Supporting Inclusive Rural Transformation in Ethiopia

The Case of the GIZ Sustainable Land Management Project in the Amhara Region

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

This internal working paper is produced by:
Sector Project Rural Development

Authors:
Alessandra Fiedler
Laura Bender
Boris Büchler

and
Antti Seelaff
Consultant for Sustainable Land Use

The working paper comprises findings from a field study conducted in Ethiopia in October 2017, supported by the GIZ-Sustainable Land Management Project.

Bonn, May 2018

Content

Insights into rural transformation in Ethiopia

List of Figures and Tables

List of Abbreviations

ADLI	Agricultural Development-Led Industrialisation
AGP	Agriculture and Growth Program
ATVET	Agriculture Technical Vocational Education and Training
BMZ	German Federal Ministry of Economic Cooperation and Development
CAADP	Comprehensive Africa Agriculture Development Programme
CSA	Central Statistical Agency of Ethiopia
DA	Development Agents
DFATD	Canadian Department of Foreign Affairs, Trade and Development
DHS	Ethiopia Demographic and Health Survey
FTC	Farmers' Training Centres
GDP	Gross Domestic Product
GIZ	German Development Cooperation
GIZ-SLM	GIZ Support Project to the National Sustainable Land Management Program
GTP	Growth and Transformation Program
IAIP	Integrated Agro-Industrial Parks
ISFM	Integrated Soil Fertility Management
MoANR	Ministry of Agriculture and Natural Resources
NRM	Natural Resource Management
PFM	Participatory Forest Management
PIF	Policy and Investment Framework
PSNP	Productive Safety Net Program
RED-FS	Rural Economic Development and Food Security Working Group
RJOC	Rural Job Opportunity Creation Strategy
RTC	Rural Transformation Centres
SIDA	Swedish International Development Cooperation Agency
SLM	Sustainable Land Management
SLMP	Ethiopian Sustainable Land Management Program
SO	Strategic Objective
WUA	Watershed User Association
WB	World Bank

Executive Summary

While different patterns of rural transformation have been widely discussed at development policy level in the past years, translating these discussions into actionable knowledge for the design and implementation of development projects has lagged behind. This study therefore set out to analyse how a rural development project, in this case the German development cooperation's Sustainable Land Management project in Ethiopia (GIZ-SLM), contributes to fostering inclusive rural transformation processes within its interventions and what lessons can be drawn from the Ethiopian case.

Rural transformation processes were understood in this study as change processes that take place in rural areas and go beyond transformations in the agricultural sector to include broader changes of the structure of the local economy, political governance and social fabric in these areas.[1] *Sustainable* and *inclusive* rural transformation describes the goal of shaping these change processes in a manner that offers economic and social prospects for rural populations, and especially disadvantaged populations groups such as women and youth, while respecting the ecological boundaries of rural areas.

In order to understand how the GIZ-SLM project's interventions are placed within the change processes witnessed in rural areas in Ethiopia, the main structural trends within one of the project's intervention areas, the Amhara Region, were analysed. On that basis, a number of effects on rural livelihoods that limit viable job and income-generating opportunities in rural areas of Amhara were identified. They have an obvious impact on the long-term development perspectives of the prevailing farm-household systems:

- With population growth and land partitioning within families, average farm sizes are decreasing, leading to increasingly limited access to land for agriculture.
- Inappropriate agricultural practices, deforestation and traditional free-grazing have contributed to severe land degradation with high erosion impacts, declining availability of soils' water retention capacity and loss of soil fertility, thereby further reducing land available for agriculture as well as overall agricultural productivity.
- The variability of rainfall patterns and extreme weather incidents exacerbate land degradation and poses an additional risk of agricultural production losses.
- Low levels of on-farm diversification, value-addition and agro-processing in the region provide only limited wage labour opportunities in the agricultural sector. Non-farm sectors are still largely underdeveloped und mainly limited to jobs in service sector with low productivity.
- Access to improved agricultural inputs and financing remain limited for many farmers and are subject to strict government regulation and distribution channels.
- Access to urban and export markets are limited due to lack of infrastructure, market knowledge and marketing channels with the exception for few commodities.

Consequently, the project was assessed regarding the contribution of its interventions in addressing these challenges to provide viable livelihood options in rural areas. It was found that the project contributes to shaping rural transformation processes and creating prospects for rural population in a two-fold manner: it helps buffer negative trends such as land degradation and its associated effects on productivity and income generation through rehabilitation and management of grazing practices. At

[1] For a synthesis paper of Rural Transformation see Global Donor Platform for Rural Development (GDPRD 2016): *Agenda 2030 – New Momentum for Rural Transformation.*

the same time, it supports the creation of new opportunities to capture the economic value of rehabilitated land, especially for disadvantaged groups such as women and youth through the organizational development of user groups and watershed user associations and direct support to income generating activity groups in fields like beekeeping and fodder production. Moreover, there is a strong local empowerment element through the establishment of firm legal footing of grassroots governance and natural resource management structures within the rural areas of Amhara Region.

The results of this study indicate that rural development projects can support inclusive rural transformation by maintaining and creating rural livelihood options. In the case of the GIZ-SLM, the community-based economic valorisation of rehabilitated land ensures the inclusiveness. The natural resource-based rural livelihood development approach needs to be tailored to local context – in this case at watershed level, and at the same time has to address the broader trends like climate change effects or population growth, which affect the livelihoods of the rural communities. In the case of Amhara, this means that income-generating activities may not always have high labour productivity, but the SLM-activities are broad-based and reach out to disadvantaged groups such as women and landless youth.

Sustainable and inclusive rural transformation happens at scale. Hence, scaling-up of effective approaches and sustainability of interventions are an issue – also for Ethiopia's SLM programme. Besides a high level of political ownership on the side of the national and regional government, the formation and legalization of community based groups to vision, plan, implement and monitor local implementation of the national program was significantly increased through the legalization of Watershed User Associations. Moreover, the sustainability of interventions as increased by the addition of an ATVET component that anchors the knowledge generated and tested within GIZ-SLM in overall national curricula.

The results of this study are, however, limited in their general applicability by its focus on the GIZ-SLM Project alone, and would have to be assessed in cohesion with other interventions of the Ethiopian government and other stakeholders in the rural space. While other major government and donor projects in the region were identified, it lay outside the scope of this study to undertake a systematic mapping exercise.

Nevertheless, sustainable and inclusive rural transformation calls for multiple interventions. This usually goes beyond the scope of individual programmes or projects. The decision on priorities and action rests with the partner government. Ideally, it is based on a forward looking development strategy building on the potentials and challenges of a given space. Development partners can assist in putting such strategies into practice. For this purpose, project design processes need to be able to capture the increasingly complex rural dynamics in order to respond to them. The analytical framework of the study was a helpful tool to do so.

1. Introduction

Rural areas in Africa are changing rapidly. The rural-urban divide is fading, with increasing flows of people, goods and services between different places and the emergence of new migratory and livelihood patterns. In the face of strong demographic pressures in many countries, however, it is evermore essential to make rural areas more attractive for their populations by providing services and income generating opportunities. These are the central objectives of the majority of donor-funded rural development programmes.

Growing urban markets are regarded as a key opportunity for value-addition in rural areas. In order to diversify employment from agriculture and food to other market-oriented jobs, private investments and market-orientation are seen as crucial requirements. Further, access to basic infrastructure and services such as schools and secondary education, health stations, energy, water and sanitation should be provided by governments. And in order to enable farmers, producer organizations and civil society to engage in local decision-making, self-organization, and also the inclusion of marginalized groups need to be strengthened.

Baseline information compiled to inform program or project design, often does not account for broader rural transformation processes. Baseline data may go beyond the core sector of intervention and look at the developments of other related sectors in rural areas, but does not explain the interlinkages between them and the forward looking implications. Yet exactly these broader rural and structural transformation processes severely influence target groups and regions and hence the operating context of any rural development intervention.

Therefore, key questions of this study are how sustainable and inclusive rural transformation can or is already be operationalized in the implementation of rural development programmes and what implications for project design processes can be learnt from this. It aims to identify the main structural trends in a given project region, situate the project within the transformation context and describe the effects of interventions on change processes in rural areas and vice versa.

As this study assesses how a rural development project within the German cooperation's portfolio addresses rural transformation processes. The GIZ-Sustainable Land Management project (GIZ-SLM) in Ethiopia, has been selected as a case study. The project supports the national Ethiopian Sustainable Land Management Program (SLMP) in introducing a watershed development approach to natural resource management for a national scaling up of sustainable land management practices. As GIZ-SLM has been implemented over nine years, and applied elements of spatial (landscape, watershed) and multi-stakeholder approaches at various levels, the project provides an excellent case. A geographic focus was put on GIZ-SLMs activities in the regional state of Amhara.

The following chapters describe the process of rural transformation with a focus of current dynamics in Ethiopia, and introduces the approach of this study and its underlying analytical framework. Based on this framework, chapter four analyses current trends of rural transformation within the project region Amhara. It is subject of chapter five how the GIZ-SLM program addresses the trends of rural change in Amhara. It also offers potentials to advance inclusive and sustainable rural transformation within the scope of the project. Implications for the design of rural development projects are presented in the outlook.

2. Inclusive and Sustainable Rural Transformation

Rural transformation describes a process[2] in which, "*Rural societies diversify their economies and reduce their reliance on agriculture; become dependent on distant places to trade and to acquire goods, services, and ideas; move from dispersed villages to towns and small and medium cities; and become culturally more similar to large urban agglomerations"* (BERDEGUÉ ET AL 2014).

The term "inclusive rural transformation" describes the objective that everyone, without exception, can exercise their economic, social and political rights, develop their abilities, and take advantage of the opportunities in such transition process (IFAD 2016). The attempt to influence rural transformation builds on the assumption that government policy can buffer negative trends or positively design support to a development of the rural space which is economically viable, socially inclusive and ecologically sustainable (GDPRD 2016). Conversely, if the government does not take appropriate action, there is a high risk that especially the more vulnerable rural populations will lose out in the dynamics of transformation as they are pushed out of agriculture, usually the primary livelihood base, but cannot be absorbed by other sectors.

Rural transformation takes place in different contexts like geography, culture, socio-economy or political framework, which may lead to very different pathways of rural change. In the European process of industrialization, rural transformation was mostly characterized by the pull factor of the industrial and urban labour market that led to large rural out-migration. As a result, shares of the agricultural sector in Gross Domestic Product (GDP) declined, as did the share of agricultural employment in total employment. At the same time, demand for agricultural products rose which accelerated the modernization and mechanization of agriculture and led to significant increases of agricultural productivity. Farm sizes increased and production became more specialized (SLE 2016).

Rural and structural transformation took place differently in parts of Asia and Latin America. Particularly in the emerging economies of East Asia, industrialization was fostered by protectionist policies, initially focusing on a limited domestic market and gradually shifting towards export-orientation since the 1960s. Since agricultural production was dominated by small farms, the introduction of price incentives to farmers helped balancing the number of migrating farm labourers with the absorption capacities of the manufacturing and services sectors. In Latin America, transformation was driven by spatial integration with the emergence of functional rural-urban territories. Diversification of rural economies from agriculture, transformation of agro-food-systems and value chains under the dominance of corporations, and a blurring of the cultural distance between rural and urban populations owing to rural roads and communications technologies triggered changes in the rural world (BERDEGUÉ ET AL 2014).

Most Sub-Saharan African countries have experienced rural transformation at best in a highly modest form, so far. While the share of the agricultural sector in the GDP and of total employment have declined steadily, total numbers of people employed in agriculture have increased in many countries

[2] IFAD (2016) defines rural transformation as a process involving "*rising agricultural productivity, increasing commercialization and marketable surpluses and diversification of production patterns and livelihoods. It also involves expanded decent non-farm employment and entrepreneurial opportunities, better rural coverage of and access to services and infrastructure".*

Rauch and his colleagues (SLE 2016) use a wider understanding of rural transformation *"as a long-term process of change of fundamental characteristics of the economies and livelihoods of people in the rural areas, taking wider societal and global dynamics into account".*

including Ethiopia due to population growth. Since the end of the colonial era, the share of the manufacturing industry in Africa, however, remained stagnant at a low level. Although some countries have recently shown evidence of a vibrant service sector in growing towns and cities like motor vehicle and electric repairs, IT services or food value chains, most of the poor not engaged in agriculture still have to rely on precarious low-income segments of the service sector for employment (SLE 2016).

Acknowledging the limited non-farm employment opportunities in rural areas, ALTENBURG (2017) proposes a twofold approach to foster inclusive rural transformation in Sub-Sahara Africa. On the one hand, measures are needed to attract and promote productive enterprises that create decent jobs in the formal labour market. On the other hand, traditional and informal enterprises require support to increase productivity. Accordingly, he identifies the following as major strategic elements for employment creation:

- Improving the general business climate and frame conditions for economic development like infrastructure, education, fiscal system development, mobilization of national and external capital, good governance
- Supporting specific sectors with transformative potential such as
    - sustainable urbanization (construction, services for diversified consume patterns),
    - agriculture-based development (through inclusive business models that generate broad-based income effects, but also regional market integration),
    - modernization of energy supply systems (electrification, decentralized networks),
    - attraction of export-oriented light manufacturing industries (cloth, shoes, leather, toys, etc.)
- Increasing productivity in informal micro-enterprises by supporting financial literacy, technical and vocational training and education, access to digital technology and finance
- Strengthening public safety nets with public work programs or direct transfers that reach out to those not able to engage in productive employment.

In most countries of Sub-Saharan Africa, the formal private sector will only be able to absorb a small share of the increasing labour force even if economic growth rates remain high. Agriculture and a diversified rural economy therefore remains crucial for a large portion of the population to sustain their livelihoods. This however will only be possible if productivity increases.

For inclusive and sustainable rural development, this means that understanding rural transformation processes requires a more holistic view considering socio-economic trends as well as spatial and ecological dimensions of development. Measuring and evaluating broader change processes as a result of project interventions may be built on a revised set of indicators than those used to describe structural transformations in the past, namely the share of agriculture in GDP and total labour. In their 2016 report on rural transformation, IFAD proposes a typology of transformation patterns based on poverty reduction rates, pace of transformation and share of agricultural sector in GDP and employment. Further relevant indicators might include poverty levels, access to services, as well as economic diversification and productive employment. This however increases complexity in designing development strategies and programs and measuring progress of transformation in rural areas (IFAD 2016).

Dynamics of Change in Ethiopia

Following the end of 17-year civil war in 1991, when the Ethiopian People's Revolutionary Democratic Front had overthrown the communist Dergue Regime, the new Ethiopian government embarked on a

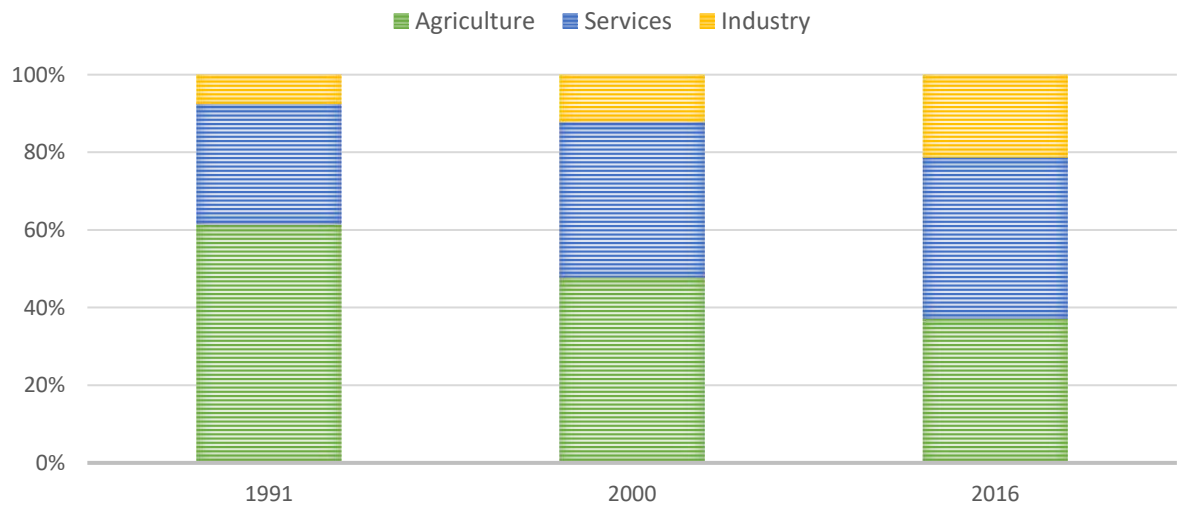
mission to consolidate its political power and to integrate Ethiopia in a global neo-liberal economy. Although the international donor community provided strong financial support, the Ethiopian Government maintained a very high level of ownership in designing, implementing and controlling the reform packages.

Over the last two decades, the country has made remarkable progress in terms of poverty reduction: while in 1996 more than 54% of the population were below the poverty line, this figure went down to 40.1% in 2005 and 30.5% in 2011. Effective pro-poor spending by the government contributed significantly to rural poverty reduction in Ethiopia. Direct transfers, like under the Productive Safety Net Program (PSNP) which was established in 2005, as well as indirect transfers through improved provision of basic services like education, roads, agriculture and health, have reduced the overall levels of poverty (WORLD BANK 2015).

Compared with other African countries, Ethiopia has experienced rapid structural change which reflects in both, increasing average annual percentage change of non-agriculture in GDP, as well as agricultural labour productivity. This contributed to the impressive reduction of rural poverty (IFAD 2016). Still, almost 80% of the working population are engaged in agriculture, and agricultures share to GDP is at approximately 50% (WORLD BANK 2015).

