Federal Democratic Republic of Ethiopia
Ministry of Agriculture and Rural Development

Ethiopia's Agriculture Sector Policy and Investment Framework: Ten Year Road Map (2010-2020)

Draft

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May 3, 2010
Addis Ababa, Ethiopia

CONTENTS

ACRONYMS AND ABREVATIONS

ADLI	Agriculture Development-Led Industrialization
AESE	Agricultural Economics Society of Ethiopia
AGDP	Agriculture Growth Domestic Products
AGP	Agriculture Growth Programme
AI	Artificial Insemination
ARCD	Agriculture and Rural Centered Development
ARD	Agriculture and Rural Development
ATVET	Agriculture Technical and Vocational Education and Training
AU	African Union
BoARD	Bureau of Agriculture and Rural Development
BoFED	Bureau of Finance and Economic Development
BPR	Business Process Reengineering
BSC	Balanced Score card
CAADP	Comprehensive Africa Agriculture Development Program
CBO	Community Based Organization
CSA	Central Statistical Authority
CSO	Civil Service Organization
COMESA	Common Market for Eastern and Southern Africa
CRDA	Christian Relief Development Association
DA/SMS	Development Agent/Subject Matter Specialist
EAAP	Ethiopian Association of Agricultural Professionals
ECX	Ethiopian Commodity Exchange
EDRI	Ethiopian Development Research Institute
EEA	Ethiopian Economic Association
EIAR	Ethiopian Institute of Agricultural Research
EPA	Environmental Protection Agency
EPRDF	Ethiopian Peoples' Revolutionary Democratic Front
FDRE	Federal Democratic Republic of Ethiopia
FTC	Farmers Training Center
FYDP	Five Year Development Plan
GDP	Growth Domestic Product
GoE	Government of Ethiopia
HLI	Higher learning Institutes
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
IR	Inception Report
MDG	Millennium Development Goal
MFI	Micro Finance Institutes
MoARD	Ministry of Agriculture and Rural Development
MoE	Ministry of education
MoFA	Ministry of Federal Affairs
MoFED	Ministry of Finance and Economic Development
MoJ	Ministry of Justice
MoST	Ministry of Science and Technology
MoTI	Ministry of Trade and Industry

MoWR	Ministry of Water Resources
MoWUD	Ministry of Works and Urban Development
NARS	National Agricultural Research System
NCs	National Consultants
NEPAD	New Partnership for Africa Development
NFYDP	Next Five Year Development Plan
NGOs	Non-Governmental Organizations
PAP	Pastoral and Agro-Pastoral
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PIF	Policy and Investment Framework
PSNP	Productive Safety Net Programme
SDPRP	Sustainable Development for Poverty Reduction Program
SLM	Sustainable Land Management
RARI	Regional Agriculture Research Institute
REDFS	Rural Economic Development and Food Security
RDPS	Rural Development Policy and Strategy
ToR	Terms of Reference

EXECUTIVE SUMMARY

I. Introduction

The agriculture sector PIF preparation is the logical follow up of the CAADP compact. Ethiopia completed the preparation and signing of the CAADP Compact in August 2009, which is an initiative of the African Union's New Partnership for Africa's Development (AU/NEPAD) footed on a vision and strategic framework to eradicate hunger and poverty and place the continent, at all levels, on a path for sustainable socio-economic growth. PIF is a 10 years road map prepared on the objective of producing a national level strategic investment planning framework that can be used to guide the prioritization, planning and implementation of current and future public and development assistance investments that contribute to sustainable agricultural growth and rural development, food security, and poverty reduction. It is also prepared to assist the GoE and its development partners to identify salient policies linkages and any policy changes, institutional arrangements and coordination mechanisms that might be recommended for the next nationwide development plan aligned with existing GoE, CAADP, and REDFS investment pillars, and programs.

II. Methodology and conceptual framework

The PIF preparation has used various approaches to collect data and information. These are primary and secondary data and information including review of documents, independent evaluation and research works that yield appropriate statistical analysis of growth and related variables, as well as field visits. The PIF preparation consultants' team travelled to Oromyia, SNNP, Amhara and Tigray Regional states. The experiences of other countries were also examined by using appropriate data and information published by international statistical agencies. The experiences of Ghana, India, Taiwan, China, and Egypt are dealt at length with comparative analysis of Ethiopia, Rwanda, Japan and U.S cases. FDRE CSA data remains the official and accepted data to undertake quantified analysis during the PIF preparation. The team also used data from MoFED, and other relevant Ministries and institutes to undertake the budget, cost and benefit analysis of on-going and incremental investment areas. Clustering techniques are used to put the very long list of incremental investment areas in 10 intra-sector and 4 inter-sectoral thematic areas.

In order to undertake the PIF preparation it was essential to start with definitional and conceptual underpinnings of some key terminologies or task guiding principles as well as to make the report easily comprehendible. Specifically scope of the sector and the study, vision, growth, pillar, sub-sector, programme, project or the broader, again controversial, issues of policy and institutes were made unambiguous a prior.

PIF in Ethiopia starts from the natural resources base analysis. From the very beginning it was believed that it is difficult to isolate the agricultural development policy elements from the water, land, and forest policies of the country. During the PIF preparation six sub-sectors, namely natural resources development, conservation and utilization; development; marketing; disaster risk management and food security; research; administration and management are set. In other words PIF programmes and projects are clustered in six sub-sectors. A programme is a broader cost center of a public body or a broad

objective of expenditure. Expenditure has to be related to output. Projects should come under programmes.

In the context of the PIF preparation the government's vision of making Ethiopia a middle income country by 2020 remains valid and acceptable. However, this has been analyzed further in the context of PIF and the investment areas identified and prioritized. In the context of PIF the vision is explained in terms of making agriculture the major employing sector and contributor to poverty reduction as indicated in MDGs and beyond that. Coupled with the vision, agricultural growth in the coming years in Ethiopia is expected to emanate from the sum total of production activities related to consumption, investment and trade. The need for investment to enhance growth is expected to come from crop, livestock and natural resources development and use both in the highland, predominantly non-pastoral areas, as well as pastoral areas of the country.

Agricultural policy is taken as a statement of course of action set by the Federal and Regional State governments of FDRE in the management of agricultural development affairs. It could be formulated and implemented in the form of laws, rules, regulations, directives and broad goal oriented guiding declarations that affect different economic and social agents and institutions. Institutional issues are examined from organizational and relational dimensions. Both dimensions are footed on laws, regulations and directives. The organizational framework covers the structure of the government and the place agriculture is given in the government structure,

III. Vision

The Government of Ethiopia has clearly articulated long term vision not only of where it wants to get to but also how it will get there. The two are intimately related. The core of the vision is to become a middle income country by 2020. In that context the millennium challenge goals are to be met. Middle income is defined as per capita income of $1000. The strategy for fulfilling that vision is Agricultural Development Led Industrialization (ADLI). The starting point for this vision was an economy dominated by low-productivity agriculture on potentially highly productive resources.

In its efforts to promote economic development, the GoE is making large investments in roads, electrification, education, health and agricultural productivity. Rapid rural non-farm (including small market town) growth requires physical infrastructure. Rural road networks linking these areas to surplus agricultural producers and inter-regional roads linking small market towns to major urban centers are crucial to enable efficient marketing of products. Likewise, electrification enhances production efficiency for producers of non-farm goods and services as well as improving quality of life (thereby reducing incentives for migration to large cities). Communications networks, (either mobile phone access or land-lines), also improves market efficiency by facilitating contacts between buyers and sellers and increased communications within vertically integrated marketing chains.

In general, so far the efforts to achieve the vision have been underway for several years, significant progress has been made and a solid basis for further progress has been built. Nevertheless the country has progressed only part way to the vision from the initial conditions described above. There is much yet to be done. An expansive 20 year vision includes a radical transformation of the economic structure of the economy and equally radical improvements in income, food security, health, and education. In the normal process of economic growth and in this 20 year vision, non-agricultural sectors should grow more rapidly

than agriculture, particularly in rapid growth contexts. Thus, it is inevitable that with rapid growth the relative importance of agriculture declines. It should do so rapidly as is illustrated in the report.

IV. Growth

Trend and sources of agricultural growth in Ethiopia is also analyzed and reported in a separate chapter. Unfortunately, as is always the case for agriculture, the year to year weather driven ups and downs in agricultural production are large compared to the changes in trends due to policy and investment that we would like to detect. In Ethiopia's agriculture sector, first, prior to 1990/91 production growth was negligible. Second, the agricultural growth rate in the 1990's accelerated from no growth in the preceding two decades to a growth rate far exceeding the population growth rate. Third, in the decade from 2000/01, yield increase picked up markedly, even as area continued to increase although at half the rate of the 1990's. Thus, the growth rate accelerated to a very substantial seven percent for that period. Thus by international standards this was a period of very rapid growth. The source of growth in this very successful Ethiopian case was almost evenly split between area and yield increase with the latter somewhat larger than the former.

This is of course the period when the government's agricultural development based strategy with its large investments in roads, extension, and research would begin having an impact. It is apparent from these data that the government's policies were indeed highly effective in accelerating the agricultural growth rate to a high level. In this context it is important to note that by international standards the increase in extension effort was huge. In the 1950's and 1960's a large part of the rural development literature was devoted to the tradition bound nature of farmers – conservative, risk averse behavior, that underexploited even traditional means of increasing output. The huge government effort not only brought a high density of extension agents and large expansion of the proportion of the rural population within reach of all weather roads, but also an emphasis on increased labor input into agriculture, means of utilizing that labor moderately productively and changed rural attitudes towards increasing agricultural production. Those changes associated with a massive extension effort are certain to increase agricultural productivity.

The important point from this analysis is that both sources of growth, increased land area and improvements in traditional husbandry cannot be expected to continue indefinitely. For the future, the sources of growth have to change dramatically. The base for that to occur has been built. It now needs to be scaled up – which is the explicit intention of the government. Greatly increased use of improved seed and fertilizer will be the core of future growth. But for the desired impact on growth the supply systems for both seed and fertilizer will need substantial change and the response to fertilizer will have to be substantially raised from present levels and maintained at a high level. The latter requires a steady flow of improved technology from the research system and its application by an increasingly technically sophisticated extension system.

The growth analysis concluded the following about future growth. First, the sources of growth must change. Second, fertilizer use must grow on the order of three times as fast as in the past. That will require major policy changes in the fertilizer area. Third, the seed system must change radically from its current modest growth rate to a very rapid growth rate. That also calls for significant institutional changes. Fourth the agricultural research system will have to continually turn out improved varieties and practices and fine tune recommendations that will allow the fertilizer response coefficient to rise to a

normal level and then be maintained at that level, as is the case for developed countries, even as usage per hectare grows rapidly. Fifth, Ethiopia has to augment its irrigation investment.

V. Policy, Strategy and Institution: A Review

Key documents that give a good grasp of Ethiopia's recent agricultural policies reviewed. These include the very recent exhaustive agriculture sector-wide policy assessment reported in the CAADP Ethiopia study[1]. Policy issues are reviewed in three categories covering natural resources, agriculture development and marketing. Within these the current national agricultural policies are classified in 10 subject/issues: land, agriculture water (Irrigation), forest, crop production, livestock production, farm inputs (seed, seedlings, fertilizer, pesticides, farm tools and machinery, feed, semen, drugs and vaccine etc.), pest management, agricultural research, agricultural extension, and agricultural marketing and trade.

Inseparable from policy is the strategy to implement it. The Agricultural Development Led-Industrialization (ADLI) strategy was the first comprehensive strategy launched by the EPRDF government and it continued to influence the formulation of successive policy, strategy, and plan documents such as the Revolutionary Democracy document which includes both policy and strategic issues, and the sector specific policy and strategy documents such as RDPS and the Industrial Development Strategy documents as well as the two consecutive plans known as SDPRP[2] and PASDEP. ADLI also remained the lead strategy which Ethiopia's agriculture sector vision and goals in the context of PIF are footed on. The Agriculture sector lead strategy is agriculture and rural centred development (ARCD). As clearly pointed out in RDPS, the basic directions of agriculture and rural centered development so far revolves around the extensive utilization of human labor; proper use and management of land, water and other natural resources; agro–ecology based development approach; integrated approach to development; targeted interventions for drought–prone and food insecure areas; encouraging the private sector; enhancing the benefits of the working people; and enhanced use of agricultural technical and vocational training.

There is no doubt that institutions are key elements of a policy formulation and implementation process. They can be seen from the aspects of organizational set-up and relationship or linkages among organizations. Both aspects are covered, in their relative importance, in policy documents including proclamations and regulations that notify the establishment and operation of the institute of concern. Broadly the institutions are classified into seven categories. These are government (Federal, regional and woreda level); non-government organizations (NGOs); mass organizations including community based organizations (CBOs); private institutions; civil society organizations (CSOs); donors: bilateral/multilateral institutions; and domestic agricultural research and extension as well as CGIAR affiliated institutions[3].

Due to the policies and following the ADLI and ARCD strategies and associated institutional arrangements Ethiopia's agriculture sector development in the last six years has been remarkable in terms of sector wide GDP growth and relative contribution of the sector to poverty reduction and increase in per capita food production. Since 2004/05 the average annual growth rate of the agriculture sector in terms of AGDP is about 13%, which exceeds the CAADP target of 6%. This is a strong and sustained performance after a sharp decline which had hit bottom by 2002/03, including this ten year trend shows an average of about 10% growth rate. The percent share of agriculture from GDP declined from 53.1% to

[1] During the conduct of the CAADP Ethiopia study previous other studies and reports on agricultural policy were reviewed and the materials referred are listed in the reference section of the study.
[2] SDPRP is Ethiopia's First Generation PRSP and its successor development plan is PASDEP.
[3] Theses classification was also used to assess the state of existing institutions in the CAADP Ethiopia study. The CAADP Ethiopia study has also included a table that shows the organizational setting, responsibility, synergy and partnership.

42.6%between 1995/6 and 2008/09[4]. The food poverty head count decreased from 44% in 1999/00 to 38% in 2005/06 to nearly 33% and expected to be 28% by the end of the PASDEP period (2009/10)[5]. The per capita grain production increased from below 1.5 quintal in 2003/04 to 2.13 in 2007/08[6] (Box 5). The number of manufacturing of food products and beverage establishments in 1998/99 was 228 and increased to 381 by 2006/07[7]. Similar achievements have been made in the area of basic infrastructure development that are important for agriculture and rural development. In order to achieve the above and others the government has increased its budget for ARD and basic infrastructure sectors. The Federal government budget to the agriculture and natural resources sector has exceeded the CAADP target of 10% since 2005/06. Generally the total Federal budget allocated to agriculture and natural resources has increased from 9.4% in 1993/94 to 15.5%in 2007/08.

It is important to note that despite the above positive changes in the economy, the GoE still believes poverty and hunger are the daunting challenges of the nation and needs a concerted effort to eradicate hunger and reduce poverty, at least per the MDGs goal, both by Ethiopians and external development partners alike.

VI. Incremental Investment areas and budget

One of the major tasks of PIF preparation is identification of priority investment areas for the agricultural sector and estimating the magnitude of investment resources required over the next five to ten years. While the existing programs and projects in the sector need to be continued with allocation of budgets and development resources that commensurate with the desired goals of economy wide GDP growth rate, the investment areas identified during PIF preparation are those which need additional finance through a project approach in order to achieve the desired goals of the NFYDP and the vision of reaching a middle income country by 2020.

Incremental investment areas were identified based on the clustering and pair-wise techniques. With a strict scrutiny and clustering finally 10 intra-sector and four inter-sector investment areas are identified. Although there is a slight difference between regions, overall ranking provided a consistent result. The top priority for incremental investment in the agriculture sector of the country is given to natural resources. It is followed by, irrigation, research, extension, and seed, respectively. In other words these areas with their specific emphasis are the top five investment areas which the nation has to focus on in the coming NFYDP and beyond till 2020. Looking at the regional level prioritization a slight deviations is registered from that of the overall ranking. Natural Resources rank 1st in Oromia, Tigray and Amhara, but 2nd in SNNPR. Irrigation ranks 1st in SNNPR but 2nd in Oromia, Tigray and Amhara regions. Research ranks 2nd in Oromia, 3rd in SNNPR, 4th in Tigray, and 6th in Amhara. Extension ranks 3rd in both Tigray and Amhara, 5th in Oromia and 8th in SNNPR. Livestock is in the 4th place in Amhara, 5th in Tigray and 6th in Oromia.

