understand why the DF had left, after such huge investments from all sides. Three years of support is simply not right in such a situation, he said.
- Ms Tseganesh Demeke Eriso, Head of the SNNPR State Hadiya Zone Environmental Protection and Forest Development Office, simply said: 'Please come back and continue what you started, and we will work together as partners!'

Indeed, it appears as a major opportunity to follow up the call from Ms Tseganesh Demeko Eriso. Seen in a global context, the policies and institutional infrastructure are outstanding. This evaluator is not aware of any other region in Africa or South Asia with such commitment, backed up by concrete action to follow up in practice. A strategy for the development of CSBs in SNNPR is in place. There are currently some 280 lead farmers, CSB leaders and experts in SNNPR who have received training in Ejere and can be expected to support such a process. In the meantime, many of them have achieved central positions in the decision-making system. Others are still waiting for a continuation of the project in their zones and districts. The farmers involved are highly motivated and deeply committed, as the programme is associated with hopes for the future. Throughout the region, there is massive demand for memberships as well as for scaling out community seed banks.

The SNNPR can provide an unprecedented

opportunity for developing community-based agrobiodiversity management. Indeed, this could attract global attention, by demonstrating how the authorities, NGOs and grassroots initiative can work together, utilizing community-based agrobiodiversity management to alleviate poverty, develop livelihoods and generate empowerment and hopes for the future.

Members of the CCA in Sigeda were asked how their CSB could best be supported. They were well prepared for the question, and had no difficulty in expressing their needs:

- expand the storage capacity for seeds as well as the field gene bank and the demonstration fields
- have a sufficient number of jute/sisal sacs for seeds that ventilate well, and enough wooden racks to put them on, to ensure optimal storage conditions and minimal post-harvest losses
- have access to relevant trainings and exposure visits (new members should be able to visit Ejere)
- provide access to relevant trainings for youth and women in particular
- ensure access to more local varieties from the national gene bank, other CSBs and other locations, to increase the diversity available in their CSB
- support the production of higher volumes of seed, to enable more persons to join the association
- strengthen the youth section, in particular with regard to their beekeeping income-generation activities – and, most importantly, help them to obtain the required materials
- ensuring enough material to the women’s group, for building fuel-saving stoves
- enable office/meeting space for the women’s and youth groups
- expand income-generating activities
- enable the CSB to engage in seed business, selling their seed to other farmers and elsewhere.

In the view of this evaluator, this list gives a very useful account of the situation and the needs of Sigeda CCA. Should EOSA/DF re-engage in Sigeda, the list can be taken as a point of departure for support. In addition, the evaluator would suggest the following:

- improving the procedures concerning the storage, documentation and regeneration of

seeds in the CSB, including awareness of why such a back-up system is important

- improving and expanding the systems of participatory variety selection for the development of promising local varieties to adapt them to climate change, other changing environmental conditions, and farmers’ preferences, to ensure optimal benefits to the farmers, as in Ejere
- providing sufficient furnishings and equipment for maintaining the CSB and the association, with a view to enabling the association to acquire such items on their own in future
- establish a clear strategy for phasing out the support, ensuring that the association is financially sustainable, and will continue to have access to sufficient technical and institutional backstopping also in the future.

The two lists above could also serve as points of departure for supporting other CSBs in the SNNPR that had been supported by EOSA/DF under the CBAM programme.

7.2.3 Conditions for the success of future interventions: the role of EOSA

The success of future interventions relating to community-based agrobiodiversity management depends on a range of factors: especially important are the role of EOSA, collaboration with the local authorities and institutions, sound models for catching up (in SNNPR) and scaling out (all areas), and creating a network or similar set-up to ensure the provision of services needed by CSBs, also after they have achieved financial sustainability. Finally, research and documentation are important, and further developing and distributing the current unpublished manual as a high-quality tool would be central to any upscaling efforts. EOSA is at the core of all these developments, and their ability to handle these factors is central to further success, also in terms of sustainability.

EOSA is a pioneer in community-based agrobiodiversity management. The EOSA model stands as a global beacon, outstanding in its approach to conservation, adaptation, development and utilization of local varieties and populations through participatory methods, as described above. EOSA staff are highly qualified and committed, with a high level of technical professionalism. However, the organization is struggling with capacity constraints, financial

restraints due to specific Ethiopian regulations on limits for administrative expenses of NGOs (probably to be lifted, as of 2018), and challenges relating to coordination of activities and staff collaboration. These constraints make EOSA vulnerable to staff turnover, and pose limitations to the expansion of its activities.

There is no other organization like EOSA in Ethiopia (or most of Africa – or most of the world, for that matter). EOSA is a highly valuable organization, and it is of utmost importance that the internal challenges can be solved, so that the organization can prosper and realize its true potential.

Solving the challenges addressed here is vital to further development of the activities of EOSA. However, this cannot be done by simply calling for changes to happen. Institutional support is required. In order to be of assistance to the organization, such support must be designed in a collaborative manner. This evaluator feels that EOSA needs close coaching from a person with experience in organizational development and with an attitude of respectful listening and helping. Such a coach should provide recommendations as well as support for their implementation, so that EOSA can overcome its institutional challenges and further develop its potentials.

As part of a coaching approach, it is important to assist EOSA to improve its communication work. As a minimum, the organization needs a website and publications documenting its activities; resources and manpower must be allocated towards that end. Discussion and exploration of ways and means to achieve that would be an important part of a coaching assignment.

