

## ETHIOPIA

# Potentials and Possibilities for German Collaboration in Agriculture



## CONTRIBUTORS TO THE COUNTRY DOSSIER ETHIOPIA

Bahir Dar University: Birhanu Gedif

FARA: Yemi Akinbamijo, Fatunbi Oluwole Abiodun

ZEF: Heike Baumüller, Joachim von Braun, Annapia Debarry, Katharina Gallant, Tigabu Degu Getahun, Christine Husmann, Hannah Jaenicke, Oliver K. Kirui, Ehsan Eyshi Rezaei, Yasmin Smith, Justice Akpene Tambo, Detlef Virchow, Katharina Zinn

This report is work in progress and continuously being updated. Any feedback and suggestions for further improvement are welcome and can be sent to [pari@uni-bonn.de](mailto:pari@uni-bonn.de).

## ACKNOWLEDGEMENTS

The paper was developed within the project “Program of Accompanying Research for Agricultural Innovation” (PARI), which is funded by the German Federal Ministry of Economic Cooperation and Development (BMZ).



Federal Ministry  
for Economic Cooperation  
and Development

## Table of Contents

1.	General background information of the agricultural and food sector .....	3
1.1	Pan-African policies and strategies .....	3
1.2	National (and regional) policies and strategies .....	4
1.3	Data on food and nutrition security.....	5
1.4	Data on most relevant crops and value chains .....	6
1.4.1	Production .....	6
1.4.2	Consumption and nutrition status .....	11
1.4.3	Trade.....	12
1.5	National (and regional) innovation system:.....	13
1.5.1	Research system and organizations .....	13
1.5.2	Innovation platforms.....	14
1.5.2	Extension system and organizations .....	15
1.5.3	Private R&D activities .....	16
1.6	Key challenges, emerging needs and potentials in the agricultural sector .....	16
2.	Most relevant value chains in the country .....	19
2.1	AIC value chains.....	19
2.1.1	Wheat value chain.....	19
2.1.2	Faba Bean value chain .....	19
2.2	Other relevant value chains .....	19
2.2.1	Coffee .....	19
2.2.2	<i>Teff</i> Value Chain.....	19
2.2.3	Maize value chain .....	20
2.2.4	Livestock Products Value Chain.....	20
3.	Innovations in value chains in the past 20 years .....	21
3.1	The most crucial limiting factors in Ethiopia / AIC-region / in AIC value chains.....	21
3.2	The most important / beneficial innovations in the relevant value chains.....	21
3.3	Most promising approaches for farmer and small business related to VC innovations	21
4.	Suggestions for Collaboration .....	22
4.1	Promising Agricultural Products and Value Chains.....	22
4.2	A systematic assessment of promising partnerships for each promising innovation area.....	23
4.3	Some potential partners for the German collaboration: in science and research, private sector, NGOs and governmental organizations.....	23
4.4	Necessary implementation research .....	24
5.	References.....	25

## **List of Tables**

Table 1: Selected national economic and health-related data .....	5
Table 2: Top 10 crops produced by area, volume and value .....	6
Table 3: Area, production and yield of major crops for Meher season 2014/15 .....	7
Table 4: Area, Production and Yield data for major crops, Meher season .....	8
Table 5: Estimate of Area, Production and Yield of Crops from 1994/95 to 2014/2015, Meher Season. ....	9
Table 6: Overall Agricultural Growth (1995-2014) .....	10
Table 7: Total Public Expenditures and TFP .....	11
Table 8: Food supply by tons, kg per capita and kcal per capita .....	12
Table 9: AIC value chains: Wheat, Faba Bean .....	12
Table 10: Top 10 Export and Imports in Ethiopia .....	12
Table 11: Country level Performance Indicators.....	17
Table 12: Selection of promising agricultural products /value chains.....	22

## **1. General background information of the agricultural and food sector**

Ethiopia is a landlocked country in the Horn of Africa, bordering, clockwise from the North, Eritrea, Djibouti, Somalia, Kenya, South Sudan and Sudan. It has the soil and climate required for the production of a variety of food crops. The major food crops grown are cereals, pulses and oil seeds. A broad range of fruit and vegetables and cut flowers are fast-growing export products. Coffee, cotton, tobacco, sugar cane, tea and spices are the main commercial cash crops grown in Ethiopia. According to the 2015 population estimation by CSA (2013), the total population of Ethiopia amounts to 90,076,012, with 72,617,000 (80.6%) of the people living in rural areas and earning their livelihood from agriculture.

The Ethiopian economy is dominated by the agriculture and service sector, accounting for 41% and 46% respectively, leaving only the remaining percentage to manufacturing (Ndukumia, 2010). Exports are highly concentrated in agriculture, with coffee alone accounting for more than 60% of the total exports. The agricultural sector contributes 90 % of foreign currency earnings, and 85 % of employment. Generally, the overall economic growth of the country has been highly associated with the performance of the agricultural sector. Coffee is critical to the Ethiopian economy. It earned US\$ 841.8 million in exports in 2010/11. Other important export products (2010/11) include gold, oil seeds, chat, flowers, live animals, pulses, leather and leather products, meat and meat products, fruit and vegetables. The industrial sector, which mainly comprises small and medium enterprises accounts for about 13 % of the GDP. Similarly, the service sector comprised of social services, trade, hotels and restaurants, finance, real estate, and transport and communication, etc. accounts for about 46 % of the GDP. The government of Ethiopia has exerted maximum efforts to minimize the level of poverty. Different policies, strategies and policy implementation modalities have been designed and implemented. As a result of this the country is one of the fastest growing both in Africa and globally.

### **1.1 Pan-African policies and strategies**

#### **a. CAADP**

The Comprehensive Africa Agriculture Development Programme (CAADP) was officially endorsed by African Heads of State at the Maputo African Union Summit in July 2003. The Programme was rolled out under the auspices of the New Economic Partnership for African Development (NEPAD) to serve as a framework for accelerating growth by eliminating poverty and hunger in the continent. Ethiopia officially launched CAADP in September 2008. Ethiopia was among the first four countries that signed a CAADP Compact. Implementation of CAADP was in line with the Plan for Accelerated and Sustained Development to End Poverty (PASDEP). The compact was reviewed at different levels in the presence of the CAADP focal unit. The review process involved consultations with the nine regional/state governments, the private sector, civil society and development partners, and was finalized in July 2009 thereby serving as input for subsequent consultations and exchange of views and a basis for the agreement reached by the Compact signatories in the same year. The Compact document states that the CAADP process in Ethiopia is aimed at strengthening and adding value to the ADLI strategy, PASDEP, and other supportive programmes all of which focus on realizing Ethiopia's rural economic development and food security objectives.

#### **b. The African Peer Review Mechanism (APRM)**

Ethiopia formally joined the APRM by signing the Memorandum of Agreement that established the process at a continental level in March 2003. It was among the first countries

## ***Program of Accompanying Research for Agricultural Innovation (PARI)***

to join the mechanism showing, in theory, the commitment of the country to bring about the culture of good political governance of a participatory kind, and its willingness to open its gates for public dialogue and peer review. The first steps in implementing the APRM process in Ethiopia were taken around June 2007. The self-assessment process was completed during 2008 and the country self-assessment report submitted to the APRM Secretariat in Johannesburg in early 2009; the APRM Panel of Eminent Persons led the country review mission to Ethiopia in July 2009. A revised draft of the national programme of action to address the issues in the APRM review report was completed in early 2010 (Fisseha and Tadesse, 2011). The peer review of Ethiopia was finally held on 29 January 2011 at the 14th session of the APR Forum.

### **1.2 National (and regional) policies and strategies**

The agricultural policy of the imperial regime had a feudalist orientation while the agricultural policy of the Derg regime had a socialist footing. The Ethiopian People Revolutionary Democratic Front (EPRDF) regime had a mixed type agricultural policy. There were progresses observed through the regime changes. During the imperial regime the three Five-Year Plans (FYPs), were formulate in a top-down approach with exclusive involvement of the elites and clergy. The Ministry of Agriculture (MoA), in the Derg regime, developed the Peasant Agricultural Development Extension Programme (PADEP), which focused on improving extension service and redirecting agricultural resources to the peasant sector. The current government has adopted and used the ADLI strategy since 1995 as an overall development strategy for the country. Concomitant with the ADLI, a series of Poverty Reduction Strategy Papers (PRSP) were launched like the Sustainable Development and Poverty Reduction Programme (SDPRP) (2001/2002-2004/2005), the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) (2004/2005-2009/2010). The current Growth and Transformation Plan (GTP1) (2009/2010-2014/2015) and GTP2 (2015-2020) are also very important steps in this regard. In all their programs and policies, poverty reduction is the central theme, and agriculture is given with the top priority, particularly with regard to smallholder farmers.