The whole exercise of prioritization and the overall top five choices closely go with the government agricultural development strategy set for the NFYDP. Natural resources management and utilization

[4] Data obtained from MoFED
[5] Source: MoFED, PASDEP Annual Progress Report, 2006/07.
[6] Ethiopia is almost meeting the 2100 Kcalorie per capita per day requirement. The equivalent of this in terms of production is 2.16.
[7] CSA, Annual Statistical Report, various years.

including SLM, irrigation, research, seed and extension are very important for conservation and scaling up of technologies use and best practices. So far donors support in irrigation development is relatively lean and it is expected that in the PIF period their incremental support in this area will be amplified. The other investment areas that did not join the top five by any means are not less important than others. Ethiopia, as one of the poor countries does need support in these areas too. Hence, both the government and donors are also expected to design development projects and solicit funding in these areas too.

For the no-agricultural sector areas were identified based on their strong relevance to enhance, support and synergize development within the agriculture sector. With slight disparity among regions, the overall rank for the non-agricultural sector areas of high priority is in the order of roads, climate change, nutrition and rural energy, respectively.

During the assessment of existing programmes for the PIF investment analysis, on the basis of MoFED definition and budget appropriation framework, there were 56 cost center programmes. Following the logic of consolidation and without excluding to retain programmes by modification or incorporating new ones if need arises, PIF preparation has ended with 36 agriculture sector programmes and this were budgeted for an amount that commensurate with the expected GDP growth rate.

For on-going programmes, the agriculture sector budget is expected to be more than tripled by 2020. The budget which was Birr 6.8 Billion (including both recurrent and capital) by 2008/09 is expected to be Birr 7.3 Billion by 2010/11 and Birr14.7 Billion by 2014/15, and Birr29.5 Billion by 2020. During the 10 years period, the agriculture sector budget ratio from GDP is to increase at a decreasing rate. This is because agriculture has to give way for the growth and expansion of other sectors with a proportionate shift of government budget share to the other sectors too. This is also in line with the ADLI strategy.

The total estimated budget for the sector was further distributed to the different sub-sectors. The distribution analysis is done on the basis of the current allocation proportions as well as the proportion suggested by the data and information obtained during the PIF preparation. Currently natural resources get only about 8% of the capital budget. Assuming that natural resources interventions contained in programmes such as PSNP and AGP will be under the appropriate development sub-sector, and the same in terms of other sub-sectors the PIF proposed budget estimates for the next 10 years allocated 31, 48, and 21 percent of the capital budget for natural resources, agricultural development (farm income improvement pillar), and agricultural marketing interventions, respectively. In general, in the years ahead about 24% of the total budget is expected to come from treasury and the rest from external sources in the form of loans or grants. In the capital budget category more than 90% is expected to come from external sources.

Overall, in addition to the annual budget requirement for on-going programmes, which ranges from Birr7.3-29.5 Billion per annum, during the PIF period at least additional Birr 74.1Billion is expected to be invested in the selected investment areas, mostly contained in the capital budget after the government put in place bankable projects together with interested donors to finance them. Put differently the agriculture sector is expected to get on average about Birr7.4 Billion in addition to the above mentioned annual budget appropriation per annum. This will make the annual budget of the sector almost tripled from the current level starting from the base year for PIF, i.e., 2010/11.

VII. Policy, Strategy, and institutional gaps

Analysis of the weakness and gaps of some of the existing agricultural policies, strategies and institutions is made. The weakness and gap areas identified in view of policy are aagricultural investment and compensation; PAP areas land tenure and administration; PAP areas transformation; land degradation and soil erosion; gaps and lack of focus on livestock policy; the seed system; and investment on staple food crops and the credit system.

In terms of strategy weaknesses or gaps are noticed in the areas of investment on AWDM and water-led-women centered green revolution; fertilizer specifically in terms of strengthening the private sector role; reducing pre and post harvest losses; HIV/AIDs and labor intensive agriculture; enhanced animal feed and pasture development; synchronized control breeding on small ruminants through AI; bee forage; and forest resources utilization.

Institutional weaknesses and gaps are identified and analyzed in the areas of programme, project, and directorate; sector-wide linkages and relationships; Inside NARS; strengthening the PM&E system; agriculture sector studies' coordination; dichotomization and the rationale behind development resources allocation; pastoral affairs coordination; livestock sub-sector institutional issues; institute for land administration and use; irrigation infrastructure- to- use; seed system institutional dimension; nutrition; gender mainstreaming; climate change and DRM; and institutional capacity: Sector-wide and critical spots.

VIII, Ethiopia in the context of other countries experience

It was essential to finally wrap up the PIF preparation by examining Ethiopia's agriculture sector growth in the context of other countries. Each country is a unique development experience. The historical background, the resource base, the level and spread of formal education, institutional structures, and the nature and orientation of leadership are among the many sources of differentiation. Nevertheless there are many constants about the evolution of economies, the process of economic growth and particularly the characteristics of rapid growth in agriculture. The experiences of other countries are of special relevance with respect to these constants. In a brief chapter the lessons must be simplified and only a few of the more relevant features discussed. Seven of the constants are identified to be of special importance to Ethiopia. They are as follows:

a. Development is a process of transforming an economy from largely agricultural to largely service and manufacturing. Agriculture can accelerate that transformation.
b. Most farmers are constrained by limited land area. Therefore growth in their production and income is largely a function of technological change and shift to high value commodities –both raising the value of production per hectare.
c. Farming is most efficiently pursued by a family size labor force, with consequent lack of ability to realize scale economies in many complementary activities, and therefore government plays a critical role in provision of technology and some of its accompaniments.
d. The small size of farms, in terms of labor force, requires organization of farmers to provide scale economies for many aspects of the agricultural value chain.
e. The nature of agricultural production processes requires specialized agriculture oriented financial institutions.
f. Market prices and private business play a key role in rapid agricultural growth
g. Roads and other physical infrastructure are vital to growth

The lessons to Ethiopia are clear. Most important Ethiopia is on the right vision and strategic track – better articulated than most of the countries – in its ADLI vision and strategy. Ethiopia is on the right

track with a large scale extension system and building indigenous agricultural research capacity. Ethiopia is right in building the cooperative movement as a strong institution and in being explicit about not using force in that effort and in minimizing the role of government in management of cooperatives. Ethiopia has done less well on building specialized agricultural finance institutions. That will become an increasingly important issue in the future.

A notable feature of these comparisons is the large role of foreign assistance in developing the three key public sector oriented institutions for research, extension and credit. In all the earlier developing countries foreign assistance to higher agricultural education, research, extension, credit and development of cooperatives has been very large both in financial transfers and technical assistance. That was true for Ethiopia in the 1960's as well. However, in recent decades that type of support at the national level has largely disappeared. Thus national expenditure on research is a complement to the international system not a substitute. In summary, the comparisons strengthen the case for Ethiopia's vision and basic strategy. They offer useful lessons for developing agricultural research, extension, credit and cooperative systems as well as in several policy areas. They confirm the value of freeing areas appropriate to the private sector for those activities. In general Ethiopia is following the positive lessons. It needs foreign assistance in the key areas that were historically important in foreign assistance.

VIII. Conclusion and Recommendations

Conclusion

The assessments and findings of Ethiopia's agriculture sector PIF preparation reaffirm that the GoE vision of reaching a middle income country status by 2020 is possible but conditional to its adherence to the ADLI strategy. Agriculture should continue to lead the transformation of the economy to industrial with a slight adjustment to the ARDC strategy. The adjustment required is to pursue a combined land, labour and capital using strategy by availing capital for the public and private sector in areas of investment that yield an acceptable rate of return comparable to other sectors. Spatially the low land areas should receive increased capital investment particularly in promoting irrigation agriculture and modern livestock husbandry, processing and marketing.

It is recognized that the GoE has made tremendous efforts to perfections in terms of setting policy, strategy and the necessary institutions. But as it is everywhere in the world policies are conditional and subject for review. The government in its RDPS (2003) document also clearly stated that policy review is part of its working imperatives. Hence, on the basis of this the gaps and weaknesses identified and listed in chapter nine of this report should get focus and be subjected for review for the PIF implementation.

Recommendations

a. General

The PIF has identified 10 incremental investment areas within the sector and 4 outside the sector, as well as on-going programmes and projects for the next 10 years. The GoE and its development partners, specifically the REDFS SWG are expected to align their efforts to these programmes and projects. They should work in harmonized and coordinated manner not only to design programmes but also to pull resources to priority areas. Specifically in the case of incremental investment areas it is recommendable to take a project approach. Besides, synchronized to these programme and project financing measures, appropriate policy making bodies have to have a close look at the policy, strategy and institutional gaps and weaknesses and address them by reviewing and legislating promptly.

b. Specifics

Programme consolidation and the project approach: In the agriculture sector program consolidation has to be made to take advantage of economies of size and scale. The PIF proposed programmes should become the cost centers whereby any other projects and interventions financed by treasury or external sources will be registered under them.

Programme budgeting: Programme budget should be practiced. It is only through this way that one may be able to see how much each Birr invested in the public sector is returning positively by benefiting the target group considered at the planning stage.

Land administration and use: The already started initiation to establish a land administration and use coordination body at Federal level should continue with due urgency. This body should also commission the conduct of studies and recommend to policy makers (a) improvements to be made in the areas of transferring part of compensation payment to the private sector in a way that benefit existing land users, (b) required legislative measures to legalize access to land for investment purposes as well as land use and urbanization effects in PAP areas.

Agriculture research and extension: There is still a gap in terms of integrating education, research and extension in the agriculture sector institutions. Specifically the NARS needs a revisit either in search of a policy or institutional solution to the many problems that are being raised by various stakeholders. The GoE has also to take a policy stance that the budget for agricultural research becomes 2% of the AGDP.

The livestock sub-sector: The livestock sub-sector despite its huge potential seems a forgotten sub-sector in the national economic development endeavors and specifically in the agriculture sector development initiatives. In order to enhance the national contribution of the livestock sub-sector to GDP it should get appropriate position in the ministerial and bureau level arrangements. The least should be that it has to have its own process owner (Directorate) in the MoARD and regional BoARD.

Agricultural Credit: The agricultural credit system in the country does not provide a comprehensive national system of competitive agricultural credit to small and large scale commercial farmers. The current system of MFIs can probably sustain the credit growth required for the many traditional smallholder farmers and rural small-scale entrepreneurs. Over the longer run major changes are needed. In view of the challenges that these countries face, the GoE should first commission a study that makes a thorough assessment and recommend for a sustainable agriculture and rural credit system and institutional arrangement. The chosen system must of course be adapted to the conditions in Ethiopia and the existing institutional structures.

Guiding the dynamic economic development of PAP areas: The investment in roads, electricity, and telecommunication and water resources, both for agriculture and drinking purposes, is attracting investors from outside as well as ignited changing livelihoods within the PAP community itself. Besides, the emergence and expansion of small towns as part of the urbanization process is further adding to this complexity of the dynamic economic development undertakings, calling for ex-ante policy and institutional formation or reviews.

Ethiopia's Agriculture Sector Policy and Institutional Framework: Ten Year Road Map (2010-2020)[8]

CHAPTER 1
INTRODUCTION[9]

1.1 BACKGROUND

In the recent history of Ethiopia's agriculture sector development the last six years has been remarkable in terms of sector wide GDP growth and relative contribution of the sector to poverty reduction and increase in per capita food production. Since 2005/04 the average annual growth rate of the agriculture sector in terms of AGDP is about 13%[10], which by pass by far the CAADP target of 6% (CAADP, 2009). This is a strong and sustained performance after a sharp decline which had hit bottom by 2002/03. The food poverty head count decreased from 44% in 1999/00 to 38% in 2005/06 to nearly 33% and expected to be 28% by the end of the PASDEP period (2009/10). The per capita grain production increased from below 1.5 quintal in 2003/04 to 2.13 in 2007/08[11] . Despite these achievements still the GOE has made poverty and hunger reduction its top priorities. It recognizes much has to be done in the agriculture sector to tackle these problems as well as realize its vision for the country to achieve a middle income status by 2020. It is because of the government's leadership, commitment, and a strong determination to reduce hunger and poverty, and reach a middle income country status by 2020 this 10 year PIF preparation is approved and commissioned.

The achievements made in the agriculture sector are also the results of a coordinated effort by the government of Ethiopia and the donor community particularly to design and implement the first poverty reduction strategy and five year plan known as SDPRP and its successor PASDEP. The efforts' put together has supported the country to implement its ADLI strategy and achieve a slight structural shift, as ADLI necessitates, to the non-agriculture sector (CAADP Ethiopia, 2009). The percent share of agriculture from GDP declined from 53.1% to 42.6%between 1995/6 and 2008/09[12]. PASDEP has also benefited from the global initiative to undertake Ethiopia's needs assessment to meet the Millennium Development Goals (MDGs), specifically Goal One the two targets related to poverty and hunger.

The MDGs needs Assessment (NA)[13] for the sector has informed the first five year of the MDG period which is also the period of the current PASDEP. This Policy and Investment Framework (PIF) is similarly

[8] Prepared by Dr Demese Chanyalew (Team Leader), Dr Berhanu Adnew (Public Finance Expert), Dr John Mellor (International consultant) and Getachew Adugna, Technical Assstant.

[9] The consultants' team has made a task division in terms of writing the different Chapters. In this draft Chapter 1, 2, 5, 7, 9, 11 and part of 8 is drafted by Demese, Chapter 3, 4 and 10 by John, and Chapter 6 and part of 8 by Berhanu.

[10] The liner trend since 1996/97 indicates an average growth rate of about 10% (See Figure 5. 1 in Chapter 5) .

[11] Ethiopia is almost meeting the 2100 Kcalorie per capita per day requirement. The equivalent of this in terms of production is 2.16 quintals.

[12] Data obtained from MoFED

[13] The MDGs NA was done for nine sectors of which one was the rural development and Food security Sector Study, MoFED, 2004.

expected to influence the preparation of the next five year development plan (NFYDP). Put differently it is also expected to assist in revising of the MDGs 2nd five year components in order to inform the preparation of the next FYDP as well as give future ten years road map (2010-2020) in the agriculture sector. Ethiopia is currently preparing the NFYDP[14] and this preparation is also benefiting from the recent study and signing of Comprehensive Africa Agriculture Development Program (CAADP) Ethiopia compact. Ethiopia completed the preparation and signing of the CAADP Compact in August 2009, which is an initiative of the African Union's New Partnership for Africa's Development (AU/NEPAD) footed on a vision and strategic framework[15] to eradicate hunger and poverty and place the continent, at all levels, on a path for sustainable socio-economic growth.

The 10 year road map PIF is expected to indicate what should be the priority incremental investment areas as well as incremental spending on on-going programmes in Ethiopia's agriculture sector to become a middle income country by 2020. Becoming a middle income country by 2020 is the economy wide vision of the nation. Besides the identification of incremental investment areas, the PIF preparation task includes the assessment and commendation of PIF related vision and growth strategies that commensurate with the economy wide vision as well as review and identification of the agriculture sector policy, strategy and institutional gaps that have been impediments and need review for the efficient and effective implementation of PIF.

1.2 OBJECTIVE

It is with the above milieu that the PIF preparation started the following specific objectives[16]

- Produce a national level strategic investment planning framework that can be used to guide the prioritization, planning and implementation of current and future public and development assistance investments that contribute to sustainable agricultural growth and rural development, food security, and poverty reduction.
- Reaffirm, and modify as needed for inclusion in the next version of national five year development plan, the vision of the GoE for agricultural development based on successes and challenges to date.
- Assist GoE and its development partners to identify salient policies linkages and any policy changes, institutional arrangements and coordination mechanisms that might be recommended for the next version of national five year development plan, and will also define investment needs and balances aligned with CAADP investment pillars, investment areas and, investment programs.