Since the 1990s Ethiopia pursues a "developmental state" model with a strong government role in many aspects of the economy and high levels of public investment to encourage growth and improve access to basic services. Despite its still low level of urbanization with 17.3% in 2012, well below the Sub-Saharan Africa average of 37%, the GDP share of the mainly urban based service sector has levelled out with the agricultural sector (WORLD BANK 2015). Major earnings in this sector come from Ethiopia's internationally successful national aviation, telecommunications, tourism, banks and insurance.

Figure 1: Trends in sectoral share of GDP (1991-2016)



Source: World Bank Open Data (https://data.worldbank.org/)

Employment rates in manufacturing are rather stagnant, possibly due to the strong global competition after deregulation in the 1990s. Ethiopia seems to benefit from the rising wages in the Chinese export industries over the last 15 years with some 10,000 jobs already created in export-oriented business parks (ALTENBURG 2017). The service sector contributes to overall growth, especially trade and other services, but also transport and construction and provides increasing potentials for employment. In

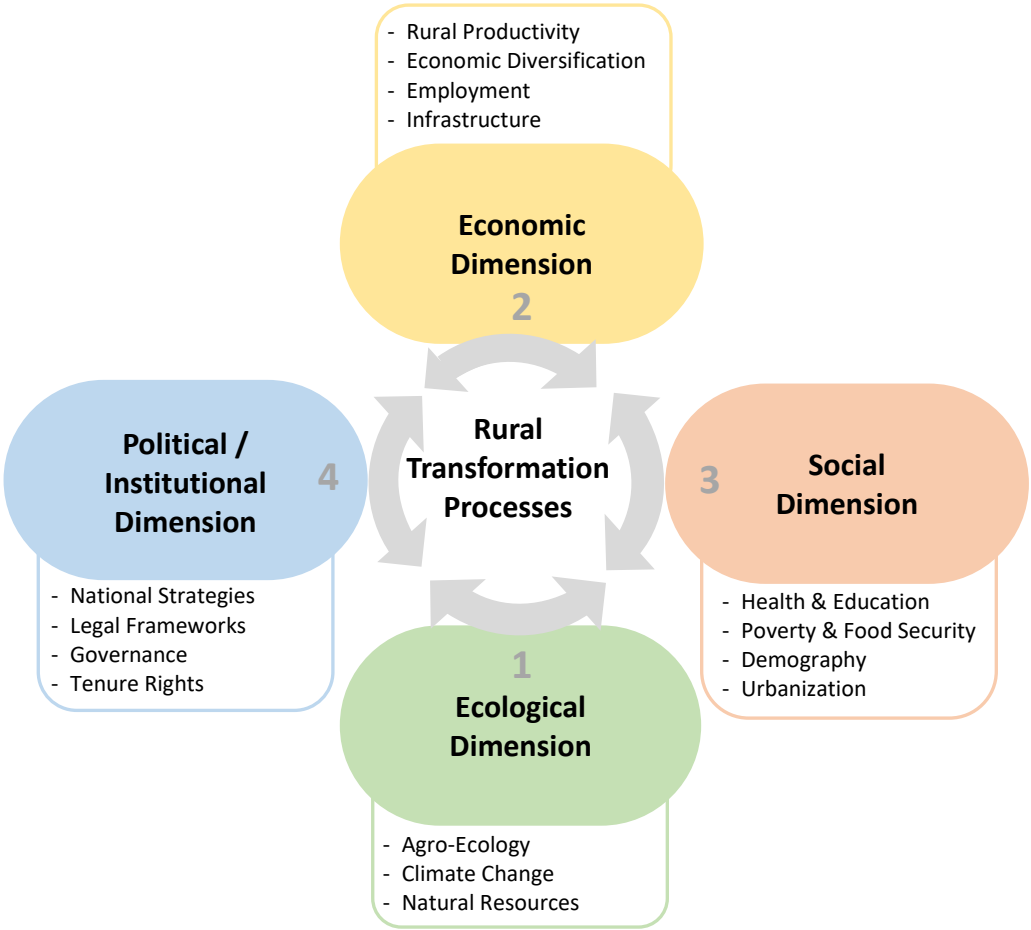
light of current population growth dynamics however, Ethiopia is about to face increasing difficulties in integrating its youthful population into the labour market.

3. Approach and Analytical Framework

The study is based on the assumption that rural development projects in the GIZ portfolio are addressing the dynamics of rural transformation, but that their contributions and entry points to shaping these processes towards a more inclusive and sustainable rural transformation are not always visible nor well understood. By examining project trajectories in conjunction with broader change processes, the study envisages a more holistic understanding of project embeddedness in complex cause-effect relations.

In the context of this study we understand rural transformation as a process of change in rural areas that is characterized by ecological, economic, social and political/institutional factors.

Figure 2: Dimensions of Rural Transformation Processes



These factors are interlinked and influence rural transformation processes to various extent depending on the local conditions. As a matter of fact some factors could even be allocated to more than one dimension. Despite the complex and multi-faceted interlinkages between those factors and their effects on change processes in rural areas, we follow the assumption that coherent government policies can not only buffer negative trends of rural transformation but also help to design context-specific development strategies that foster inclusive rural transformation with high-priority policy

reforms, institutional innovations and investments (IFAD 2016). Those government policies and strategies (4) provide the political framework for external support to development interventions under varying local contexts (1-3).

The following framework for analysis has been used to capture relevant aspects of rural transformation processes within the context of the selected project.

Table 1: Framework for analysis

1. Ecologic Dimension
- Agro-ecological conditions - Status and management of natural resource base - Impact of climate change
2. Economic Dimension:
- Structure of the rural economy - Agricultural productivity and access to inputs and services - Access to land - Availability of basic infrastructure - Rural labour markets
3. Social Dimension
- Demography - Poverty and Food security - Access to basic services like education, health and information - Mobility and migration - Roles and prospects for women and youth
4. Political / Institutional Dimension
- National policy frameworks for rural development and agriculture - Capacity of local authorities and institutional arrangements - Land rights and other rights relevant for rural economic activity

The study follows a four-step analysis, comprising

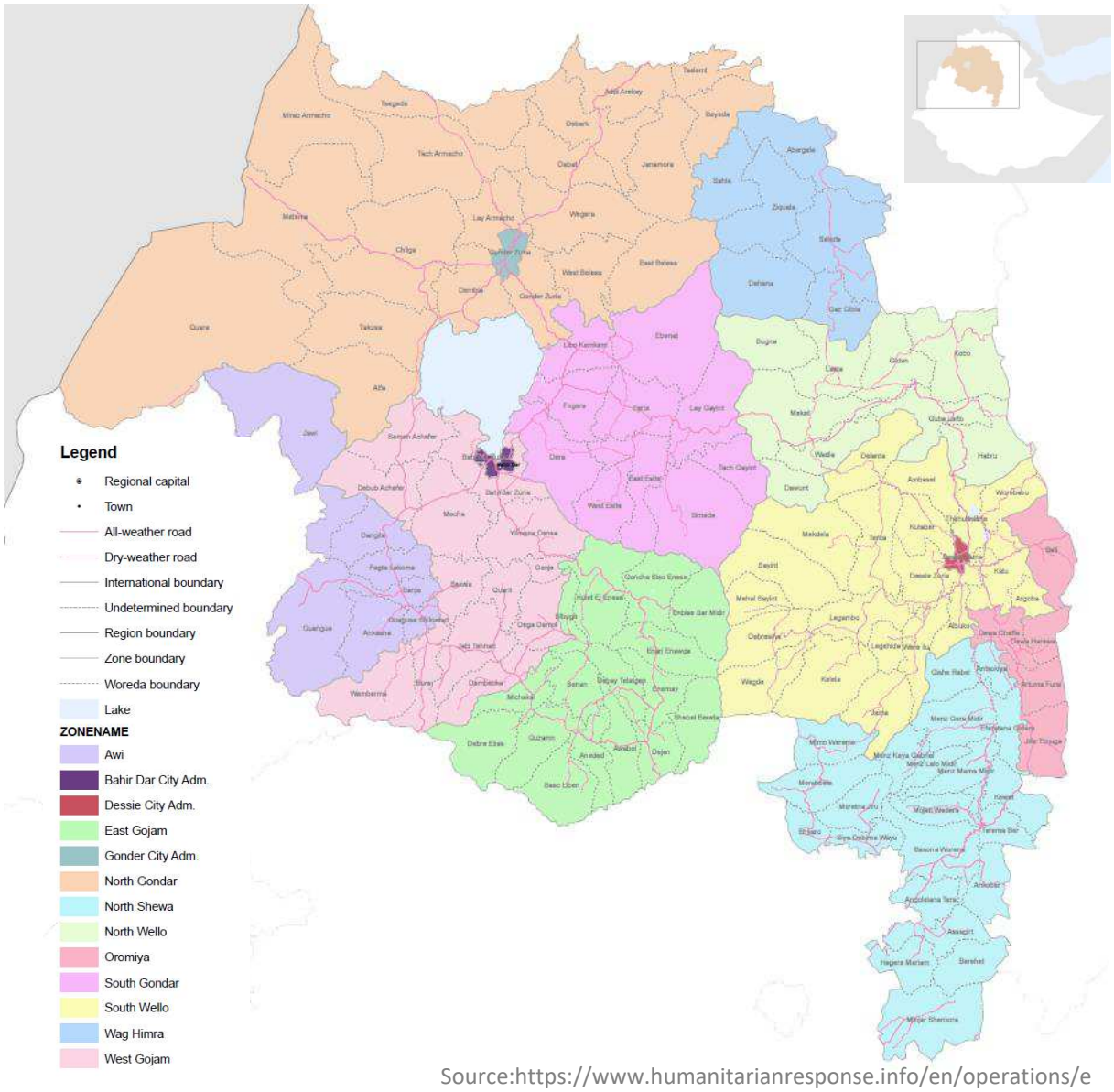
- Identifying major dynamics and drivers of rural transformation within the selected project area clustered by social, economic, ecological and political/institutional dimensions.
- Assessing how GIZ project interventions responded to dynamics of rural transformation directly or indirectly.
- Compile findings and highlight project interventions with potential to contribute towards inclusive and sustainable rural transformation processes
- Highlight implications for the design of rural development projects and programmes in changing rural settings

Information was obtained through desk review of project documents and literature analysis complemented by interviews and group discussion with project staff, government staff and other relevant stakeholders in Addis Ababa and Amhara Region. Information obtained from external literature will be indicated within this document. For information obtained by interviews and GIZ internal project documents no additional citation is made as it would severely impair the readability of the text. To limit the geographic scope of the study, focus is set on the GIZ-SLM project in Amhara Region.

4. Trend Analysis: Rural Transformation in Amhara Region

Amhara Region is one of nine regional states of Ethiopia with most of its 17 million inhabitants belonging to the ethnic group of the Amhara. The region is sub-divided into nine zones plus the city administrations of Bahir Dar, Gondar and Dessie (see figure 3). Each zone is furthermore structured into districts called Wordeas and then municipal units called Kebele. Field visits during the study were conducted in Woredas of East-Gojam and West Gojam zones.

Figure 3: Administrative divisions in Amhara Region



Source:https://www.humanitarianresponse.info/en/operations/ethiopia/infographic/administrative-map-amahara-a0-15-aug-2017

4.1 Ecological Dimension

Agro-ecological conditions

Ethiopia's agricultural landscapes are characterized by a high variability in topography and rainfall, even within the same regions. The traditional agro-ecological zoning (HURNI 1998, see annex 1) describes five major zones with strongly varying agricultural production potentials. Amhara Region, with the country's highest peak (Ras Dejen, 4550m) in the Semien Mountains and lowlands below

500m in western parts of the region, comprises all of Ethiopia's five traditional agro-ecological zones. High potential areas for agricultural production are predominantly located in the highlands.

Ethiopia's agro-climatic zones are categorized as:

- Drought prone areas
- Moisture reliable humid lowland
- Moisture reliable areas for cereals
- Moisture reliable areas for ensete (staple food crop from the *banana* family)
- Pastoralist areas

The variability of rainfall throughout the year is high. While the majority of permanent rivers flow in the highlands, seasonal rivers and streams form during the rainy season (July – September) throughout the whole country.

In general, Ethiopia's agriculture is strongly influenced by its rainy seasons: its primary agricultural season depends on the long and heavy summer rain from June to September, followed by a hot, dry period from October through February. In some areas including Amhara there are moderate spring rains in March and April providing water for the second most important sowing season. With most farmers expecting their main crop harvest to start around October, food insecurity often occurs in June-September, the months before the harvest of the primary agricultural season.

Status and management of natural resource base

Amhara Region has a population density of 100-150 persons per km² in its highland areas (see also section 4.3). In combination with the rugged terrain, this means that little or no unused arable land is left (SIDA 2010). Due to the high population pressure on a fragile natural resource base, various forms of land degradation with implications for agricultural productivity occur. Deforestation due to demand for fuel and construction wood or cropland expansion, cultivation on steep slopes and uncontrolled grazing in forests and on grasslands lead to soil erosion, gully formation, loss of soil fertility, and limited water absorption and retention capacities.

Figure 4: Soil erosion gullies

Figure 5: Land degradation due to overgrazing

In Amhara Region, cropland expansion, largely at the expense of forests and grasslands, increased particularly in the second half of the 20th century. In the lower areas, overgrazing and recurrent droughts diminish the potential for regeneration, building up of secondary bush and tree vegetation and aggravate the water-run off with removal of topsoil during the rainy seasons (MESERET 2016). With 70 million head of cattle, Ethiopia has the largest livestock population in Africa (IFPRI ET AL 2013). Livestock numbers and densities in Amhara Region are above national average[3]. Besides the manifold

[3] Amhara stands first in the number of goats, second in cattle, sheep, asses, horses and poultry (CSA 1998, in MESERET 2016)

negative implications of overgrazing like soil compaction, low moisture retention or increased run-off, the use of the dung as fuel for cooking rather than as manure further reduces soil fertility. The reduction of organic matter in soils is one major factor contributing to the widespread acidity of agricultural soils in the region (BUNI 2014).

Impact of climate change

Extreme weather incidents have become a common phenomenon in Eastern Africa. In general, lowlands are vulnerable to rising temperatures and prolonged droughts, while highlands are prone to intense and irregular rainfall. While the mean temperature is expected to rise, projections of rainfall patterns are inconclusive.

Table 2: Major recent and projected climate trends in Ethiopia

Historical Climate	Future Climate
Climate trends since 1960 include: - Mean annual temperature has increased by 1°C, an average rate of 0.25°C per decade, most notably in July through September - The average number of "hot" nights (the hottest 10% of nights annually) increased by 37.5% between 1960 and 2003, while the average number of hot days per year increased by 20% - More intense precipitation during extreme weather events, although long-term rainfall trends are difficult to determine - The incidence of drought increased - Short rains are increasingly unpredictable	Future projections of temperature and rainfall patterns in Ethiopia exhibit a high degree of uncertainty, but most projections agree that: - Mean annual temperature is projected to increase by between 1°–2°C by 2050 - The frequency of hot days and nights will substantially increase. About 15–29% of days will be considered hot by 2060 - It is uncertain whether rainfall will increase or decrease; projections range from -25% to +30% by the 2050s - Increases in the proportion of total rainfall that falls in “heavy” events with annual increases of up to 18%

Source: USAID 2016

In Amhara Region, the rainfall patterns over time do not show any significant change in total precipitation but a contraction of the length of growing period due to early cessation of rainfall (AYLEW ET AL 2012). In 2017, some regions in Amhara experienced unusual long-lasting rains during the primary agricultural season. As the majority of Ethiopia’s farmers practice rain-fed agriculture, they are highly vulnerable to changing rainfall patterns. Little water retention capacities of degraded landscapes and depleted soils and lack of water-storage facilities further increase the vulnerability of natural resource dependent rural communities to climatic risks.

4.2 Economic Dimension

Structure of the rural economy

Compared with other East African countries, Ethiopia’s development path over the last 15 years has been characterized by a low level of economic diversification with a dominant agricultural sector. This sector provides employment for the largest share of the Ethiopian population, employing 80% of all workers in Ethiopia in 2005 and 78% in 2013. Agriculture’s contribution to GDP decreased from 59% in the early 1990s to 41% in 2015, with much of its share taken over by the services sector (WELDESILASSIE 2017). As the manufacturing sector performance remains stagnant with 4.9% of total employment in 2005 and 4.7% in 2013, the employment in the services sector accounted for 13% in 2005 and 15% in 2013 (IFPRI 2016a).

Smallholder family farms cultivate more than 90% of the arable land, and account for over 90% of the agricultural output. The most widespread crop is teff, followed by maize, sorghum, wheat, barley and roots and tubers (IFPRI 2013). Livestock production, as one component of agriculture, accounts for 40% of agricultural output and contributes 13-16% of the total GDP (ASRESIE & ZEMEDU 2015).

Agricultural exports accounted for an average of 80% of total commodity exports in the period 2004/05 – 2013/14 with coffee being the most important export crop (average of 29% of exports), followed by oilseeds and chat[4]. Exports of flowers as well as meat products and live animals show high growth rates in the same period. The vast majority of Ethiopia's agricultural output (87%) however is domestically consumed (IFPRI 2016a).

Agricultural productivity and access to inputs and services

In the period between 2005 and 2015, Ethiopia's agricultural output more than doubled (IFPRI 2016a). Partly, this has been due to crop area expansion, the increased use of fertilizer, whereby the share of farmers applying synthetic fertilizers rising from 46% in 2004/05 to 76% in 2013/14, and the introduction of improved crop varieties. The use of improved cereal seed has more than doubled since several improved cereal varieties were released in 2010/11.

High international commodity prices since 2007 provided incentives for increased production, better access to micro-finance and improved land tenure security and contributed to improved agricultural production. At the same time, changing food consumption patterns raised the demand for non-cereal foods, whilst an average total food consumption increased by 20% (IFPRI 2016a).