Policies related to agriculture in Ethiopia stated that agricultural development could be achieved by increasing the capacity and extensive use of labor, proper utilization of agricultural land, linking specialization with diversification, integrating agricultural and rural development, and strengthening the agricultural marketing system. Strengthening the linkages between research, extension services and farmers is essential to the wider use of improved technologies and practices. At the same time the number of beneficiaries of agricultural extension services was estimated to have increased from 5 million in 2011 to 15 million in 2015 (Stein, 2011).

#### **Other important policies and strategies are:**

- Rural Development Policy and Strategy;
- The Plan for Accelerated and Sustained Development to Reduce Poverty (PASDEP);
- Food Security Strategy;
- Climate Change National Adaptation Programme of Action (NAPA);
- Growth and Transformation Plan (GTP-1).

### 1.3 Data on food and nutrition security

Significant parts of Ethiopia are characterized by persistent food insecurity. While droughts and other hazards (such as floods) are significant triggers, more important are the factors which create and/or increase vulnerability to these shocks and which have undermined livelihoods. These factors include land degradation, limited household assets, low levels of farm technology, lack of employment opportunities and population pressure. As a consequence, but also exacerbating the situation, levels of education are low and disease prevalence is high. Prior to 2005, the typical response to this persistent food insecurity was emergency relief resourced through an unpredictable annual appeals process. Although relief was provided, often at great expense, it was rarely adequate or timely. As a consequence, households were forced to sell assets (further constraining their livelihood options) and to restrict consumption (with immediate impacts on increasing the risk of disease and longer term impacts on chronic malnutrition). In 2003, following significant rain shortages, more than 13 million people required assistance and chronic malnutrition stood at approximately 52% (Country Food security program, 2010-2014).

**Table 1: Selected national economic and health-related data**

Indicator	Data	Year
Population, total	96,506,031	2014
Population growth (annual %)	2.0	2014
Rural population (% of total population)	81	2014
GDP per capita, PPP (constant 2011 international \$)	1,432	2014
GNI per capita, PPP (constant 2011 international \$)	13,777,890	2014
Poverty headcount ratio at \$2 a day (PPP) (% of population)	72	2010
Poverty headcount ratio at \$1.25 a day (PPP) (% of population)	37	2010
Poverty headcount ratio at national poverty lines (% of population)	30	2010
Rural poverty headcount ratio at national poverty lines (% of rural population)	30	2010
Agricultural land (% of land area)	36	2012
Agricultural irrigated land (% of total agricultural land)	0.5	2011
Agriculture value added per worker (constant 2005 US\$)	278	2014
Agriculture, value added (% of GDP)	42	2014
Access to electricity, rural (% of rural population)	7.6	2012
Employees, agriculture, female (% of female employment)	75	2005
Employees, agriculture, male (% of male employment)	83	2005
Employment in agriculture (% of total employment)	79	2005
Literacy rate, adult total (% of people ages 15 and above)	39	2007
Ratio of female to male secondary enrolment (%)	63	2006
Mortality rate, under-5 (per 1,000 live births)	64	2013
Malnutrition prevalence, weight for age (% of children under 5)	25	2014
Malnutrition prevalence, height for age (% of children under 5)	40.4	2014
Maternal mortality ratio (modelled estimate, per 100,000 live births)	680	2011

Source: World Bank, <http://data.worldbank.org/country>

## 1.4 Data on most relevant crops and value chains

### 1.4.1 Production

In Ethiopia, grain crops that include cereals, pulses, oilseeds, vegetables, root crops, fruit, fibers, stimulants and sugarcane are grown on 16.5 million hectares of land in different agro-ecological zones of the country. Among all crops, grain crops are the most important field crops occupying about 86% of the area planted. Private peasant holders grow various crops for own consumption and/ or economic benefits.

**Table 2: Top 10 crops produced by area, volume and value**

Area harvested (ha)		Production volume (tons)		Production value*	
Top 10	Share of Total	Top 10	Share of Total	Top 10	Share of Total
Cereals, nes	19.0	Maize	17.1	Milk, whole fresh cow	18.2
Maize	13.7	Roots and tubers, nes	14.0	Maize	14.3
Sorghum	12.3	Cereals, nes	10.8	<b>Wheat</b>	<b>12.0</b>
<b>Wheat</b>	<b>10.7</b>	Sorghum	10.7	Sorghum	11.8
Barley	6.7	<b>Wheat</b>	<b>9.4</b>	Coffee, green	7.4
Roots and tubers, nes	4.8	Sugar cane	7.2	Barley	5.7
Coffee, green	3.5	Barley	4.8	Chillies and peppers, green	4.2
Millet	2.9	Sweet potatoes	2.6	Sugar cane	2.4
<b>Broad beans, horse beans, dry</b>	<b>2.6</b>	Yams	2.4	Millet	2.2
Chillies and peppers, dry	2.3	Millet	2.0	<b>Broad beans, horse beans, dry</b>	<b>1.9</b>
		<b>Rank 12: Broad beans, horse beans, dry</b>	<b>1.6</b>		

\* Gross Production Value (constant 2004-2006 million US\$)

Note: AIC value chains are marked in red nes refers to Not elsewhere specified

Data: average 2011-2013, FAOStat, accessed 9 July 2014

### Trend of Crop production in Ethiopia

In Ethiopia, major food crops are grown at subsistence level in different volumes across different agro-ecological zones as the private peasant holders grow cereal crops (*teff*, wheat, maize, sorghum) for own consumption and economic gain. Pulses and oil seeds are also among the various crops produced to a small amount. The historical records of land area under cultivation and production for major crops ranging from early 1994/95 to 2014/15 are taken from successive editions of the agricultural sample survey statistical bulletin prepared by the Central Statistical Authority (CSA) of Ethiopia. The focus of this paper is on major relevant crops *teff*, wheat, maize, sorghum, pulses, and oil seeds; all data is for the *Maher* (summer) season of crops commonly grown by the majority of peasant holders (i.e. large scale commercial farms or co-operatives are not considered). The following quantitative statistical data have been summarized and organized using the information on cropped land area and production of both temporary and permanent crops at country level.



Table 3: Area, production and yield of major crops for Maher season 2014/15

Crop	Number of Holders	Area in Hectares	Area in %	Production In Quintals*	Yield (qt/ha)
Teff	6,536,605	3,016,063	24.03	47,506,573	15.75
Wheat	4,614,159	1,663,846	13.26	42,315,887	25.43
Maize	8,685,557	2,114,876	16.78	72,349,551	34.31
Sorghum	4,993,368	1,834,651	14.57	43,391,343	23.69
Pulses	7,931,562	1,558,422	12.42	26,718,345	15.5
Oilseeds	2,936,158	855,763	6.82	7,600,993	11.80

\* 1 qt = 100kg

Out of 12.6 million hectares of cultivated land by smallholder farmers, major crop production accounts for 11 million hectares or 87.9% of the total coverage. *Teff* (24.3%), wheat (13.3%) maize (16.8%), and sorghum (14.6%) refer to the largest shares of the total production area and represent the major crops that are cultivated by the greatest number of smallholders. The following comparison diagrams give an overview about the increment of volume of production over the last 20 years that can give direction about the rate of change and level of agricultural development. The data allows for a comparison of the production trends of the different crops. Such a presentation of data is believed to identify problem areas which are relevant for taking corrective measures to boost sustainable agricultural production and to transform it into industry led agriculture of the country plan.