In future, the core role of EOSA would be threefold: (1) to strengthen the CSBs/FCAs/CCAs already established, to enable their independence and further development based on own resources; (2) to serve 'independent' CSBs/FCAs/CCAs with technical backstopping upon request and offer trainings and exposure visits important to ensure the continued quality of their operations and their further development; (3) to develop a strategy for scaling out experiences. This makes it vital for EOSA to continue developing its model to accommodate the needs of the target groups, as pointed out in this evaluation. Here is a list of further points on how

such a core role could be developed:

- ensure that the 20% interest for the revolving seed stock paid by the members is used according to the intentions, including covering the costs of running the CSBs/FCA
- develop a strategy/model to ensure the financial sustainability of the associations/CSBs
- develop a strategy/model on support mechanisms to enable market access for promising locally adapted varieties
- develop further options for income-generating projects for members and groups as well as for the FCA/CCA as such, in order to cover their operating costs
- prepare an exit strategy for EOSA/DF support for all CSBs/FCA/CCAs where EOSA/DF are or will be involved to ensure a soft and well-prepared transformation to independence, in order to enable their sustained operations and further development on their own
- establish a network or similar to assist CSBs/FCA/CCAs that have received direct support from EOSA/DF but are no longer receiving such support – to ensure that they have access to sufficient quality technical and institutional backstopping; can acquire seeds from the national gene bank at the Ethiopian Biodiversity Institute, other CSBs or other localities if they so wish; have access to relevant information that may help them improve their operations; and are invited to trainings and exposure visits
- seek to develop a model for crisis intervention for situations where CSBs/FCAs/CCAs risk or experience environmental hazards, political turmoil or other situations that may challenge their operations or existence. Such a model might entail a seed security fund under EOSA, established for the purpose of support in such situations, and strategies for carrying out such support. A model/fund should be developed in close collaboration with relevant donors.
- develop a model for establishing seed storage facilities (or satellite seed banks) in villages located far away from the CSBs, to reduce transport costs/labour
- develop a model for scaling out CBAM experiences in Ethiopia, taking the recommendations in this report into consideration
- serve as a hub for community-based agrobiodiversity management in Africa, with global outreach.

7.2.4 Conditions for success: collaboration with local authorities

EOSA has developed well-functioning relations with local authorities, generally with a high level of commitment from these authorities. It is essential to continue to develop and maintain collaboration with the local authorities along these lines.

Such collaboration may take place at various levels. At the lowest level, the authorities understand what the CSBs are about and do not obstruct their activities. At the next level, they seek to support these activities with advice and trainings, as in Ejere. And, at a further level, they adopt the model or parts of it, and seek to scale out activities in the district/zone/region for which they are responsible, as in SNNPR.

It is important to keep up the good work. In addition, the collaboration model may be further developed, so as to enable local experts to engage in technical backstopping of CSBs/FCA that no longer receive EOSA/DF support. Such experts must have the required knowledge and approach, e.g. achieved through trainings, exposure visits and communication, and they must keep contact with EOSA regarding new developments. A model to ensure this would be useful, not least in view of the often high staff turnover.

It is also possible to develop a facilitation model for local/regional authorities wishing to engage in scaling out CBAM experiences. Important requirements for such a model would be a manual, organising training and exposure visits, and facilitating institutionalised technical backstopping from EOSA.

7.2.5 The importance of documentation and research

EOSA is a research NGO, and, thanks to figures like Regassa Feyissa and Dr Bayush Tsegaye, it has a strong academic standing. Earlier background reports have noted the high level of research behind the EOSA model. However, due to capacity constraints and institutional issues, this potential cannot be utilized to its full extent. There has been very little documentation of the model, or of experiences with using it. EOSA has no website, and there is only one small leaflet presenting the organization.

Documentation is essential, for several reasons: to show the world what has been achieved, and

thereby attract recognition and further support; to learn from experience, in order to further develop the approach; and thirdly, to enable other initiatives and institutions to learn from the experience, to enable out-scaling.

Documentation may also impact on policies and strategies at the national and regional levels. For example, the locally adapted variety of traditional purple-seeded wheat known for its outstanding nutritious quality, flavour and aroma – which is a good substitute for teff in making injera and has straw that cattle find highly palatable – is now as high-yielding as commercial improved varieties, according to farmers interviewed for this evaluation (if, as they noted, organic methods are correctly applied). This sort of information has great potential, and could make it possible to produce a grain variety like this, in many parts of Ethiopia, a variety that is far better than commercial varieties as regards nutrition, taste, uses (commercial wheat is not suitable for injera) cattle fodder, etc. A market could be created for locally adapted varieties. However, first correct documentation is required to validate the information provided by the farmers on yields and other properties.

Research provided the basis for the original EOSA model. It is important to continue with research also in the follow-up. What are the conditions for success of the model? What can be learned from challenges and problems? In which areas could the experiences be out-scaled successfully? How can the model best respond to the needs of those living there? These are some of the many questions that are relevant for research that could guide further activities. Enabling such research would be highly advantageous to the further development of the CBAM approach.

7.2.6 Manual for establishing and operating CSBs

A manual based on the CBAM approach is sorely needed. Such a manual would provide the foundation for strengthening established CSBs/FCAs/CCAs, guiding processes from the initial steps and until fully fledged operations, as well as for scaling out the experiences. A first version of such a manual was compiled in Amharic in 2017 but has limited distribution so far, due to lack of funds. Also, a first translation into English is with EOSA, but has not yet been finalized and published. Support for reprint and distribution of the Amharic version, translation into other relevant languages and finalization and

publication of the English version of the manual is required to ensure that it reaches out to all target groups and stakeholders.

A second edition of the manual could include illustrations with practical examples from existing CSBs and their associations, also highlighting the impacts, and provide other resources relevant to farmers, officials and experts wishing to establish or be involved in CSBs following the EOSA model of community-based agrobiodiversity management. As the model is further developed, the manual should continue to be revised at regular intervals, as also envisaged by EOSA.