The increase of agricultural productivity can also be attributed to public investment in agricultural extension as well as in road infrastructure providing better access to markets. In 1997/98, 67% of the rural population resided more than 5 hours travel away from a city, this declined to 26% in 2010/11. In Amhara, the productivity levels correspond with the positive national trend as seen in figure 6.

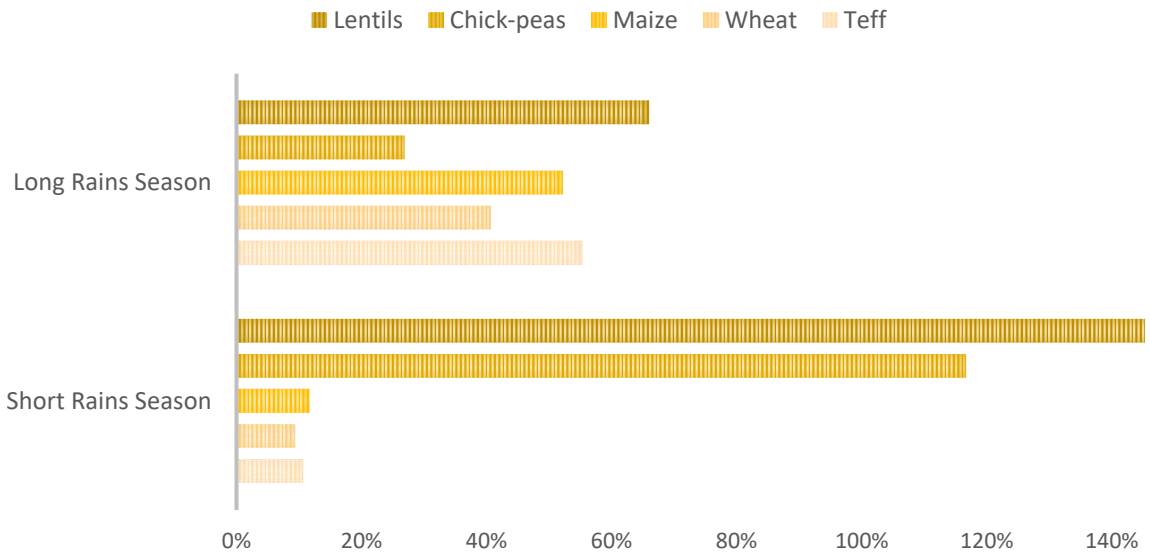
Cooperatives and cooperative unions are handling the fertilizer distribution in Ethiopia almost exclusively[5]. Apparently, this distribution network, without being subsidized, delivers quality fertilizers at reasonable prices to their members and non-members. Yet this system is not able to service the full demand for inputs. Foreign currency constraints were mentioned as one limiting factor for input supply. With respect to marketing, cooperatives play only a minor role however, with market shares of around 10% for coffee or even much smaller for most other crops.

In Amhara, cooperatives and unions have grown in terms of members, savings and produce throughout the last decades. The capital of cooperatives in Amhara Region has, for example, increased from 25.2 Million US$ in 2009 to 88.9 Million US$ in 2015. In 2015, cooperative unions from Amhara Region exported products to China, Israel, South Korea, America, India, and Germany. Several cooperative unions are in the process of building up capacities for machinery services, processing facilities and better marketing.

[4] Chat (or khat), *Catha edulis,* is a plant native to the horn of Africa. Due to its content of the stimulating alkaloid cathinone, khat chewing has a history as a social custom dating back thousands of years. In 1980, WHO has classified chat as a drug of abuse that can produce psychological dependence.

[5] Ethiopia has moved from partial liberalization in 1990s, to exclusive marketing through farmers' organizations, since 2008. As a result, private sectors, endowments and farmers' cooperative unions have been involved in the fertilizer import between 1996 and 2007. Private sectors were the first sectors engaged in fertilizer import in 1996 followed by holdings that involved a year later. Farmers' cooperative unions joined the import business in 2005/06 and stayed for three years. The 2007/08 season then became the end of the involvement of other sectors (IFDC 2015).

Figure 6: Productivity growth between 2006-2016 of selected crops in the short and the long rains seasons in Amhara Region (%)



Source: CSA Agricultural Sample Surveys 2006 & 2016, http://www.csa.gov.et/survey-report/category/26-agricultural-sample-survey (access 03.05.18)

Agricultural extension coverage in Amhara has improved in terms of government extension workers, so-called Development Agents (DA), deployed within the last years. Data from the PSNP evaluation shows that in all surveyed Kebeles in Amhara so called Farmers' Training Centres (FTC) were established (IFPRI ET AL 2013). FTCs are the local base for DAs and usually comprise a small office, a store room and meeting hall/lecture room as well as a plot of land for demonstrations. 55% of the FTCs were fully staffed with three to four DAs specialized in crop-production, livestock-production, natural-resources management and farmers' cooperative development. Nevertheless, the agricultural extension services performance is behind expectation. Lack of equipment - most FTCs do not have electricity - and extension material, practical unexperienced DAs straight from agricultural colleges and low salaries result high staff turnover at an annual average of 20% (KELEMU ET AL 2014) hamper effective service delivery to the farmer.

Access to land

In Amhara, agricultural plot sizes are declining, mainly due to inheritance practice of dividing the cultivable land among the sons (see table 3). The regional state has regulated minimum plot size for rain-fed and irrigation agriculture at 0.25ha and 0.11ha respectively. Consolidation of land holding is based on voluntary arrangement between individual farmers where farmers are encouraged to exchange their holding. These small plot sizes and their fragmentation limit the possibilities for agricultural mechanization to increase productivity (TAFFA 2009).

Table 3: Average number of field holdings and field size in Amhara Region

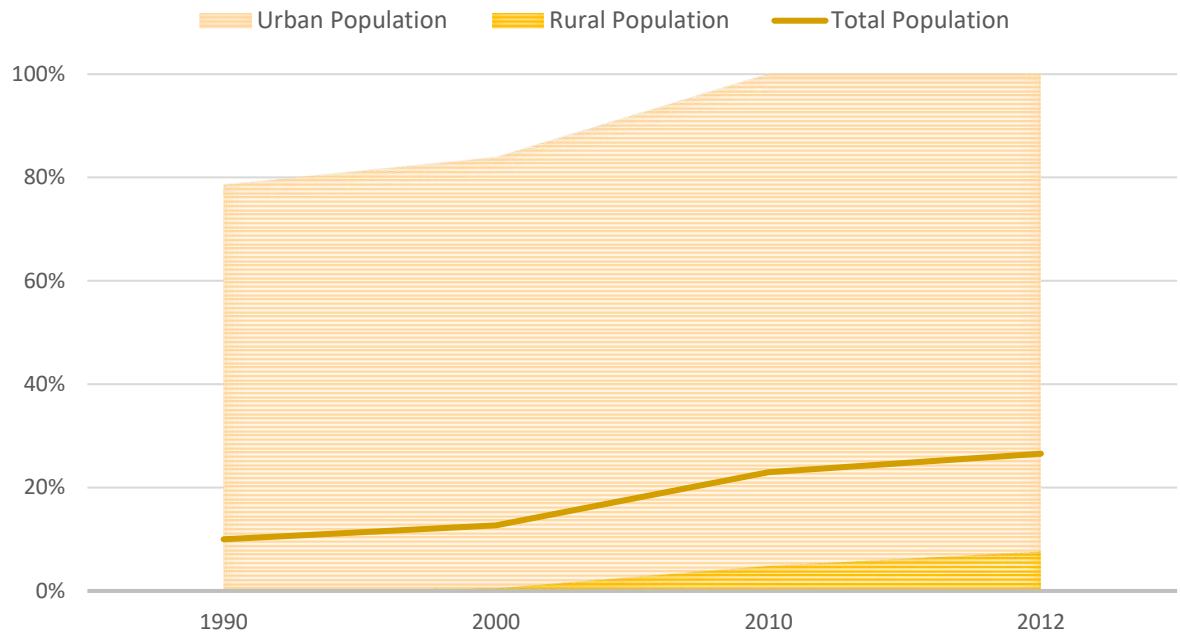
	Average no. of fields per households	Average field size (ha)	Average total household land holdings (ha)	Average total cultivated land holdings (ha)
2011/12	11.0	0.23	2.53	-
2013/14	10.9	0.12	1.33	1.04
2015/16	9.9	0.14	1.34	1.07

Source: CSA & WORLD BANK (2013, 2015, 2017)

Availability of basic infrastructure

With the introduction of hydropower in the 1960s and a surge in investment in this sector since 2005, electricity generation capacity has risen and opened up the potential for significant increases in productivity and output in the national economy (IFPRI 2010). Still, only around one third of the population has access to electricity, leaving more than 50 million people unconnected to the grid.

Figure 7: Access to electricity in Ethiopia (% of population)



Source: World Bank, Sustainable Energy for All (SE4ALL) database, online available at: http://www.indexmundi.com/facts/ethiopia/access-to-electricity (30.04.2018)

The 2012 evaluation of the PSNP used detailed questionnaires in 30 Woredas of Amhara, and shows that electrification in Amhara reflects the national average with 55% having good, 25% having occasional and 15% having no access to electricity. Access to telecommunication in Amhara shows with regard to landlines 50% excellent, 25% good and 15% poor household connectivity, whilst for the mobile network the evaluation reports 20% excellent, 45% good, 10% occasional, 15% poor and 5% erratic coverage (IFPRI ET AL 2013).

In 2004, the rural water supply coverage in Amhara Region was estimated at 29%, therefore higher than in the rest of the country. However, still around 70% of households did not have access to water supply, using unsafe water from wells, rivers and ponds. As a result, many people suffered from water-born diseases. Parasites, diarrhoea and vomits (14%) were the second top diseases in the region after malaria (48%) (FINNISH & ETHIOPIAN GOVERNMENT 2007). Compared with other Sub-Saharan countries, access to water in Ethiopia is below average. This situation has improved in the past ten years. According to the 2016 Ethiopia Demographic and Health Survey (DHS) almost all households in urban areas have access to an improved source of drinking water, compared to 57% of rural households (CSA & ICF 2017).

Rural labour markets

On-farm activities are the major source of income for the population in rural Ethiopia. The majority of farmers are fully occupied on their own farm for about half of the year. However, non-farm labour

opportunities in Ethiopia remain limited and thus constrain "*a large share of individuals from reaching their full working potential*" (IFPRI 2016c).

Even though agriculture still accounts for the majority of employment in Ethiopia with 78% of the working population solely engaged in own-farm activities, labour diversification at household as well as individual level can be observed. According to the Ethiopia Socioeconomic Survey of 2013/14:

- around 25% of households have non-agriculture income sources
- the share of people engaged in non-agriculture activities is highest (13.7%) among young-youth headed households (from 15-24 years)
- only very limited non-farm activity exist in rural areas, especially higher-skilled job opportunities are rare (CSA & WORLD BANK 2015)

Table 4: Importance of different income sources in rural areas, estimates using the Agricultural Growth Program of Ethiopia baseline survey data

	Contribution of source to total household income (%)		Households earning income from various sources (%)	
Income Source	All regions	Amhara	All regions	Amhara
Crop	71.4	69.6	94.1	93.6
Livestock	10.7	13.6	60.2	74.4
Agricultural wage income	6.6	9.1	21.4	29.0
Non-agricultural wage income	3.1	2.4	8.1	6.9
Enterprise income	8.1	5.3	25.4	18.0

Source: IFPRI 2016b

With respect to Amhara Region, the economic importance of livestock production and agricultural wage labour during harvest season on commercial farms is higher than the national average. Less households than in other regions of Ethiopia engage in, and derive an income from wage labour outside the agricultural sector and enterprise income (IFPRI 2016b). Analysis of the above data with various disaggregation such as age and gender suggests that:

- younger households are more likely to rely on non-farm income sources to assure their livelihoods, often due to the fact that they mostly own smaller plots of land
- female-headed households rely more on non-farm income then male-headed households
- greater quantity and better quality of agricultural assets lead to less diversification
- real rural wages increased by 54% over the last decade, mostly driven by agricultural productivity growth

In recognition of the precarious situation of the rural labour market, job creation as a strategic agenda of the government has been expanded to rural areas recently. The Rural Job Opportunity Creation Strategy (RJOC) from 2017 looks beyond the agricultural sector - including ON-farm, OFF-farm and NON-farm employment. It aims at supporting youth in education and training on entrepreneurship, linking rural and urban areas for employment opportunities and promoting rural industrial investment for wage employment. But it also aims at contributing to promoting agriculture for youth by shifting from productivity orientation towards business orientation. Under the strategy, the active creation of employment potentials shall be mainstreamed in programs and projects design. This may include the promotion of rural livelihood diversification with food security concept of a more holistic resilience perspective, social enterprises and standing transformation agendas e.g. engaging rural youth in soil and water conservation or payment schemes for environmental services. The successful implementation of the strategy will require strong local governance capacities across sectoral

institutions. RJOC-leading agencies at decentral levels shall be appointed by regional governments and may vary from region to region.

Under Ethiopia's national strategy of agriculture development led industrialization, the government pursues ambitious goals of establishing concentrated industry parks of various purposes. With a focus on the rural economy 8 integrated agricultural industry parks are foreseen to be established in different parts of the country. In Amhara Region, the development of the massive government project of the Bure Integrated Agro-Industrial Park has been started. Overseen by regional government, industrial parks with access to basic infrastructure are developed to attract agro-processing industries. Additionally, further decentral satellite collection centres in the rural area are part of the concept.

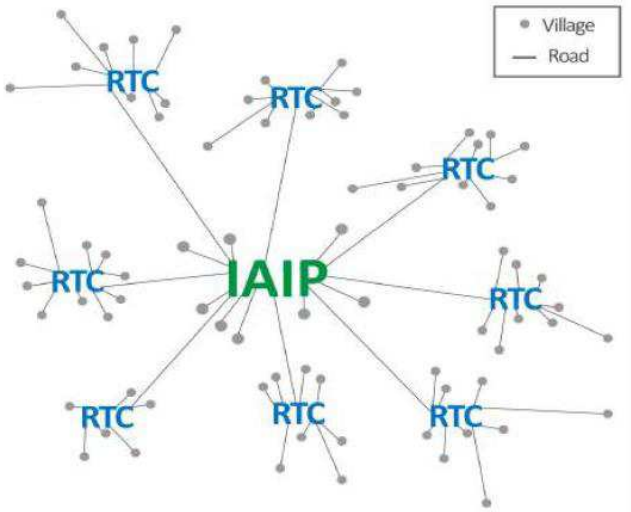
Bure Integrated Agro-Industry Park Project

In Ethiopia, a rural transformation vision is on its way to realization with the development of Integrated Agro-Industrial Parks (IAIP). One planned IAIP projects is located in the small town of Bure in Amhara Region. With ambitious figures for local job creation potential (612,000 new jobs) the masterplan is envisaging a total coverage of 1000 ha. So far 260 ha are acquired for development in an initial phase. Affected were 317 smallholder farmers who had to give up their land and were compensated according to government regulations. Office facilities for project management are erected on the premises and fund acquisition for IAIP's infrastructure development is ongoing. The IAIP development concept links the central industrial space with Rural Transformation Centres (RTC) as service points for the communities including warehouses, input supply, sorting, grading, extension services, pre-processing activities and microfinance in the IAIP's catchment areas of approximately 100 km radius.

The project is developed under the Ministries of Agriculture and Industry, the Amhara Regional Government and the Ethiopian Federal Government. So far financial support amounting to 54 million US$ was secured via UN Industrial Development Organization, World Bank, Food and Agriculture Organization and the Ethiopian Agricultural Transformation Agency.

The Bure IAIP concept is based on comprehensive studies of local production potentials, markets and potential investors' interests. It will focus on the production sectors dairy, meat, brewery and edible oil.

SLMPs achievements are considered as important basis for advancing improved farming on stable and sustainably managed natural resources opening up options for smallholders to contribute to the government's agriculture development led industrialization and gain economic benefits.



4.3 Social Dimension

Demography

With a population of about 17 million over an area of 170,000 km², the Amhara Region is comparatively densely populated, particularly in its central highland regions. The population growth rate of 1.7% is below the national average with 2.71%, however there are discussions on these figures[6] (the next census is planned by Central Statistical Agency for 2018). With a total fertility rate of 3.7 children per women Amhara Region is slightly below the national average of 4.6 children per women (urban 2.3 and rural 5.2). Nationwide over 47% of the population are under 15 years old and almost 16% are between 15 and 24 years. Roughly 28% are aged 25 to 54 years, and over 9% are above 55 years (CSA & ICF 2017).

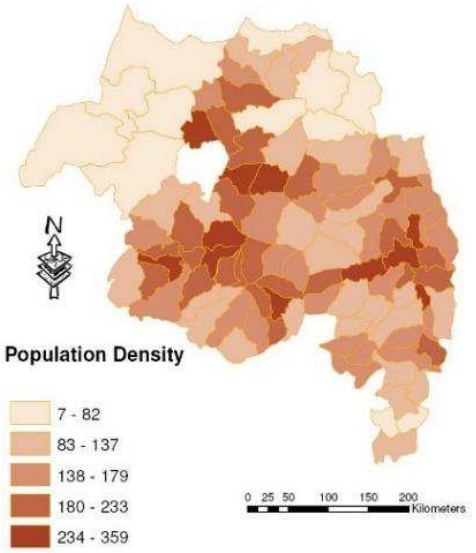


Figure 8: Population density of Amhara Region (2008) Source: http://www.etzhiodemographyandhealth.org/Amhara.html

The share of urban population in Amhara Region is below the national average as seen in table 5. Yet, the number of small and medium sized towns is increasing in Amhara, while, in 1984 there were only five cities with more than 20,000 inhabitants, in 2015 there were 32 cities in Amhara that had reached this size. In 2015, Amhara Region comprised four cities with more than 100,000 inhabitants (Gonder, Bahir Dar, Dessie, Debre Birhan) and four with more than 50,000 (Debre Markos, Kembolcha, Debre Tabor, Weldiya).