**Program of Accompanying Research for Agricultural Innovation (PARI)**

**Table 4: Area, Production and Yield data for major crops, Meher season**

Year	Area in hectares ('000 ha)							Production in Quintals ('000 qt)						
	Teff	Wheat	Maize	Sorghum	Pulses	Oilseed	Total	Teff	Wheat	Maize	Sorghum	Pulses	Oilseed	Total
1994/95	1841.84	770.77	1101.1	890.89	.	.	4604.6	13013.54	10210.22	16716.75	11211.24	.	.	51151.75
1995/96	2102.1	880.88	1281.28	1251.25	.	.	.	17517.54	10810.81	25425.44	17217.25	.	.	70971.04
1996/97	2172.17	770.77	1321.32	1401.48	.	.	5665.74	20020.83	10010.12	25325.36	20120.16	.	.	75476.47
1997/98	1768.75	790.79	1202.18	954.95	.	.	4716.67	14132.14	11221.14	19728.37	10915.74	.	.	55997.39
1998/99	1751.75	790.79	1101.43	950.95	.	.	4594.92	13113.13	11111.31	19319.35	10710.73	.	.	54254.52
1999/00	2092.09	990.99	1301.38	1041.04	.	.	5425.5	16416.42	11110.43	24224.24	13213.28	.	.	64964.37
2000/01	2122.12	1031.03	1411.41	1001.21	.	.	5565.77	17217.29	12112.15	25325.35	11811.82	.	.	66466.61
2001/02	1818.38	1005	1323.04	1132.5	1016.79	426.13	6721.84	16275.16	14444.34	28002.09	15462.08	10212.15	2081.36	86477.18
2002/03	1931.93	1001	1191.19	1071.07	1054.76	521.45	6771.4	14214.2	10710.7	17917.9	10410.4	10012.45	2890.32	66155.97
2003/04	1989.07	1098.91	1367.12	1283.65	1099.54	570.78	7409.07	16773.48	16144.41	25429.65	17424.54	10373.13	3128.63	89273.84
2004/05	2135.55	1398.22	1392.92	1253.62	1349.12	824.43	8353.86	20255.21	21766.03	23941.62	17159.54	13495.79	5263.96	101882.15
2005/06	2246.02	1459.54	1526.13	1468.07	1292.17	797.34	8789.27	21755.98	22190.75	33367.95	21735.99	12712.47	4866.1	116629.24
2006/07	2404.67	1473.92	1694.52	1464.32	1379.05	741.79	9158.27	24377.5	24630.64	37764.4	23160.41	15786.22	4970.84	130690.01
2007/08	2565.16	1424.72	1767.39	1533.54	1517.66	707.06	9515.53	29929.23	23144.89	37497.49	26591.29	17827.39	5406.85	140397.14
2008/09	2481.33	1453.82	1768.12	1615.3	1585.24	855.15	9758.96	30280.18	25376.4	39325.22	28043.51	19646.3	6557.04	149228.65
2009/10	2588.66	1683.57	1772.25	1618.68	1489.31	780.92	9933.39	31793.74	30756.44	38971.63	29712.66	18980.47	6436.14	156651.08
2010/11	2761.19	1553.24	1963.18	1897.73	1357.52	774.53	10307.39	34834.83	28556.82	49861.25	39598.97	19531.94	6339.99	178723.8
2011/12	2731.11	1437.48	2054.72	1923.72	1616.81	880.87	10644.71	34976.89	29163.34	60694.13	39512.94	23162.01	7308.8	194818.11
2012/13	2730.27	1627.65	2013.04	1711.49	1863.45	818.45	10764.35	37652.41	34347.06	61583.18	36042.62	27510.31	7266.64	204402.22
2013/14	3016.52	4746.23	8809.22	4788.5	1742.6	816.13	23919.2	44186.42	39251.74	64915.4	38288.7	28588.81	7112.59	222343.66
2014/15	3016.06	4614.16	8685.56	4993.37	1558.42	855.75	23723.32	47506.57	42315.89	72349.55	43391.34	26718.34	7600.99	239882.68

Source: Central statistical Agency (CSA), data archive; 1qt = 100kg

Table 5: Estimate of Area, Production and Yield of Crops from 1994/95 to 2014/2015, Meher Season.

Start Year	End	Area change in %						Production change in %						Yield (Quintal/Hectare) change in %			
		Teff	Wheat	Maize	Sorghum	Pulses	Oilseeds	Teff	Wheat	Maize	Sorghum	Pulses	Oilseeds	Teff	Wheat	Maize	Sorghum
1994/95	1995/96	12.38	12.50	14.06	28.80			25.71	5.56	34.25	34.88			13.29	-9.05	23.69	7.80
1995/96	1996/97	3.23	-14.29	3.03	10.72			12.50	-8.00	-0.40	14.43			9.16	8.77	-3.22	3.42
1996/97	1997/98	-22.81	2.53	-9.91	-46.76			-41.67	10.79	-28.37	-84.32			-22.27	4.81	-9.56	-16.88
1997/98	1998/99	-0.97	0.00	-9.15	-0.42			-7.77	-0.99	-2.12	-1.91			3.80	-2.99	-3.72	-2.34
1998/99	1999/00	16.27	20.20	15.36	8.65			20.12	-0.01	20.25	18.94			2.83	-21.42	9.60	6.33
1999/00	2000/01	1.42	3.88	7.80	-3.98			4.65	8.27	4.35	-11.86			7.52	18.12	-4.34	-6.76
2000/01	2001/02	-16.70	-2.59	-6.68	11.59			-5.79	16.15	9.56	23.61			1.90	3.97	15.08	12.17
2001/02	2002/03	5.88	-0.40	-11.07	-5.74	3.60	18.28	-14.50	-34.86	-56.28	-48.53	-1.99	27.99	-20.95	-34.30	-41.07	-40.47
2002/03	2003/04	2.87	8.91	12.87	16.56	4.07	8.64	15.26	33.66	29.54	40.25	3.48	7.62	12.22	27.16	19.35	28.45
2003/04	2004/05	6.86	21.41	1.85	-2.40	18.50	30.77	17.19	25.83	-6.22	-1.54	23.14	40.57	32.34	5.65	-8.20	0.88
2004/05	2005/06	4.92	4.20	8.73	14.61	-4.41	-3.40	6.90	1.91	28.25	21.05	-6.16	-8.18	-28.59	-2.43	21.40	7.56
2005/06	2006/07	6.60	0.98	9.94	-0.26	6.30	-7.49	10.75	9.91	11.64	6.15	19.47	2.11	4.44	9.04	1.88	6.38
2006/07	2007/08	6.26	-3.45	4.12	4.51	9.13	-4.91	18.55	-6.42	-0.71	12.90	11.45	8.06	13.11	-2.83	-5.04	8.77
2007/08	2008/09	-3.38	2.00	0.04	5.06	4.26	17.32	1.16	8.79	4.65	5.18	9.26	17.54	4.34	6.93	4.59	0.12
2008/09	2009/10	4.15	13.65	0.23	0.21	-6.44	-9.51	4.76	17.49	-0.91	5.62	-3.51	-1.88	0.65	4.43	-1.14	5.45
2009/10	2010/11	6.25	-8.39	9.73	14.70	-9.71	-0.83	8.73	-7.70	21.84	24.97	2.82	-1.52	2.69	0.65	13.43	12.03
2010/11	2011/12	-1.10	-8.05	4.46	1.35	16.04	12.07	0.41	2.08	17.85	-0.22	15.67	13.26	1.48	9.36	14.01	-1.61
2011/12	2012/13	-0.03	11.68	-2.07	-12.40	13.24	-7.63	7.11	15.09	1.44	-9.63	15.81	-0.58	7.11	3.84	3.43	2.47
2012/13	2013/14	9.49	65.71	77.15	64.26	-6.94	-0.28	14.79	12.50	5.13	5.87	3.77	-2.17	5.87	13.70	5.99	7.75
2013/14	2014/15	-0.02	-2.86	-1.42	4.10	-11.82	4.63	6.99	7.24	10.28	11.76	-7.00	6.43	6.98	3.85	5.16	3.63

Figure 1: Meher Production Change

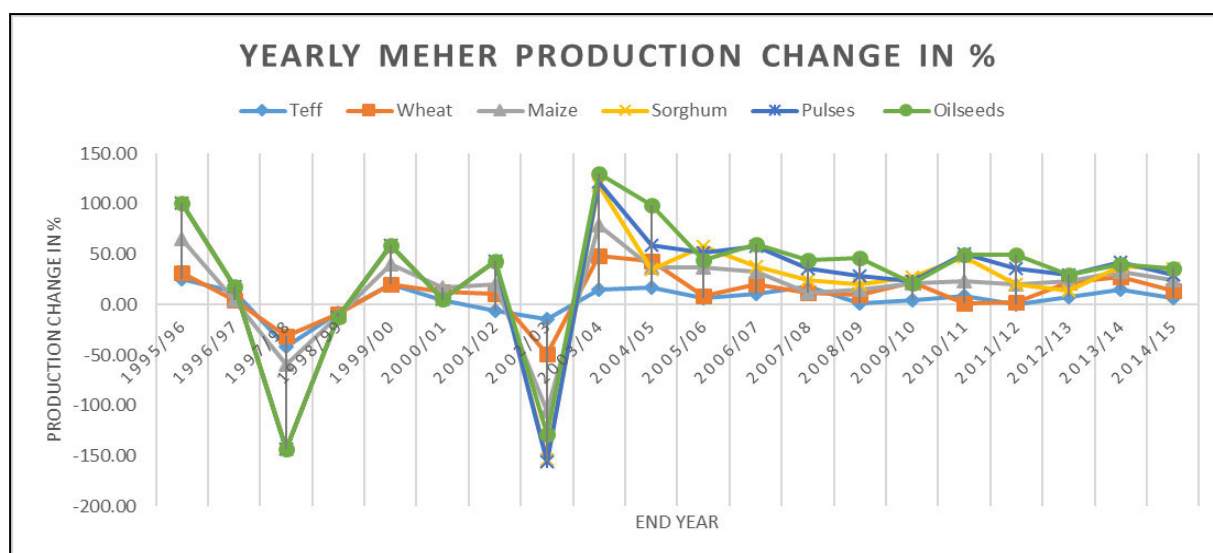


Table 6: Overall Agricultural Growth (1995-2014)