In short this PIF study report includes the connectivity among the FDRE government vision, growth strategy, and sector pillars with on-going, modified and new agriculture sector programmes in conjunction with their resource requirements for on-going or incremental investment needs. It sets the ground for development partners' harmonization, coordination and resource allocations to implement the investment programmes aligned to the CAADP Ethiopia compact, inclusive of a holistic and integrated

[14] which in some cases referred as the next PASDEP
[15] Adopted by the then OAU Heads of State and Government Summit in July 2001.
[16] As indicated in the terms of reference (ToR),

strategic planning framework for addressing challenges that are hindering sustainable agricultural development in multi-sectoral and coordinated manner.

1.3 ORGANIZATION

The next chapter presents the methodology, conceptual and definitional frameworks. Chapter 3 discusses the interaction of the government's development vision and its strategic approach. It revolves around the assessment of ADLI's relevance to Ethiopia's expected structural shift from agriculture to industry. Chapter 4 analyzes past agricultural growth rates and their implications for future growth rates, policy, and investment priorities. Chapter 5 gives a summary of existing Ethiopia's agriculture sector and sub-sector policies, strategies, and institutional arrangements. Chapter 6 presents the PIF incremental investment areas and the details of setting in terms of regional and national priorities. Chapter 7 covers the proposed PIF programmes in view of the current programmes and projects that are contained in the recurrent and capital budgets of the FDRE government. Chapter 8 presents the 10 year budget for on on-going programmes based on the minimum 10% annual GDP growth rate the government set as a target to meet the development goals in the NFYDP period and extended all the way to 2020. This chapter also presents the incremental investment areas resource requirements. Chapter 9 revisits the issues of policy, strategy and institutions. It discusses gaps in terms of identified thematic areas. Seven policy, eight strategy, and fifteen institutional gaps or weaknesses are identified and discussed. Chapter 10 gives a brief note on lessons to be learnt from other countries. Chapter 11 is a conclusion and recommendation chapter followed by list of reference and annexes.

CHAPTER 2
METHODOLOGY AND CONCEPTUAL FRAMEWORK

2.1 METHODOLOGY

The PIF preparation has used various approaches to collect data and information. These are primary and secondary data and information including review of documents, independent evaluation and research works that yield appropriate statistical analysis of growth and related variables, as well as field visits. The experiences of other countries were also examined by using appropriate data and information published by international statistical agencies.

2.1.1 DOCUMENTATION REVIEW AND USE OF SECONDARY DATA

Clearly stating the ***vision*** for the agriculture sector in the context of PIF, explaining the trends and expectations of the Ethiopian agriculture sector growth and review of existing and identifying of the gaps and remedial measures related to agricultural policy and institutions in Ethiopia were among the tasks to be accomplished during the PIF preparation. Such tasks require an extensive desk reviews and secondary data and information analysis. The consultant team has used various studies that have been made in recent years to make an informed analysis and conclusion in these areas. Among these are CAADP Ethiopia Study (2009), the REDFS pillar areas documents and investment frameworks such as the Ethiopian Strategic Investment Framework for SLM, the Food –Security cum PSNP programme documents, the Agriculture Growth Project documents, various reports and studies by EDRI, bilateral and multilateral institutions, the FDRE Government base document for the 2010-20014 FYDP, MoFED Guideline for the FYDP as well as MoARD's latest Business Score card (BSC) resulted from the Business Process Reengineering (BPR) exercise.

The assessment of recent growth trends in the agriculture sector required independent evaluation and research works that has to employ appropriate statistical analysis of growth and related variables. This has been done primarily using Central Statistics Authority (CSA) data and in the absence of the required data external sources were also used. It is agreed a prior that the FDRE CSA data remains the official and accepted data to undertake quantified analysis during the PIF preparation. The team also used data from MoFED, and other relevant Ministries and institutes to undertake the expenditure, cost and benefit analysis of on-going and incremental investment areas.

2.1.2 THE APPROACH TO IDENTIFY INCREMENTAL INVESTMENT AREAS

As indicated earlier, the consultants' team for the PIF preparation is composed of two national and one international consultant. The international consultant has started to work in his duty station abroad but was scheduled to come and work with the national consultants for three weeks starting the 7th of February. Strategically it was important to work intensively and reach on preliminary state of investment areas identification before the international consultant returns back to his duty station. This was also critical since work of expenditure analysis on on-going as well as the costing for incremental investment areas have to be completed before the international consultant returns in his second leg of the task

schedule which is first week of May. Cognizant of this when the international consultant arrives in Addis Ababa in the first leg, among the initial tasks accomplished was to identify key stakeholders from Government, NGOs, CSOs, CBOs, and the Donors[17] and pay a visit for interviews and brainstorming sessions. On the basis of this strategic move in the presence of the international consultant the team managed to identify preliminary investment areas, policy and institutional gaps.

More than 24 thematic investment areas were identified by the time the inception report was prepared and submitted. More was added during the initial documentation review, the first two weeks interviews and brainstorming sessions with stakeholders. In the first leg first part of the third week of the international consultant stay in Addis Ababa, the consultants' team used clustering techniques to put the very long list of incremental investment areas in 10 intra-sector and 4 inter-sectoral thematic areas. Secondly, the team has used the pair wise techniques to prioritize them. The pair wise technique[18] is based on a pair wise ranking technique which enables selected specialist from various profession make choices to provide individual priorities to be statistically compare one taking precedence over the other.

In order to apply the technique, it is essential to set the criteria that are being used for investment areas prioritization and ranking. In the PIF preparation these include the following:

1. Alignment with government's vision and goals of becoming a middle income country by 2020 with significant employment growth and poverty reduction.
2. Alignment with the Government's agricultural sector pillars and strategies
3. The ease to attract external development support
4. Capacity sequencing to absorb development resources

The second criteria, i.e., alignment with the Government's agricultural sector pillars and strategies is linked to the next five years development plan (NFYDP), 2010-2015 base document. In this criterion the following two major pillars and related strategic components are observed.

a. Agriculture development footed on Smallholder crop and livestock production. Within this three directives/strategic areas are considered:

- The scaling up of best practices and technologies
- Promotion of natural resources conservation and improved irrigation
- Encouraging commercialization and high value crop production and marketing

b. Intensification and extensification of production

- Promoting agriculture enterprises that are land saving but produce high demand commodities with intensive production practices around major towns, for example dairy and horticulture.

- In low land areas, where land is available but infrastructure is very low, to promote extensive agriculture by investing in infrastructure, enhancing skills, and attracting the private sector.

[17] More than 35 Federal and Regional level institutions were identified and visited the list is indicated in the Annex A3 that lists persons met .

[18] which ones was promoted by Technical Centre for Agricultural and Rural Cooperation (CTA), ACP/EU Lome Convention, Wageningen, Netherlands, January 2000.

For the no-agricultural sector areas, identification of investment areas is based on their strong relevance to support and synergize with the sector.

2.1.3 REGIONAL VISITS

The PIF preparation consultants' team travelled to Oromyia, SNNP, Amhara and Tigray Regional states. Bureaus and institutes were identified[19] and targeted officials and experts were interviewed using appropriate checklists. Specifically, the verification of incremental investment areas and prioritization of the same using the pair wise technique was conducted at each regional state by forming an expert group at one venue with participants from different bureaus and institutes. The prioritization and ranking of the investment areas are computed and announced to the participants at the same venue.

2.1.4 ENHANCED EXPENDITURE AND COST/BENEFIT ANALYSIS

Relevant data and information, as well as technical coefficients were identified during the visits of the different regions and they are used in the enhanced expenditure and cost-benefit analysis of the proposed investment areas.

Enhanced expenditure or budget estimate for on-going programmes is made on the basis of recent year's budget to GDP ratios and approved budget appropriation across sub-sectors. Establishing unit costs and cost attribution, as well as quantification of outputs were the major challenges for incremental investment areas. The plausible has been made to overcome these challenges through extensive consultation and explorations with the sectoral and sub-sectoral experts and stakeholders engaged in the management of various sectoral programs at Federal and regional levels. Particularly, it is important to indicate that in the Ethiopian context unit costs for complex agricultural projects cost estimation are not easily available. Same is true with outputs derived from investments of broad agricultural development interventions. But the best available technique was used to come up with a pragmatic solution to show the cost and benefit of prioritized incremental investment areas. In this connection it is important to note that the investment areas identified are expected to fit in the on-going, modified or new agriculture sector programmes of the country that are envisaged to exist at least in the coming ten years. In return, following the CAADP investment plan guideline, the programmes are expected to be aligned to pillars or subsectors. In this regard the PIF preparation consultants used MoARDs latest BSC, REDFS and CAADP focal areas and pillars to set the pillar-programme-investment projects linkage. Same pillar-programme connectivity knob is used to make the policy and institutional gap analysis.

[19] At least BoARD, BoFED, BoWR, and RARI were the target.

2.2 CONCEPTUAL FRAMEWORK

This PIF report can be easily understood with adherence to the definitional and conceptual underpinnings of some key terminologies or task guiding principles. It is not abnormal to encounter definitional and/or conceptual variation in the area of policy and investment framework elements such as vision, growth, pillar, sub-sector, programme, project or the broader, again controversial, issues of policy and institutes. In this sub-section these key terminologies and issues are discussed to pave the ground for the understanding of the chapters to follow. Before going to the specific terminologies and conceptual issues below is a condensed framework which is designed to present the coverage of the Ethiopia agriculture sector PIF preparation. It is followed by the discussion of pillar and sub-sector configurations; the programme/project setting, the adopted and conceived notion of vision and growth, leadership and attitudinal change, the public versus private investment needs as well as the adopted definition of policy and institution. In today's Ethiopia and in the future the issue of agro-ecology remains influential in agricultural policy and sector and sub-sector investment undertakings. In general this sub-section is designed to indicate the need for a certain level of common understanding of the key terms and their usage in the PIF preparation as well as future use.

Box 1: Key definitional and conceptual terminologies and issues

- Scope of PIF
- Pillar and sub-sector
- Vision
- Development and growth
- Public versus private investment
- Programme versus project
- Agro-ecology
- Policy and institution

2.2.1 SCOPE OF PIF ETHIOPIA

It is difficult to isolate the agricultural development policy elements from the water, land, and forest policies of the country. Hence any agriculture policy and investment framework in Ethiopia has to start from the natural resources base.

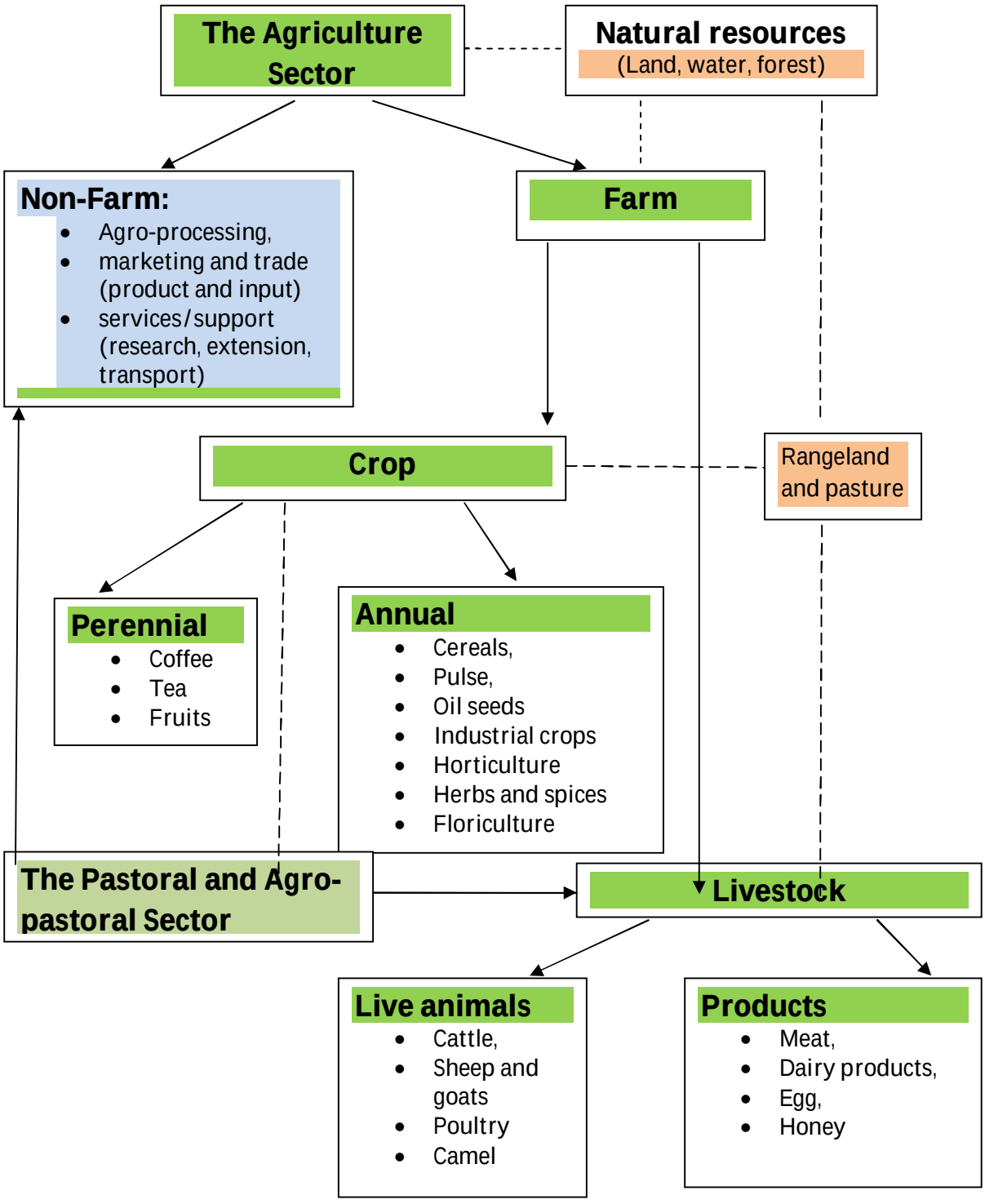
Diagram 1 shows, like any agricultural economy, Ethiopia's agriculture economy should be examined under two major components: farm and non-farm agriculture. The non-farm agriculture of the country has to cover issues/problems revolving around agribusiness, agricultural marketing and trade inclusive of value addition; support services such as research, extension, and transport, as well as the multiplication and/or distribution of critical inputs such as seeds, fertilizer, semen, vaccine and others.

The farm sector should be covering the two sub-sectors: crop and livestock. The crop sub-sector analysis should be further disentangled into perennial and annual crops. The perennial crops should put in perspective commodities or commodity groups like coffee, tea, sugarcane and fruit trees. Sub-sub-sector analysis related to annual crops should be assessed at least focusing on commodity groups known as cereals, pulse, oil crops, horticulture, herbs and spices, industrial crops as well as floriculture. Of course, this does not prohibit the singling-out of economically important crops such as teff, wheat and maize or fababean and check pea, lentil or sesame. Pepper is a very important vegetable both for fresh and industrial use and so does ginger and cardamom.

The livestock sub-sector can be scrutinized from two angles: live animals and commodities. In the context of live animals in Ethiopia the focus will be on cattle, sheep and goats, poultry, and camel. On a commodity line meat, dairy, egg, and honey become in the forefront.

Finally, off-the-diagram, as part of the agriculture sector, issues such as disaster risk management, food security, and resettlement remain overriding. Structural issues related to small, medium and large farms or firms, commercialization, price, income and employment issues require paramount importance in agricultural sector PIF preparation. In general, setting PIF for a sector of such a wide scope is a daunting task. As much as possible the necessary data and information is used to accomplish the task but in circumstances where gap arises it could be attributed to the sectors complexity and wider scope as well as the many actors, institutes and stakeholders that are prominent being within and without the sector periphery.