Table 5: Share of urban population over time (in million)

	1984		1994		2007	
	Total population	Percentage urban	Total population	Percentage urban	Total population	Percentage urban
Ethiopia	39.869	3.7	53.477	7.1	73.919	14.2
Addis Ababa	1.423	61.2	2.113	85.5	2.738	99.3
Amhara Region	10.686	2	13.834	3.7	17.214	7.5

Source: IFPRI 2010

However, urbanization is failing to meet the demands of urban residents in various areas: formal job creation is not keeping pace with increasing populations and migration, cities have difficulties to provide adequate infrastructure and services, and urban households face major housing challenges such as poor quality and often overcrowded living conditions (WORLD BANK & CITIES ALLIANCE 2015). Annex 2 contains an overview of the growth of medium and large cities in Amhara Region.

Poverty and Food security

Since the year 2000, when Ethiopia had one of the highest poverty incidences in the world with 56% of the population living on less than US$ 1.25 PPP a day, the country was able to significantly reduce poverty. With only very little growth of employment opportunities outside agriculture, poverty reduction among rural, self-employed, agricultural households together with pro-poor public

[6] The 2007 population census in Amhara Region measured a population growth rate of 1.7%, while this figure in most other regions has been close to 3%. After re-examination, lower birth rate and high death rate (especially from HIV/AIDS) were given as explanations. However, the figures drew criticism mainly from members of the Amhara National Democratic Movement (ANDM) (http://www.ethiopianreview.com/index/13760) and continue to be considered contentious.

investment on basic services and effective rural safety nets like the PSNP accounts for the major share of poverty reduction from 1996 to 2011. In 2011, the share of the population living on less than US$ 1.25 PPP per day had gone down to 31%. The picture in Amhara Region reflects the national trend: while in 1996 more than 54% of the population was below the poverty line, this figure went down to 40.1% in 2005 and 30.5% in 2011 (WORLD BANK 2015).

Food security also improved. High public spending under the PSNP have supported vulnerable households throughout the country. In Amhara, 21.1% of the respondents in 2011/12 reported to have food shortages, in 2013/14 this figure increased to 30.2% whereas in 2015/16 it went down again to 15.9% (CSA & WORLD BANK 2013).

Access to basic services like education, health and information

Over the last 20 years, the Ethiopian government, in partnership with donors, has invested heavily in improving access to education. And both, primary as also secondary enrolment rates have increased. Key interventions included abolishing school fees, increasing expenditure on school construction and maintenance and hiring and training thousands of new teachers, administrators and officials in the educational system. Gradual decentralization of the education system to progressively lower administrative levels, complemented by a shift to mother tongue instruction also have been likely to improve service delivery (ODI 2011).

The 2016 Ethiopia Demographic and Health Survey (CSA & ICF 2017) indicate an improvement in the share of men and women's educational attainment: whereas in 2005 62.2% of men and 75.6% of women were estimated to have received no education at all, in the 2014 survey these numbers had gone down to 43.4% and 52.3% respectively. Despite the remarkable progress made, there is still a huge gap between rural areas and cities and men and women as seen in table 6.

Table 6: Share of men and women by educational attainment

	Amhara Region		Addis Ababa	
	male	female	male	female
No education	43.4 %	52.3 %	8.2 %	16.3 %
Some primary	43.6 %	36.9 %	31.1 %	37.4 %
Completed primary	1.6 %	0.9 %	4.9 %	5.2 %
Some secondary	6.6 %	6.4 %	21.0 %	16.6 %
Completed secondary	0.4 %	0.3 %	8.5 %	6.5 %
More than secondary	4.1 %	3.0 %	25.6 %	17.7 %

Source: CSA & ICF 2017

Under its Health Sector Development Program (since 1996) and Health Extension Program (since 2002), Ethiopia has improved its health care significantly. The numbers of hospitals increased from 87 in 1996 to 311 in 2015, health clinics from 412 to 3547 and health posts from 76 to 16440 in the same period (CSA & ICF 2017).

Due to the low electrification in Amhara Region and low incomes mass media like newspapers, TVs, Radio or the Internet are only rarely used. About 24% of the male and only 8.4% of the female population in Amhara listens regularly to the radio. The ownership of mobile phones is drastically lower in Amhara Region compared to the capital. Only half as many women own a mobile phone than men, as seen in table 8 (CSA & ICF 2017).

Table 7: Selected indicators for basic health

	Amhara Region		Addis Ababa	
Total Fertility Rate (children born per women)	3.7		1.8	
Under 5 mortality rate (per 1000 live births from 2005-2015)	85		39	
Share of women using modern method of contraception	46.9 %		50.1 %	
Share of children under age 5 who are stunted	46 %		15 %	
Share of births delivered at a health facility	27.1 %		96.6 %	
Share of children under 3 that received all basic vaccinations	45.8 %		89.2 %	
Share of women age 15-49 that are circumcised	62 %		54 %	
	male	*female*	*male*	*female*
Share of people without health insurance	84.3 %	86.2 %	89.7 %	93.8 %
Share of people who are underweight	67.4 %	45.8 %	35.2 %	26.8 %
Share of people who are overweight	2.8 %	6.9 %	39.2 %	58.8 %

Source: CSA & ICF 2017

Table 8: Selected Indicators for media coverage & mobile phone ownership

	Amhara Region		Addis Ababa	
	male	*female*	*male*	*female*
Share of people who used the internet within the last year	9.7 %	2.5 %	58.5 %	30.8 %
Share of people who reads a newspaper at least once a week	3.2 %	1.7 %	30.7 %	10.5 %
Share of people who watches television at least once a week	19.5 %	10.3 %	80.8 %	81.1 %
Share of people who listens to the radio at least once a week	24.6 %	8.4 %	67.1 %	45.3 %
Share of people who own a mobile phone	48.4 %	21.2 %	94.4 %	87 %

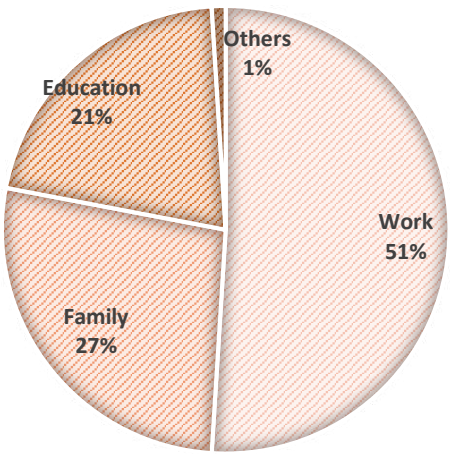
Source: CSA & ICF 2017

Mobility and migration

Over the last 50 years, Ethiopia had substantial migration flows, induced by different incidents and following certain migration patterns. Main migration patterns include:

- a seasonal (temporary) migration, mostly by single men, often coinciding with the agricultural slack season (ASFAW ET AL 2009),
- permanent migration to cities, often due to shortage of land and employment opportunities in rural areas with destinations including large cities but more importantly medium-sized and small towns (HAILEMARIAM & ADUGNA 2010),
- long-term migration by women due to marriage or other family-linked causes, often from rural areas,
- multi-local livelihoods when people pursue diversified livelihood strategies at different places.

Rural-urban migration is an issue also within Amhara Region where small and medium towns are growing at a faster rate than the large cities like Addis Ababa. The main rural-urban migration patterns include a seasonal migration, often during agricultural slack periods, and permanent migration due to land shortages and lacking employment opportunities in rural areas (mostly males) or marriage (mostly females). In Amhara Region, several studies (e.g. HUNNES 2012) have identified the inability to grow enough food or other produce as major reason for migration from rural areas to cities.



Source: FAO 2017

Figure 9: Drivers of rural-urban migration

However, job creation is not keeping pace with population growth and the number of rural-urban migrants, respectively. The job opportunities in urban centres are very limited. With a stagnating manufacturing sector and despite an increasing services sector the urban job potentials are far too small to absorb the increasing numbers of young rural job seekers. Moreover, many of these jobs are in the informal market and have low productivity and limited income-generating effects.

Roles and prospects for women and youth

Analysis of the National Labour Force surveys conducted by the Central Statistical Agency of Ethiopia in 2005 and 2013 shows that a share of 45% of the youth are engaged in the agriculture sector. Despite this figure has declined by 6% over time it remains the biggest employment sector for the young generation. Substantial variation of employment by gender can be observed:

Rural future? – Perspectives from the rural youth

In the forerun of the G20 Summit 2017, topics around "rural futures" and prospects for the rural youth were discussed and elaborated during consultations, workshops and conferences. In order to also to obtain the perspectives of a more numerous sample of African Youths, GIZ initiated a SMS-based survey: 10,000 young people (between 18 and 35 years) from rural regions in 21 African countries were asked about their personal aspirations and plans for the future.

Question: In five years, where do you want to live?

	Capital / metropolitan area	Other city / town	Village	Depends on conditions
Amhara	26.4%	13.6%	6.4%	53.6%
Ethiopia	27.0%	13.6%	5.8%	53.5%
Africa	23.4%	17.7%	7.1%	51.5%

When disaggregating the responses into those from Ethiopia (n=600) and from Amhara (n=125), several regional differences become visible. For example, in Ethiopia, the share of young people regarding agriculture as not attractive or see the need to improve its reputation (48.6%) is more than three times the average for all African countries (14.6%).

Question: Farming is attractive if:

	Its reputation improves	It uses technology	There is training	I can invest	It pays well	I get land	Isn't attractive at all
Amhara	31.2	22.4	12.8	10.4	5.6	3.2	14.4
Ethiopia	35.6	21.8	9.0	9.3	5.5	5.6	13.0
Africa	11.6	20.6	16.0	18.4	17.4	13.9	3.0

Remarkably also, respondents from Ethiopia do not regard access to infrastructure and electricity as an obstacle for living in rural areas. But, three out of four young people, and therefore twice as many as in African average, cite lacking job opportunities as one major aspect that makes rural areas unattractive to them. Also educational standards are seen as problematic in Ethiopia.

Question: What would be the three main improvements to make life in your community/village more attractive for young people?

	More job opportunities	Better education	Other	Better access to technology	Don't know	Better electricity access	Infra-structure dev.	Better support to agriculture
Amhara	77.6	41.6	21.6	7.2	1.6	0.8	0.8	-
Ethiopia	75.0	43.8	25.3	7.5	1.1	0.1	0.5	1.0
Africa	36.9	35.4	21.4	5.3	2.5	4.7	17.9	14.8

Source: GeoPoll, unpublished

The share of female youth employed in wholesale increased by 11%, while the share of male youth employed in construction increased by 7%. Female and younger youth are more likely to be unemployed or work for wages below average (WELDESILASSIE 2017). Young households are more likely to rely on non-farm income sources to assure their livelihoods as they mostly own little land, and female-headed households rely more on non-farm income then male-headed households (IFPRI 2016b).

Educational attainment of the youth has substantially improved between 2005 and 2013, however only a small share of the youth have access to tertiary education. Despite improved education, a large share of the youth (32%) still is engaged in elementary (unskilled) jobs. At the same time, there is an increasing skills gap amongst the youth for more professionalized occupations in the agriculture, forestry and fisheries sector (WELDESILASSIE 2017).

4.4 Political and Institutional Dimension

National policy framework for rural development and agriculture

While many other African countries have neglected investing in rural areas over the last 25 years, the Ethiopian government invested consistently in the agricultural sector, infrastructure and basic services. Ethiopia is one of the few countries that has met and surpassed the Maputo Declaration's goal to spend 10% of the national budget on agriculture (SLE 2017).

Ethiopia's agricultural policy framework is based on the Agricultural Development-Led Industrialisation (ADLI) strategy that has been a central pillar of Ethiopia's development vision since the 1990s. Implementation of these key government strategies takes place through 5-year plans, including the Plan for the Accelerated and Sustained Development to End Poverty (2005/06-2009/10) and the Growth and Transformation Program (GTP I, 2010- 2015) and the current GTP II 2015-2020.

Agriculture and Rural Transformation under the second Growth and Transformation Plan 2015-2020 (GTP II)

The agricultural sector development plan has the following objectives:
(i) bring about accelerated and sustained growth of agriculture within the framework of the Climate Resilient Green Economy Strategy that equitably benefits people at all levels and that realizes structural transformation of the sector and the overall economy;
(ii) bring about a significant shift in agricultural productivity, build productive capacity and thereby enhance the contribution of the sector to the economy and stabilizing the macro economy;
(iii) to enable women, youths and other stakeholders participate in a structured and organized manner to contribute their part and benefit from the development outcomes. Source: GTP II 2016

In September 2009 the Ethiopian Government and its development partners signed the CAADP Compact agreement like many other African countries. Thereupon an Agricultural Sector Policy and Investment Framework (PIF), was developed to better prioritize and coordinate the investment (from government and development partners) under the GTP I, and to operationalize the CAADP Compact. The PIF has four strategic objectives (SO) that correspond to the four pillars of the CAADP Compact agreement:

SO1: Achieve a sustainable increase in agricultural productivity and production (Corresponding to CAADP pillar 4)
SO2: Accelerate agricultural commercialisation and agro-industrial development (Corresponding to CAADP pillar 2)

SO3: Reduce degradation and improve productivity of natural resources (Corresponding to CAADP pillar 1)
SO4: Achieve universal food security and protect vulnerable households from natural disasters (Corresponding to CAADP pillar 3)

The current Growth and Transformation Plan (GTP II) follows this structure and sets three strategic objectives in the agriculture and natural resources sector which also correspond to the three major (flagship) programs of Ethiopia's Ministry of Agriculture and Natural Resources (MoANR):

1. increasing crop production and productivity (*Agriculture and Growth Program, AGP*)
2. reduce natural resource degradation and improve natural resource productivity (*Sustainable Land Management Program, SLMP*)
3. ensure food security and disaster preparedness and create jobs for rural women and youth (*Productive Safety Net Program, PSNP*)

Each flagship programme has its own steering structure with Steering Committees at national, regional and Woreda level. Additionally, at national level, the government of Ethiopia, together with its development partners, established a coordination secretariat, the Rural Economic Development and Food Security Working Group (RED-FS), to coordinate planning and implementation across all programmes, manage resources and create a framework for synergies. Various technical committees and sub-sectoral task forces on agricultural research or promotion of small-scale irrigation, have been established.

Capacity of local authorities and institutional arrangements

Ethiopia's 1995 constitution created a federal government of nine regional states. The regional governments received fiscal transfers from the central state, and subsequently more power in political decision-making, e.g. for raising taxes, domestic borrowing, recently also in land allocation. But despite a progressive and coherent framework for decentralization, capacities at regional and lower levels are varying and often poor (SLE 2017).

This also reflects in the institutional structures responsible for nation-wide implementation of development programs. Major sectoral programs are defined at federal level, with regional levels having limited influence on design but mandates for implementation within the line of sectoral/departmental government structures. Additionally budget allocations to regional and from there on to district levels are often below demand and earmarked for specific lines of expenditure and hence limit the scope of decentral decision making. At federal level an overall rural development coordination mechanism exists with the Rural Economic Development and Food Security Working Group that brings government and development partners from various programs together on a regular basis. This is not systematically replicated at regional level.

Nevertheless, SLMPs steering structures exist on federal, regional, Woreda and Kebele levels. They formally include representatives from various line ministries and relevant ministerial departments on the respective levels. The same is valid for the other flagship programs. All rural development flagship programs are overseen and coordinated by the Ministry of Agriculture and Natural Resources and it's decentral structures. On regional level, as the leading government authority for agriculture and rural development, the Bureau of Agriculture and Natural Resources and on Woreda level the Office of Agriculture and Natural Resources is represented in all programme/project specific oversight committees.

Coordination between the three flagship programmes at Woreda level is a challenge as parts of these programmes are implemented by different directorates within the MoANR structure and follow different implementation modalities. Although there are no spatial overlaps on grassroots level, institutional structures and staff for implementation support, particularly at Woreda are often overburdened with providing support to various national programs in their districts at the same time. That particularly opens up synergies for more efficient development of varying capacities of governmental implementation staff at district level. Also, there is untapped potential of exploring synergetic interlinkages between adjacent program implementation areas across and within the various flagship programs. However, this would be an important precondition to work towards inclusive rural transformation.

Generally, on Kebele or community level, local commitments to implement SLMP is high. Particularly efforts to strengthen community based institutional structures on community levels have proven to be effective for SLMP implementation. Particularly the model of local level Watershed Users Associations (WUA), as introduced under the SLMP, have improved participation in planning, implementation and monitoring of SLMP activities, and also created a stronger sense of ownership amongst the target group. Formal legalization of those WUAs was first realized in Amhara Region. Through the formal regime of WUAs, user-groups adopted bylaws on the sustainable use of their natural resources, for instance to enforce grazing regulations and qualified for the opening of bank accounts. Experience has shown, that strong WUAs can partially buffer for occasional capacity gaps within the SLMP multilevel technical support platforms of the governments' implementation system to reach out to community level in scale. This mainly by regular dialogue processes amongst affected community members to share information and the focussed communication of jointly formulated issues via the WUA chairperson into the lower level government system.

Garma Microwatershed Users Association in Gozamin Woreda

One of the almost 500 WUAs formed under the SLMP in Amhara is the Garma Microwatershed Users Association with 589 households. The Association ensures participatory planning processes in cooperation with local government support staff – mainly the Development Agents, based at the local farmers training center.

Members report positive developments attributed to impacts of the SLMP interventions leading to rising household incomes. Indicators mentioned are improved housing situation with corrugated iron roofs instead of grass thatched ones, 3 meals a day instead of only 2 and that families can afford to send all their children to school. The association realized joint saved 2,160 US$ on its bank account and members managed individual savings as well.