Year	GDP (current Billion US\$)	GDP (current Billion LCU)	GDP growth (annual %)	GDP, Agriculture share (value)	GDP, Agriculture share (%)	GDP, Agriculture share (Billion LCU)
1995	7.66	47.92	6.13	0.53	53	25.40
1996	8.55	54.01	12.43	0.52	52	28.08
1997	8.59	55.82	3.13	0.53	53	29.58
1998	7.82	53.81	- 3.46	0.48	48	25.83
1999	7.70	57.84	5.16	0.45	45	26.03
2000	8.24	67.16	6.07	0.46	46	30.89
2001	8.23	68.55	8.30	0.43	43	29.48
2002	7.85	67.07	1.51	0.39	39	26.16
2003	8.62	74.00	- 2.16	0.38	38	28.12
2004	10.13	87.33	13.57	0.39	39	34.06
2005	12.40	107.29	11.82	0.42	42	45.06
2006	15.28	132.65	10.83	0.43	43	57.04
2007	19.71	173.31	11.46	0.43	43	74.52
2008	27.07	250.21	10.79	0.46	46	115.10
2009	32.44	337.97	8.80	0.47	47	158.84
2010	29.93	385.88	12.55	0.42	42	162.07
2011	31.95	515.08	11.18	0.42	42	216.33
2012	43.31	747.33	8.65	0.45	45	336.30
2013	47.52	864.67	10.49	0.42	42	363.16
2014	54.80	1,047.39	9.94	0.42*	42*	251.80*

Sources: [http://data.worldbank.org/country/ethiopia#cp\\_surv](http://data.worldbank.org/country/ethiopia#cp_surv);

\*<http://www.tradingeconomics.com/ethiopia/indicators>

LCU=Local Currency Unit

### CAADP in Ethiopia.

Ethiopia is widely considered a “big success” in CAADP. The key achievements of CAADP in Ethiopia were (i) attracting additional international support to agriculture and (ii) considerably strengthening the coordination in the sector, both among development partners and between

development partners and Government. This led to effective coordination mechanisms and to a degree of alignment of multilateral and bilateral assistance that many stakeholders suggest should be shared with other African countries as “best practices”. Ethiopia is also possibly the best example of the centrality of national leadership and local conditions for the successful implementation of CAADP. Such good progress (including on donor harmonization) is largely due to the choice of the Ethiopian Government, well before CAADP, to focus and invest in rural development (from 2008 to 2011 almost 20% of government spending was invested in agriculture, and productivity rose each year by almost a quarter, while the CAADP Compact was signed in 2009 and the NAIP launched in 2010). According to many national stakeholders, the Prime Minister’s direct involvement as a political champion made a difference, while the CAADP Lead Institutions (and the MDTF) did not play a crucial role. Possibly the major bottleneck for CAADP in Ethiopia is the scarce direct involvement of the private sector; so one of the key challenges ahead will be to ensure that farmers and companies really own and contribute to the agriculture transformation agenda, also building on the significant experiences of public-private cooperation’s such as those promoted by the Ethiopian Agricultural Transformation Agency (European Centre for Development, 2014).

**Table 7: Total Public Expenditures and TFP**

Expenditure	Total public expenditures	Agricultural expenditures		TFP
		Birr	percentage	
2003/04	21479	3454	16.1	0.089
2004/0	28142	5257	18.7	-0.071
2005/06	35098	7316	20.8	0.032
2006/07	41836	7868	18.8	0.062
2007/08	53511	9869	18.4	-0.014
2008/09	67448	11452	17	0.026
2009/10	75509	12830	17	0.02
2010/11	90905	15251	16.8	0.02
2011/2	138294	26854	19.4	na
2012/13	167343	30762	18.4	na
2013/14	194344	31730	16.3	na

“na” stands for no data available. Source: ReSAKSS (Regional Strategic Analysis and Knowledge Support System), 2014. Joint Sector Review Assessment of Ethiopia- East and Central Africa ([www.resakss.org](http://www.resakss.org))

#### 1.4.2 Consumption and nutrition status

Household food insecurity, hunger and undernutrition remain critical issues; the poor nutritional status of women and children has been a consistent problem in Ethiopia. Undernutrition is an underlying cause of 53% of infant and child deaths. Rates of stunting and underweight have decreased over the past decade but remain high with 44% of children under the age of five stunted and 29% underweight. Lack of dietary diversity and micronutrient-dense food consumption, and problematic child feeding practices contribute to the high rates of child undernutrition (USAID, 2014). Only half of the infants are exclusively breastfed and introduced to complementary foods at the appropriate time, and only 4% of young children are receiving a minimal acceptable diet. 25% of the women of reproductive age are undernourished, leaving their children predisposed to low birth weight, short stature, lower resistance to infections, and higher risk of disease and death. Children in rural areas are more likely to be stunted (46%) than those in urban areas (36%).

*Program of Accompanying Research for Agricultural Innovation (PARI)*

**Table 8: Food supply by tons, kg per capita and kcal per capita**

Food supply quantity (tons)		Food supply quantity (kg/capita/yr)		Food supply (kcal/capita/day)	
Top 10	% of total	Top 10	kg	Top 10	kcal
Roots, Other	16	Roots, Other	51	Maize and products	402
Maize and products	13	Maize and products	43	Wheat and products	285
Wheat and products	10	Wheat and products	31	Roots & Tuber Dry Equiv	267
Cereals, Other	8	Cereals, Other	27	Cereals, Other	257
Sorghum and products	8	Sorghum and products	25	Sorghum and products	211
Roots & Tuber Dry Equiv	6	Roots & Tuber Dry Equiv	18	Roots, Other	208
Vegetables, Other	5	Vegetables, Other	15	Barley and products	121
Barley and products	5	Barley and products	15	Pulses, Other and products	115
Pulses, Other and products	4	Pulses, Other and products	12	Sugar, Raw Equivalent	57
Sweet potatoes	3	Sweet potatoes	11	Sugar (Raw Equivalent)	56

Data: average 2011-2013, FAOStat, accessed 22 August 2015

### 1.4.3 Trade

**Table 9: AIC value chains: Wheat, Faba Bean**

Import volume (tons)		Import value (US\$)	
Top 10	Share of Total	Top 10	Share of Total
<b>Wheat</b>	<b>63.1</b>	<b>Wheat</b>	<b>38.5</b>
Oil, palm	9.3	Oil, palm	21.8
Sugar Raw Centrifugal	5.8	Sugar Raw Centrifugal	7.2
Sorghum	5.4	Sorghum	3.9
Rice – total (Rice milled equivalent)	2.9	Rice – total (Rice milled equivalent)	3.3
Sugar refined	2.2	Sugar refined	2.8
Peas, dry	1.9	Peas, dry	2.4
Malt	1.4	Food preparations, flour, malt extract	1.9
Food preparations, flour, malt extract	1.0	Malt	1.8
Maize	1.0	Food prep nes	1.3

Data: average 2010-2012, FaoStat, accessed 31 Oct 2015

AIC value chains marked in red. nes refers to Not elsewhere specified

**Table 10: Top 10 Export and Imports in Ethiopia**

Export volume (tons)		Export value (US\$)	
Top 10	Share of Total	Top 10	Share of Total
Sesame seed	26.6	Coffee, green	41.0
Coffee, green	19.1	Sesame seed	18.3
Beans, dry	11.2	Vegetables, fresh nes	12.3
Chick peas	5.9	Crude materials	10.0
Vegetables, fresh nes	4.6	Beans, dry	3.6
Broad beans, horse beans, dry	4.3	Meat, goat	2.5
Potatoes	4.0	Chick peas	2.0
Oilseeds nes	3.3	Broad beans, horse beans, dry	1.4
Maize	3.3	Oilseeds nes	1.3
<b>Wheat</b>	<b>2.4</b>	<b>Wheat</b>	<b>0.6</b>

Data: average 2010-2012, FaoStat, accessed 31 Oct 2015

AIC value chains marked in red. nes refers to Not elsewhere specified

The most important import good in Ethiopia is wheat, which accounts for more than 60% of the import volume. Coffee and sesame are the main export products. There is no data for Fava bean.