Diagram 1: The policy and investment framework



2.2.2 PILLAR AND SUB-SECTOR

The ToR for the PIF preparation points out that the investment areas identified should be aligned with the existing agriculture sector programmes and in turn the programmes to the agriculture sector pillars. The consultants' team is cognizant of the fact that any suggested PIF programmes should be linked-to and associated with the agriculture sector pillars accepted by the GoE, specifically MoARD. Of course documentation review revealed that it has been common to plan the agriculture sector activities or examine the planned activities performance on the basis of pillar, focal area or sub-sector formation. Compartmentalization of the various activities in to projects and in turn to programmes has been also an accepted norm. But all these needed revisiting in terms of the PIF preparation objectives and expected outputs.

For the purpose of PIF preparation and specifically its investment needs identification currently used or recently proposed pillars or a combination of the two have been used to configure the pillars. It is important to note also the notion of pillar often is reflecting similar if not identical strategic and planning underpinning to that of a sub-sector. Documents obtained from MoARD indicate that after the BPR exercise and issuance of the first balanced score card (BSC)[20] four focal areas which can be also considered as lead pillars or subsector indicators has been set. These are

- increasing productivity and production;
- establishing modern agricultural marketing system;
- strengthening sustainable natural resource development, conservation and utilization, and
- strengthening disaster risk management.

The REDFS[21] has three agriculture sector pillars and has become functional to harmonize and coordinate donors support to the agriculture sector through three technical committees formed following the pillars. The pillars are sustainable land management; risk management and food security; and agricultural growth. The recently signed Ethiopia's CAADP compact has four indigenized pillars. These are improve natural resources management and utilization; improve rural infrastructure, market access and trade; enhance food security and improve disaster risk management; and improve the agricultural research and extension system. It is important to know that CAADP as a framework was not contained only within agriculture but also bringing other sector interventions for agriculture to help meet the MDGs goals. These include the roads, energy and telecommunication investment undertakings.

As can be seen the MoARD BSC focal areas do capture the pillars contained in REDFS and CAADP-Ethiopia documents. Because of this resemblance the BSC focal areas has been adopted to form the PIF pillars or sub-sector configurations. In a broader context the pillars could remain four. The natural resources, agricultural development, agricultural marketing and disaster risk management and food security. However, from the setting of a 10 year road map that shall indicate clustering of adopted programs and incremental investment areas, the technical pillars should pave a way for a cluster that encompass the administration and management of the same. It is possible to assume that the resource requirements and the investment needs for capacity building to administer each sub-sector remain within the sub-sector. Alternatively it can be also argued that administration and management support staff and other resources and the envisaged investment for capacity building in these areas can be more efficient

[20] MoARD, Balanced Score Card, Addis Ababa, 1999 E.C. (Text is in Amharic) and it is currently being reviewed.
[21] Established officially in April, 2008.

and effective if it is brought under one body instead of fragmenting it in four sub-sectors. The later can pave the ground to maximize on economics of scale and size to administer and manage by using limited support staff and equipment. Because of this during the PIF preparation is anticipated to have a list of five programme and incremental investment areas classifications that are listed below[22].

1. Agriculture development (picking on the issue of productivity and production of the BSC)
2. Agricultural marketing
3. Natural resources development, conservation and utilization
4. Disaster risk management and food security
5. Administration and management (support services)

From the current institutional arrangements of the ongoing and expected programs/projects and related tasks of MoARD, it is plausible to consider research on natural resources (land specifically soil, water, forest etc) and agriculture (both crop and livestock) either as a separate cluster or part of the agriculture development cluster. This issue will be further discussed in detail in Chapter 8. In general, the above five program clusters (pillars or sub-sectors) are expected to be of exemplary not because the different pillars contained in REDFS and CAADP are included but also they accommodate programs which are going to contain the ways and means of resources (human, financial and physical) solicitation and allocation that also guide successive FYDPs recurrent or capital budgeting inclusive of treasury, bilateral and multilateral sources.

2.2.3 THE PROGRAMME/ PROJECT NOTION

Bridging the pillars/subsectors and investment areas is the programme. Programme setting also follows the formulation of sector policies and strategies. It is the core budget appropriation instrument. Specifically the PIF preparation recognizes the need for programme budgeting[23] where by each programme is subject to a conventional PM&E system in order to evaluate its performance in predetermined continuous or periodic timeframe. Projects should come under programmes. On the basis of this connectivity and for the purpose of PIF a sub-sector or broad area of investment is expected to contain more than one programme and in turn a program to contain one or more projects with several activities that are financed partly or fully by treasury or from external sources.

In the context of current MoFED practices, a programme by definition is a framework that contains similar activities designed to bring developmental changes (result-based); and enhance growth with a continuous resource allocation from internal and external sources via annual recurrent budget or capital budget i.e., set in a project format. Specifically, according to the FDRE government budget manual a programme is a broader cost center of a public body or a broad objective of expenditure. Expenditure has to be related to output. This definition is adopted to make the result of PIF preparation easily buyable by MoARD, MoFED and broadly government and legislative bodies of the country.

[22] These are further discussed in depth in Chapter 8
[23] This was also one of the CAADP Ethiopia Study, July 2009.

A programme can have sub-programmes and further contains projects as the government budget manual and the Public Investment Programme (PIP[24]) document defines and bound by resources (human, financial, and physical) via the capital budget appropriation or non-project regular government development interventions with the recurrent budget (resources) provisions. Implicit in this is that a programme cannot be solely footed on external finance. Any support that is coming from external sources shall take a project format which brings resources that are to be used for a specific life time known as the project period. In this context PSNP, SLM or AGP are projects and not programmes by definition. PSNP remains part of the GoE food security programme. AGP is a project with various components whose implementation should be conceived as activities contained in and lead by different programmes. Given the spatial coverage (regions and woredas) of the present AGP[25], in the coming ten years several AGPs are expected to be designed and become as means of implementing the PIF proposed investment areas and their specific components.

The above definitional requirements, however, does not exclude assessments to strengthen and consolidate current programmes. One thing that seems to emerge is the number of programmes within the agriculture sector may not remain as many as they are today. That means the government may have to take a bold stand for programme consolidation to maximize gains from economies of scale and size in terms of managing and executing them. Besides, this may entail a need for re-configuring the current institutional arrangements and mechanisms of integrated working.

During the CAADP study, on the basis of MoFED definition and budget appropriation framework, there were 56 cost center programmes recognized by MoFED. There were 87 programmes listed under the four focal areas of the MoARD BSC. The CAADP Ethiopia study final document consolidates them to 41 inclusive of modified and new ones[26]. The proposed PIF programmes are listed and discussed in Chapter 8.

2.2.4 VISION

The ToR for the international consultant has stated the need for a vision statement. This has been a tricky specification since the vision for the growth and development of Ethiopia has been set by the GoE and no one has a mandate to change it. After a thorough review of available documents and discussions with concerned authorities, the consultants' team also found out that indeed there is no need to change the vision set by the government. In the context of the PIF preparation the government's vision of making Ethiopia a middle income country by 2020 is still valid and acceptable. However, this has to be understood in the context of PIF and the investment areas to be identified and prioritized.

Chapter 3 of this report presents the understanding of GoE vision in the context of PIF. It builds on the assumption of achieving a real per capita income of USD1000 by 2020. It also explains the implications to expected goals using ADLI as a governing economy wide strategy. With ADLI Ethiopia's economy is

[24] PIP is a three year rolling plan for capital and recurrent expenditure which uses Indicative planning figures for the resource envelope.

[25] The latest document referred is the Agriculture Growth Programme (Proposed) Appraisal Mission Aide-Memoire-Draft, March 22 to April 2, 2010, Draft 5 April 2010.

[26] It is important to note that some parts of the CAADP Pillar may not be directly related to the agriculture sector development plans including this PIF preparation. Because pillars related to infrastructure development or trade are having tasks to be accomplished by other sectors such as transport and road as well as trade. Recently there are attempts to refine the CAADP proposed programmes in line with the next five year development plan framework after examining the existing program.

expected to continue the already started structural shift from agriculture to industry. Agricultures contribution to GDP is declining by more than 10% in ten years period and most of this decline is captured by the service sector. The service sector share to GDP has increased from 34% to 42% between 1996 and 2007 (CAADP, 2009). The vision of reaching a middle income country by 2020, however, requires a faster decline in the share of agriculture in the coming ten years. Already the NFYDP basis indicate the government is planning to lead the economy to achieve an average growth rate of 18% in the industrial sector, which includes energy and telecommunication, and make agriculture to grow around 10% while service sector growth to become in between. In the context of PIF the vision should also be explained in terms of making agriculture the major employing sector and contributor to poverty reduction as indicated in MDGs and beyond that. It requires a change from the adopted pillar of increasing agriculture productivity and production to improving farmers' income by increased profitable agricultural activities whether in farm or non-farm enterprises.

2.2.5 DEVELOPMENT, GROWTH, LEADERSHIP AND ATTITUDINAL CHANGE

Agricultural development and growth are also key definitional and conceptual issues in the PIF preparation. Conventional development economics text books equate development as the sum of ***growth*** and ***change***. Economic growth in general and the agriculture economy growth specifically have been measured by monetary value of final goods and services produced in a given period of time. This is reported as the agriculture gross domestic product (AGDP). Change refers to the reduction of poverty, hunger, food insecurity, unemployment as well as injustice to resources and wealth access and distribution. It is important to note in recent works of a renowned scholar development is considered nothing but freedom[27]. In view of these academic definitions and explanations of development and growth it is important to have a pragmatic approach to the use of the terms and concepts in the PIF Ethiopia preparation.

Agricultural growth in the coming years in Ethiopia is expected to emanate from the sum total of production activities related to consumption, investment and trade activities the country plans to undertake in the various areas indicated in diagram 1. That is agricultural growth and the need for investment to enhance growth is expected to come from crop, livestock and natural resources development and use both in the highland, predominantly non-pastoral areas, as well as pastoral areas of the country. Chapter 4 of this report has dealt much on crops, and even focused on cereals, to explain the future intervention that may determine the agriculture sector growth. This is for two reasons; first in the recent history of the agriculture sector it is the crop sub-sector which has generated much of the AGDP. Besides the most available data for statistical analysis purpose is in crops specifically cereals. Secondly, there has been paucity of data and information that pave the way for statistical analysis in the livestock and natural resources sub-sectors. The little available, however, is used. Besides, it is important to recognize the net effects of investments on the agriculture economy growth. For example, an investment to promote inorganic fertilizer use, in a direct way, may contribute positively to the agriculture sector through the crop domestic product growth but it may indirectly contribute to soil toxicity and water and environment pollution due to chemical discharges to nearby streams and rivers. Such effects need to be carefully examined during cost-benefit analysis. Knowing these shortcomings, in chapter 4 plausible

[27] Amartya Sen, Development as Freedom, New York, 1999.

explanations on the past sources of growth and the future is made. Care has been made in the choice of techniques to identify the incremental investment areas and assess the need for incremental spending on on-going programs covering all sub-sectors i.e., to minimize the crop bias in the growth analysis.

It is important to note here when one assesses Ethiopia's agriculture sector growth, for that matter the overall economic growth, in the recent ten years it may not be easy to quantify and show the contribution of factors such as leadership and attitudinal change as sources of growth. In production economics theory, particularly in scholarly exercises of the 19650 and 60s to explain the role of entrepreneurship to development, there were attempts to equate this and leadership to management and hence management to be a variable to explain sources of growth explained by changes in production of targeted goods and services. Again all these may seem theoretical but in Ethiopia the role of leadership and attitudinal change to the recorded growth is substantial but still remained unquantifiable and not modeled. In the PIF preparation it is assumed that the strong leadership that Ethiopia has had recently will continue with determination and commitments to make Ethiopia reach the MDG goals , the goals set for the NFYDP and the vision set for 2020.

2.2.6 AGRO-ECOLOGY

In Ethiopia agro-ecology remains a key factor of national and regional agriculture sector development planning and performance analysis. Ethiopia's natural resources base, the soil, the climate, the relative humidity, the vegetation types are the foundations of agriculture and are laid to give what is known as the agro-ecological zones. At present there are 32 major agro-ecological zones (CAADP, 2009, and Engida, 2001). The different agro- ecological zones, extensive arable land and high population in rural areas make Ethiopia an agrarian country. In Ethiopia, any sub-sector specific (crop, livestock, natural resource) policy formation, or project design and implementation, or institutional arrangements related to the sub-sectors remain handicapped if they don't give analysis and explanation using agro-ecological variations. In other words, any agriculture sector project that is financed by treasury or external sources or both should cover adequately the agro-ecology factor in addition to the spatial dimensions of regional and district (woreda) specifications. Of course it is known that taking different agro-ecological zones into account is also a policy stance of the GoE as it is indicated as one of the five basic principles governing agricultural development policy in Ethiopia (RDPS, 2003). *Adaptation of development path compatible with different agro-ecological zones* has been also one of the six fundamentals of Ethiopia's agricultural development strategy of PASDEP.

The 32 major agro-ecological zones are grouped under six major categories consisting:

- Arid Zone – mostly pastoral and occupies 53.5 million ha (31.5 percent of the country);
- Semi-arid - occupies 4 million ha (3.5 percent of the country);
- Sub-moist – occupies 22.2 million ha (19.7 percent of the country) highly threatened by erosion.
- Moist – covers 28 (103) ha (25 % of the country) of the most important agricultural land of the country, and cereals are the dominant crops.
- Sub-humid and Humid – cover 17.5 (103) ha (15.5 % of the country) and 4.4 million ha (4 % of the country) respectively; provide the most stable and ideal conditions for annual and perennial crops; home of the remaining forest and wildlife and biological diversity;
- Per-humid – covers about 1 million ha (close to 1% of the country) and suited for perennial crops and forests.

The six categories are further divided into three major agro ecological zones which includes moisture reliable, low moisture and pastoral areas[28]. Indeed the classification can further be narrowed into two: Pastoral and non-pastoral. In the non-pastoral areas there are two distinct modes of agricultural production: smallholder and commercial. The smallholder account for 96% of annually cultivated land, large scale farms, which occupy only 4% of the cultivated land range from 50 hectares for horticultural crops to 4,000 hectares for field crops. The pastoral areas can further be seen in terms of pure pastoral and agro-pastoral areas. In these areas there are also irrigation schemes that are catering to the broader national agriculture development as well as specific contributions to pastoralists, for example the development of irrigated pasture as it is contained in the recent Tendaho-Kesum irrigation scheme in Afar. Similar practices are also emerging in different parts of Borena, South Omo, Gode, and Gambela (MoARD/USAID-PALTAS, 2008).

2.2.7 PUBLIC VERSUS PRIVATE INVESTMENT

The agriculture sector's contribution to GDP and the growth rate expectations were not explainable adequately by what is to be invested for the services/support delivered by the public sector solely. It is evident that the dominant producer and direct investor to harness economic returns is the private sector, specifically smallholders (agriculturalists and pastoralists and agro-pastoralists alike) and the emerging commercial and large scale farm and non-farm agribusiness producers. In this connection it is evident to comprehend that public investment is not necessarily directed to seek a direct benefit or return to tax payers' money. An output of a given public investment can be an input for private use or broader public works. For example, a public investment in soil and water conservation or watershed management could be an output in terms of rehabilitated and fertility augmented land to be used further for production purposes by the public or private entities.

The PIF preparation has made due emphasis to ensure that the role of both public and private investment in the agriculture sector is well captured and incorporated in the process of investment areas identification as well as in the subsequent benefit-cost analysis. Similar the attempt to set targets related to agricultural growth is in a good grasp of the contribution of the private and public sectors both in the input and product spheres. It is important also to comprehend PIF is not identifying investment projects to be considered and implemented by the private sector. PIF has identified investment areas for public investment undertakings including public support for the private sector expansion and development. With such a support the private sector is expected to prepare its own investment projects and business plan based on principles of competition and rates of returns determined by the market.