With regard to the perspectives of the young generation in their local community, WUA-members expressed their view on the importance of local options, strongly related to the status of and access to a robust natural resource base. Those who have access to a portion of land would prefer to be engaged on the family farm. As the availability of land cultivable land is limited, many young community members without access to land have benefitted through SLMP support in engaging them in income generation activities as sheep fattening or bee keeping/honey production. In the opinion of the WUA Chairman, SLMP has opened up options for the young to become part of local development. Still, casual work for commercial farms or other industries - particularly around the Woreda capital Debre Markos area are a welcome option to diversify income and bridge off-season slack periods on family farms. The same applies for governmental cash for work programs mainly in rural road maintenance and construction.

The organized smallholders benefit from their relative proximity to the growing Woreda capital, where they prefer to market their livestock and agricultural products individually than the nearby small town of Gokola. The group reports also, that with the rapid expansion of the mobile network their rural area is now also connected. While 10 years ago, no one in the local communities had a mobile phone, now a quarter of the community members do have one. They use it to get market information from town and access general information from Ministry of Agricultures' infoline. It provides them immediate access to pertinent agronomic information, which helps them to make more informed decisions about their farming practices.

Land rights and other rights relevant for rural economic activity

Ethiopia has a mixed history of internal migration and population redistribution shaped by instability, civil war, drought and famine, and also, partly in response, governmental resettlement programmes. After three major droughts in 1977-78, 1987-1988 & 1993-1994 and a national famine in 1984-1985, the Derge regime resettled an estimated 600,000 rural farmers from "*drought-prone areas in the north to more agriculturally productive areas in the west. In addition to resettlement plans, land redistributions were frequent under the Derge, with some locales experiencing as many as three rounds over ten to twelve years*" (IFPRI 2010).

Under Ethiopian law, all land is vested in the government and people of Ethiopia. However, people have land use rights that are transferable through inheritance, gifting, divorce and rent. Several publications (IFPRI 2010, WORLD BANK 2015) cite the lack of transferable land rights as one factor constraining rural-urban migration in Ethiopia.

Land rental is most common in Amhara, over 30% of rural households rented out their land, and 22% rented a parcel of land from someone else. Land rental is limited to a 25-year period. Households in Amhara have on average 1.34 ha cultivable land which is fragmented into various parcels (CSA & WORLD BANK 2017). Formally, there exists a very low agricultural income tax based on land size in Amhara. Also, in order to stop further land fragmentation, minimum size for an agricultural plot has been set at 0.25 ha (BUNI 2014).

Ethiopia's land registration and certification program has been one of the largest, fastest, and most cost-effective in Africa. Between 2002 and 2009 the SIDA-supported Amhara Rural Development Program supported registration of legitimate land use rights in Amhara. In 2009, practically all rural farmland in the Amhara Region had been registered and *"3 million certificates have been issued, giving almost all households formal right to a piece of land"* (SIDA 2010). A "Book of Holding" contains the official certificate showing that those named within - wife and husband - are the rightful users of the land described in the book[7], a precise description of the parcels, including specifics of the area, incl. names of neighbours. This "first stage" involved the registration and demarcation of land plots using simple local technologies that required little training such as field markings, measuring tapes, ropes and neighbour as witness. "*While the initial cost of this registration was extremely low (approximately 1 US$ per farm plot or less), its impact in improving tenure security has been significant, as evidenced by increased investment, land productivity and land rental market activity*" (BEZU & HOLDEN 2014).

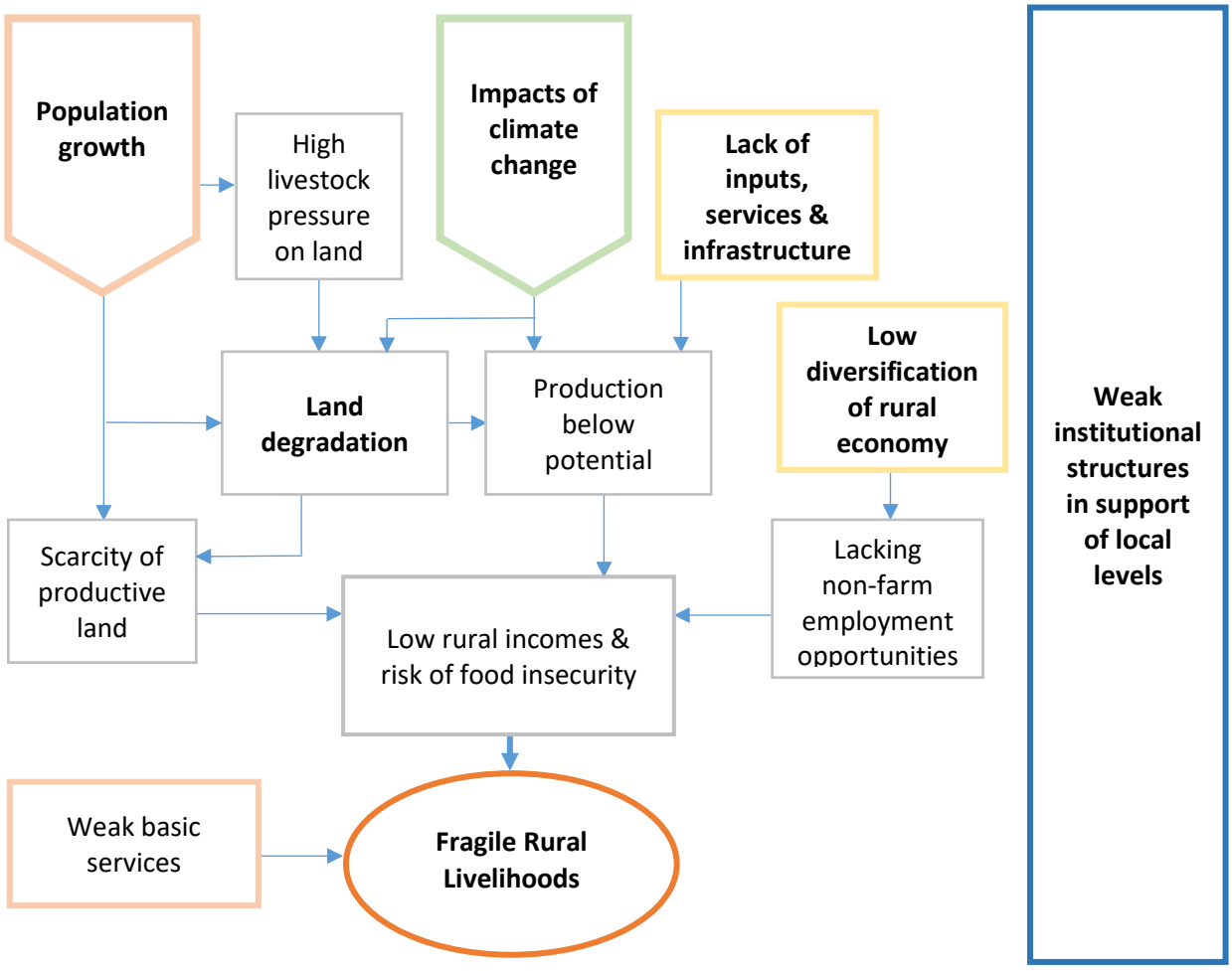
A "second stage" registration, using technologies such as GPS, satellite imagery or orthography for registering the precise geographical locations and sizes of individual farm plots is currently rolled out. Main advantages of the second level registration are a better basis for digital land administration and an accessible public documentation of land-related affairs, improving also transparency. In Amhara, the land registration is one component of the SLMP. The Amhara Regional government has, in 2017, adopted a new law that allows owners of a land-use certificate to use their land as collateral for accessing financial credit.

[7] Based on the information entered into the Land Registry Book, the Woreda administration office issues a Book of Holding for each registered household. This booklet contains the name and picture of the owners, list of family members and address, as well as basic rights and obligations according to the law. It also contains the official certificate of a household's right to use their land, the Primary Certificate (SIDA 2010)

4.5 Synthesis: Rural Transformation in Amhara Region, Ethiopia

Through the analysis of current trends in rural transformation within the Amhara Region different challenges of rural livelihoods can be identified. With population growth and the inheritance practice of splitting the farmland between several descendants, average farm sizes are decreasing, and, access to land is increasingly limited. Furthermore deforestation and traditional free-grazing have contributed to severe land degradation with high erosion figures, declining availability of water over the year, loss of soil fertility and declining agricultural productivity on affected areas. Additionally lack of inputs and services combined with poor infrastructure reduce agricultural productivity. At the same time, little on-farm diversification as well as value-addition and agro-processing in the region provide only limited employment opportunities as labourer on other farms, in agro-processing or non-farm jobs. Even though effects of climate change on agricultural production and incomes are difficult to differentiate from normal climate fluctuations, it is expected that an increasing variability of weather patterns and expected temperature increases of between 1°–2°C by 2050 will pose an increasing risk of agricultural production losses. These pressure factors drive especially young people out of rural areas into urban centres. The interlinkages and relationships between the described factors and resulting trends of rural transformation are depicted in the following illustration.

Figure 10: Challenges of rural natural resource-based livelihoods and possible impacts

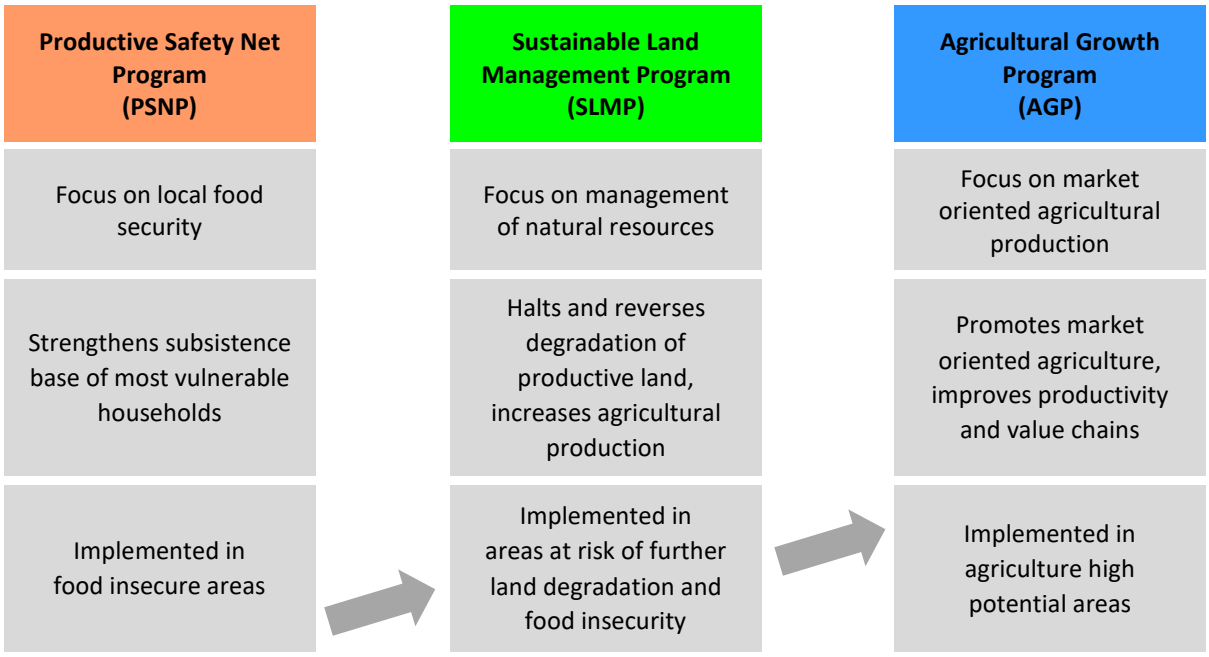


5. The GIZ support to Ethiopia's Sustainable Land Management Program in the context of rural transformation

Ethiopia's Sustainable Land Management Program is one of Ethiopia's three flagship programmes in the agriculture and rural development sector. It is considered as one of the three pillars to realize agricultural and rural transformation as envisaged in the agricultural sector development plan under the GTP II (see also 4.4).

SLMP is strategically positioned in between the Productive Safety Net Program and the Agricultural Growth Program. Each program is set up to target distinct geographic spaces with specific characteristics, target groups and objectives. Those are determined by the levels of poverty and food security, the status of their natural resource base and prevailing agricultural production systems and potentials. Accordingly, the three flagship programs are pursuing different objectives and cover a wide spectrum of development interventions spanning from social security measures over agricultural development support to value-chain promotion.

Figure 11: Agricultural and rural development flagship programs

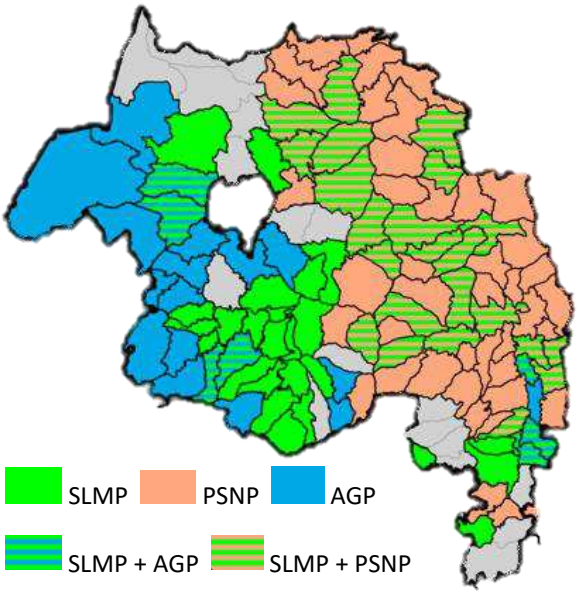


In theory, a supported community could "graduate" from one pillar to another, if successful program implementation has contributed to a certain level of transformation of the rural space addressed by the respective programmes' measure. In practice however, we could not identify cases of clear performance based "graduation". Nevertheless, re-assessments of local status and changes of program criteria led to transitions of areas into higher development level program support.

Amongst the programs, there are thematic overlaps with regard to implementation measures. Most prominently, these are soil and water conservation measures to rehabilitate, stabilize, and improve the natural resource base for agricultural production. Thus, experiences from SLMP are essential for replication and scaling within all flagship programs. Moreover, expansion of all programs led to increased geographic links and overlaps on district-levels.

5.1 Contributions of the GIZ-SLM project

Since 2008 GIZ supports the Ethiopian Ministry of Agriculture in the implementation of the SLMP. The objective of the SLMP is to reduce land degradation, improve agricultural productivity of smallholder farmers, and protect or restore ecosystem functions and diversity in agricultural landscapes. Major interventions of the program with specific GIZ support comprise:



Source: GIZ-SLM Project Report

Figure 12: Agricultural and rural development flagship programs: Geographical coverage of Amhara Region

- Rehabilitating degraded land through soil and water conservation with physical and biological measures like contour lines, cut-off drains, percolation pits or gully check dams;
- adoption of soil fertility improvement techniques through incorporation of nitrogen-fixing leguminous plant species and use of organic manure into agricultural systems;
- introducing agro-forestry practices and improved fodder management system;
- introducing of controlled and zero grazing with cut-and-carry feeding based animal fattening;
- promotion of Natural Resource Management (NRM) based income generation at household level through bee-keeping and honey production, improved animal breeds for milk and meat production, poultry production, crop diversification, and small-scale irrigation;
- supply of clean water for both, human and animal consumption through integrated spring development on watershed level.

SLMP contains five components 1) Watershed Management, 2) Land Administration, 3) Improvement of Framework Conditions, 4) Improved agricultural advisory services, 5) Project Management and receives financial and technical support from various donors like World Bank, EU, Canada, Germany, Finland, and UK.

Through its GIZ-SLM project, the German government supports four of the five SLMP components (all except for land administration). While there are several bi- and multilateral financial cooperation agencies supporting SLMP, GIZ is the only technical cooperation organization that addresses capacity development to strengthen governmental implementation structures of SLMP. This includes technical

Figure 13: Fodder bund plantation

Figure 14: Rehabilitation works

as well as project managerial capacities on national, regional and district levels. Whereas the application of a cascading system was pursued to transfer knowledge and skills to farmer levels.

Evolution of GIZ-SLM Project

Over time, the GIZ-SLM project management did respond to trends and various dynamics affecting the rural space and its local communities by readjusting its intervention design and strategic foci contextualized for the project area. Drivers for adjustment of the project were experiences from macro, meso and micro levels of implementation, effects of extreme climatic incidents, changes in development partner constellation and strategic shifts of government policies (see also: *Dimensions of Rural Transformation Processes, p.12*).

Initially the local level SLM implementation was structured in three clearly separated phases. During the initiation phase, community-level awareness creation and participatory watershed-level planning were at the focus. This was followed by actual support to rehabilitation works at watershed-level and consequently to be complemented with economic utilization of the rehabilitated and stabilized natural resource base. In 2012 the GIZ-support project successfully pushed for a greater integration of the rehabilitation and economic development phases under the SLM program. Implementation of NRM-based income generation activities created greater ownership with the local watershed communities already at early stages of rehabilitation works.

Income generation activities beyond improved agricultural practices were also introduced for vulnerable members of the community, such as female-headed households and landless youth. This supported and rewarded their active engagement in extensive and labour-intensive rehabilitation works on communal lands. For many groups this provided perspectives in rural areas with a recovering natural resource bases.

The issue of free grazing and overstocking is a major driver of land degradation. At the same time, particularly in Amhara Region livestock is a major factor for rural communities' livelihoods. The SLMP initially focused on avoiding livestock induced land degradation via pure regulative measures. The GIZ-SLM support project in Amhara engaged beyond that level and introduced approaches to improve the local animal husbandry systems. This included models of zero- and controlled-grazing combined with stallfeeding and gradual improvement of livestock performance to allow moderate destocking of herds.