## **1.5 National (and regional) innovation system:**

### **1.5.1 Research system and organizations**

In Ethiopia, the agricultural sector plays a central role in the economic and social life of the nation and is a cornerstone of the economy. To support the sector, national agricultural research system (NARS) units such as the Ministry of Agriculture (MoA), the Agricultural Transformation Agency (ATA), the Ethiopian Institute of Agricultural Research (EIAR) and other public, private and civil society institutions have been established. The contributions of these governmental and non-governmental organizations include the implementation of different projects and programs that are funded both locally and internationally.

#### **1.5.1.1 International**

The international (and regional) organizations which have been actively conducting agricultural research and coordinating efforts to support agricultural growth in Ethiopia include:

- The United Nations Food and Agriculture Organization (FAO);
- The United Nations Development Program (UNDP);
- Global Forum on Agricultural Research (GFAR);
- International Fund for Agricultural Development (IFAD);
- The Consultative Group on International Agricultural Research (CGIAR):
  - International Livestock Research Institute (ILRI);
  - International Center for Tropical Agriculture (CIAT);
  - International Maize and Wheat Improvement center (CIMMYT);
  - International Food Policy Research Institute (IFPRI);
  - International Rice research Institute (IRRI);
  - International Water Management Institute (IWMI);
  - International Potato center (CIP);
  - Center for International Forestry Research (CIFOR);
  - International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT);
  - Africa Rice;
  - Biodiversity international;
  - World Agroforestry Center;
  - WorldFish Center.

#### **Regional organizations:**

- FARM-Africa;
- Forum for Agricultural Research in Africa (FARA);
- Africa RISING;
- Association for Strengthening Agriculture Research in Eastern and Central Africa (ASARECA);
- African Forum for Agricultural Advisory Services;
- SOS-Sahel;
- Agri Service Ethiopia (ASE);
- Alliance for Green Revolution in Africa (AGRA);
- African Agricultural Technology Foundation (AATF).

### **1.5.1.2 National**

The history of agricultural research in Ethiopia dates back no further than the 1950s, when higher education institutions in agriculture were first established. However, a formal step to institutionalise agricultural research at the national level was made in 1966 with the establishment of the Institute of Agricultural Research (IAR), which was recently restructured and renamed as the Ethiopian Agricultural Research Organization (EARO). EARO is a federal public institution established by the government of Ethiopia to conduct research and coordinate the Ethiopian Agricultural Research System (EARS); its headquarters are located in Addis Ababa. The EARS is organized into five sectors: crops, livestock, soil and water, forestry and farm mechanization. Each research process is subdivided into projects conducted by specific teams.

#### **(a) Crop Research**

- Cereal research case team;
- Pulses, oil crops and fibres research case team;
- Horticulture research case team;
- Coffee, tea and spices research case team;
- Crop protection research case team;
- Aromatic, medicinal and biofuel research case team.

#### **(b) Livestock Sub-Sector**

The national livestock research strategy is designed as a demand-driven and problem-oriented approach, with considerable resources invested in stakeholders' problem assessment. Short- and long-term research objectives are formulated. Research focus is given to smallholder farming systems, the improvement of nutrition and the testing of available technologies. Research in livestock consist of:

- Ruminant research case team;
- Poultry research case team;
- Fishery research case team;
- Apiculture and sericulture research case team.

### **1.5.2 Innovation platforms**

Below are some of the important innovation platforms in the agricultural sector in Ethiopia.

#### **Africa RISING**

The Africa Research in Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development (USAID). The overall purpose of Africa RISING is to provide pathways out of hunger and poverty for small holder families through sustainably intensified farming systems that sufficiently improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base. In Ethiopia, the program is working in the highland areas towards the establishment of Local Innovation Platforms (IPs) at research site levels to engage partners and to facilitate meaningful and effective interactions that help to prioritize, guide, and evaluate the various research and development processes that are implemented at household level.

Through action research and development partnerships, Africa RISING creates opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for



women and children, and conserve or enhance the natural resource base. Africa RISING program is being implemented in eight *kebeles* (the lowest administrative units in Ethiopia in Amhara, Oromia, SNNP and Tigray regional states. *Woreda* (district) level strategic IPs support *kebele* platforms and farmer research groups. They bring together stakeholders to support the wider adoption of innovations and scaling up of *kebele* or community level IPs, they oversee local research activities, foster integration among the farmer research groups, and promote alignment of local on-farm research with district priorities. These researches for development (R4D) activities are now beginning to identify and validate scalable innovation for the project's target farmers (<http://africa-rising.net/where-we-work/ethiopian-highlands/> accessed on 17/08/2015).

## **PROLINNOVA**

Prolinnova–Ethiopia is a national platform to create space and provide a conducive environment for recognizing and enriching local innovation processes in agriculture and natural resource management (NRM). It aims to scale up and integrate Participatory Innovation Development (PID) approaches in governmental and non-governmental organisations concerned with agricultural and NRM research, extension, education and training. Its overall objective is to contribute to enhancing food security, safeguarding the environment and improving rural and urban livelihoods based on the sustainable use of natural resources. It is an initiative of several organisations within Ethiopia that had been working in participatory research and development in relative isolation and decided to join forces in 2003 under the name PROFIEET (Promoting Farmer Innovation and Experimentation in Ethiopia). For more information about the background to this initiative, see the Ethiopia National Workshop report from August 2003 ([www.prolinnova.net](http://www.prolinnova.net)).

After making an initial inventory of organisations and experiences in participatory research and development in Ethiopia and holding a national workshop in August 2004, Prolinnova-Ethiopia drew up an action plan which is jointly revised by member organisations each year. Core activities include:

- Awareness raising and policy dialogue about local innovation and PID;
- Documentation of local innovations and innovation processes;
- Joint experimentation by farmers, scientists and development workers;
- Capacity building to identify local innovations and engage in PID;
- Participatory monitoring and evaluation;
- Piloting Local Innovation Support Fund (LISF);
- Facilitating Farmer Led Documentation (FLD);
- Studying local innovation in adaptation to climate change;
- Integrating PID approaches into institutions of research, extension and education.

### **1.5.2 Extension system and organizations**

A new agricultural extension system called Participatory Demonstration and Training Extension System (PADETES) was designed mainly to implement Agriculture Development Led Industrialization Strategy (ADLI) especially in rural Ethiopia where 85% of the population resides (Gebre-Selassie, 2010). This program was piloted by Sasakawa Africa Association and Global 2000 of the Carter initiative. The major component of PADETES was to disseminate modern farm inputs, especially fertilizers and improved seeds, and the accompanied modern farming practices among smallholders. The government with financial assistance from bilateral and multilateral sources has allocated substantial resources to implement the new system. To enable the PADETS, the Ministry of Agriculture and Rural Development (MOARD) has developed a document outlining rural development policies, strategies, and instruments.

### ***Program of Accompanying Research for Agricultural Innovation (PARI)***

A core part of the government's investment in agriculture is the public agricultural extension system. As a result of the commitment there were great achievements which include increased "modernization" and revitalization of agriculture through improved and new crops, livestock, and natural resource management (NRM) technologies (Kristin *et al.*, 2010). The achievements also include the increase in input use by farmers and the use of improved seed varieties is on the rise. The professional capacity of extension has also dramatically increased with over 60,000 development agents (DAs) having graduated from the Agricultural Technical and Vocational Education and Training (ATVET) colleges with three-year diplomas (prior to 2000, the existing 15,000 DAs had received about nine months of training. It is believed that those DAs were committed in their tasks) (*ibid*).

The existing government continues its efforts to foster production through improved extension systems. It considers the agricultural extension system as a major element of the agricultural and rural development strategy of the country. As a result it directs that technologies need to be disseminated through a strong agricultural research and extension system. The lead technologies identified in this regard are improved seed, fertiliser, artificial insemination and veterinary services. The extension system has federal and regional dimensions. Core institutions are the Agricultural Technical and Vocational Education and Training (ATVET) centres and the Farmer Training Centres (FTCs).

#### **1.5.3 Private R&D activities**

The private sector is known to contribute to agricultural production through organized markets and channels for seed, fertilizers and other farm inputs. In Ethiopia, the overwhelming presence of the government in all areas of agriculture has limited the expansion of the private sector in previous years<sup>1</sup>.

#### **1.6 Key challenges, emerging needs and potentials in the agricultural sector**

Ethiopia does have tremendous resources: the diverse ecology and fertile soil, the amount of rainfall, the policy setup which enables extensive research, and the amount of development agents in each *kebele* of the country.

The collaboration of national and international organizations with the government is of great importance to research, investment and innovation fields. Consequently the agricultural sector achieved some progress towards nutrition food security.