2.2.8 POLICY AND INSTITUTION

Though this report is dealing with policy and investment framework preparation there should not be confusion that it is a beginning of agricultural policy formulation in Ethiopia. Of course, the PIF preparation is expected to start with articulation of exiting agricultural policies of the country[29]. It is also expected to have a policy indicator matrix, which may follow the pillar/sub-sector compartmentalization of the envisaged investment framework. However, at the very start there seems to be a need for a clear

[28] RDPS, 2003
[29] Indicated in the lead consultant's ToR and a review of the same is presented in Chapter 5.

definitional and comprehension of the term ***policy*** in terms of both its academic and philosophical underpinnings.

The starting point perhaps is that policy is determined in the political arena and policy decisions are fundamentally political decisions. In this agriculture sector PIF preparation, agricultural policy is taken as a statement of course of action set by the Federal and Regional State governments of FDRE in the management of agricultural development affairs. It could be formulated and implemented in the form of laws, rules, regulations, directives and broad goal oriented guiding declarations that affect different economic and social agents and institutions.

Policy decisions hence stances may also reflect the different levels governments' (federal, regional, woreda and kebele) positions and programme biases. Policy positions are derived from the interaction of facts, beliefs, values and goals that are held by individuals. It indicates as to where the government ought to stand with respect to a particular problem or a set of circumstances. This does not mean that various agents of the society may, individually or collectively, have no varying policy positions in different times and locations on a given issue. But as said above policy decisions are fundamentally political decisions and reflect the policy positions of those leading the political system of the day. In this regard, conceptually, one may not easily siphon the politics from policy issues. Of course, in order to assess the efficacy of existing policies one should also put in perspective issues of institutions and institutional arrangements.

In general, following the above definitional and conceptual underpinning, existing agricultural policies should be the core starting points for the PIF preparation in general, and for the investment area identification, prioritization and cost-benefit analysis, specifically. It is here also where care should be made to introduce the term "other countries experience" because experience is to share and not necessarily to copy and follow. Policies and strategies designed in other countries not necessarily are adapted in Ethiopia. Besides, if leadership is going to be a key factor to derive changes and growth (development) in a given country, then it implies policies and strategies are often unique to a given country economic, social, and political situations and conditions.

As highlighted in Chapter 5 that presents a review of Ethiopia's agricultural policies, strategies and institutions, there are clearly stated policies in Ethiopia addressing various issues in each of the pillars/sub-sectors identified earlier. This has been contained in RDPS, PASDEP and recently in CAADP Ethiopia. They are also stated in various proclamations, rules, regulations and directives. If the preparation of PIF and the recommendations to emerge are expected to be used by Federal and Regional State governments then it is prudent to suggest that all stakeholders of PIF have to accept and work in conformity with the agricultural policies and strategies of the FDRE Government. This, however, requires their prior participation in the policy and strategy formulation process too. Besides working in conformity with GoE agricultural policies does not mean the consultants' team cannot identify where policy changes are required or new policy regimes introduced. Of course, it is possible to measure economic effects of policy changes and the resultant knowledge may influence and even change political positions, with at times, other compensating decisions to allow political objectives to be met. Policy research must always be sensitive to these realities.

In other words the PIF consultants' team can contribute to the beginning of a policy review process on those issues where it is deemed necessary and timely. In this regard it is advisable to stick to the use of options and the notion of selling a revised policy to the decision making and implementing body in the political system of the country. Put differently, all engaged in the PIF preparation shall remain cognizant of the possibilities of having several policy options and the recognition of the principles of incremental-ism. *Public policy making is based on the principle of incremental-ism i.e., policy is built step by step, and wise decisions as well as mistakes of the past are the foundations for current and future policy*. Secondly, to invoke and continue with any policy review process, the approach and explanations should be understandable by policy makers and particularly politicians. Chapter 9, which presents and discuss policy, strategy and institutional gaps should be read as a continuation of these notes.

It is possible to examine institutional issues from organizational and relational dimensions. Both dimensions are footed on laws, regulations and directives. The organizational framework covers the structure of the government and the place agriculture is given in the government structure, such as attaining ministry, bureau, and agency/authority status in general and specific sub-sector components. In this report a review of existing institutional arrangements is made from organizational perspective and is reported in Chapter 5. Institutional issues are also issues of relationships or linkages among existing or newly emerging organizations either in the private or public sector. This further should be seen in terms of programmes or activities within a programme or project to be shared with more than one institute or directorates or departments in an institute and how to monitor and evaluate them for a continuous and periodic performance management and evaluation.

CHAPTER 3
INTERACTION OF THE GOVERNMENT'S DEVELOPMENT VISION AND ITS STRATEGIC APPROACH

3.1 GOVERNMENT'S VISION AND ADLI

The PIF (Policy and Investment Framework) is directed towards implementation of the agricultural development aspect of the government's development vision and strategic approach. This chapter of the report starts with the Government's vision and strategy, provides analysis and quantification of the components of that vision and strategy, and develops the implications to current policy and investment priorities for agriculture.

The Government of Ethiopia has a clearly articulated long term vision not only of where it wants to get to but also how it will get there. The two are intimately related.

The core of the vision is to become a middle income country by 2020 (twenty years from when the vision was announced.) In that context the millennium challenge goals are to be met. Middle income is defined as per capita income of $1000.

The strategy for fulfilling that vision is Agricultural Development Led Industrialization (ADLI.) The strategy is not just an agricultural development strategy. It is an economy and society wide strategy within which agriculture has a central role. The Government envisions an economically transformed society within which agriculture will grow rapidly but see its relative importance decline in favor of an even more rapidly growing industrial and manufacturing sector. This vision is consistent with a substantial scholarly literature (see for example, Mellor and Lele 1973, Mellor 1976, Mellor 1992 entitled "Agriculture on the Road to Industrialization," Mellor and Ranade 2006.)

Consistent with the vision, economic development transforms an economy from one that is largely agricultural to one that is largely manufacturing and services (Johnston and Mellor 1961.) Ideally, that transformation brings increased per capita income, more equitable income distribution, urbanization of the population and from the latter, immense cultural advantages (see Jane Jacobs on the value of urbanization.)

The starting point for this vision for Ethiopia was an economy dominated by low-productivity agriculture on potentially highly productive resources. Average rural incomes were low and close to 50 percent of the rural population fell under the standard $1 a day poverty line. The bulk of the people were in rural areas, many physically isolated by lack of roads and electrification. They were isolated from not only the requisites for a high level of agricultural productivity but from the resources for education and health.

In its efforts to promote economic development, the government is making large investments in roads, electrification, education, health and agricultural productivity. The efforts to achieve the vision have been underway for several years, significant progress has been made and a solid basis for further progress has been built. Nevertheless the country has progressed only part way to the vision from the initial conditions described above. There is much yet to be done.

An expansive 20 year vision includes a radical transformation of the economic structure of the economy and equally radical improvements in income, food security, health, and education. The poverty reduction and social welfare gains in the vision follow from the economic transformation and the incident growth rates. The results for Ethiopia follow not just from the growth rate but from the structure of that growth. For Ethiopia, agriculture led growth is critical to achieving the vision.

There is ample reason for optimism that an expansive vision can be achieved. Agriculture has a dominant role to play especially in the early stages of achieving the vision. Ethiopia does have high potential for rapid agricultural growth (particularly in the rainfall sufficient agro-ecological zone), as evidenced by the gap between current yields and those obtained in research stations and between commercial farms and small farms, as well as in similar ecologies in other countries (Diao and Pratt 2006, Spielman et. al. 2007, Alemu et. al. 2007. See also the next chapter which analyzes the agricultural growth rate.) While the agricultural growth rate has been rapid in recent years, it is clear that a small number of removable policy and investment constraints discussed in later sections are constraining that growth. Thus, a few changes are at hand that can provide a continued high agricultural growth rate.

This chapter commences with transformation of the economies structure, the most visible aspect of strategic elements of the government's vision. It then models the impact of the growth strategy on employment and poverty reduction. International comparisons place the Ethiopian vision and its accomplishment in the context of countries with similar and dissimilar approaches. The final section relates ADLI and improvements in the social sector.

In this exposition the impact of the CADDP targets for agricultural growth will be examined. The CADDP target of a six percent agricultural growth rate is significantly lower than that already achieved in Ethiopia. Therefore, a higher agricultural growth rate of eight percent is examined for potential to more assuredly surpass the Governments vision. It will be shown that the CADDP target is sufficient to meet the Governments vision. The eight percent agricultural growth rate meets the new Government targets for a ten percent overall growth rate and achieves the long term vision more rapidly. The next chapter discusses in detail the agricultural growth rate and the input and output composition of rapid agricultural growth

Since agriculture initially dominates the economy and employment, there is an issue as to what its role should be in getting from here to there. In the normal process of economic growth and in this 20 year vision, non-agricultural sectors grow more rapidly than agriculture, particularly in rapid growth contexts. Thus, it is inevitable that with rapid growth the relative importance of agriculture declines. It should do so rapidly as is illustrated in this section.

The slower growth of agriculture compared to other sectors, its decline in relative size, concern about the difficulty of modernizing agriculture, pessimism about the potentials for technological change in agriculture, and even urban ignorance about the intelligence of illiterate farmers, have in many cases led to speculation that agriculture would most usefully be ignored or at least not given priority for scarce resources in the interests of rapid overall growth. This section shows a vision of a rapidly growing agriculture playing a major role in the overall transformation of the economy, exactly as envisaged in the national strategy (ADLI) for economic development. The mechanics of this relationship are discussed in the section on multipliers.

3.2 ADLI AND THE ECONOMIC TRANSFORMATION

Table 1 illustrates the structural transformation with sectoral growth rates consistent with the Governments 10 percent target for the next five year plan. In fast growth strategies agriculture inevitably grows more slowly than non-agriculture. Agriculture is constrained by the fixed land area. That constraint is relaxed by yield increasing technological change that flows from the agricultural research system. But even at the best from that institutional structure it cannot grow as rapidly as the best achievable in the non-agricultural sector. Even given that slower growth rate, agriculture is so large initially and so important to employment growth that it is critical that its full potentials for growth be realized. Agriculture in Ethiopia initially provides nearly half of GDP and encompasses way more than half of the labor force. Thus, over time as those shares decline the GDP growth rate automatically picks up.

Table 3.1 Changing Proportions of GDP by Sector in the Context of Rapid Agricultural Growth

Sector	Share GDP 2004/05 a	Growth Rate	Share GDP 2014/15	Share GDP 2020/21
Agr.	43	8.0	38	32
RNF	33	10.7	34	36
Urban	24	12.0	28	32
Total/Average	100	10.0	100	100

The next largest sector, after agriculture is the rural non-farm sector (RNF) providing one-third of total GDP. That sector produces largely non-tradables. That is goods and services for the local rural market. Examples are construction activity, expanding housing, making local furniture, to some extent local clothing, repairs on buses and other vehicles and small machinery, sales persons in stores, teachers and tutors, and a wide range of services. The demand for these goods and 1983 comes almost entirely from rising farm incomes. It is elastic demand – that means that it grows faster than the underlying income. A ten percent increase in farm income causes as much as a 15 percent growth in the rural non-farm sector (see for example data from Bouis 1999.

Prospering farmers typically spend half of increments to their income on the rural non-farm sector (Bell et. al. 1982, Hazell 1989, Hazell and Ramaswamy 1991, Delgado et. al. 1998, Hazell and Roell. These sectors are labor intensive and so make huge amounts of employment. That is how the bulk of poverty is eliminated in an ADLI strategy. These sectors also provide the experience and skills that are the stepping stone from farming and rural occupations to the more capital intensive jobs of the urban sector. Agriculture on the road to industrialization passes through the rural nonfarm sector.

Because the demand by farmers for output from this sector is elastic (grows faster than income growth) the RNF sector expands more rapidly than the agriculture that drives it. Indeed by middle income status it is larger than the agricultural sector (see the comparison with Egypt later in this chapter.).

As the rural non farm sector grows it develops scale synergies within itself and with other activities that shift it gradually from purely rural areas into small towns and growing market centers (Mead and Liedholm 1998.). In all countries with rapid agricultural growth the enlarging market towns are vibrant places with rapidly growing employment and a wide range of activities. Thus rapid agricultural growth contributes to a diffused pattern of urbanization. And as many of these activities grow they begin to produce goods that can be sold in major urban centers and eventually to export markets.

Thus a diffused pattern of industrialization also occurs. Taiwan is the most impressive example of such a growth pattern (Lee 1972.) In Taiwan industrial production is diffused geographically and a high proportion even of exports come from relatively small, but modern firms that are fully competitive in international marks. With that structure of growth the gini coefficient, a measure of income equality, actually shows a more equal distribution of income with rapid growth (Lee 1972.)

Note the significant change in economic structure shown in Table 1. Even though agriculture grows rapidly, by 2020 its share of GDP has declined by one-quarter. Meanwhile the share of the urban sector has grown by one-third. At the beginning agriculture is larger than the rural non-farm sector. By the end of the period the latter is 13 percent larger than agriculture. At present the total non-agricultural sector is 57 percent of the economy. By 2020, with the overall ten percent growth rate it is over two-thirds of the economy. That is what is expected as middle income status is reached.

Starting with a round number $300 per capita income in 2004/05 at the 10 percent growth rate (eight percent for agriculture) reaches $1378 per capita in 2020, well above the target. Even with an eight percent growth rate (which assumes a six percent growth rate for agriculture, the CADDP target) per capita income exceeds the target in 2020.

3.3 Employment and Poverty Reduction Dimensions of the ADLI Strategy

Employment growth and poverty reduction are two sides of the same coin (Mellor and Desai 1985.) People below the poverty line have few assets other than their labor. If demand for labor increases faster than labor force growth there are two favorable impacts on the poor. First they obtain more employment (underemployment decreases) thereby increasing their total income. Second, as the labor market tightens the real wage rises further increasing incomes (Lele and Mellor 1981.)

3.3.1 The Impact of an Eight Percent Agricultural Growth Rate

The impact of the difference between a very high (eight percent) and a low agricultural growth rates (three percent) is immense. As will be explained later it is rise in real incomes per capita of farm families that drive the poverty reduction. Thus, it is per capita growth that is important. A three percent growth rate for agriculture in the context of 2.5 percent population growth only provides 0.5 percent growth per capita. A six percent growth rate at only two times the three percent provides 3.5 percent per capita – seven times as large as for the three percent growth rate! An eight percent growth rate provides over ten times as fast a growth rate per capita. Thus, the Government is right in setting a high target for agricultural growth. The next chapter examines the feasibility, and requirements, of those high targets.

Tables 2 and 3 examine the impact of, by international standards, a very high (8 percent) growth rate in agriculture, on both GDP and employment in the context of an overall growth rate of ten percent in GDP. It then compares the impact of that high agricultural growth rate with a "traditional" agricultural growth rate of three percent. The latter is the growth rate to be expected when the government does little to accelerate agricultural growth.

In the base situation agriculture represents somewhat less than half of both GDP and employment, the rural non-farm sector, whose growth depends on demand from rising farm incomes is one third of GDP and significantly more (37 percent) of employment. The urban sector represents one-fifth of employment and one-quarter of GDP. These are typical numbers for a low income country.

The most striking result in Table 2 is with an eight percent growth rate in agricultural GDP and a commensurately fast growth rate in the urban sector, the growth rate of employment is over five percent – twice the rate of growth of population and the labor force. That would easily eliminate underemployment of rural labor in 10 years.

Table 3.2. Base Shares of GDP and Employment and Growth Rates, Eight Percent Agricultural Growth Rate, by Sector

Sector	Base, Empl %	Base, GDP %	High Agric GDP Growth Rate %	Low Agric GDP Growth Rate %	Empl Elasticity	Rate of Growth Employ, High GDP %	Rate of Growth Employ low GDP %
Agric	43	43	8	3.0	0.3	2.4	0.9
RN F	37	33	9	3.1	0.8	7.3	2.5
Sub-total	80	76					
Urban	20	24	12	10	0.5	6.0	6.0
Total	100	100	10	5.9	0.5	5.1	2.7

Source: These are additional calculations made by Paul Dorosh and his colleagues at IFPRI using modeling techniques similar to those presented in the CADDP analysis.