Particularly in Amhara Region, GIZ-SLM realized the potential need for strong local governance at watershed level. The project advanced the formation and formalization of local level management structures, from community watershed organizations to legally acknowledged watershed user associations. In 2013, the Amhara Regional council enacted a Watershed User Association proclamation, providing the legal basis for WUA. This has turned out as an effective element for local ownership and to ensure continuation of local level natural resource management by local community based institutions also after project support terminates.

Shortages or significant delays of rainfall affected parts of the Amhara Region several times over the last couple of years. During those periods, GIZ-SLM supported direct support via provision of seed and planting materials for re-planting after early season drought losses and particularly addressed specific parts of the region with special emphasis on water conservation and storage measures.

With a specific emphasis on capacity development of the governments' SLMP implementation structure, GIZ-SLM pioneered the linking between agricultural vocational education and SLMP

implementation support. On a strategic level, the Agriculture Technical Vocational Education and Training (ATVET) component was integrated under GIZ-SLM. With this, the project aims at a more systematic strengthening of agricultural extension workers capacities and knowledge transfer to the farmer level in Ethiopia. The component bridges the sectors of agriculture and education by improving ATVET colleges curricula with more practically oriented content developed under SLMPs implementation support.

Table 9: Overview on GIZ-SLM objectives over time

GIZ-SLM module objectives	Remarks
Phase I: 2008-2011 Agricultural sector institutions, intermediaries and producers contribute to a sustainable and productive land use	– GTP (2010-15) and Ethiopian Sustainable Land Management Investment Framework providing policy frame for SLM – Project focus on technical aspects of soil and water conservation and watershed development
Phase II: 2012-2014 Smallholder farmers and user groups in the intervention areas in Amhara, Oromia, and Tigray apply SLM measures on individual and community land.	– Introduction of support to income-generating activities under SLM Project – 2013 Amhara Regional government enacts a Watershed User Association proclamation that provides a legal status for WUA and strengthens governance on watershed level
Phase III: 2015-2017 Smallholder farmers and user groups increasingly apply sustainable land management practices in combination with income generating activities	– GTP II (2015-2020) includes income-generation – Income-generation moved to objective level under GIZ-SLM – Systemic strengthening of capacity Development through ATVET support component – Government of Ethiopia addresses Youth Employment by Rural Job Opportunity Creation Strategy (2017). This emphasizes importance of youth engagement under NRM-based income generation activities

Increase of complexity by expansion of SLMP

Since the start of the SLMP in 2008, the number of districts taken up by the national program has gradually increased. Initially SLMP in Amhara Region had covered 16 Districts funded by the World Bank (WB) during their first support phase. Additional 10 districts were added in 2010 funded by KfW and further 6 districts were taken up in 2013 through the engagement of the Canadian Department of Foreign Affairs, Trade and Development (DFATD). Whilst the World Bank covered another 24 Districts via its second SLMP-Support phase a gradual withdrawal of funding support to the districts of World Banks' phase I was initiated. However particularly with regard to economic development some advisory support still was rendered to those districts in declining intensity.

Table 10: Number of districts covered under SLMP by donor

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
WB I	16 Districts									
KfW			10 Districts							
DFATD					6 Districts					
WB II								24 Districts		
Total	16		26		32			56		34 + *16*

Due to the use of various opportunities in accessing additional funding, GIZ-SLM complemented its core SLMP-support project with additional components. Those were the participatory forest management (PFM-funded by BMZ), the Global Climate Change Alliance (GCCA-funded by EU), the Improved Seed Supply Project (ISSP-funded by BMZ) and the Integrated Soil Fertility Management

Component (ISFM-funded by BMZ). Although, activities under these project components didn't add new districts for GIZ's support coverage, additional thematic elements were integrated into the regional units portfolio. Despite all thematic complementarities, new interfaces were created with the core SLMP, requiring additional coordination efforts by all parties involved. Moreover, the parallel gradual expansion of the other flagship programs of Ethiopias' Ministry of Agriculture (AGP, PSNP) increased spatial interlinkages and institutional overlaps on district levels.

Table 11: GIZ-SLM interfaces with other projects/partners

Level	Projects / components
GIZ internal	Integrated Soil Fertility Management (ISFM) Participatory Forest Management (PFM) Global Climate Change Alliance (GCCA) Improved Seed Supply Project (ISSP) Agricultural Technical and Vocational Education and Training (ATVET)
SLMP-scope	Multi-partner setting for SLMP implementation support to MoANR includes financial cooperation (FC) and technical cooperation (TC) with different modalities - World Bank direct FC support (Investments for specific Woredas under SLMP) - German FC support via KFW (Investments for specific Woredas under SLMP) - German TC support via GIZ (Capacity Development for all Woredas under SLMP) - Canada FC support via KFW and TC support via GIZ (for specific Woredas under SLMP) - EU Climate Change Mitigation and Adaptation FC and TC support via GIZ (for specific Woredas under SLMP) - Finland direct FC and TC support to SLMP Land Administration Component (for all Woredas under SLMP)
Other programs	Agricultural Growth Program (AGP) (Ethiopian government) Productive Safety Net Program (PSNP) (Ethiopian government) Community Based Integrated Natural Resources Management Project (IFAD)

This complexity required more efforts in regional coordination and steering which was substantially supported by GIZ-SLM. This mainly through advisory services provided to the regional Amhara Bureau of Agriculture and Natural Resource Management, which is in charge of the coordination of SLMP and the other flagship programs as well. Through mostly program-specific steering structures and technical committees, the Bureau is overseeing the regional program implementation and can adjust for synergies. The regional program coordination structure under SLM reflects the national level platform. It comprises a political steering committee - which also has the key mandate for regional steering of the (sub-) components such as PFM, a technical committee oversees implementation plans and the implementation coordination unit. Regional donor-partner coordination is not as strictly organized as on national level with its RED-FS working group.

5.2 Results in Amhara Region

In Amhara Region, the GIZ-SLM project – through activities implemented by its regional support team in Bahir Dar – has significantly contributed to the implementation of the national SLMP. With the ecological dimension of the national SLMP flagship program as a lever, all four dimensions of rural transformation could be addressed.. Over 9,000 government staff (more than 40% women) from regional, zonal and Woreda levels were trained. Technical trainings addressed issues of soil and water conservation measures, crop and livestock development, forestry, nursery development and infrastructure development. Socio-economic content was particularly dealing with participatory approaches, grassroots-level group formation, and household level income generation. Moreover, a

number of trainings particularly aimed at strengthening the government implementation structures' project management and methodological capacities.

With respect to current trends of rural transformation and interlinked challenges for rural livelihoods identified within chapter 4 (see figure 10), GIZ-SLM contributions to SLMP's impact are addressing five key factors that will be addressed in more detail:

a) Rehabilitation of degraded land increases area for productive use
b) Controlled and zero grazing reduces livestock pressure on fragile land and increases water storage capacity on landscape level
c) Integrated soil fertility management increases soil health and production potential
d) Support to income-generating activities integrated with rehabilitation works
e) Establishment, empowerment and legal formalization of community level organization like watershed user associations

(a) Rehabilitation of degraded land increases area for productive use

In Amhara, 414,000 ha of degraded lands in 750 micro-watersheds have been rehabilitated with 202,000 households benefitting, 22% of them are women-headed households. Both communal and individual farmlands were rehabilitated from 2008 to 2017.

Physical measures of land rehabilitation including gully rehabilitation (3486ha), construction of diversion weirs (7) and irrigation feeder canals (3), spring and hand dug wells for irrigation (31) as also for drinking water supply (486), water lifting and application facilities (2158), water harvesting ponds (364), small-scale irrigation schemes (3610ha) and community road constructions (in total 193km). All figures according to GIZ-SLM internal monitoring.

Under the participatory forest management component in Amhara, 22,000 hectares have been demarcated for community-based management, more than 2 million seedlings were produced and planted, and land use agreements between community and land holders have been signed. Under the Improved Seed Supply Project, over 80,000 households in Amhara have received seeds/seedlings for fruits, tubers, coffee, cereals, root crops or pulses.

An average increase of vegetation cover of 13-15%, a substantial reduction (85%) of soil erosion on treated land, and positive effects ground water levels as on water availability have been measured in the project areas.

Through these interventions degraded land was restored and biodiversity increased. This allows for diversification of agricultural activities and creates employment opportunities, like bee keeping or fodder production, and more people can become engaged in agricultural activities in Amhara Region. For example, landless youth were allocated portions of land in previously degraded gullies or terraced hillsides and trained in appropriate cultivation methods.

(b) Introduction of controlled and zero grazing and improved livestock breeds

Area closures of over-used grazing lands, especially on hillsides, halted soil degradation, improved biomass coverage and water percolation. Biological measures for cut and carry fodder systems improved fodder availability and quality as well as sales of surplus forage.

Introduction of improved animal breeds and strengthening of household based animal husbandry systems with controlled grazing and stall feeding improved livestock productivity (milk and meat). This

also allowed destocking of livestock at household level from average 5.7 cattle to 3.8 and from 6.4 sheep to 3.5 per household. These measures improved overall livestock productivity and therefore generated better incomes and reduced grazing pressure on fragile lands.

(c) Soil fertility measures increases productivity of arable land

Soil and water conservation measures, especially increase of organic matter in soils, utilization of manure and liming of acid soils can significantly improve soil fertility. On farm productivity analysis indicate 80% to over 200% higher yields attributable to improved soil health and appropriate cultivation methods.

The Integrated Soil Fertility Management component of GIZ-SLM conducted an analysis comparing ISFM practices such as use of improved seeds, row seeding, application of lime and different fertilizers like a single urea top-dressing or bio-fertilizer such as green manure or compost from so-called farmer-led demonstration sites with conventional local farming practices as control. Increases of yield on the eight Amhara field sites for maize, faba bean, teff and wheat showed increases of additional 40-90%. The higher on-farm productivity from crop cultivation can lead to better incomes for rural farmers.

(d) Support to income-generating activities

In Amhara, GIZ-SLM supported 312 organised user groups in natural resources management based income generating activities comprising 2,896 members (2,252 men and 644 women). These groups generated income from activities such as apiculture (78 groups), small-scale irrigation (61), bull-fattening (23) and sheep fattening (45), poultry production (35), seedling production in nurseries (34), production of fruit (7), vegetable (2), potatoes (5), fuel-saving stoves (1) and shoats (21 groups).

Support included provision of inputs, technology, infrastructure as well as trainings on improved production methods. Farmer targeted capacity development was delivered through the governmental structures usually via local development agents based at the community level Farmers' Training Centres and district level expert staff. Out of the 312 user associations, 231 developed by-laws that regulate access to and use of resources as well as aspects of cooperation, management and accountability. 226 are very active and economically viable; most successful were groups supported in small-scale irrigation, 43 groups have dissolved because of weak performance or other reasons.

(e) Establishment, empowerment and legal formalization of WUAs

The establishment of coordination and cooperation platforms at the different levels, from federal to Woreda-Kebele-community, has allowed networking and creation of ownership for local development initiatives. With the concept of watershed user associations GIZ-SLM strengthened decentralized ownership amongst watershed communities in Amhara. WUA have been essential in participatory land use planning on micro-watershed level and in the formulation and enforcement of by-laws that regulate use of the local natural resource base. The community members are using the WUA to organize, plan and implement soil and water conservation and rehabilitation measures in their watersheds. In Amhara, 489 WUAs have been established, so far.

In 2013, the Amhara Regional Government enacted a Watershed User Association proclamation that provides a legal status for WUA, enabling them to legally enforce bye-laws and eases access to professional services. It should be emphasized that strong ownership by functional WUA allows

continuation of the communities' efforts of managing their natural resource base sustainably, also beyond external donor support to the local watershed level.

Ato Tiruye – Farmer at Bure Zuria

Ato Tiruye, a local champion of sustainable land management and chairperson of Bure Zuria Dawja Menkeria Microwatershed Users Association, has observed a big change in his community, particularly due to SLMPs support in construction of a diversion weir and support to improve agricultural diversification and productivity. The area of irrigable land in the local watershed was expanded from 30 to 80 ha. A local contractor led the construction works of the weir and irrigation canals, supported by community labour. This opened up new prospects for the community and triggered an increase in WUA membership from 32 to 56 households. All of them now engaged in cash crop production under irrigation like banana, coffee, onions or spices.

Ato Tiruye is a role model for community members. He is closely collaborating with Woreda experts and Development Agents and provides advice to other community members based on the good practices on his intensively managed 0,35 ha plot and homestead based animal husbandry. As a comparatively young farmer of the community, he operates on a small plot size compared to those who have not split-up their plots amongst their children yet. Nevertheless, he himself managed to secure education for all his 8 children with 2 of them at university studying computer sciences in the nearby Woreda capital Bure. Although sceptical if they will find a decent non-farm-job, he is clear about the limitations of having them engaged on the small family farm – despite his good understanding of raising the intensification levels of production. However, as a man with a vision on the future of his flourishing family farm and with his close observation on developments in the growing Woreda capital nearby, he contemplates options for economic diversification. A family led small restaurant in bustling Bure Town is what he is striving for to add value to the own farm produce.

Key lessons learned by the GIZ-SLM project.

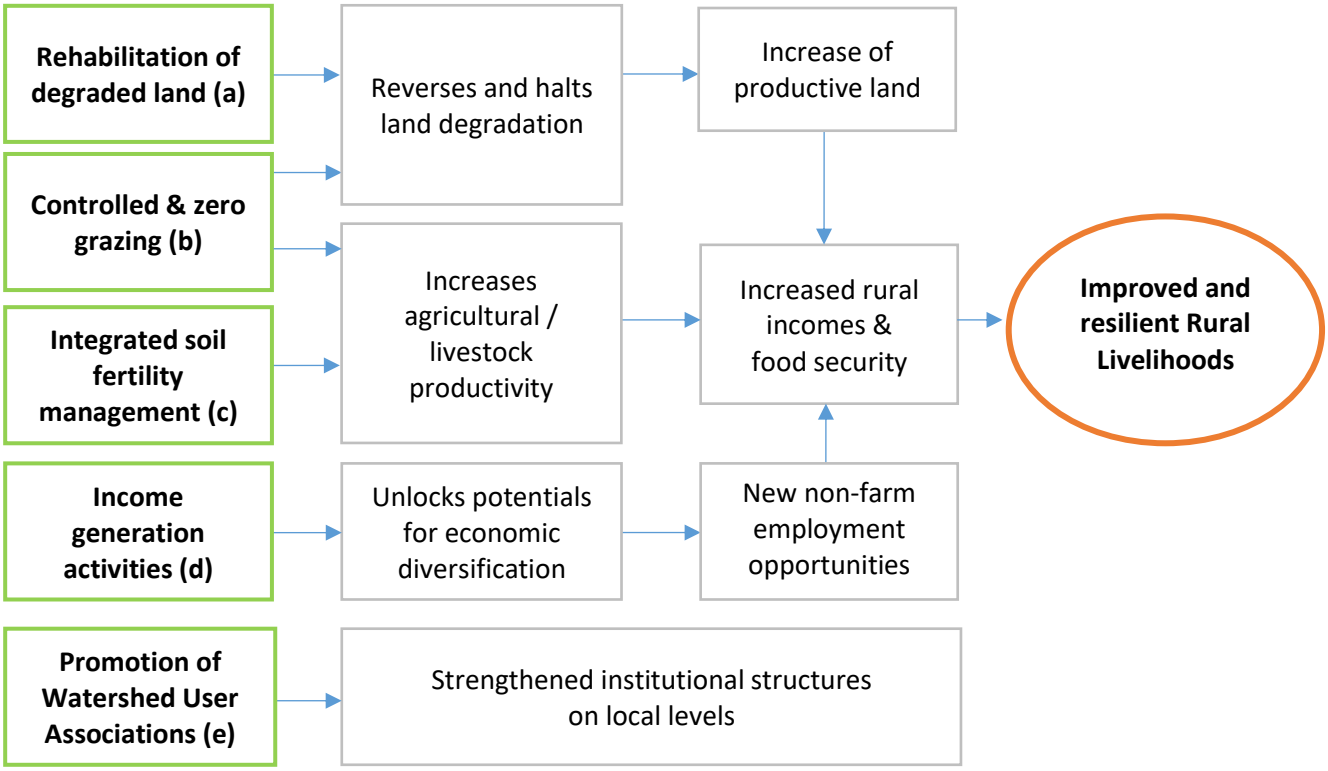
After nine years of GIZ-SLM implementation, key lessons with regard to sustainable land management in Amhara Region are:

- Land degradation can be reversed: Watershed User Associations / grassroots community organizations can manage natural resources and drive agricultural development with support from regular extension services, once capacities have been developed;
- Economic benefits from the rehabilitated land are a key incentive for future protection and continuation of sustainable land management practices beyond donor supported program phases. Focus should be “protection through productive use”;
- Adoption of zero and controlled grazing and local enforcement of grazing regulations can be successfully achieved through community based governance systems. In combination with improved animal husbandry systems this can be a critical step towards transforming small-holder agriculture with significant improvement of productivity;
- The high fluctuation of government implementation staff on micro and meso levels as well as reoccurring changes in organizational structures particularly on regional and national levels are a particular challenge for capacity development efficiency and effectiveness.
- Scaling-up of SLM remains a general challenge. Out of roughly 4-5 million ha degraded area in Amhara, so far 414,000 ha have been rehabilitated. A strategic approach to cost-effective scaling mechanism is yet to be developed. Smart SLM financing mechanisms through engagement of private sector and payment for ecosystem services schemes may be options to support further scaling-up.

5.3 Discussion: addressing the four dimensions of rural transformation with the GIZ-SLM project

This section of the document reflects GIZ-SLM project outcomes against trends observed in ecological, economic and social dimensions of rural transformation. It is understood that one intervention alone cannot change all factors influencing a rural change process, nor is this the ambition. But positive impacts of the programme have made a substantial contribution on a more inclusive development pathway.