7.2.7 Catching up and scaling out

It is important that DF can find ways and means to continue what was started in the SNNPR. This may entail scaling down the current involvement in new districts since 2017, where relevant and possible. Further, it is essential to ensure that EOSA has the capacity to take on responsibility for such involvement in the SNNPR, as has been described above, working together with local institutions.

In Oromia and Amhara regions it might be possible for EOSA to scale out successful experiences on a district basis, in collaboration with agricultural extension services, provided it EOSA has the required institutional capacity. That could involve establishing one or two new CSBs elsewhere in the same district or in neighbouring districts of existing CSBs, with the already-established CSBs functioning as a resource sites. In the selection of new sites, the point of departure should be farmers' needs and requirements, as well as the commitment of the relevant authorities, along with other parameters used by EOSA.

EOSA must have a clear strategy for financial sustainability of the initiatives supported, and a clear exit strategy explicitly pointing out when and how to phase out its involvement. Such a phase-out could be followed by a network that can provide access to technical and institutional backstopping, trainings and exposure visits (and possibly a seed security fund under EOSA in case of emergency), while the FCA/CCA carry the full responsibility for their own operations (and with state funding where relevant and possible).

If EOSA manages to solve the issue of financial

sustainability and develop an exit strategy for CSBs, that will free their capacity for new initiatives. In any case, it is important to establish a network or something similar, to ensure the availability of some basic services to CSBs that stand on their own. This has been described above; the evaluator regards it as an essential element in an exit strategy, to ensure sustained success after the end of direct support.

8. Conclusions and recommendations

Community-based agrobiodiversity management, as practised by EOSA/DF in the CBAM-programme in Ethiopia, is a well-designed and powerful tool to ensure seed and food security and to improve the livelihoods and living conditions of small-scale farmers, while also ensuring that crop diversity and soil resources will be available for future generations to meet their needs.

8.1 Conclusions

The following conclusions present the points highlighted in this evaluation.

A. Relevance: The CBAM programme is of profound relevance to the target groups, as it addresses their basic needs with regard to seed and food security, improved nutrition and income generation to meet household needs and to enable families to send their children to school. All the farmers consulted in connection with this evaluation stressed the vital importance of the programme in this regard. They emphasized the importance of reintroducing and restoring local varieties and continuously adapting them to the changing climate and farmers' preferences as a vital means for food security. Greater vegetable diversity to improve nutrition has been highly appreciated, and the introduction of efficient means of organic production to increase yields and quality of the produce is considered of great relevance not only for these reasons, but also as it improves soil health. Reduced dependency from expensive chemical fertilizers is of crucial relevance to the target groups in economic terms, as they find it very hard to afford to purchase such expensive inputs. Moreover, chemical pesticides are seen as hazardous to health. Reducing the expenditures for such inputs, combined with higher productivity and income generation has been of great relevance to improving family finances. The income-generating projects involving fuel-saving stoves was also highly relevant to improving women's living conditions, in terms of workload and reduced smoke exposure inside their houses. The

social profile of the CSBs targets families living under particularly difficult conditions, making this measure of special relevance to them. Further, the target groups greatly appreciate the possibilities for capacity building, sharing experiences and learning from other community seed banks. It also helps to boost self-esteem, especially among the women participants.

The programme has been highly relevant to the policies, strategies and plans in Ethiopia (to which it has also contributed). Agricultural policies today are far much more conducive to agrobiodiversity and organic methods than only 10 years ago, due largely to climate change. In the Southern Nations, Nationalities and Peoples Region (SNNPR), a strategy has been adopted for scaling out CSBs throughout the region as a means of achieving food security and poverty alleviation through community-based agrobiodiversity management. In other parts of Ethiopia, the local authorities wish to scale out the experiences as well. Indeed, the CBAM approach is now more relevant to Ethiopian priorities than ever. It is also highly relevant the country's commitments to international agreements and goals, such as the International Treaty on Plant Genetic Resources for Food and Agriculture, the Convention on Biological Diversity and to the Sustainable Development Goals. The objectives of the CBAM – sustainable adaptation to climate change among farmer communities by enhancing the capacity of farming communities to manage, develop and utilize local agro-biodiversity sustainably as an adaptive mechanism – are just as relevant now as when the programme started – perhaps even more so.

B. Impact: The impacts of the CBAM programme have been impressive. Not only has lost crop diversity in these centres of crop origin and diversity been reintroduced and restored, varieties have also been adapted to climate change and further improved to accommodate the needs of local farmers. In Ejere alone, 142

varieties of 15 species were restored and 9 new varieties were developed on this basis. Not only programme participants but most farming families in these areas have benefited. Farmers gave impressive accounts of how the programme, with all its various components, has transformed their lives – from poverty and hunger, to seed security, better food and nutrition security, greatly improved livelihoods, and enhanced capacity, self-esteem and confidence. The CBAM approach serves as a platform for food security, poverty alleviation and development, all extremely important to local communities. Women benefit on an equal basis with men. In addition, the arena function of the CSBs is an important benefit for women, enabling them to get out of their houses, develop their own capacities and join forces with other women. The programme has also greatly impacted on policies in Ethiopia, most notably as regards seed policies and agricultural policies. Authorities in various parts of the country wish to scale out the experiences to enable more communities to benefit from this approach, which they recognize as a bottom-up approach to dealing with major challenges related to food security in times of climate change, and to developing livelihoods and building self-esteem.