Even though the country achieved higher economic growth for a decade, there are a number of challenges related to the agricultural sector. Since the sector contributes the lion share in the development of the country, these challenges should be understood in the first place and possible solutions should be developed in close collaboration with actors. The following are major challenges:

- Degradation of land and other natural resources due to intense cultivation and overgrazing;
- Recurrent drought;
- Conflict among clans in some of the regional states on resources;
- Fragmented land holdings and landlessness;
- Less employment opportunities among the young landless;
- Neglect and lack of agricultural investment;
- Poor culture from the companies to encourage innovators.

---

<sup>1</sup> <http://www.worldwide-extension.org/africa/ethiopia/s-ethiopia>. Accessed on September 20, 2015.

Other challenges contributing to stagnation and to poor performance of the agricultural sector include:

- Low resource utilisation (e.g., the proportion of cultivated land compared to the total amount of land suitable for agriculture and the amount of water available for irrigation is far below the potential of Ethiopia and thus compels the sector to be rain fed);
- Low-tech farming techniques (e.g., wooden plough pulled by oxen and usage of sickles);
- Over-reliance on fertilisers and underutilised techniques for soil and water conservation; Ecological degradation of potential arable lands.

Based on the general approach (see Africa-wide study Chapter 4) and in pursuit of efficiency and effectiveness, investment by Germany into the agricultural and food sector are suggested in those African countries, which

- Show actual progress in sustainable agricultural productivity driven by related innovations, as indicated by comprehensive productivity measurement and innovation actions on the ground;
- Have a track record of political commitment to foster sustainable agricultural growth, as indicated by performance under CAADP, and
- Prioritize actions for hunger and malnutrition reduction and show progress, but where agricultural and rural development and nutrition interventions are likely to make a significant difference, as indicated by public policy and civil society actions.

Based on this approach, investments into the agricultural and food sector of Ethiopia can be expected to have significant effects on food and nutrition security improvements in the country.

**Table 11: Country level Performance Indicators**

Indicators	Index	Performance (%)
1. Number of Years with more than 6% agricultural growth (2005 to 2014)	7	70
2. Percentage point change in TFP index between 2001 and 2008	10	60
3. Number of years with more than 10% government expenditure (2005 to 2014)	8	80
4. Average share of agricultural GDP spent on R&D (2005 to 2011) in %	0.3	26
5. Steps in CAADP completed	8	100
6. Percentage point improvement in undernourishment between 2001 and 2011	18.8	100
7. Global hunger index (2014)	24.4	100
Total score (weighted)		78

Source: Own computation based on World Bank (2015), FAO (2015), ASTI database and von Grebmer *et al.* (2014)

Note: the % performance (rounded) is defined as follows for the respective indexes: 1. % out of 10 years; 2. classes: if <1, or negative= 0; 1 – 7= 30, 8-15= 60, > 15= 100; 3. % out of 10 years; 4. % of the AU target value of 1% spent on R&D; 5. % of the desired 8 steps; 6. classes: if < 2 = 0; if 3-5= 30; if 6-10=60, if>10=100; 7. classes: if < 12= 0; 12-16: = 30; 17-20: = 60; > 20= 100. Total score (weighted) performance and need to invest: (sum of (1.+2.)/2 (expected growth performance); + sum of (3.+4.+5.)/3 (expected government commitment); + sum of (6.+7.)/2 (performance in food and nutrition security and need)) divided by 3.

Results of assessment (Table 11):

Expected agricultural growth performance:

- Ethiopia has significantly increased its agricultural growth by having seven years more than the annual 6% agricultural growth target defined by CAADP between 2005 and 2014 ([www.resakss.org](http://www.resakss.org));

### **Program of Accompanying Research for Agricultural Innovation (PARI)**

- Total factor productivity in Ethiopia has improved by 10% between 2001 and 2008 (Fuglie and Rada, 2011), indicating that Ethiopia’s commitment to research and development into the agricultural and food sector is modest.

#### Government commitment:

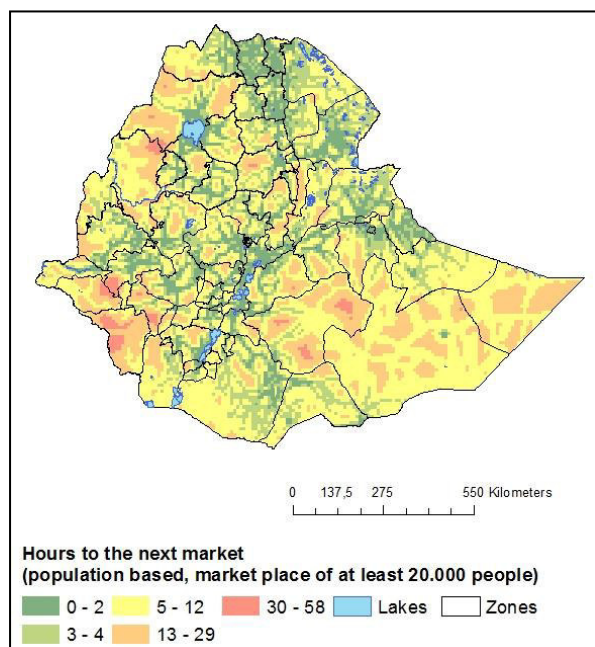
- The Ethiopia government has shown a strong willingness to invest in agricultural sector by surpassing the CAADP 10% agricultural expenditure target for eight years between 2005 and 2014 ([www.resakss.org](http://www.resakss.org)).
- Ethiopia has also a track record of political commitment to foster sustainable agricultural growth by being active in the CAADP process and having completed all the eight steps in the CAADP process ([www.resakss.org](http://www.resakss.org)).
- However, Ethiopia spends only 0.3% of its agricultural GDP on agricultural research and development, which is much lower than the Sub-Saharan Africa average ([www.asti.cgiar.org](http://www.asti.cgiar.org)) and the AU target value of 1%. This indicates that Ethiopia’s investment on agricultural innovation is not yet sufficient.

#### Food and nutrition security progress and need:

- Ethiopia is prioritizing actions for hunger and malnutrition reduction and showed a 19% improvement in undernourishment between 2001 and 2011, which is above the 10% threshold level ([www.resakss.org](http://www.resakss.org)).
- Still, Ethiopia has the highest GHI score, at 24.4, reflecting an alarming level of hunger (von Grebmer *et al.*, 2014)<sup>2</sup>. This makes the investment into the agricultural and food sector in Ethiopia very urgent to reduce the high numbers of food insecure people.

The economic, political, and social/nutrition framework in Ethiopia strongly suggests accelerated investment into the agricultural and food sector of the country.

**Figure 2: Distance to markets**



Data sources: Hours to next market - HarvestChoice, 2015;

Administrative areas: <http://www.gadm.org/>, accessed 209.9.2015

Inland water bodies: <http://www.diva-gis.org/gData> (water bodies), accessed 20.9.2015

<sup>2</sup> GHI score Values less than 5.0 reflect low hunger, values from 5.0 to 9.9 reflect “moderate” hunger, values from 10.0 to 19.9 indicate a “serious” level of hunger, values from 20.0 to 29.9 are “alarming,” and values of 30.0 or greater are “extremely alarming.” (von Grebmer *et al.*, 2014)

Transport intensive products should be promoted in areas that are well connected to markets, whereas the remote areas should focus on low volume and livestock value chain segments.

## **2. Most relevant value chains in the country**

### **2.1 AIC value chains**

#### **2.1.1 Wheat value chain**

In 2013/14, 4.7 million farmers produced 39 million quintals of wheat across 1.6 million hectares of land, making it the third most important cereal crop in the country. Between 2007/8 and 2013/14, yield and total production of wheat grew annually by an average of 8.4% and 11.6%, respectively (EATA, 2014). In absolute terms, total national wheat production showed a remarkable 54.7% and 69.6% growth from what it was in 2008/9 and 2007/8, respectively. Despite these gains, demand for wheat continues to outpace supply, and the production growth has been a fraction of what it could be with more focused effort and attention (ibid).

#### **2.1.2 Faba Bean value chain**

Faba beans is one of the twelve pulse species grown in Ethiopia. Among the individual varieties, faba beans (broadly known as horse beans) accounts for the greatest portion of production at 36%, followed by haricot beans (17%) and chickpeas (16%). Other pulses (e.g., lentils, peas, lupines, and mung beans) account for the remaining 32%. Pulses, generally, contribute to smallholder livelihoods in multiple ways. Firstly, pulses can play a significant role in improving smallholders' food security, as an affordable source of protein (pulses make up approximately 15% of the average Ethiopian diet) and other essential nutrients. Secondly, pulses can have an income benefit for smallholders, both in terms of diversification and because they yield a higher gross margin than cereals. Faba beans provide the highest net return among the crops considered, while chickpeas provide higher returns than barley and *teff*, but comparable returns to wheat. Finally, as the third largest crop export product in terms of total value (US\$ 90 million), pulses have a positive impact on the trade balance, and contribute to the country's foreign exchange reserves.