Figure 15: SLM entry points and leverages to address rural transformation dynamics



(a) Rehabilitation of degraded land

Clearly addressing the ecological dimension of rural transformation, land rehabilitation deals with reversing damage to the natural resource base caused by people and exacerbated by impacts of climate change. It lays the foundation for rural productivity and hence is a prerequisite for positive transformation processes under the economic perspective.

The rehabilitation of degraded land increases the total area available for cultivation, and directly responds to the decrease of available farm land which is one of the drivers of rural-urban migration in Ethiopia. With the magnitude of land degradation in Amhara and the significance of the agriculture sector for the rural population, restoring degraded lands for a sustainable agricultural production contributes to livelihood opportunities in rural areas. This is even more effective when mechanisms exist that allow people with limited land access to benefit for instance from replanting with high quality fodder grasses for intensive livestock production. Therefore, land rehabilitation is a key prerequisite for local development. But given the population pressure in rural Ethiopia, it needs complementary investments in local non- and off farm economic development. This can be observed in Amhara Region and throughout Ethiopia by strong efforts of the government to establish agro-investment parks to

attract private sector investment in agro-processing industries, small, medium or large, and agricultural input service delivery businesses on decentral levels.

(b) Controlled and zero grazing

Taking into account the economic importance of livestock in Amhara Region and its potentially negative impact on the local ecology, the integration of appropriate grazing systems addresses foremost ecologic and economic dimensions of rural transformation. Whilst protecting fragile lands from overgrazing it strengthens the performance of animal husbandry systems with high potential to increase incomes of rural households.

Overstocking often results in reduction of animal productivity and overgrazing, which leads to accelerated land degradation with far reaching effects also on agricultural production. The introduction of controlled and zero grazing, the latter by area closures managed by local communities halts land degradation and allows quick recovery of biomass and increased biodiversity at watershed levels. Besides the positive ecological effects, recovered former communal free grazing areas, especially on hillsides, are used productively for quality cut-forage plantation and establishment of bee colonies feeding on revived local plants and flowers for profitable honey production. Introduction of improved species and animal husbandry systems based on cut and carry feeding, improved livestock productivity and allowed gradual destocking on household levels. Consequently, the livestock pressure on remaining communal pastures managed under controlled grazing was gradually reduced and with it, the threat of livestock induced land degradation. Income from livestock products increased through integrated SLM measures.

(c) Integrated soil fertility management

A central element for improving sustainable agriculture in Ethiopia is a soil fertility management adapted to the local conditions. The introduction of modern methods for soil analysis to identify deficiencies in plant nutrition, combined with a wide spectrum of corresponding measures, lay the foundation for improved agricultural productivity and increased incomes from farming activities embedded in concepts of sustainable use of natural resources. Besides technical improvements for integrated soil fertility management, this also includes strengthening of capacities of government extension services and development of services provision such as the establishment of lime supply chains with private sector stakeholders and/or cooperative structures, with potentials to strengthen local economy and creation of jobs.

Recognizing not only the obviously visible ecological damage to the landscape, ISFM takes restoration further by addressing depleted soils and restoring soil health. In line with land rehabilitation this adds the necessary elements for ecological sustainability and increase agricultural productivity, the basis for making economic development of rural areas possible.

(d) Income generation activities

The intensification and diversification of agricultural production provides many opportunities for small-holder farming households and buffers for scarcity of land: small-scale milk or meat production, honey production or irrigated horticulture improve incomes and general livelihood perspectives for the rural population. Additionally, natural resource management based income generation activities specifically addressing vulnerable groups and landless youth, open up new perspectives for the latter. Examples are economic activities without land requirement such as beekeeping for honey production, oil seed processing or also agricultural activities like fruit, vegetable or fodder production on small

portions of rehabilitated communal lands in gullies and terraced hillsides. Despite their low labour productivity, these activities offer opportunities for increased household resilience and bear potentials for local economic development. In light of limited or non-existent formal job potentials, such interventions to moderately foster local economic development are options with potential for scalability and growth, e.g. through establishment of revolving funds and market linkage support.

Zembaba Union of bee product cooperatives – Bahir Dar

Cooperative based unions are common organisational arrangements in Ethiopia, which link smallholders to input and output markets. Their success and hence relevance for smallholders as members in cooperatives, is strongly depending on the management capacities and functionality of institutional arrangements. Service orientation to the needs of their members occasionally appears to be a challenge. Often, agricultural unions take up functions under government strategies aimed to boost agricultural productivity such as fertilizer distribution campaigns.

Commodity based unions, such as Zembaba Union can help producers from rural communities to improve their economic status. Established in 2006 with 9 primary crude honey cooperatives in Amhara Region, Zembaba Union today comprises 21 primary cooperatives with a capital increase from 108,000 to 756,000 US$. The union managed to acquire support from different organizations over the years and holds fair trade and organic certification. The union manages honey exports to the European market (200 qtl/year) and serves the local market with 75% of its produce at a high quality standard. Reaching and keeping this standard of quality, the Union provides training to cooperatives on improved production methods – also with support of the Ethiopian Apiculture Board. The quality and quantity of honey production depends on the availability of a diverse flora. Honey producer groups formed under the SLMP in Amhara Region also belong to the unions' cooperative. The rehabilitation of degraded landscapes and the support to landless community members in particular, to become engaged in beekeeping opened up new alleys for economic diversification. Linking producers to the union improved levels of professionalization and competitiveness.

Improved income is the major incentive for rural communities to become fully committed to sustainable land management. Whilst first and foremost addressing the economic dimension of rural transformation, activities aim at addressing the prevailing lack of off-farm employment opportunities, the project also considers the social dimension. With a focus on disadvantaged rural groups such as the landless, women or youth, specifically designed income generation activities create perspectives and reduces the distress for those of being left behind from local development.

(e) Promotion of watershed user associations

The establishment of organizational structures at community level has proven essential for successful rehabilitation and economic use of the local natural resource base. The empowerment of local communities to actively participate in and benefit from joint planning processes with a long-term vision on how their landscape/watershed will look like in the future, is a strong driver for sustainable land management. The legal formalization of local groups governing rehabilitation, protection and sustainable utilization of local natural resources, based on common interest, allows for consequent enforcement of agreed arrangements on community level and strengthens ownership of SLM amongst the target group. The formalized Watershed Users Associations contribute significantly to the sustainability of SLM implementation, as those groups carry on local activities beyond periods of direct program funding.

Conclusion on transformative effectiveness of GIZ-SLM

Interventions of GIZ-SLM as major technical capacity development partner of the Ethiopian national Sustainable Land Management Programme is actively addressing ecological, economic, social and political/institutional dimensions of rural transformation to buffer negative trends and advance sustainable livelihood strategies in rural areas. Its support in enhancing land rehabilitation, introducing appropriate animal husbandry systems, improving soil health and farming systems for agricultural productivity, promoting economic diversification and income generation as well as strengthening institutional structures clearly aim at unlocking potentials of rural areas to take the line of inclusive and sustainable transformation.

Almost all activities supported by the GIZ-SLM project are on-farm activities or at least interventions strongly connected to the agricultural sector. Under the given local/ regional development potentials of the Amhara region, investments in sustainable agricultural development with the aim to stabilize and improve the natural resource base and to increase productivity provides the most obvious development pathway for rural households – at least in the medium term.

The GIZ supported SLMP uses a landscape-based watershed development approach with many elements relevant to foster inclusive rural transformation in an economy based on agriculture. Implementation at the scale of landscapes requires context specific interventions that go beyond mere rehabilitation and conservation works. It aims at creating resilient landscapes and hence, development perspectives for the rural population.

Enhancing rural transformation further

Spatial up-scaling:
Remarkable progress has been made in terms of rehabilitation of degraded lands. However, large degraded areas in Amhara Region are not covered by SLMP or similar initiatives. Innovative approaches to enhance vertical outreach of the SLMP will be required to strengthen the basis for sustainable rural economic development.

Financial and organizational sustainability in rehabilitated watersheds:
Watershed level organizations and user associations play a key role in implementing and up-scaling of SLM measures. Therefore, organizational strengthening and support to the financial sustainability of these groups – as it already has been initiated by GIZ-SLM – is recommendable. Here, a broad perspective for potential synergies and cooperation with other organizational structures is advisable. Options may include engaging more partners in financing rehabilitation (e.g. cooperatives and cooperative unions), or to improve access to finance through saving cooperatives or revolving funds.

Complementary education:

The ATVET component has been included in GIZ-SLM in 2015 to address the weak capacities of agricultural training colleges and Development Agents as SLM advisers to the farming community, respectively. Activities include adapted development of curricula and learning materials, increase of practical "out of classroom" training, and strengthening qualifications of teachers - both technically and methodologically. This improves capacity development of the SLMP governmental implementation structures. Due to staff fluctuation at various levels, redundant trainings of new experts and Development Agents have to be provided by the TC support to SLMP. Improving the quality of education by covering SLM related thematic and managerial content in agricultural colleges will allow greater efficiency in external TC support to the SLMP.

Sharpen participation of youth and women:
Measures that specifically target the rural youth or women should be enhanced. This is in line with national policies such as the *Rural Job Opportunity Creation Strategy* to foster youth employment. Engagement of youth in rehabilitation works linked with allocation of small portions of previously uncultivable land, such as in Tigray Region, provide options for economic engagement of the young generation. However, local conditions matter and need to be considered before transferring such an approach to other regions.

Income and job opportunity creation, diversification and value-addition:
Potentials for supporting income generation through diversification, value-addition and

Evergreen Integrated Dairy Farm Enterprise

Private sector engagement in Ethiopia's rural development remains behind its potential as government regulations and bureaucratic hurdles do not yet provide the most conducive framework for private investment in rural areas. As improvements are underway, some pioneers, often under the umbrella of the AGP flagship program venture into rural businesses.

One example is the Evergreen Integrated Dairy Farm Enterprise in the rural periphery of Amhara's regional capital Bahir Dar. Their market study of the dairy sector revealed a high potential for dairy production and excellent marketing potentials in central Amhara Region. Setting up a local dairy with modern processing technology, the enterprise started linking up with family farms within a radius of 15 km to purchase raw milk.

Currently 1200 smallholders deliver milk to 5 rural collection centres with cooling facilities. The average of 3-10l milk per day bought from rural communities is supplemented by produce from Evergreens' own herd. To meet the processing capacity of the dairy and the market demand, expansion of milk collection from rural communities also via additional collection centres is underway. As quality of milk from smallholder producers is an issue, the enterprise envisions improved collaboration with smallholders by delivering services such as quality feed provision and technical advice via the collection centres. This entails also the establishment of a quality-based payment system in the long term, which would help smallholders to further improve their income by improving their production methods.

intensification need to be further promoted, based on analysis of marketing potentials and channels. Clear targeting and realistic expectations are mandatory, e.g. which markets are targeted and whether the supported commodities for value addition are expected to create productive jobs, or broad-based income increases for a large number of farmers. Potential roles of private sector partners and strengthening business oriented rural production open up further potential for a benign rural transformation.

6. Implications for the design of rural development projects

Within the last chapter we draw the conclusion, that the GIZ-SLM project addresses dynamics of rural transformation and made a clear impact on the natural resource base, its management and the well-being of people. Over time, the project has gone beyond mere natural resource management interventions. However, it is also evident, that the contributions and potentials of a NRM-based rural development are not sufficient for providing perspectives for rural areas in the long run. In fact, providing perspectives for a fast growing rural population confronted with shrinking availability of agricultural land and increasing spatial fragmentation remains a challenges.

Here, a more holistic perspective on the dynamics in the rural space is needed to development planning in a context of complex cause-effect relations of rural transformation. Decision makers have to respond to the question: What (else) is needed to embark on a sustainable development pathway for a given rural space and which are respective local priorities? This said, it is understood that the decision on priorities and how to combine interventions rests with the partner government. Ideally, it is based on a forward looking development strategy building on the potentials and challenges of a given space. Development partners can only assist in putting such strategies into practice. For this purpose, various stakeholders have to work together and efficient and goal oriented coordination is needed. Following, some thoughts on how to take a broader perspective when looking at the design of projects and programs of rural development. The following considerations highlight the implications of the above said for the design of projects implemented in the realm of rural development.

Consider multiple dimensions

The assessment of ecological, economic, social and political/institutional dynamics in the implementation context reveals insights into existing processes and helps understanding their interdependencies. Based on the recognition of these interdependencies, priorities for interventions and delivery mechanisms have to be chosen accordingly.

The study showed that it was extremely valuable to assess the local transformation processes with the used analytical framework that included four dimensions of change. This allowed a better understanding of drivers and consequences of specific change processes. Furthermore, it also helped to comprehend the complex linkages between various processes of change under the different dimensions.

Therefore it is advisable, to consider the different dimension of change when designing project interventions. It is evident, that the nature of an intervention usually doesn't allow to address each dimension in-depth. However, it comes with added value to be aware of cross-dimensional interfaces to avoid the eventuality of potential negative impacts and missed out synergies. Moreover, by applying a multi-dimensional perspective, the inclusiveness of an intervention can be strengthened by assuring that negative effects are minimized.

Measure in multiple dimensions

Rural transformation must not only to be viewed in multiple dimension. The question *"How do we actually measure transformation over a period of time?*" is crucial as well. As explained in chapter two, rural transformation dynamics are often captured by highlighting facets like demographic changes or shares of the agricultural sector in total GDP and total labour force. However, single indicators are not sufficient to provide evidence for the transformation processes currently underway in rural areas.

Measuring complex processes is always more difficult than measuring a single indicator at a certain time. The revised set of indicators for rural transformation proposed by IFAD (see Chapter 2, page 9) provides us with food for thought for capturing the multiple effects of holistic interventions. Considering the four dimensions of change, a multitude of indicators could be of concern to gauge rural transformation processes. For example, indicators depicting ecological degradation like change in vegetation cover or reduction in soil fertility. The political dimension is also rarely considered with suitable indicators like the possibility for the population to participate in local decision making.

Without doubt, a more diverse set of indicators adds complexity to the planning and monitoring of development interventions. Still, to capture the full spectrum of rural transformation, a more systemic approach has advantages over mono-dimensional and mono-sectoral indicator frameworks. Moreover, rural development highly depends on local conditions. A framework for indicators should allow for place-specific factors. Local stakeholders play a vital role in determining indicators, which adequately suit the particular context.

Conceptualize in multiple dimensions – bridging sectors

Usually, rural development programmes are organized along sectorial development strategies of partner governments. They all contribute to transformation processes in one way or the other and therefore need to remove their conceptual blinders to recognize opportunities and challenges evolving from each other's intervention. This study showed, for example, that not only the interplay of sustainable natural resources management has to be linked to income creation. Also the availability of basic services or decentralised structures for local self-organization need attention. A framework covering different dimensions of change, supports a structured and comprehensive mapping of the multitude of stakeholders and their respective approaches. This is particularly important for designing macro-level advisory support to foster policy cohesion and managing sectoral interfaces.

Recognize place specific factors to rural development

Each rural space is unique and there is no silver bullet to achieve inclusive and sustainable rural transformation. Nevertheless, gathering information on factors influencing processes of change across various geographic regions enriches the knowledge base and can help to identify methods and approaches to design effective development interventions. Here, a standard framework to assess processes of change and, at the same time, to outline likely development scenarios is required to ensure comparability of results and transferability of good practices. The framework used for this study allowed us to capture the particularities in a specific local intervention area, while comparing it to higher level implications according to the four dimensions.

Consider the new rurality

New realities of rural dwellers have to be included in our understanding of rural transformation processes. The emergence of new communication technologies, increased mobility and rural-urban

migration patterns have to be considered in our understanding of how the transformation of rural spaces are influenced. Still, rural areas with the prevailing dominance of the agricultural sector and the need to manage natural resources in a sustainable manner, hold a huge potential for development. With the focus on rural employment, digitalization or rural-urban linkages, rural development programs will need to address additional complex and dynamic conditions.

This does not call for a complete redesign of program types in rural development. Existing good practices of rural development provide a strong and diverse basis to foster sustainable and inclusive rural development. Reflecting them against broader development dynamics can guide implementers out off a mono-sectoral perspective. This creates an impetus to unlock potentials of previously undetected synergies with other thematic areas, stakeholders or sectors. Hence, a close collaboration with other stakeholders like civil society and the private sector, ideally coordinated by national governments, is needed to address all dimension of rural transformation processes in a sustainable and inclusive way.

Literature

ALTENBURG, T. (2017). *Arbeitsplatzoffensive für Afrika*. Deutsches Institut für Entwicklungspolitik gGmbH, Bonn available at https://www.die-gdi.de/discussion-paper/article/arbeitsplatzoffensive-fuer-afrika/

ASRESIE, A. & ZEMEDU, L (2015) Contribution of Livestock Sector in Ethiopian Economy: A Review in *Advances in Life Science and Technology* 29, 79-90.

ASFAW, W., TOLOSSA, D., & ZELEKE, G. (2010). Causes and impacts of seasonal migration on rural livelihoods: Case studies from Amhara Region in Ethiopia in *Norsk Geografisk Tidsskrift–Norwegian Journal of Geography*, 64(1), 58-70.

AYALEW, D., TESFAYE, K., MAMO, G., YITAFERU, B., & BAYU, W. (2012). Variability of rainfall and its current trend in Amhara region, Ethiopia in *African Journal of Agricultural Research*, *7*(10), 1475-1486.

BERDEGUÉ, J. A., PROCTOR, F. J., & CAZZUFFI, C. (2014). Inclusive rural–urban linkages. Working Paper Series No. 123, Working Group Development with Territorial Cohesion; RIMISP: Santiago, Chili.

BEZU, S., & HOLDEN, S. (2014). Demand for second-stage land certification in Ethiopia: Evidence from household panel data in *Land Use Policy*, 41, 193-205.