C. Sustainability: The CBAM model is highly sustainable along several parameters, but not all. Motivation is generally high among members as regards maintaining operations. In institutional terms, the organizational set-up is democratic, legitimate and transparent, and the support of local authorities is ensured. Technical capacity among members is generally high, although perhaps less so in the SNNPR, because of the shorter project period. Extension services and biodiversity experts (in SNNPR) provide good technical backstopping but need further capacity-building to meet the needs here. The greatest challenge concerns financial sustainability. Even well-established CSBs are still dependent on support from EOSA/DF. Those CSBs that do not receive such support any longer suffer, lacking funds to cover their operating costs and expand their revolving seed stocks. This problem can probably be solved if the principles of operation of the revolving seed stock are made clear and are followed more closely. Also, possibilities of income generation for the CSBs can be

considered. A special sustainability challenge has evolved in the SNNPR where the DF provided support through EOSA for three years. Seven out of eight CSBs made substantial progress during this period, and the institutional conditions and policy support were highly conducive. The decision of the DF to discontinue the support after 2016 in order to move to new areas, partly with new partners, and build CSBs there was not only discouraging and deeply frustrating for those involved in SNNPR – it was in fact not sustainable with a view to enabling the CSBs to continue operations on their own. That the farmers have managed to keep their CSBs alive without any external support shows their immense commitment and belief in the importance of the CBAM approach for food security and livelihoods in these hunger-prone areas. However, the need for technical backstopping and support to enable the potential of the CSBs to unfold has remained critical.

D. Central conditions for future success of the CBAM approach: Most EOSA-facilitated CSBs evaluated here have been successful, including the CSBs in Ejere, Chefe Donsa and Ollenkomi in Oromia; in Siya Debir in Amhara; and in Sigeda, Shiyamba Kalene, Horsenso, Gozamba Musha, Mino, Kambata Tamabro and Bayide in the SNNPR. The limited success of the CSBs in the SNNPR must be seen in the context of the short duration of project support, which was not sufficient to enable the full potential to develop. The support stopped before the internal capacity of the FCA was developed to the level required to manage the main functions of the CSBs. The necessary conditions for future success of the CBAM approach include sufficient institutional capacity on the part of EOSA, achieving financial sustainability as outlined above, and developing sustainable exit strategies for external support. Also marketing opportunities and further avenues for income generation need to be developed to realize the full potentials of the CSBs. A further condition for future success is continuation of the support that had been started in the SNNPR, and careful selection of sites for expansion in the districts/zones where the CBAM approach has been introduced. Finally, there must be systematic training of extension service and biodiversity experts to follow up the CSBs whose external support has been phased

out, to free capacity for EOSA to scale out the experiences and set up a network for EOSA-supported CSBs to offer trainings, exposure visits and some technical backstopping of established CSBs.

E. DF follow-up: The CBAM approach has been a great success, despite several issues related to financial sustainability, for which this evaluation has proposed solutions. The DF's longstanding commitment to EOSA and the CBAM approach has been instrumental in this regard. The DF has been a professional dialogue partner and has been both flexible and supportive of the development of CBAM. However, some challenges have surfaced. On several occasions from 2012 and onwards, the DF sought to get EOSA to collaborate with other NGOs in order to develop the capacities of these other NGOs to establish CSBs. EOSA has not seen this as an effective way of working, and the results have not been satisfactory thus far. Moreover, this approach replaced the DF engagement in the SNNPR, abruptly halting very promising developments which had the potential of showcasing how CBAM can be scaled out in a region within the framework of a regional strategy and institutional structures and support provided by relevant authorities. The reason for this decision was that the DF wished to focus on new partners that had been recruited through a call for applications. It is the opinion of this evaluator that such calls are not the best way of recruiting to long-term partnerships with regard to CBAM; further, that engaging EOSA to teach new partners how to establish CSBs is a waste of valuable capacity and energy, and that the decision to stop support to the most promising developments in the SNNPR was not a wise decision. It is essential now to seek better dialogue with EOSA, to listen carefully to their experiences and priorities, and to pay attention to their challenges.

8.2 Recommendations

Based on this evaluation, the following recommendations are offered:

1. Documentation required: It's harvest time! (– and EOSA and DF deserve credit!)

The DF has invested comprehensive resources and engagement in developing agrobiodiversity management in Ethiopia – in partnership with

EOSA, with significant results. These results are known among those who have been involved, and to some extent to visitors and evaluators, but remain a well-kept secret to the rest of the world. Experiences should be documented and communicated widely. In particular, documentation is needed on the advantages of traditional varieties as experienced by farmers, on yield/input calculations with regard to enhanced traditional varieties, and on CBM methods, practices, experiences and benefits. Such documentation would be important to guide further programme development of the DF as well as of other donors. This evaluation constitutes a beginning, based on qualitative research. Also quantitative methods are required to document the achievements in further detail. Not least: it is time to publish a manual for CSBs in Ethiopia – for use by the CSBs themselves, for extension service and biodiversity experts involved in providing guidance for CSBs, for policy-makers and others involved in developing the framework conditions for CSBs, and for the purpose of scaling out the experiences in Ethiopia. EOSA has produced a first unpublished version, with limited distribution. To support EOSA in further developing, translating into relevant languages and publishing this manual is highly recommended. Thereby wide distribution should be ensured.