## **2.2 Other relevant value chains**

### **2.2.1 Coffee**

Ethiopia is generally regarded as the birthplace of coffee. The word coffee comes from "Kaff", the name of one of Ethiopia's main coffee-producing regions, and more genetically diverse strains of coffee exist in Ethiopia than anywhere else in the world. Coffee remains the most important export crop, utilizing over 600,000 ha under cultivation in almost all regional states (EATA, 2014). Ethiopia is the largest coffee producer in Africa and this industry is the largest export earner. More recently, coffee accounted for over a third of export earnings and it is estimated that coffee forms a main source of livelihood to more than 20 million families (CSA, 2013).

### **2.2.2 *Teff* Value Chain**

*Teff* is currently the dominant cereal crop which is annually grown on more than 3 million ha of land, covering 6 million smallholder households. *Teff* constitutes a daily staple food for over 50 million Ethiopians. Nationally, about 47.5 million quintals of *teff* were produced by peasant holders in 2014/15 during the Meher season. The future strategy by different stakeholders is to increase sustainable production and create a well-functioning *teff* value chain (EATA, 2014).

### **2.2.3 Maize value chain**

Maize is the most important cereal in produced in Ethiopia: it is grown by more than half of all farmers grow, mostly for subsistence. Maize also forms the cheapest source of calorie intake (21% of per capita daily calorie intake nationally (CSA, 2013/2014). The maize development strategy as envisioned in the Agricultural Transformation Agenda seeks to see the maize contribute to greater food security and increased incomes for smallholder maize farmers by increasing its productivity and improving access to sustainable and efficient markets (EATA, 2014).

### **2.2.4 Livestock Products Value Chain**

#### **a. Meat and Live Animals**

Ethiopia has the tenth largest livestock inventory in the world, yet the country's current share in the global export market for meat is quite small (IGAD, 2010). The meat production is not only meant for the large domestic market but also directed to the export market. From meat production, other livestock value chains have also emerged over time, including; hides, skins and leather value chains. However, informal trade of live animals across the borders of the neighbouring states is believed to significantly reduce the numbers of animals reaching abattoirs in Ethiopia (FDRE, undated).

#### **b. Hides, Skins and Leather**

The hides, skin and leather is a critical strategic sector for the economic and industrial development of Ethiopia (IGAD, 2010). It has an abundant and renewable resource base in Ethiopia's large population of cattle, sheep and goats. It is labour-intensive with the potential to be a major source of employment all along its value chain. The government of Ethiopia has identified the leather and leather products value chain as one of the top four most promising industries in the country due to its strong backward linkages to the rural economy, and potential for poverty reduction. To date, over 10,000 formal jobs have been created as have thousands of informal handicraft and trading activities (Barrett et al., 2006; IGAD, 2010). Out of the 17 large shoe factories, 14 are engaged in exporting. About 1,000 small and micro-enterprises are also engaged in the production of footwear. Today the sector consists of over 850 legal hides and skins traders, 6,515 workers in tanning, 5,400 workers in foot wear and leather goods factories. The Ethiopian leather industry is one of the leading generators of foreign currency in the country and an important creator of jobs.

#### **c. Dairy**

Ethiopians produced 3.3 billion liters of milk worth US\$ 1.2 billion in 2011/2 and imported an additional US\$ 10.6 million of dairy products (USAID, 2013). At 19 liters per annum, per capita annual milk consumption is extremely low in Ethiopia, well below the world average of 105 liters and the African average of about 40 liters. However, Ethiopia has the largest cattle population in Africa, at 52 million, including 10.5 million dairy cattle.

Overall, Ethiopia has a complex dairy value chain, with both formal and informal channels. Less than 5% of the milk produced in Ethiopia is sold in commercial markets. The dairy value chain has a variety of entrepreneurial actors: smallholder and commercial producers, small and large processors, service and input providers, farmers' organizations, and cooperatives (Land O'Lakes, 2010). The dairy sector is growing in Ethiopia and is receiving new investment, although the demand for investment exceeds the supply.

The Ethiopian dairy production and market systems face severe constraints. The average milk production per cow is 1.5 liters per day, well below international benchmarks. Poor animal genetics, insufficient access to proper animal feed and poor management practices all

contribute to the low productivity levels. Similarly, dairy producers and downstream actors in the value chains face many challenges in getting milk to market (Care-Ethiopia, 2010). For the most part, milk collection, chilling and transport, is not well organized and there are few economies of scale. Transaction costs are high and up to 20-35% of milk is spoiled or otherwise lost. Dairy cooperatives and some private processors seek to provide improved services and scale economies.

### **3. Innovations in value chains in the past 20 years**

#### **3.1 The most crucial limiting factors in Ethiopia / AIC-region / in AIC value chains**

##### **Limiting factors in the livestock value chain**

A number of challenges in the structure and functioning of the livestock marketing system are associated with supply shortages of shoats. These are summarized below (Getachew *et al.*, 2008):

- Initially the supply derived from non-market-oriented livestock production systems involving several highly dispersed smallholder farmers, pastoralists and agro-pastoralists mostly in remote areas that supply non-homogenous types to local markets;
- There is lack of a well-coordinated livestock supply chain that would link the majority of producers and buyers;
- Problems in the acquisition system of abattoirs: in some markets, there are only single purchasers of abattoirs or none at all. It may not be justified to establish permanent purchasing points in all supply areas;
- Lack of a monitoring mechanism: Abattoirs need to establish a mechanism to monitor their purchasing system regularly.

#### **3.2 The most important / beneficial innovations in the relevant value chains**

*- pending further information for Fava Beans -*

##### **Wheat Value Chain**

A strategy is being developed to aid in sustainable increase the productivity of smallholder wheat production. The strategy will be updated to align with the upcoming GTP-2 goals.

#### **3.3 Most promising approaches for farmer and small business related to VC innovations**

The farmers are organised in cooperatives, working forces, and are being trained at FTC. The development agents (at least three in each *kebele*) are important resources. The network from the national to grass root level is workable and promising. Ministries have lined offices up to district level.

The investment framework designed by the government is another promising area. In addition to this the interest of farmers in modern technology has potential for small businesses and investments. Introducing improved varieties in all sectors has gotten good records. Another opportunity is the research environment in all the regions. The agricultural research centres, the growing number of universities and training centres can be viewed as opportunities, if their capacities are built at optimum level.

## 4. Suggestions for Collaboration

### 4.1 Promising Agricultural Products and Value Chains

Besides assessing the returns of investments into institutional innovations in Ethiopia, analysis to choose the most promising value chains in the country is also undertaken. In compliance with the availability of data and the purpose of the study four criteria that focus on poverty and market potential are used to select the five most promising agricultural products from the long list of agricultural products the country produces and sells. The first indicator, the trade potential (revealed comparative advantage (RCA) index), is computed to identify value chains over which the country has revealed (but not potential) comparative advantage. In the present case, the RCA index compares the share of a given agricultural product in Ethiopia's export basket with that of the same product in total world exports. The second indicator, yield gap, is used to assess the expected return of the envisaged Germany investment on the given GIAE country value chains. A third indicator, average yield growth, is used to examine the Potential of the product for poverty reduction. The production share of total supply is also used to assess the present integration of the poor in the market (relevance).

The summary of the five most promising value chains based on Revealed Comparative Advantage (RCA) index, average yield growth and relative yield gap is reported in Table 12 below. The production share, RCA index, actual yield growth and relative yield gap for the GIZ-selected value chain(s) is also reported at the bottom of the table, when they are not included in the list of the first five most promising value chains.

**Table 12: Selection of promising agricultural products /value chains**

Rank by RCA		Rank by yield progress***			Rank by yield gap		Rank by relevance of crop	
Rank	Name of agricultural Product	RCA index (2012)	Name of the Crop	Average annual Yield growth (2005 to 2012 )	Name of Stable crop (rainfed)	Relative yield gap (%)**	Name of agricultural Product	Production share of supply (2012)*
1	Sesame seed	87	Sweet potatoes	39	Maize	86	Pulses & products	130
2	Meat, goat	67	Yams	37	sorghum	82	Maize & products	125
3	Vegetables, fresh nes	28	Chick peas	8	Wheat	81	Cereals, Other	123
4	Oilseeds nes	20	Potatoes	8	Millet	77	Peas	122
5	Broad beans, horse beans, dry	19	Maize	8			Beans	120
GIZ select ed	wheat	0.25	Broad/horse beans,	7			Wheat, product	77
			Wheat	5				

Source: \* Own computation based on FAO 2015 data, \*\* from Van Bussel *et al.* (2015).