BUNI, A. (2015). Effects of liming acidic soils on improving soil properties and yield of haricot bean in *Journal of Environmental & Analytical Toxicology*, *5*(1).

CSA (2014) Ethiopia Mini Demographic and Health Survey 2014, Central Statistical Agency, Addis Ababa.

CSA & ICF (2017) Ethiopia Demographic and Health Survey 2016, Central Statistical Agency Addis Ababa.

CSA & WORLD BANK (2013) Ethiopia Rural Socioeconomic Survey (ERSS) Survey Report, Central Statistical Agency, Addis Ababa.

CSA & WORLD BANK (2015) Ethiopia Socioeconomic Survey (ESS) - 2013/14 Survey Report, Central Statistical Agency, Addis Ababa.

CSA & WORLD BANK (2017) LSMS—Integrated Surveys on Agriculture; Ethiopia Socioeconomic Survey (ESS) 2015/2016, Central Statistical Agency, Addis Ababa.

FAO (2017) State of Food and Agriculture – Leveraging Food Systems for Inclusive Rural Transformation, Food and Agriculture Organization of the United Nations, Rome.

FINNISH & ETHIOPIAN GOVERNMENT (2007) Rural Water Supply and Environmental Programme in Amhara Region, Phase IV, available at http://formin.finland.fi/public/default.aspx?contentid=88307&culture=en-US

GDPRD (2016) Agenda 2030 – New momentum for rural transformation. The future of donor programs in rural development, Background Paper for the Round Table of Platform's Strategic Initiative *Agenda 2030– New Momentum for Rural Transformation,* Global Donor Platform for Rural

Development available at https://www.donorplatform.org/challenges-and-opportunities-of-rural-transformation.html

GPT II (2016) Growth and Transformation Plan II (GTP II) (2015/16-2019/20) Volume I: Main Text, National Planning Commission, Federal Democratic Republic of Ethiopia.

HAILEMARIAM, A., & ADUGNA, A. (2011). Migration and urbanization in Ethiopia: Addressing the spatial imbalance in *The Demographic Transition and Development in Africa* (pp. 145-165). Springer, Dordrecht

HUNNES, D. E. (2012). An analysis of Ethiopian rural-to-urban migration patterns from primary interviews in *J Global Health Perspect*, *1*, 1-10.

HURNI, H. (1998). Agroecological belts of Ethiopia: explanatory notes on three maps at a scale of 1: 1,000,000. Soil conservation research program of Ethiopia, Centre for Development and Environment University of Bern and The Ministry of Agriculture, Ethiopia, Addis Ababa.

IFAD (2016) Rural Development Report 2016 – Fostering inclusive rural transformation available at https://www.ifad.org/web/knowledge/publication/asset/39240288

IFDC (2015) Assessment of Fertilizer Consumption and Use by Crop in Ethiopia available at http://www.africafertilizer.org/wp-content/uploads/2017/05/FUBC-Ethiopia-Final-Report-2016.pdf

IFPRI (2009) High Potential Agricultural Growth Areas: Alternative Approaches and Considerations, presentation for discussion within AGP Team by Emily Schmidt and Mengistie Kindu, May 18th, 2009

IFPRI (2010). The rural-urban transformation in Ethiopia, ESSP2 Discussion Paper 13, International Food Policy Research Institute.

IFPRI (2013) East African Agriculture and Climate Change: A Comprehensive Analysis, International Food Policy Research Institute, Washington, DC.

IFPRI (2016a) Agricultural Growth in Ethiopia (2004-2014): Evidence and Drivers, ESSP Working Paper 81, International Food Policy Research Institute.

IFPRI (2016b) Non-farm income and labor markets in rural Ethiopia, ESSP Working Paper 90, International Food Policy Research Institute.

IFPRI (2016c) Rural youth and employment in Ethiopia, ESSP Working Paper 98, International Food Policy Research Institute.

IFPRI ET AL (2013) Evaluation of Ethiopia's Food Security Program: Documenting Progress in the Implementation of the Public Safety Net Programme and the Household Asset Building Programme, International Food Policy Research Institute, Institute of Development Studies, University of Sussex and Ethiopian Development Research Institute.

KELEMU, K., SIME, M., HAILU, M., & ZALALAM, T. (2014). Determinants and Levels of Agricultural Development Agents Job Satisfaction: The Case of Kalu Woreda, South Wollo Zone of the Amhara National Regional State in *Ethiopian Journal of Business and Economics*, *4*(1), 149-175.

MESERET (2016) Land Degradation in Amhara Region of Ethiopia: Review on Extent, Impacts and Rehabilitation Practices in *Journal of Environment and Earth Science, 6(1),* 120-130.

ODI (2011) Ethiopia's progress on education: A rapid and equitable expansion of access, Overseas Development Institute, London

SIDA (2010) Land Registration and Certification: Experiences from the Amhara National Regional State in Ethiopia, Sida-Amhara Rural Development Program & the Bureau of Environment Protection, Land Administration and Use

SLE (2016) Rural Transformation in Sub-Saharan Africa, Conceptual Study; SLE Discussion Paper 01/2016, Centre for Rural Development (SLE) Berlin

SLE (2017) Ethiopia's Arid and Semi-Arid Lowlands: Towards Inclusive and Sustainable Rural Transformation, SLE Discussion Paper 03/2017, Centre for Rural Development (SLE) Berlin,

TAFFA, T. (2009). Characteristics of Property Units in Ethiopia, the Case of Two Pilot Projects in Amhara National Regional State in *Nordic Journal of Surveying and Real Estate Research*, *6*(2), 7-24.

USAID (2016) Climate Change Risk Profile – Ethiopia, available at https://www.climatelinks.org/resources/climate-change-risk-profile-ethiopia

WELDESILASSIE (2017) Towards Ensuring the Youth Bulge for Structural Transformation in Ethiopia, Ethiopian Development Research Institute, Addis Ababa, draft conference paper, unpublished

WORLD BANK (2015) Ethiopian Poverty Assessment 2014, World Bank Group, Addis Ababa.

WORLD BANK & CITIES ALLIANCE (2015) Ethiopia Urbanization Review Urban Institutions for a Middle-Income Ethiopia, World Bank Group, Washington, D.C.

Annex 1: Agro-Ecological Zones of Ethiopia

Figure 16: Agro-ecological zones of Ethiopia

Altitude in metres above sea level	Annual rainfall in mm			Agriculture
	Less than 900 mm	900 – 1400 mm	over 1400 mm	
Higher than 3700 m	Legend A: main crops C: traditional conservation S: soils on slopes T: natural trees		**High Wurch** A: none (frost limit) C: none S: Black soils, little disturbed T: mountain grassland	
3700 to 3200 m		**Moist Wurch** A: only barley, one cropping season / y C: Drainage rare S: Black soils, degraded T: Erica, Hypericum	**Wet Wurch** A: only barley, two cropping seasons / y C: widespread drainage ditches S: Black soils, highly degraded T: Erica, Hypericum	
3200 to 2300 m		**Moist Dega** A: Barley, wheat and pulses, 1 cropping season C: some traditional terracing S: Brown clay soils T: Juniperus, Hagenia, Podocarpus	**Wet Dega** A: Barley, wheat, nug and pulses, 2 cropping seasons C: widespread drainage ditches S: Dark brown clay soils T: Juniperus, Hagenia, Podocarpus, Bamboo	Barley, wheat, and pulses grown No teff or maize expected to grow in this belt.
2300 to 1500 m	**Dry Weyna Dega** A: Wheat, teff, rarely maize C: terracing widespread S: light brown to yellow soils T: Acacia trees	**Moist Weyna Dega** A: maize, sorghum, teff, inset rare, wheat, nug, dagussa, barley C: terracing S: red-brown soils T: Acacia, Cordia, Ficus	**Wet Weyna Dega** A: Teff, maize, inset in western parts, nug, barley C: Drainage widespread S: Red clay soils, deeply weathered, gullies frequent T: Many varieties, Ficus, Cordia, Acacia, Bamboo	All major rainfed crops grown, particularly teff and maize Lower Weyna Dega is suitable for cash crops such as coffee and tea
1500 to 500 m	**Dry Kolla** A: Sorghum rare, teff C: Water retention terraces S: Yellow sandy soils T: Acacia bushes and trees	**Moist Kolla** A: Sorghum, rarely teff, nug, dagussa, groundnut C: Terracing widespread S: Yellow silty soils T: Acacia, Erythrina, Cordia, Ficus		Sorghum is the dominant crop grown and teff and maize if rainfall permits Warmer temperature, with higher rainfall variability and recurring drought conditions.
Below 500	**Berha** A: none except irrigated areas C: none S: Yellow sandy soils T: Acacia bushes			no rainfed cultivation possible Large-scale irrigation systems along major rivers have been developed, particularly along the Awash River.

Source: HURNI (1998) & IFPRI (2009)

Figure 17: Map of agro-ecological zones in Ethiopia

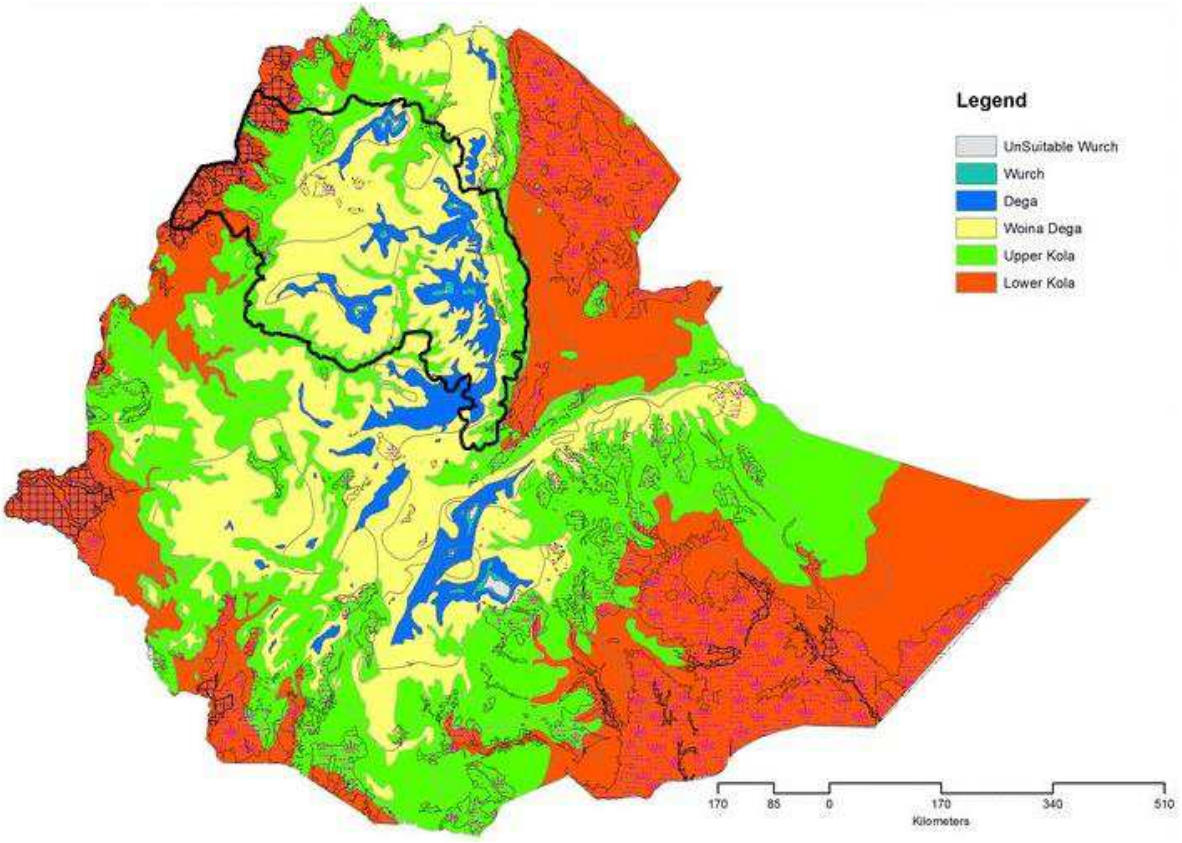
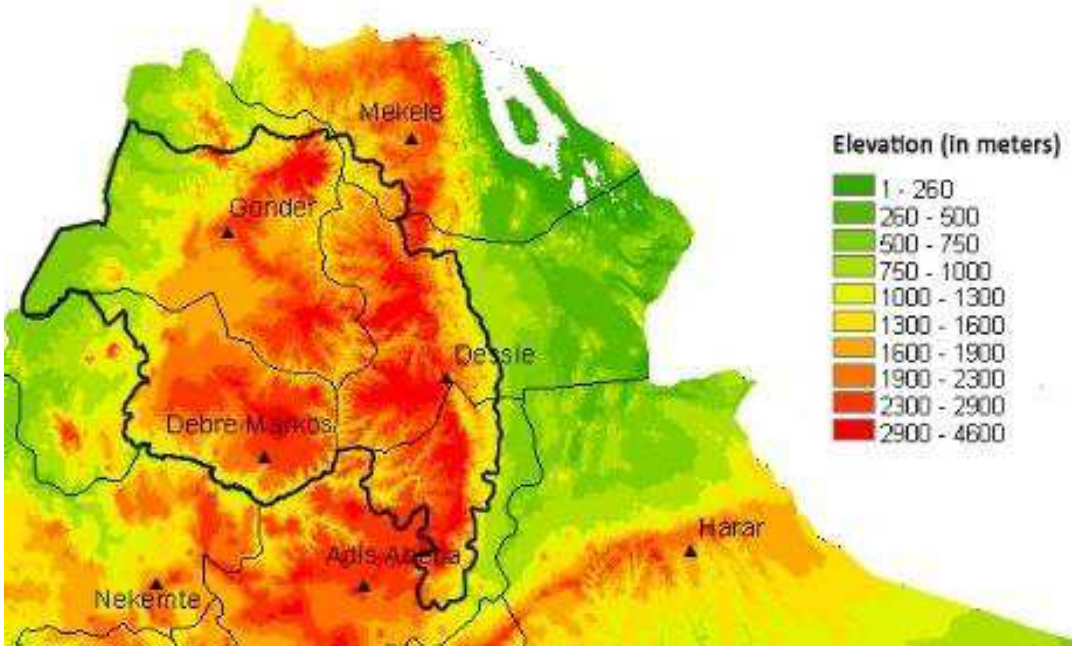


Figure 18: Elevation map of Amhara



Source: https://www.researchgate.net/figure/Visceral-leishmaniasis-risk-areas-in-Ethiopia-The-risk-areas-extend-from-the-Kola-to-the_fig1_280563875 (Accessed on 02.05.2018)

Annex 2: Urbanization in Amhara Region

Table 12: Cities in Amhara Region with more than 20,000 inhabitants

Name	Population			
	Census (C) **1984**	Census (C) **1994**	Census (C) **2007**	Projection (P) **2015**
Ethiopia		53,477,265	73,750,932	90,078,000
Adis Abeba	1,412,575	2,112,737	2,739,551	3,273,000
Amhara Region		13,834,297	17,221,976	20,401,000
Gonder	*80,886*	***112,249***	***207,044***	***323,900***
Bahir Dar	*54,8*	*96,14*	***155,428***	***243,300***
Dese	*68,848*	*97,314*	***120,095***	***187,900***
Debre Birhan	*25,753*	*38,717*	*65,231*	***102,100***
Debre Markos	*39,808*	*49,297*	*62,497*	*97,800*
Kembolcha	*15,782*	*39,466*	*58,667*	*91,800*
Debre Tabor	*15,306*	*22,455*	*55,596*	*87,100*
Weldiya	*15,69*	*24,533*	*46,139*	*72,300*
Mot'a	*12,934*	*18,16*	*26,177*	*41,000*
Finote Selam	*8,156*	*13,834*	*25,913*	*40,600*
Kobo	*13,542*	*20,788*	*24,867*	*39,000*
Dangila	*10,602*	*15,437*	*24,827*	*38,900*
Chagne	*8,421*	*17,777*	*23,232*	*36,400*
Sok'ot'a	...	*7,922*	*22,346*	*35,000*
Werota	*8,614*	*15,181*	*21,222*	*33,200*
Injibara	...	*754*	*21,065*	*33,000*
Debark'	*8,484*	*14,474*	*20,839*	*32,600*
Bure	*8,177*	*13,437*	*20,410*	*32,000*
Nefas Mewcha	*6,548*	*10,808*	*19,620*	*30,700*
Kemise	*4,721*	*10,822*	*19,420*	*30,400*
Adet	*6,501*	*12,178*	*19,169*	*30,000*
Merawi	...	*9,282*	*18,682*	*29,300*
Shewa Robit	*9,783*	*14,287*	*17,575*	*27,500*
Lalibela	...	*8,484*	*17,367*	*27,200*
Tis Abay	...	*4,227*	*17,370*	*27,200*
Bati	*10,009*	*13,965*	*16,710*	*26,100*
Bichena	...	*12,484*	*16,206*	*25,400*
Adis Zemen	*9,093*	*14,342*	*16,113*	*25,300*
Mersa	...	*7,274*	*16,122*	*25,300*
Ayikel	...	*8,364*	*15,127*	*23,600*
Este	...	*9,241*	*13,901*	*21,800*
Dembecha	...	*8,663*	*13,218*	*20,700*

Note: Different shades for cities with more than 20,000, 40,000, 100,000 and 200,000 inhabitants

Source: CSA on https://www.citypopulation.de/Ethiopia.html (Accessed on 02.05.2018)

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn

Friedrich-Ebert-Allee 36 + 40
53113 Bonn, Germany
T +49 228 44 60-0
F +49 228 44 60-17 66

Dag-Hammarskjöld-Weg 1 – 5
65760 Eschborn, Germany
T +49 61 96 79-0
F +49 61 96 79-11 15

E info@giz.de
I www.giz.de