2. Ensure financial sustainability and an exit strategy for external funding

The CBAM approach is comprehensive and successful, but financial sustainability/ exit strategy for external funding is lacking. As pointed out in this report, it is probably feasible within the operations of the CSBs to generate the funds required for covering operating costs. EOSA should develop a clear strategy for making the CSBs financially sustainable with regard to maintaining their core functions. Due to limited capacity, EOSA and the DF might collaborate in this endeavour. An exit strategy does not mean that EOSA should stop having contact with established CSBs. EOSA might wish to consider establishing an informal network or something similar, to maintain contact, offer training and exposure visits, and some level of technical backstopping. Technical backstopping may be provided on a more regular basis by extension service and biodiversity experts. EOSA might

consider training extension service staff and biodiversity experts involved in supporting established CSBs at regular intervals to ensure the quality of their guidance. Furthermore, EOSA might consider establishing a guarantee fund or similar in case of disasters that may threaten the further existence of CSBs established by EOSA. Close dialogue with partners like the DF would be useful in this context.

3. Capitalize on the investments: A road map to show the way for scaling out CSBs

CBAM is a quite new and innovative approach. It has taken many years to develop it into the success that it has become today. The demand for scaling out the experiences is high in Ethiopia, among farmers as well as local, zonal and regional authorities that have been exposed to CSBs. If a solution can be found for ensuring financial sustainability, as noted above, such an approach to scaling out could involve: (a) institutional support to EOSA, to enhance their capacity to follow up and further develop the CBAM approach along with the needs of the target groups; (b) documentation of experiences, including a manual for CSBs, as noted above; (c) careful selection of sites for expansion, based on research, preferably within the districts/zones of established CSBs, which can function as resource sites; (d) systematic training of extension service staff and biodiversity experts for them to follow up the CSBs with high-quality technical and institutional back-up, thereby freeing EOSA capacity to proceed with new CSBs; (e) developing an informal network for EOSA-supported CSBs, to enable technical backstopping from EOSA when required, and to offer regular training and exposure visits to members, before and after the phasing out of project support; (f) developing a value-chain approach to enable market access for certain products at fair prices, including through the farmers' cooperative unions; and (g) develop further opportunities for income generation for the CSBs and their members.

4. Continue where the DF left in the SNNPR

As explained above, the SNNPR has the most promising framework conditions in all Ethiopia for achieving success with the CBAM approach. It was indeed a mistake to withdraw DF support to SNNPR. However, it is not too late to make amends here: DF is recommended to continue

what it started through EOSA with regard to the eight CSBs that were supported, and to consider expanding operations in the SNNPR. That should take place as soon as possible, provided EOSA can ensure the institutional capacity required and the issues regarding financial sustainability and exit strategies can be solved. The lists of recommended priorities for funding provided in section 7.2.2 may be taken as a point of departure for developing the collaboration.

5. Time dimension: Agrobiodiversity work requires long-term commitment and partnership

Engagement in agrobiodiversity management takes time, in terms of capacity building as well as conservation and participatory variety selection. After many years, a successful approach is now available, but many more years will be needed to scale out the experiences. For each CSB it may take 5 – 8 years to develop and establish the capacity, structures, processes and operations required. However, to unleash the full potentials of CSBs, scaling out is important and requires a much longer time-horizon. DF will need to be able to serve as a professional partner in this work, providing basic knowledge within the area and commitment to long-standing partnerships.

6. Learning across borders

EOSA has developed an approach that may be of great inspiration for organizations in other parts of the world working with community-based agrobiodiversity management. DF partners in other countries could benefit greatly from learning how EOSA conserves and adapts local crop diversity to climate change and the preferences of local farmers, improving yields and quality. Moreover, EOSA could learn from LI-BIRD in Nepal, with regard to micro-credit schemes, income generation and creating access to markets. EOSA could also benefit from learning about the financial sustainability of CSBs in Nepal. Such learning from experiences in Nepal could be of great value to EOSA and the CSBs in Ethiopia, and vice versa. Also exchange on the development of value-chain approaches to the marketing of diversity-based produce would be mutually beneficial for further developing the potentials for economic returns from crop diversity to the farmers involved.

Attachments

A. List of documents and literature

Programme documents

Applications from EOSA to DF:

- Agricultural Biodiversity Project Proposal Ethiopia, 2010
- Agricultural Biodiversity Project Proposal Ethiopia, 2011–2014
- Community-based Agrobiodiversity Management (CBAM) Proposal 2011–2015

Reports from EOSA to DF:

- Community-based Agrobiodiversity Management (CBAM) – Africa (Ethiopia) Annual Report 2011
- Community-based Agrobiodiversity Management (CBAM) – Africa (Ethiopia) Annual Report 2012
- Community-based Agrobiodiversity Management (CBAM) – Africa (Ethiopia) Annual Report 2014
- Community-based Agrobiodiversity Management (CBAM) – Africa (Ethiopia) Annual Report 2015
- Report of Survey and Analysis of Progress of the Implementation of Project Strategies and Actions in Eastern Showa, 2014
- Survey Report of Newly Established CSBs in Southern Nations Nationalities and Peoples Region, Ethiopia.
- Project Completion Report. ABC Ethiopia 2012–2016

Other programme-related documents from EOSA:

- Teshome Hunduma Mulesa, 2015: *Report on ABC Programme Review in Ethiopia*. DF
- Samson Gashu, 2014: *Report on the newly established community seed banks. Survey at SNNP region state*. EOSA
- EOSA, 2014: *Spatio-temporal study of no-farm occurrence of crop genetic diversity in Ejere and Chefe programme sites*. EOSA
- Teshome Hunduma Mulesa and Samson Gashu, 2013: *Report of the Feasibility Study to Scale Out Community Seed Bank (CSB) Practices in Ethiopia*. DF/EOSA

Documents of historic value:

- King, Israel Oliver, Bharat Bhandari, Sergio Guilherme de Azevedo and Kumar Natarajan, with Genene Gezu, Samson Gashu and Temesgen Desalegn, 2010: *Global Study on CBM and Empowerment – Ethiopia. Exchange Report*. Wageningen: Wageningen University and Research
- PGRC/E, 1986: *Ten Years of Collection, Conservation, Utilization 1976–1986*. Addis Ababa: Plant Genetic Resources Centre, Ethiopia. <http://publication.eiar.gov.et:8080/xmlui/handle/123456789/1838>
- Universalia, 1999: *Planting for the Future. CBDC Network Programme Evaluation*. Montréal/Quebec: Universalia

Selected policy documents:

Proclamation No. 481/2006: Plant Breeders' Rights Proclamation. Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia. Vol. 12 No. 12, 27 February 2006, pp. 3339-3352.