Table 3.3 Shares of Employment and GDP by Sector, Fast (8%) and Slow (3%) Growth Rates, Urban Sector at 10% and 12% Respectively

Sector	Share Employ Growth, 8% Agric Growth	Share Employ Growth, 3% Agric Growth	Share GDP Growth 8% Agric Growth	Share GDP Growth 3% Agric Growth
Farm	21	15	37	27
RNF	55	37	32	22
Sub-total	76	52	69	49
Urban	24	48	31	51
Total	100	100	100	100

Source, same as Table 3

Equally striking, when the urban GDP growth rate is kept at a still high 10 percent, but the agricultural growth rate reduced to the three percent norm of countries not making special efforts in agriculture, the employment growth rate drops to less than the labor force growth rate. Thus instead of poverty being rapidly reduced it would slowly increase. That is the drama of the ADLI strategy – huge reduction in poverty compared with none. As discussed in a later section that has even greater implications for the future.

With the eight percent agricultural growth rate the RNF sector grows at 9 percent. Because of the high elasticity of employment with respect to output in the RNF sector, employment grows at 7.3 percent, over three times as rapidly as for the agricultural sector, for which labor productivity is rising rapidly. The rate of growth of employment for the RNF sector is 20 percent faster than for the urban sector. Employment grows less rapidly on agriculture because of the labor productivity increasing impact of the technological change on agriculture (Rao1975.)

With the fast growth scenarios ¾'s of the employment growth is in the rural sector (including small towns) compared to ¼ in the urban sector. The shares are roughly equal with the three percent agricultural growth rate.

3.3.2 The Impact of a Six Percent Agricultural Growth Rate

A six percent growth rate is the CADDP target. It is a rapid growth rate for agriculture. Three percent is what is expected when the government does little to assist agriculture. The latter growth rate is caused by rural population growth, adding to the labor supply, the pressure of poverty, and slow innovation by farmers with little help from modern science. Middle income countries with excellent records on agricultural growth achieve growth rates of four to six percent (Mellor 1992.) That is sufficient to rapidly reduce poverty rates (see the international comparisons in a later section.)

Ethiopia has achieved on the order of seven percent growth rate in its agricultural sector over the past decade (see Chapter 4) and can with highly favorable investment and policy decisions do better than that. Nevertheless six percent will meet the Governments vision. Table 4 and 5 illustrate that. This is not to suggest a lower rate but to show even with very conservative results the Governments vision is met with the CADDP targeted six percent rate.

IN tables 4 and 5, the base weights of the sectors are the same as in tables 2 and 3 and the growth rate for the urban sector is slowed to a still very rapid 10 percent. The growth of the RNF sector is slower than in Table 2 since it is a function of the agricultural growth rate. It is of course faster than the agricultural growth rate which drives it due to the elastic demand of farmers for the output from the RNF. The shares of employment growth are quite different. Agriculture accounts for one-fifth of employment growth, while the agriculture driven rural non-farm sector accounts for over one half (table 5.)

Table 3.4. Base Employment and GDP and Growth Rates, Six and Three Percent Agricultural GDP Growth Rates, by Sector

Sector	Empl %	GDP %	High Agric GDP Growth	Low Agric GDP Growth	Empl Elasticity	Rate of Growth Employ, High GDP %	Rate of Growth Employ High GDP %
Agric	43	43	6.0	3.0	0.3	1.8	0.;9
RN F	37	33	6.7	3.1	0.8	5.4	2.5
Sub-total	80	76					
Urban	20	24	10.0	10.0	0.5	5.0	5.0
Total	100	100	7.3	5.1	0.51	3.9	2.4

Source: same as Table 2

Table 3.5 Shares of GDP and Employment Growth with Six and Three Percent Agricultural GDP Growth rates, by Sector

Sector	Percent of Employ Growth, 6% Agric	Percent of Employ Growth, 3% Agric	Percent of GDP Growth, 6% Agric	Percent of GDP Growth, 3% Agric
Agric	21	17	36	27
RNF	53	40	31	22
Sub-Total	74	57	67	49
Urban	26	43	33	51
Total	100	100	100	100

Source: same as Table 2

The urban sector accounts for somewhat over one-quarter of employment growth. Agricultures relatively small contribution directly to employment growth follows because fast agricultural growth derives substantially from yield increasing innovation which not only increases output per unit area of land, but also increases labor productivity substantially as well. However the rural non-farm sector grows rapidly because of the elastic demand of farmers for the goods and services from that sector and labor efficiency tends to increase very little. It is increased demand that drives the sector not productivity increases. The urban sector employment grows quite rapidly despite rapid increase in labor productivity because the GDP growth rate is so rapid.

Of course the eight percent agricultural growth rate results on demand for labor growing one third faster than for the six percent agricultural growth rate. Nevertheless that rate is still more than 50 per5cent faster than the population labor force growth rate. Unemployment declines and hence poverty s still reduced

quite rapidly. If one assumes that half the population under the poverty line is underemployed (20 percent of the population) then less than 15 years of growth will absorb the underemployed, at which point growth in demand for labor will increase wage rates. The poor benefit first from increased employment and second from rising real wages. Over the 20 year period income of labor and hence of the poor will increase by 50 percent.

The striking contrast is between the six percent and three percent agricultural growth rates, holding the urban growth the same. In the slow agricultural growth strategy the rural non-farm sector accounts for 40 percent of employment growth, compared to 53 percent in the fast growth strategy. Of course the share of GDP growth in the urban sector increases to over half when agricultural growth is slow, as compared with one-third with the fast agricultural growth rate. But the striking figure is that in the low agricultural growth situation employment grows less then population (labor force growth) (Table 4.)
In contrast in the high agricultural growth situation employment grows 50 percent faster than population growth. In the slow agricultural growth case poverty increases rapidly, in the fast growth case it declines rapidly. That is why the government's ADLI strategy is so crucial not only to rapid transformation of the economy but to dealing with Ethiopia's immense problem of poverty. Rapid growth of urban industry does little to reduce poverty. That is because employment increases much less than rapidly than output growth. That is substantially because very high rates of growth of the urban sector depend substantially on export growth 9nto highly competitive markets. Costs must constantly be reduced and in labor intensive industries that reuq9ires increasing labor productivity. That in turns reduces the employment content of growth.

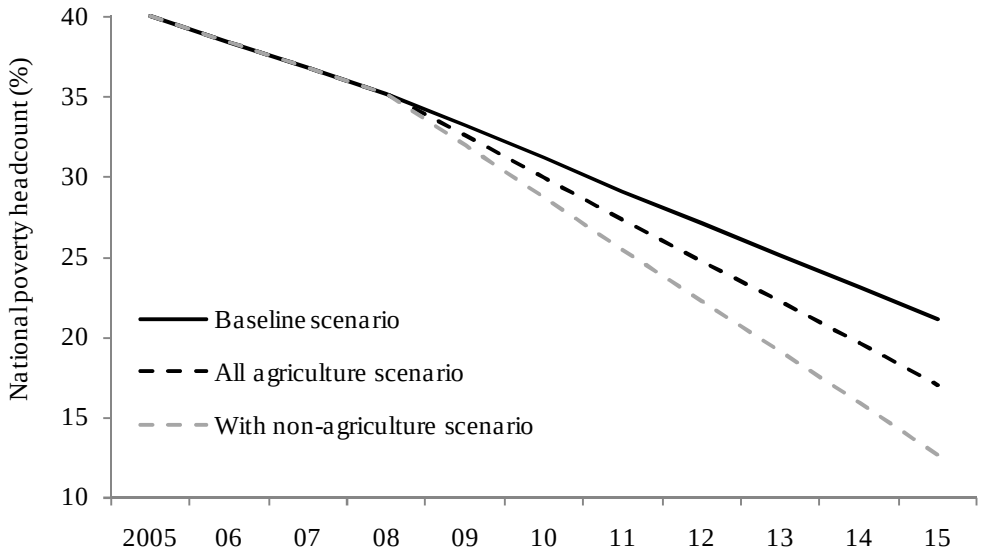
Employment composition will also change radically. The share of employment (and population) in urban centers will increase from less than $1/5^{th}$ to nearly $1/3^{rd}$. The proportion farming will decrease from half to 41 percent and the proportion in the rural non-farm sector will decrease moderately – reflecting a shift of many activities servicing farm incomes from rural to small towns. These figures infer that underemployment will be eliminated within ten years with further growth in labor incomes coming from increased wages.

3.3.3 MEASUREMENT OF POVERTY DECLINE

The preceding sections show how the ADLI strategy reduces poverty through the impact of rising farm incomes on expenditure in the RNF sector. Rapid agricultural growth causes rapid growth in employment. That raises income of the rural population below the poverty line.

Figure 1 uses the IFPRI DREME modeling to show the direct impact of rapid agricultural growth on poverty numbers. The modeling is very similar to that presented in the preceding section. In the DREME model agriculture grows at the CADDP six percent rate and the urban sector grows somewhat slower than in the preceding exposition. With those conservative assumptions, in a ten year period ending in 2015 the proportion of the population under the poverty line in the fastest decline scenario drops to 12 percent, less than one-third the level at the beginning of the ten years.

Figure 3.1: National poverty results from model scenarios.



Source: Results from the IFPRI Dynamic Regional Economy wide Model of Ethiopia (DREME).

Note: The 'poverty headcount' is the percentage share of the population living below the poverty line. We assign the poverty line so that 40 percent of the population is classified as 'poor' (i.e., the bottom two expenditure quintiles).

Simple extrapolation of that poverty line reduces it to zero in another five years. Of course structural poverty will remain and require treatment, but the back of the poverty problem is broken with the growth processes of the government's ADLI strategy.

3.4 INTERNATIONAL COMPARISONS

Table 6, using similar models for each, compares Egypt and Ethiopia and shows that the huge employment impact of the multipliers from agricultural growth holds up in an upper middle income country. This is important to Ethiopia since it means that building a solid base for agricultural growth is important even when Ethiopia reaches middle income status.

Of course agriculture is a much smaller share of GDP in an upper income country such as Egypt (only 16 percent) compared to a low income country such as current the case for Ethiopia (43 percent.) A somewhat slower agricultural growth rate is assumed in the Egyptian example than for Ethiopia. The urban growth rate is about the same. With those growth rates the impact of agriculture and its multipliers on GDP growth is modest at 16 percent. But the impact on employment is huge – over half (56 percent) of employment growth is due to agriculture and its multipliers to the RNF sector.

Table 3.6: Contribution to GDP and Employment Growth: Egypt and Ethiopia

Item	Egypt	Ethiopia
Base Share Employment	100	100
Agriculture	26	43
Rural Non-farm	34	37
Urban	40	20
Base Share GDP	100	100
Agriculture	16	43
Rural Non-Farm	16	33
Urban	68	24
Growth Rate		
Agriculture	4.9	6.0
Rural Non-Farm	6.4	6.7
Urban	9.0	10.0
Share of Incremental Growth, Employment	100	100
Agriculture	18	24
Rural Non-Farm	38	46
Urban	44	31
Share of Incremental Growth, GDP	100	100
Agriculture	7	36
Rural Non-Farm	9	31
Urban	84	33

Source: Egypt: Mellor and Gavian (1999); Ethiopia: Tables 1 and 2.

Nothing could make the point more clearly that GDP growth alone is not an adequate measure of economic progress. One does not have to go to the complexities of the Stiglitz exercise. One need only recognize that in a view of justice in any way approximating that of John Rawls, that the employment growth rate is critical and that that is driven by agricultural growth.

3.4.1 International Evidence on Agricultural Growth and Poverty Reduction

The fact that national income statistics do not differentiate tradable from non-tradable sectors requires piecing together information and searching for consistency. It is notable that international cross section studies consistently report that poverty decline (consistent with employment increase) is large when agriculture grows and is either small or non existent when only the urban sector or manufacturing grows. See for example Ravallion and his colleagues 2007, 2002, Timmer and his colleagues 1997, Thirtle 2001.

These studies also show a significant lag between the agricultural growth and poverty reduction. That is consistent with the process being indirect with time for the multipliers to work through. If the impact was largely from increased supply of food and decline in food prices the impact would not be substantially lagged. In any case the price effect assumes a closed economy, whereas economies are generally thought now to be quite open.

It is notable that Timmer shows that when asset ownership is highly skewed the impact of agricultural growth on poverty reduction is negligible. That again is consistent with the impact working through employment in the rural non farm sector based on resident small farmers with a high marginal propensity to consume local non-tradables. Rich landowners tend to be absentee and to have more capital intensive and import intensive consumption patterns that create little employment.

Another factor at work in explaining the small impact of industrial growth on poverty reduction is international competitive pressure. Large scale, urban based manufacturing competes on international markets. There is constant pressure to reduce costs of production. Labor intensive manufacturing that must occur largely by increasing labor productivity. That in turn results in very small increases in employment as production increases. Thus, we find in Indonesia over the past two decades manufacturing output has grown rapidly and employment in those industries has not increased at all!

3.4.2 THE PATTERN OF URBANIZATION

The vision in the government's strategy will have growth in the capital city on the order of five percent per year – doubling in nearly 15 years[30]. That is manageable from the point of view of providing urban services. Because that urban growth is driven by employment growth and rising prosperity in rural areas it is consistent with an urban vision without poverty.

The farm population will increase by about 25 percent, all in the first 10 years and then slowly decline for most of the next ten years. Only in that second ten year period will a gradual decline in the farm population begin with associated slow increase in the average size of farm. The reality is that the farm population starts very large and hence even very rapid growth in urban employment and farm income driven rural and small town employment requires a large multiple of population growth to absorb all the population growth. As the economy transforms the agriculture base of employment declines and the transformation accelerates. In the 20 year vision that process is proceeding rapidly with consequent growth in average size of farm. That takes time however.

The vision that derives from the Government strategy has the capital city growing more rapidly than small towns and rural areas. That is shown in the previous section. However, the driving force of agricultural growth provides massive increase in the demand for the small scale, labor intensive sector providing goods and services to meet the rising farm incomes. Economies in the small towns and cities will encourage gradual shift of many of those activities into those centers. However, they will maintain a comparative advantage in providing the goods and services demanded by farmers as their incomes rise.

[30] The figures here and below on growth of population in various sectors are derived from Table 5 and are therefore based on the assumptions of that and Table 4.

The result is a diffused pattern of urbanization – more akin to that of Taiwan than South Korea (Lee 1976.) That in turn will have environmental and social life style advantages.

3.4.3 INTEGRATION OF THE POPULATION – PHYSICAL INFRASTRUCTURE

The twenty year vision includes coverage of all weather roads so that 90 percent of the population resides within 5 kilometers of an all-weather road. That is essential to both the agricultural growth vision and the social welfare vision (Dercon 2006.) Agriculture becomes commercialized, purchasing inputs previously produced on the farm – fertilizer, seed, increasingly machinery. The proportion of output sold (that beyond subsistence) will increase to 80 percent of output. Thus, road access becomes increasingly important. That flow of consumption goods, production inputs and output becomes dependent on not just roads but all weather roads. Provision of agricultural services such as extension and accounting for business serving agriculture and also education and health services requires educated people who will not live in areas with inadequate roads. Hence the vision is one of rapidly increasing farm incomes and social services in the context of all weather road coverage.

The agricultural growth, as shown below will turn increasingly to perishables that require refrigeration and hence electricity. In 20 years farmers incomes will be sufficiently high so that most will acquire electric appliances. Thus the vision is again of 80 percent of the population having access to electricity in the home. Of course to obtain the envisaged coverage of roads and electrification requires that it start now with a clear plan for moving to the targeted coverage.