Note: \*\*\* a minimum of 0.5% production (volume) share threshold is used as a screening (crop relevance) criteria.



Results of assessment (Table 12):

- The trade potential (revealed comparative advantage (RCA) index), is very high for sesame seed, goat meat, vegetable and fruits, oil seeds and one of the GIZ selected value chains namely broad bean (Fava bean, horse bean). This indicates that Ethiopia has comparative advantage (in the export) of these commodities. The RCA value for the other GIZ selected crop, wheat, is less than 1 indicating that Ethiopia has comparative disadvantage in the export of wheat;
- The yield performance indicating progress suggests that over the CAADP period (2005 to 2012) sweet potatoes, yams, chick peas, potatoes and maize are five most promising crops. The two GIZ selected crops, broad beans and wheat, also grow on average by 7% and 5% respectively;
- Yield gaps indicate potentials from another angle, and are observed to be high for rain-fed maize, sorghum, wheat and millet indicating the high potential return of investing on these value chains;
- In terms of relevance (production share of supply) pulses, maize, other cereals, peas and one of the GIZ selected crop, beans, are leading. The total production of these products exceeds the total supply. More than three fourth of the total wheat (the other GIZ selected crops) supplied in the market is also domestically produced.

#### **4.2 A systematic assessment of promising partnerships for each promising innovation area**

The German Federal Ministry for Economic Cooperation and Development (BMZ) has innovation centres for the agriculture and food sector. The following themes are potential areas of collaboration:

- Innovations on agricultural technologies production. There are a number of limitations in supplying appropriate technologies to the rural farmer. Rainfall erraticity is one of the problems in Ethiopia which results in frequent drought. Since the country receives more than 800 mm of average rainfall, water harvesting is believed to reduce the impact of erraticity. Therefore technological inputs are necessary. Water lifting/ pumping technologies, small scale water harvesting structure constructions, etc. are needed;
- Integration and linkage among the innovators (research groups or local) and the platforms are insufficient. Most innovators and researchers are working separately from one another. Working in a fragmented way is effective and reduces the chance of actually achieving change. Therefore, integration and linkage need to be established;
- Capacity building on value addition for agricultural outputs is lacking. Particularly the livestock sector in the country has very high potential. But the sector is not well developed to exploit the resources;
- The research being undertaken is numerous. Yet the problems which are at the core of the research projects and which affect the rural people continue to exist. This is sometimes attributed to the exclusion of farmers as stakeholders during the research process.

#### **4.3 Some potential partners for the German collaboration: in science and research, private sector, NGOs and governmental organizations**

The following bodies could be good partners:

- Research centers of universities;

***Program of Accompanying Research for Agricultural Innovation (PARI)***

- Cooperatives and cooperative unions;
- EIAR and their branch at regional level;
- Private seed producers;
- Ministry of Agriculture and its line offices at the district level;
- Research centers like ILRI.

**4.4 Necessary implementation research**

*- pending further information -*

## **5. References**

- CARE-Ethiopia. 2009. Value Chain Analysis of Milk and Milk Products in Borana Pastoralist Area. Addis Ababa: CARE Ethiopia.
- CSA. 2013. Population Projection of Ethiopia for All Regions At Wereda Level from 2014 – 2017. Addis Ababa, Ethiopia.
- CSA. 2014. Report on Area and production of major Crops. Agricultural sample survey volume 12013 / 2014, Addis Ababa, Ethiopia.
- Demese Chanyalew, Berhanu Adenew and Mellor J. 2010. Federal democratic republic of Ethiopia ministry of agriculture and rural development Ethiopia's agricultural sector policy and investment framework (PIF) 2010-2020 draft final report 15 September, 2010. Addis Ababa, Ethiopia.
- Demekech Gera, Fisseha Moges, Getnet Zeleke, Kindie Tesfaye and Melkamu Ayalew. 2010. Multi-stakeholder linkages in rural innovation processes in the Amhara region, Ethiopia. Working Document Series 137: ICRA, Bahir Dar University and ARARI.
- FAO. 2014. The State of Food Insecurity in the World 2014. Rome: FAO, WFP, IFAD.
- Ethiopian Agricultural Transformation Agency. 2014. Annual Report. Transforming Agriculture in Ethiopia. Addis Ababa, Ethiopia. Available online at: [http://www.ata.gov.et/wp-content/uploads/Annual\\_Report.pdf](http://www.ata.gov.et/wp-content/uploads/Annual_Report.pdf).
- European Centre for Development. 2014. Policy Management Independent Assessment of the CAADP Multi-Donor Trust Fund, discussion paper No. 158. Available at: [www.ecdpm.org/dp158](http://www.ecdpm.org/dp158)
- Fisseha T. and Tadesse M. 2011. Ethiopia and the APRM: A Path to Nowhere. A Critical Assessment. Johannesburg, South Africa: Open Society Foundations.
- Getachew L., Hailemariam T., Dawit A. and Asfaw N. 2008. Live animal and meat export value chains for selected areas in Ethiopia: Constraints and opportunities for enhancing mat exports. *Unpublished.[PDF] Live animal and meat export value chains for International*. Available online at: [https://www.ilri.org/InfoServ/Webpub/fulldocs/LiveAnimalMeatExportEthiopia/LiveAnimal\\_DPaper\\_12.pdf](https://www.ilri.org/InfoServ/Webpub/fulldocs/LiveAnimalMeatExportEthiopia/LiveAnimal_DPaper_12.pdf).
- Gebre-Selassie S. 2010. Summary Report on Recent Economic and Agricultural Policy. Paper prepared for the Roles of Agriculture International Conference 20-22 October, 2003 – Rome, Italy Agricultural and Development Economics Division (ESA) Food and Agriculture Organization of the United Nations. Rome, Italy.
- HarvestChoice. 2015. "Travel time to nearest town over 20K (mean, hours, 2000)." International Food Policy Research Institute, Washington, DC., and University of Minnesota, St. Paul, MN. Available online at [http://harvestchoice.org/data/tt\\_20k](http://harvestchoice.org/data/tt_20k).
- IFPRI. 2010. In-Depth Assessment of the Public Agricultural Extension System of Ethiopia and Recommendations for Improvement, Addis Ababa.
- IGAD. 2010. The Contribution of Livestock to the Ethiopian Economy – Part II. IGAD LPI Working Paper No. 02 - 11 . Roy Behnke, Odessa Centre, Great Wolford and United Kingdom.
- Kristin D., Burton S., David A., Daniel A., Aaron F., Jens R., Chloe L. and Elias Z. 2010. In-Depth Assessment of the Public Agricultural Extension System of Ethiopia and Recommendations for Improvement. IFPRI Discussion Paper 01041, Eastern and Southern Africa Regional Office.

***Program of Accompanying Research for Agricultural Innovation (PARI)***

Land O'Lakes, Inc., 2010. 'The next stage in dairy development for Ethiopia: Dairy Value Chains, End Markets and Food Security. Cooperative agreement 663-a-00-05-00431-00. USAID and Land O'Lakes, Inc.

Ndikumana N.M. 2010. Ethiopia's Economic Growth Performance: Current Situation and Challenges. *Economic Brief, Economic Brief vol.1* (Issue 5). 1

Stein H. 2011. World Bank agricultural policies, poverty and income inequality in Sub-Saharan Africa. *Cambridge Journal of Regions, Economy and Society*, 4(1), 79. 4

The Federal Democratic Republic of Ethiopia (undated): Poverty reduction Strategy Paper: Growth and Transformation Plan 2011-2015

The Open Society Initiative for Eastern Africa (OSIEA), Addis Ababa, Ethiopia.

USAID. 2014. Ethiopia: Nutrition Profile. Available online at:

<https://www.usaid.gov/sites/default/files/documents/1864/USAID-Ethiopia-Profile.pdf>

United States Agency for International Development (USAID) 2013. Agricultural Growth Project - Livestock Market Development End-Market and Value Chain Analyses. Summary August 2013.

Available online at:

[http://ethioagp.org/download/reports/Ethiopia%20EMA-VCA%20Summary%20Note%20\(AGP-LMD\).pdf](http://ethioagp.org/download/reports/Ethiopia%20EMA-VCA%20Summary%20Note%20(AGP-LMD).pdf)

von Grebmer K., Saltzman A., Birol E., Wiesmann D., Prasai N., Yohannes Y., Menon P., Thompson J., & Sonntag A. 2014. 2014 Global Hunger Index: The Challenge of Hidden Hunger. Bonn/Washington D.C./Dublin: Welthungerhilfe, International Food Policy Research Institute (IFPRI), Concern Worldwide.