Proclamation No. 482/ 2006: Access to Genetic Resources and Community Knowledge, and Community Rights Proclamation. Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia, Vol. 13, No. 13, 27 February 2006, pp. 3353-3373

Proclamation No. 782/2013: Seed Proclamation. Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia, Vol.6, No.36, 6th June, 2000. pp. 1317-1330.

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Andersen, Regine, 2016: 'Farmers' Rights – Evolution of international policy debate and national implementation'. In: Halewood, Michael (ed), pp 129 – 152.

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Berg, Trygve, 1992: 'Indigenous Knowledge and Plant Breeding in Tigray, Ethiopia'. In: *Forum for Development Studies* No 1, 1992, pp 13–22.

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Dalle, Sarah Paule and Susan Walsh, 2015: 'USC Canada's experience in supporting community seed banks in Africa, Asia and the Americas'. In: Vernooy, Ronnie et al. (eds.): *Community Seed Banks: Origins, Evolution and Prospects*, pp 212–229. Earthscan/ Routledge.

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<https://www.fni.no/getfile.php/131864-1469869789/Filer/Publikasjoner/FNI-R0706.pdf>

Friis-Hansen, Esbern and Bhuwon Sthapit (eds.), 2000: *Participatory approaches to the conservation and use of plant genetic resources*. Rome: IPGRI.

Halewood, Michael (ed): *Farmers Crop Varieties and Farmers' Rights, Challenges in Taxonomy and Law*, pp 129 – 152. London/New York, Routledge.
https://www.biodiversityinternational.org/fileadmin/user_upload/Farmers_crop_varieties-Halewood.pdf

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Thijssen, Marja H. et al. (eds.), 2016: *Farmers, seeds and varieties. Supporting informal seed supply in Ethiopia*. Wageningen: Wageningen International.

Worede, Melaku, Awegechew Teshome and Tesfaye Tesemma, 2000: 'Participatory approaches linking farmers' access to genebanks: Ethiopia', in Friis-Hansen, Esbern and Bhuwon Sthapit (eds.), pp 56–61.

B. List of interviews and interviewees in Ethiopia

Thursday 1 November:

Meeting with EOSA, EOSA's office in Addis Ababa

1. Regassa Feyissa, Executive Director, EOSA (M)
2. Bayush Tsegaye, Program Advisor, EOSA (F)
3. Bedilu Tafesse, Programme manager, EOSA (M)

Thursday 1 November:

Meeting with MELCA, MELCA's office in Addis Ababa

1. Bereket Welde Giorgis, Programme manager, MELCA (M)
2. Mersha Yilma, Planning, monitoring and resources mobilization senior coordinator, MELCA (M)

Friday 2 November 2018: Meeting with the Executive Committee of Ejere Farmer Conservator Association (FCA), Ejere Community Seed Bank

1. Tigist Alemayehu, Chairperson, Women's Group, Ejere FCAS, Executive Committee (F)
2. Eshetu Nugusse, Store keeper, property control, Ejere FCAS, Executive Committee (M)
3. Demissew Wudneh, Chairperson, Ejere FCAS, Executive Committee (M)
4. Assefu Ayano, Cashier, Ejere FCAS, Executive Committee (M)
5. Eshete Lemma, Auditor, Ejere FCAS, Executive Committee (F)
6. Tadese Reta, Member, Ejere FCAS, Executive Committee (M)
7. Abebe Demsse, Secretary, Auditor, Ejere FCAS, Executive Committee (M)
8. Abera Tasew, Seed Quality Control Committee, Ejere FCAS, Executive Committee (M)
9. Mekuria Negese, Seed Quality Control Committee, Ejere FCAS, Executive Committee (M)
10. Taye Biru, Seed Quality Control Committee, Ejere FCAS, Executive Committee (M)

Friday 2 November 2018:

Meeting with the members of Ejere Farmer Conservator Association (FCA), Ejere Community Seed Bank

1. Gemechu Telila, Member, Ejere FCAS (M)
2. Bekele Gurmu, Member, Ejere FCAS (M)
3. Tesfaye Yami, Member, Ejere FCAS (M)
4. Almaz Negash, Member, Ejere FCAS (F)

5. Ababo Bedishu, Member, Ejere FCAS (F)
6. Elfinesh Tesfaye, Member, Ejere FCAS (F)
7. Tesfaye Boke, Member, Ejere FCAS (M)
8. Bekele Alemu, Member, Ejere FCAS (M)
9. Girma Chukala, Member, Ejere FCAS (M)
10. Alemu Tulema, Member and pioneer farmer, Ejere FCAS (M)
11. Sintayehu Alemu, Member, Ejere FCAS (M)
12. Dachew Tilahun, Member, Ejere FCAS (M)
13. Fikadu Boke, Member, Ejere FCAS (M)
14. Abebech Deresu, Member, Ejere FCAS (F)

Friday 2 November 2018:

Meeting with women members of Ejere Farmer Conservator Association (FCA), Ejere Community Seed Bank