Why does not the vision provide 100 percent coverage of roads and electricity? On the order of 10 percent of the population now lives in areas with a resource base, because of soil and rainfall limitations, that does not allow farm incomes of the level envisaged for all within 20 years. Those areas will gradually be abandoned from agriculture and investment in physical infrastructure will be lost. Welfare is better improved by migration to more favored areas and there non-farm job opportunities. Thus the priority on roads is to the areas that can generate increased farm income. That will cover most of the country but not all.

Rapid rural non-farm (including small market town) growth requires physical infrastructure. Rural road networks linking these areas to surplus agricultural producers and inter-regional roads linking small market towns to major urban centers are crucial to enable efficient marketing of products. Likewise, electrification enhances production efficiency for producers of non-farm goods and services (as in the case of hand-looms in Ethiopia, Zhang et al. 2009), as well as improving quality of life (thereby reducing incentives for migration to large cities). Communications networks, (either mobile phone access or land-lines), also improves market efficiency by facilitating contacts between buyers and sellers and increased communications within vertically integrated marketing chains.

3.4.4 SOCIAL WELFARE (FOOD SECURITY, EDUCATION AND HEALTH)

The 20 year vision is one of food security for all families. The increase in incomes to labor of 50 percent and the four fold increase in agricultural production will lift almost all of the population above the poverty line and hence to food security, even in poor crop years. The small remainder will be dealt with by modest food distribution programs. The elimination of poverty and food security goes hand in hand. Nutritional status will improve through these growth processes and by the increased proportion of output

from horticulture and livestock with consequent large increases in home consumption of these products. That will be supplemented by educational programs that encourage improved diets and home gardens.

The increased incomes will eliminate the requirement of children's labor, freeing them for school and the improved roads and electrification will make living in rural areas and small towns attractive to teachers. Thus the vision is for all children to receive secondary school education. This is of course important in its own right but is also essential to rapid growth of the rural non-farm sector with its increasing proportion of jobs, for example bus conductors, drivers, retail clerks, requiring secondary school education/

Similarly, the roads and electrification will bring trained staff to clinics. Education will improve health practices, longevity will increase rapidly, and infant and child mortality will decline.

CHAPTER 4
PAST AGRICULTURL GROWTH RATES AND THEIR IMPLICATIONS FOR FUTURE GROWTH RATES, POLICY, AND INVESTMENT PRIORITIES

4.1 SOURCE OF DATA AND INFORMATION

The agricultural growth rate is targeted by CADDP, plays an important role in determining the growth rate of GDP, and even more so the growth rate of employment and of poverty reduction. Hence it plays a critical role in fulfilling the Governments vision. Equally important, analysis of output growth rates is the first step in diagnosing sources of growth and from that the impact of policies and investment allocations on growth and needed corrections in those policies and investment allocations.

Ethiopia has a highly professional Central Statistical Agency (CSA) that provides output and other data on the basis of crop cutting samples grounded in disciplined application of sophisticated statistical methodology. That is a continuing good fortune for two reasons. First it provides a sound basis for judging past performance. Second, it provides a statistical basis for diagnosing corrections in policy and investment. Those benefits of an intellectually independent and sound data source are important now and will become even more so in the future. One of the investment priorities must be increased funding for CSA to allow it to play an increasingly large and important role in understanding growth and changes in policies and investment priorities for facilitating that growth.

Unfortunately, as is always the case for agriculture, the year to year weather driven ups and downs in agricultural production are large compared to the changes in trends due to policy and investment that we would like to detect. Thus considerable care in interpretation of the data is necessary. Further the growth rates cannot be understood without careful analysis of sources of growth which in turn includes many uncertainties. This section draws on a wealth of historical and comparative international information on these matters and presents laboriously derived calculations.

4.2 CHANGES IN THE CEREALS GROWTH RATE SINCE 1961-62

Table 1 provides data by decades for area, yield and production for cereals. Cereals comprise 32 percent of total agricultural GDP and half of crop GDP (Table 4.) Measurement of cereal production is less complex than for other agricultural commodities, is of course the critical component of food security, and has received particular emphasis in government efforts to increase agricultural production. CSA data are not available for the period prior to 1980/81. For those earlier decades FAO data are used. These data are of course not as reliable as the more recent CSA data and must be interpreted more carefully. However, it is notable that the FAO figures are quite similar to the CSA for more recent periods for which they overlap. In interpretation the implications of the data will be examined for their consistency with logic derived from surrounding events. In that context they have proved useful.

Three features stand out from table 1.

First, prior to 1990/91 production growth was negligible. Particularly noticeable is the decline in area in the 1970's. That presumably set the stage for recovery in the 1990's of area previously farmed. The increase in yields in the 1970's may well have been the result of the area decline removing the least productive land. It probably also reflects the introduction of short stiff stemmed wheat varieties as demonstrated on the Swedish project in Chillalo.

Second, the agricultural growth rate in the 1990's accelerated from no growth in the preceding two decades to a growth rate far exceeding the population growth rate. Area increase accounted for all of the increase. Indeed yields declined at a modest rate – perhaps indicating some decline in land quality as the area expanded. The 1990's might best be seen as a period of increasing stability and recovery growth from previous periods of disruption.

Table 4.1: Ethiopia: Cereal Area, Yield and Production, 1961/62 – 2008/09

	FAO Area (mn has)	FAO Yield (tons/ha)	FAO Production (mn tons)	CSA Area (mn has)	CSA Yield (tons/ha)	CSA Production (mn tons)
1961/62-1969/70	6.23	0.73	4.53	n.a.	n.a.	n.a.
1970/71-1979/80	5.25	0.90	4.63	n.a.	n.a.	n.a.
1980/81-1989/90	4.89	1.15	5.63	4.30	1.14	4.89
1990/91-1999/00	5.87	1.18	6.88	5.60	1.20	6.67
2000/01-2008/09	8.24	1.30	10.68	7.72	1.41	10.94
Average Growth Rates (from logarithmic regressions)						
1961/62-1969/70	1.1%	0.8%	1.9%	n.a.	n.a.	n.a.
1970/71-1979/80	-4.9%	3.7%	-1.4%	n.a.	n.a.	n.a.
1980/81-1989/90	0.5%	-0.8%	-0.3%	2.4%	-1.7%	0.6%
1990/91-1999/00	5.9%	-0.7%	5.1%	5.8%	-0.5%	5.2%
2000/01-2008/09	2.7%	3.6%	6.5%	3.1%	3.5%	7.0%

Source: Calculated by IFPRI from data from the FAO website and CSA agricultural surveys.

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Third, in the decade from 2000/01, yield increase picked up markedly, even as area continued to increase although at half the rate of the 1990's. Thus, the growth rate accelerated to a very substantial seven percent for that period. Note that the big success stories in agricultural growth have been mostly middle income countries and falling in the range of four to six percent growth rates (Mellor 1992.) Thus by international standards this was a period of very rapid growth. The source of growth in this very successful Ethiopian case was almost evenly split between area and yield increase with the latter somewhat larger than the former.

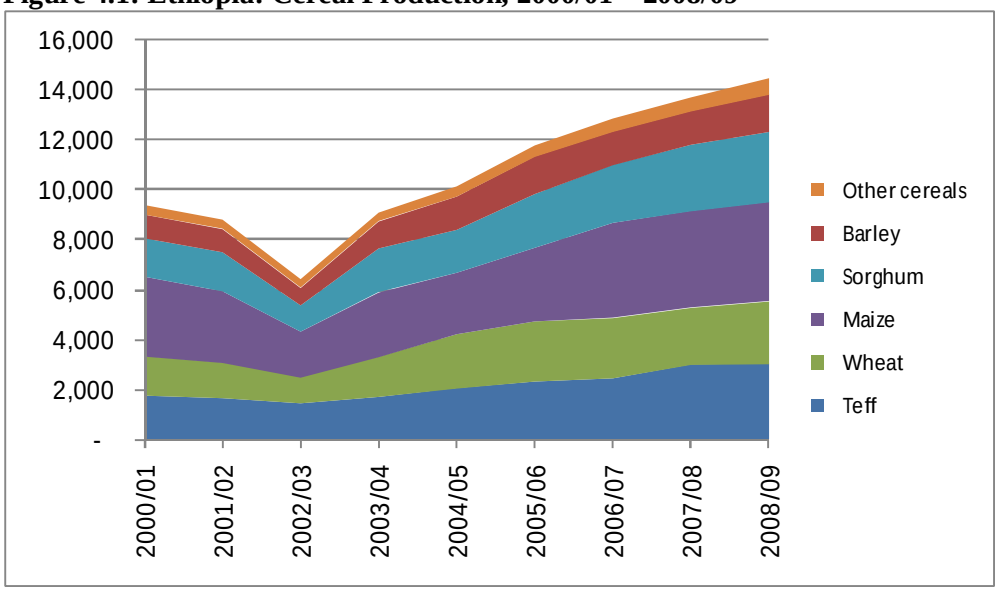
This is of course the period when the government's agricultural development based strategy with its large investments in roads, extension, and research would begin having an impact. It is apparent from these

data that the government's policies were indeed highly effective in accelerating the agricultural growth rate to a high level. In fact the high growth years come in the latter half of the period, precisely when those government policies would be having impact, confirms the importance of those polices.

Some interpretation of these data is in order. The year 2000/01, the first year of the period was probably a fairly normal year for weather. For the next two years production declined substantially. That was due to very poor weather and consequent large scale reduction in crop yields (Figure 1.) That is consistent with the production decline being much greater for the crops grown relatively more in the lower rainfall areas – for example barley and sorghum.

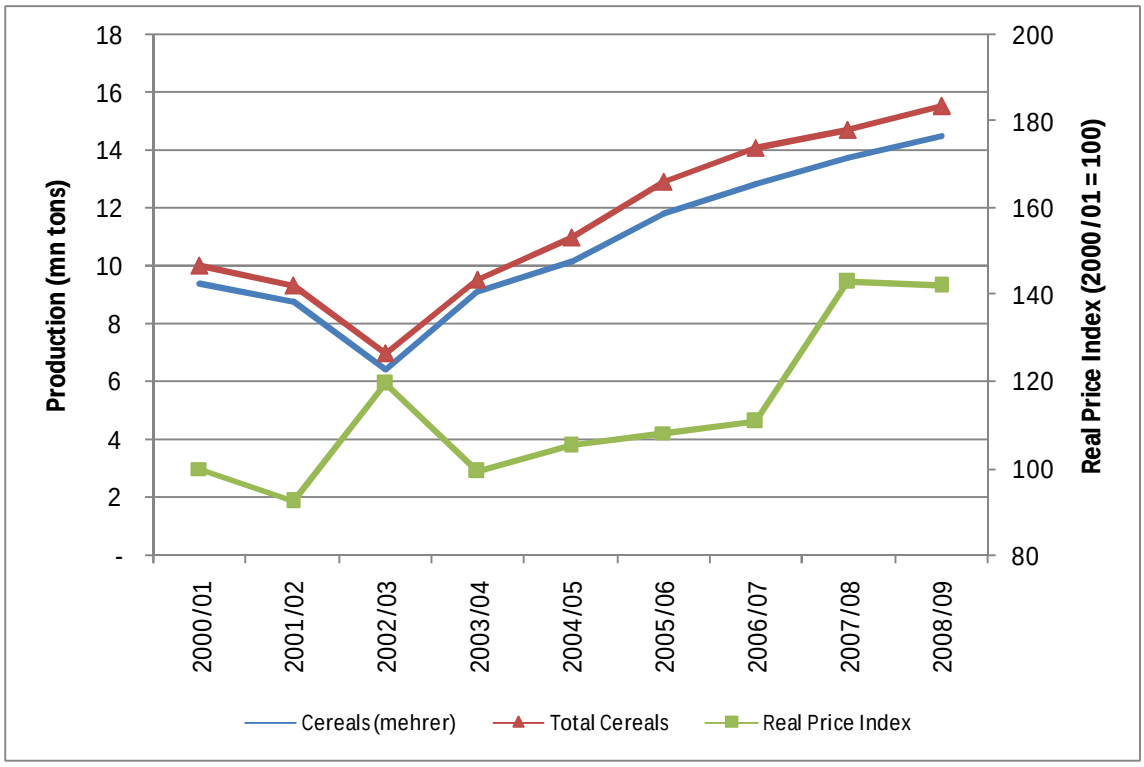
It is conservative but reasonable to measure the growth rate from the normal year at the beginning to the end of the period. That period gives a seven percent growth rate. Of course the growth rate was far more rapid than that for the recovery year 2003/04. However, the growth rate remained very rapid for the next few years. Indeed it averaged 12 percent for the three years 2004/05 – 2007/08, and then gradually dropped off to seven percent in the year 2007/8 to 2008/09. A case can be made that following the recovery from drought the growth rate did indeed accelerate beyond the seven percent average rate for the ten year period. In any case, the importance of the governments programs is clear and they have important implications to future growth.

Figure 4.1: Ethiopia: Cereal Production, 2000/01 – 2008/09



Source: Calculated from CSA data.

Figure 4. 2: Ethiopia: Cereal Production and Real Prices, 2000/01 – 2008/09



Source: Dorosh and Ahmed (2009) calculated from CSA and EGTE data.

4.3 Input Sources of Growth

Understanding the sources of agricultural growth helps diagnose what policies have been effective in achieving growth and what policy changes may be needed for the future. The analysis is particularly revealing for the 1990's and first decade of the new millennium.

In traditional agricultures, growth occurs at a slow pace that is derived largely from increased labor input as population growth adds to the labor force and increasing poverty pushes labor to work for lower and lower marginal returns. Farmers are always innovating, albeit at a slow pace, so some yield increase is expected from traditional farmer's practices. The increased labor supply brings additional land into cultivation at declining labor and land productivity and increased labor input increases crop yields.

Thus in traditional agricultures production increases are in the context of declining per capita incomes That is what happened in Ethiopia in the 1960's. Even those processes were disrupted in the 1970's and 1980's. Production actually declined with consequently declining per capita incomes. That set the stage for the spurt of growth n the 1990's. In the 1990's yields actually declined while area grew rapidly. That was undoubtedly a period of bringing back into production land which previous periods of disruption had

seen taken out of agriculture. That represented a return to normalcy in security and other features that affect farmer's decisions. Positive effects from the Governments efforts to influence farmer's attitudes were probably also beginning to show.

In the current decade (2000/01 – 2008/09) area increased at less than half the rate of the previous decade. That suggests that the processes that were bringing additional land into cultivation, including recovery of area taken out in earlier decades were running down. That further suggests that rates of area increase would continue to decline. The impact of increased irrigated area is discussed in a later section.

The striking change is that yields per hectare increased at a rapid rate. That is an important finding that demands explanation. A logical explanation would be increased use of modern inputs – seed and fertilizer. However, that seems not to be the case (Table 2 and 3 and Figure 2 and 3.) Fertilizer use grew at somewhat less than four percent per year from 1995 to the pre drought year 2000/01. Measured from that year to the present the growth rate has been slightly higher at a little over five percent annual rate.

Applying a five percent increment to the then current level of consumption of about 400 thousand tons, or around 200,000 tons of nutrients, provides an annual increment of 10,000 tons of nutrients. Applying a normal response coefficient of 10 tons of cereal output for one ton of nutrients provides a contribution to growth of only 100 thousand tons per year. That adds about one percent to output and explains only 14 percent of the seven percent growth rate. And, that assumes that all the fertilizer was used on cereals.

However the response to fertilizer was probably considerably lower than that 10 to 1 ratio due to lack of improved seed and possibly to poor fertilizer practices such as proper timing and placement of fertilizer.[31] Assuming a 7 to 1 response, increased use of inorganic fertilizer accounts for less than ten percent of the incremental growth. However it does explain twice as high a percentage of the yield increase or roughly twenty percent. Put differently a rate of yield increase of 0.7 percentage points per year is explained, leaving 2.45 percentage points unexplained. In looking to the future it will be shown that fertilizer has reached a level that could provide a substantial portion of growth. But that has not yet been the case. If modern inputs do not provide much of the explanation for output growth, what does explain it? There are two sources.