1. Tigist Alemayehu, Chairperson, Women's Group Ejere FCAS, Executive Committee (F)
2. Eshete Lemma, Auditor, Ejere FCAS, Executive Committee (F)
3. Elfinesh Tesfaye, Member, Ejere FCAS (F)
4. Abebech Deresu, Member, Ejere FCAS (F)
5. Almaz Negash, Member, Ejere FCAS (F)
6. Ababo Bedishu, Member, Ejere FCAS (F)

Friday 2 November 2018:

Meeting with representatives of Lumme District Agriculture and Natural Resources Office and Lumme District Cooperative Office, Ejere Community Seed Bank

1. Mengistu Kibrat, Organizer, Lumme District Cooperative Office (M)
2. Ayele Seifu, Organizer (M)
3. Tadesse Demisie, Deputy Head of Office, Lumme District Agriculture and Natural Resources Office (M)

Saturday 3 November 2018:

Farm visit, Ejere

1. Ayelu Dinku (with family), Farmer and Member, Ejere FCA (M)

Saturday 3 November:

Meeting with non-members, Ejere Community Seed Bank

1. Buta Guta, Farmer, Non-member (M)
2. Bekele Wedajo, Farmer, Non-member (M)
3. Bekele Tesfaye, Farmer, Non-member (M)
4. Tamiru Yirgu, Farmer, Non-member (M)
5. Sisay Taye, Farmer, Non-member (M)
6. Alemu Hero, Farmer, Non-member (M)
7. Gezahegn Beriso, Farmer, Non-member (M)

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8. Fikadu Telila, Farmer, Non-member (M)
 9. Girma Abebe, Farmer, Non-member (M)

Saturday 3 November:

Guiding at stow production site at Ejere Community Seed Bank

1. Tigist Alemayehu, Chairperson, Women's Group, Ejere FCA (F)
2. Eshete Lemma, Auditor (and member of the Womens' Group), Ejere FCA (F)

Saturday 3 November 2018:

Farm visit, Ejere

1. Alemiye Abebe, Farmer and Member, Ejere FCA (F)
2. Taye Biru, Farmer and Member, Ejere FCA (M)
3. Yeshi Ayele, Farmer and Member, Ejere FCA (F)

Monday 5 November:

Meeting with the Biodiversity Development and Conservation Directorate of the Southern Nations, Nationalities and Peoples Region (SNNPR), Hawassa

1. Melaku Bafa Tumiso, Director, Biodiversity Development and Conservation Directorate of the SNNPR (M)

Monday 5 November:

Meeting with the Hawassa Biodiversity Centre, Hawassa

1. Fikerte Assefa Kebede, Director, Hawassa Biodiversity Centre (F)

Tuesday 6 November 2018:

Meeting with the Executive Committee of Sigeda Crop Conservator Association (CCA), Sigeda Community Seed Bank

1. Detamo Aga, Chairperson, Executive Committee of Sigeda CCA (M)
2. Lagebo Lechebo, Secretary, Executive Committee of Sigeda CCA (M)
3. Lire Darge, Controller, Executive Committee of Sigeda CCA (M)
4. Desalegn Chefamo, Controller, Executive Committee of Sigeda CCA (M)
5. Ganamo Guracha, Vice Chairperson, Executive Committee of Sigeda CCA (M)
6. Adimasu Detebo, Chairman of the Kebele, Executive Committee of Sigeda CCA (M)
7. Markos Erebetto, Cashier/accountant, Executive Committee of Sigeda CCA (M)
8. Kabede Ashamo, Member/committee leader, Executive Committee of Sigeda CCA (M)

9. Aberash Molito, Member, Executive Committee of Sigeda CCA (F)
10. Amharech Lolemo, Member, Executive Committee of Sigeda CCA (F)
11. Desalech Sehile, Member, Executive Committee of Sigeda CCA (F)

Tuesday 6 November 2018:

Meeting with the members of Sigeda Crop Conservator Association (CCA) and other stakeholders, Sigeda Community Seed Bank (members were mainly addressed)

1. Yohanise Handebo, Head, Soro District Environment Protection and Forest Development Office (M)
2. Temesgen Dagebo, Team leader, Soro District Biodiversity Team (M)
3. Alamu Lafamu, Farmer/member, CCA (M)
4. Ganamu Gosamo, Farmer/member, CCA (M)
5. Kebede Ashano, Farmer/member, CCA (M)
6. Detamo Aga, Chairperson, Executive Committee of Sigeda CCA (M)
7. Alamu Ashamo, Farmer/member, CCA (M)
8. Lagebo Lechebo, Secretary, CCA (M)
9. Markos Erebetto, Cashier/accountant, CCA (M)
10. Lire Darge, Controller, CCA (M)
11. Desalegn Chefamo, Controller, CCA (M)
12. Mengesha Dubamo, Farmer/member, CCA (M)
13. Amarche Lechamo, Women Assistant, Soro District Biodiversity Team (F)
14. Alemine Abose, Expert, Kebele (M)
15. Abebe Ashamo, Farmer/member, CCA (M)
16. Yibeltal Tagesse, Forestry Expert, Soro District Environment Protection and Forest Development Office (M)
17. Achore Etebo, Forestry Expert, Soro District Environment Protection and Forest Development Office (M)
18. Yohanis Dilamo, Farmer/member, CCA (M)
19. Dantamo Dakamo, Farmer/member, CCA (M)
20. Ganamo Guracha, Vice Chairperson, CCA (M)
21. Adimasu Detebo, Chairman of the Kebele, CCA (M)
22. Lechamo Anshore, Farmer/member, CCA (M)
23. Dedacho Anito, Farmer/member, CCA (M)
24. Aberham Kebede, Expert, District/Zone office (M)
25. Dimore Nuramo, Expert, District/Zone office (M)
26. Dereje Yohanes, Expert, District/Zone office (M)
27. Gedion Tagesse, Expert, District/Zone office (M)
28. Misgana Bekele, Expert, District/Zone office (M)
29. Tadele Anano, Expert, District/Zone office (M)
30. Tsedeke Mandefro, Expert, District/Zone office (M)
31. Dabebe Desta, Expert, District/Zone office (M)

32. Desalche Sile, Farmer, CCA (M)
33. Dana Erisedo, Farmer, CCA (M)
34. Abere Achiso, Farmer, CCA (M)
35. Chafamo Aga, Farmer, CCA (M)
36. Ashante Osumo, Farmer, CCA (M)
37. Lechamo Anshore, Farmer, CCA (M)
38. Abule Ersulo, Farmer, CCA (M)
39. Mathose Nukuro, Farmer, CCA (M)
40. Melaku Bafa Tumiso, Regional Biodiversity Directorate, SNNPR (M)
41. Hailu Getachew, Biodiversity Expert/Leader, Hadiya Zone (M)
42. Melese Getachew, Biodiversity Expert, Hadiya Zone (M)
43. Shita Abuye, Expert, Hadiya Zone (F)
44. Desalech Saile, Farmer/member, CCA (F)
45. Amharech Dibamo, Farmer/member, CCA (F)
46. Amharech Dimbore, Farmer/member, CCA (F)
47. Delibo Ergudo, Farmer/member, CCA (F)
48. Aberash Molito, Farmer/member, CCA (F)
49. Worke Herbelo, Farmer/member, CCA (F)
50. Birhanesh Chufamo, Expert, Hadiya Zone (F)

Tuesday 6 November 2018:

Meeting with women members of Sigeda CCA

1. Shita Abuye, Expert, Hadiya Zone (F)
2. Desalech Saile, Farmer/member, CCA (F)
3. Amharech Dibamo, Farmer/member, CCA (F)
4. Amharech Dimbore, Farmer/member, CCA (F)
5. Delibo Ergudo, Farmer/member, CCA (F)
6. Aberash Molito, Farmer/member, CCA (F)
7. Worke Herbelo, Farmer/member, CCA (F)
8. Birhanesh Chufamo Expert, Hadiya Zone (F)

Tuesday 6 November 2018:

Farm visit, Sigeda

1. Alamu Lafamu, Farmer and Member, Ejere FCA (M)

Tuesday 6 November 2018:

Meeting with Soro Woreda Agriculture and Natural Resources Development Office, Sigeda

1. Tamire Tadesse Vice Administrator/ Head, Soro Woreda/ Agriculture and Natural Resources Development Office (M)
2. Tamirat Bobodo, Vice Head, Soro Woreda Agriculture and Natural Resources Development Office (M)

Tuesday 6 November 2018:

Meeting with experts from Hadiya Zone and Soro District, Sigeda

1. Hailu Getachew, Biodiversity Experts Leader,

Hadiya Zone Environmental Protection and Forest Development Office (M)

2. Melese Getachew, Biodiversity Expert, Hadiya Zone Environmental Protection and Forest Development Office (M)
3. Temessy Delebo, Biodiversity Experts Leader, Soro Woreda Environmental Protection and Forest Development Office (M)
4. Yibeltal Tagesse, Biodiversity Expert, Soro Woreda Environmental Protection and Forest Development Office (M)

Wednesday 7 November 2018:

Meeting Hadiya Zone Co-operative Office, Hossana

1. Tilahun Molla Atesso, Head, Hadiya Zone Co-operative Development Office (M)

Wednesday 7 November 2018:

Meeting with Hadiya Zone Agriculture and Natural Resources Development Office, Hossana

1. Desalegn Siraj, Vice Head, Natural Resources Development Office, Hadiya Zone Agriculture and Natural Resource Development Directorate (M)
2. Wlro Genet Haramo, Head, Coffee, Tea and Spices Development Office, Hadiya Zone Agriculture and Natural Resource Development Directorate (F)

Wednesday 7 November 2018:

Meeting with the SNNPR State Hadiya Zone Environmental Protection and Forest Development Office, Hossana

1. Tseganesh Demeke Eriso, Head, Hadiya Zone Environmental Protection and Forest Development Office (F)

Thursday 8 November 2018:

Meeting with Ethiopia Biodiversity Institute (EBI), Addis Ababa

1. Tamene Yohannes, Director, Crop and Horticulture Directorate (M)
2. Wubeshet Teshome, Leader, CSB & On-farm Conservation Case Team (M)

Friday 9 November:

Debriefing with EOSA and DF, DF office in Addis Ababa

1. Regassa Feyissa, Director, EOSA (M)
2. Bedilu Tafesse, Project Manager, EOSA (M)
3. Knut Andersen, Regional Director, Africa, DF (M)
4. Hamelmal Getachew, Country Programme

Coordinator, DF (F)

5. Sisay Kassahun, Programme Officer, DF (M)

Interviews and exchange were also carried out with Teshome Hunduma Mulesa, PhD candidate at Noragric/NMBU, Norway, and previously working with DF, with responsibility for CBAM, and with Kate Green, Programme Manager, USC Canada, per mail and telephone at different points in time.



FRIDTJOF NANSENS INSTITUTT
FRIDTJOF NANSEN INSTITUTE

Fridtjof Nansens vei 17 | P.O. Box 326 | NO-1326 Lysaker | Norway
Telephone (+47) 67 11 19 00 | E-mail post@fni.no | www.fni.no