First, half the growth is explained by area increase. At first glance this seems implausible since Ethiopia has extreme pressure of population on the limited land area. However, as explained above, as population grows labor is available to bring more land into cultivation. India, also considered a high population density land scarce country, in the 1950's and 1960's achieved moderate growth with half the contribution from expanded land area (Mellor et. al. 1968). Further, Ethiopia experienced a substantial

[31] CSA data show a small impact of fertilizer use on cereal yields (only a 2 to 1 ratio – which is not profitable to farmers). However the impact is probably understated because of the tendency for farmers to put organic manures on fields near the village and inorganic on the more distant fields. Thus, the fields not fertilized with inorganic fertilizers are probably receiving substantial organic manure.

decline in cultivated area in the 1970's. The area growth beyond recovery of previous losses is plausibly explained by the preceding analysis and by the same factors that increased yields, as discussed below.

The yield increase only shows up in the most recent decade – and mostly in the last half of the decade. The increased yield was coterminous with greatly expanded extension services. According to IFPRI surveys these services were well regarded by farmers. Given the very low level of yields it is not surprising if improvements in husbandry encouraged by the extension agents provided increased yields. That this followed a period of disruption from which recovery would be expected to be delayed and slow adds to the plausibility of this argument. Further this experience on yields is similar to that of India in the period of stability that followed independence and the large increase in expenditure on community development, including extension agents.

In this context it is important to note that by international standards the increase in extension effort was huge. In the 1950's and 1960's a large part of the rural development literature was devoted to the tradition bound nature of farmers – conservative, risk averse behavior, that underexploited even traditional means of increasing output. The huge government effort not only brought a high density of extension agents and large expansion of the proportion of the rural population within reach of all weather roads, but also an emphasis on increased labor input into agriculture, means of utilizing that labor moderately productively and changed rural attitudes towards increasing agricultural production. Those changes associated with a massive extension effort are certain to increase agricultural productivity.

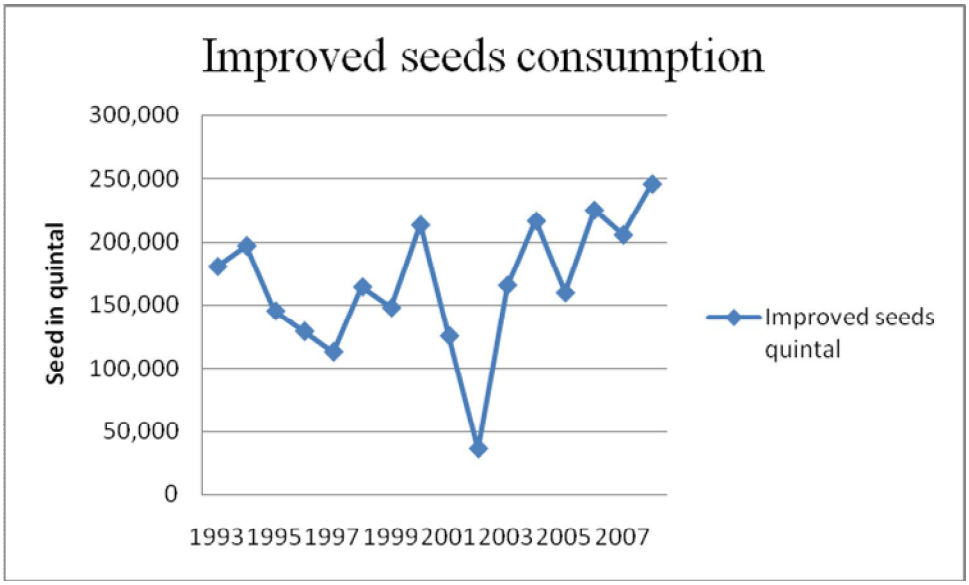
It should also be noted that these changes are also one time changes. They give an immediate upward shift in production and create conditions for other changes to be more productive but they are not in themselves the basis for sustained growth.

Table 4. 2. Fertilizer consumption in metric ton in Metric Tons (1995 - 2007)

	DAP	UREA	Total(DAP+UREA)
1995	202312	44411	246723
1996	209883	43269	259152
1997	168623	51808	220341
1998	193395	87976	281371
1999	195345	94919	290264
2000	197345	100562	297907
2001	181545	98057	279602
2002	155941	76329	232270
2003	157955	106394	264349
2004	210837	112105	322942
2005	224819	121735	346554
2006	251156	124561	375717
2007	259020	129121	388141
2008	265768	138988	404756
2009	278239	148437	426676

Table 4.3, Improved Seed Production

	Seeds quintal
1993	180,849
1994	197,117
1995	**145,380**
1996	**129,163**
1997	**113,186**
1998	**164,540**
1999	**147,983**
2000	**213,482**
2001	**125,544**
2002	**36,244**
2003	**165,837**
2004	**216,641**
2005	**159,959**
2006	**225,310**
2007	**205,680**
2008	**246,050**
2009	



The important point from this analysis is that both sources of growth, increased land area and improvements in traditional husbandry cannot be expected to continue indefinitely. If judged by the Indian experience both may be running out in the near future. What then?

For the future, the sources of growth have to change dramatically. The base for that to occur has been built. It now needs to be scaled up – which is the explicit intention of the government.

Greatly increased use of improved seed and fertilizer will be the core of future growth – of course in the context of multiple changes in practices. But for the desired impact on growth the supply systems for both seed and fertilizer will need substantial change and the response to fertilizer will have to be substantially raised from present levels and maintained at a high level. The latter requires a steady flow of improved technology from the research system and its application by an increasingly technically sophisticated extension system. Government policy will have to focus on radically scaling up the current modest growth rates for seed, fertilizer, and research output. More on those later.

4.4 Implications of the Future Role of Inorganic Fertilizer to Growth

Increased fertilizer use is central to and the indicator of modernization of agriculture. Put simply, large increases in output require large increases in plant food. Inorganic fertilizer is the source of that increased supply of plant food. Organic matter is highly complementary to inorganic fertilizers. Inorganic fertilizer raises the rate of return to organic matter even as it increases the supply of organic matter. Conversely increased use of organic matter raises the rate of return to inorganic fertilizer.

If fertilizer use were to accelerate from its current growth rate of about five percent to 15 percent (what India achieved at a similar stage of development, Mellor et. al. 1968) on a base of 500,000 tons (projecting ahead a few years) of materiel or 250,000 tons of nutrients that would add 37,500 tons of nutrients which would increase rapidly with compounding of the growth rate. With a normal response coefficient of 10 to 1, that would add 375,000 tons of cereals equivalent output annually. That would add 3.5 percentage points to cereals output growth rate.

If land area expanded at 2/3rds the pace of the last ten years (expanding by 2 percent per year), that would provide a 5.5 percent growth rate from just these two forces. Of course the land area from traditional sources cannot continue much longer to grow at that rate. However, the government plans to double the irrigated area in the next five years. The irrigated area is currently equal to 0.6 percent of area. With double the yield of unirrigated land that would add the equivalent of 1.6 percentage points to output growth. That percentage would be expected to compound and thereby increase its share of output growth. Thus expansion of the irrigated area would gradually take over from the current expansion of the traditional land area.

However, the improvement in seed and in the technical capacity of the extension services should increase the productivity of the base level of fertilizer use. That base is probably a 7 to 1 response – consistent with moderate profitability which in turn is consistent with the current relatively slow rate of growth of fertilizer use.

Increasing the response to the current base of 200,000 tons of nutrients from 7 to 1 to 10 to 1 adds 600,000 tons of output. That is a five percent increase in production. Spread over five years that comes to one percent a year. Thus the rate of increase in production would be 3.5 percentage points from increased fertilizer, 2.0 percentage points from increased land area/irrigation and 1.0 percentage point from increased response to the base level of fertilizer use for a total of 6.5 percent growth rare. If 1.5 percentage points of land were transferred from cereals to higher value crops, including high quality livestock fodder that would leave a 5.0 percent growth rate for cereals. As discussed in the next section that is consistent with the rate of demand growth.

4.5 Comparative Yield Data and issues related to the growth rate

4.5.1 Comparative yield

Comparing yields on farmer's fields with best practices and yields for Commercial Farmers compared to all other farmers gives us two important pieces of information. First, it tells whether or not there is existing potential for increasing yields form simple spread of existing knowledge. Second, it tells us how much time we have before the research system must generate new technologies. Exploiting current best practices is of course a once and for all proposition. Once an existing potential is realized growth stops unless a stream of new technologies are fed into the system. That is the task of the national agricultural research system. The following data suggest several years of yield increase are possible with the existing stock of knowledge. That suggests the time available to get the research system expanded to play a larger future role. An important warning should be noted. Some of differences in yields are due to differences in soils and climate. Some are due to innate differences in skill among farmers. It is not reasonable to expect all farmers to get the level of yields of the currently highest. Indeed, the scope for closing the yield gap may be quite modest. Given that possibility it is prudent to expand the research capacity rapidly. That issue is treated in a later section on investment priorities.

Comparison of yields in trials on farmer's fields with best practices compared with actual average yields shows on average a roughly two fold difference in yields. There are likely biases in these comparisons in that best practices are on better than average fields. But even if that differential is reduced by half it would still take eight years at a 4.5 percent growth rate in yields to use up this backlog of innovation. During that period of grace the research system must push the frontiers ahead if those growth rates are to be continued. In fact the period of grace is shorter than that since the least competent farmers are never brought fully up to the level of the best.

Another, perhaps more meaningful comparison is between the yields on "Commercial Farms" and the yields on all other farms – largely the small, traditional farmers. Commercial farmers are well educated, have ready access to the latest knowledge with direct access to experiment stations, have large holdings, have little or no capital constraint, and have ready access to improved seeds and fertilizer. The several institutional constraints that hold back the small farmer are not faced by the commercial farmer.

Table 4 shows the yield differentials between Commercial Farmers (shown as Large) and small farmers for a wide range of crops and for both seasons, Meher and Beig. The last column shows yields on large farms divided by the yields on small farms. It is notable that the percent increase in yields varies greatly among crops. That variation is logical. For example small farmers vegetables are probably largely home

garden plots, while the commercial farmer vegetables are commercial – hence 3.4 times as high yields on the commercial as the small farms. More striking is the 77 percent higher yield for coffee on commercial compared to small farms. The latter must also be commercial in the sense of selling the bulk of output, suggesting considerable scope for raising yields. The most meaningful figure is for all cereals. Commercial farmers with essentially no constraints to following best practices obtain 50 percent higher yields than small farmers. That suggests with a good extension program on the order of five years of backlog of technology, assuming that all farmers are brought up to the commercial level. That is surely too strong an assumption. The prudent position is to take immediate action to expand the research system.

Table 4.4 Comparison of Crop Yields, Small Farmers and Commercial Farmers, Meher and Beig seasons, by Commodity, 2007/08

Ethiopia: 2007/08 Crop Yields by Season and Farm Size							
	Yield Small Meher (tons/ha)	Yield Belg (tons/ha)	Yield Large Meher (tons/ha)	Yield Total (tons/ha)	Yield Meher Large/Small	Urea Large Meher (kgs/ha)	DAP Large Meher (kgs/ha)
Cereals	1.57	0.77	2.41	1.51	1.53		
Teff	1.17	0.47	1.66	1.15	1.43	37.4	70.2
Barley	1.38	0.79	1.87	1.30	1.36		
Wheat	1.62	1.04	1.97	1.61	1.22	42.2	104.4
Maize	2.12	0.80	3.55	1.87	1.67	111.4	113.5
Sorghum	1.73	0.42	1.76	1.69	1.01		
Pulses	1.17	0.46	1.29	1.10	1.10		
Oilseeds	0.87	0.04	1.17	0.90	1.34		
Sesame	1.00	---	1.18	1.05	1.17		
Subtotal	1.47	0.71	1.83	1.41	1.25		
Vegetables	3.96	---	13.49	4.76	3.40		
Root crops	8.31	---	19.66	8.77	2.37		
Other temporary crops	---	---	15.14	15.14	---		
Fruit crops	7.37	---	20.90	8.43	2.84		
Cash crops	0.74	---	1.26	0.79	1.69		
Coffee	0.67	---	1.19	0.73	1.77		
Sugar Cane	36.39	---	118.57	79.29	3.26		
Cotton	---	---	1.96	1.96	---		

Source: Paul Dorosh and Colleagues, IFPRI

The data (not shown in the table) show high levels of fertilizer use by commercial farmers, explaining the bulk of the additional yield. On average the commercial farmers are using 224 Kg of fertilizer materiel per hectare on Maize, 146 Kg on Wheat and 117 Kg on Teff. Those relationships look sensible in terms of relative response ratios. They are of course far higher than small farmers who face financial constraints and to some extent availability constraints. However, the important point is that to achieve the yields of commercial farmers requires not only improved seed, but massive increase in fertilizer availability. That has to be scaled up if these levels are to be realized.

What do we conclude about future growth? First, the sources of growth must change. Second, fertilizer use must grow on the order of three times as fast as in the past. That will require major policy changes in the fertilizer area. Third, the seed system must change radically from its current modest growth rate to a very rapid growth rate. That also calls for significant institutional changes. Fourth the agricultural research system will have to continually turn out improved varieties and practices and fine tune recommendations that will allow the fertilizer response coefficient to rise to a normal level and then be maintained at that level, as is the case for developed countries, even as usage per hectare grows rapidly. All these issues are discussed in subsequent sections of this report.

4.5.2 What Would the Input Composition of an 8 Percent Growth Rate Look Like?

Raising the growth rate of fertilizer use to 20 percent would add another 1.2 percentage points to the growth rate. Raising the response coefficient to 10 would add another 0.5 percentage point. Increasing the irrigated areas growth to 1.5 times rather than 1.0 times the base for each five year period would add another 0.8 percentage points. That gives an increment of another 2.5 percentage points or a growth rate of 8.5 percent. These increases would put tremendous pressure on both the policy and investment regimes. But, they are conceivable. The pressure on the research system and hence much larger financing would be especially great because the current backlog of innovation would be used up much faster.

Two questions remain. First, will continued expansion of the road system continue to add to the growth rate as it has in the recent decade? The answer to that is the very high growth rates for fertilizer and improved seed use, as well as irrigation assume that the road system will expand to bring most of the rural population within five kilometers of an all weather road. Second, will the extension impact on changing farmers attitudes continue to add to the growth rate. The answer to that is perhaps, but not for long. Soon essentially all farmers will have been brought under that influence and the growth effect will cease to occur. Thus, it does not seem reasonable to add these forces to the growth rate calculated above. That also shows that the extension system will have to raise its technical competence rapidly if these high growth rates are to be maintained. The nature of the extension impact must change radically on the future.

4.5.3 Are these Growth Rates Consistent for a Commodity Breakdown of the Growth Rate?

It is useful to examine what commodity specific growth rates are needed to achieve a six percent overall growth rate in agricultural production. Six percent is examined first as it is the CADDP target and is at the top end of the range that the most successful middle income countries have achieved. Eight percent is also examined, which is consistent with an overall 10 percent growth rate for GDP which is the Governments target for the next five year plan (see discussion in the preceding chapter.).

Farmers in general have farming systems that incorporate commodities in their interacting context. However much research and marketing is commodity specific and the commodity sets discussed below have important demand and supply characteristics in common. This is an exercise about plausible growth rates not an exercise in constructing farming systems.

Ethiopia's agriculture is dominated by the cereals (32 percent of agricultural GDP) and livestock (33 percent). Export crops (17 percent of agricultural GDP) and other agriculture (18 percent) account for the remainder (Table 4). It is generally believed that the livestock sector is undercounted in GDP figures (29

percent). Therefore that sector is pushed up a bit from standard figures and the other sectors pushed down modestly.

Table 4 states a hypothetical commodity composition of growth. From that is calculated the shares of growth from each commodity set. Growth rates must be consistent with both effective demand and production potential. To determine the plausibility of these numbers, the following paragraphs discuss each of these in the context of' Ethiopia. First the six percent CADDP rate of growth is posited and discussed. The CADDP rate is also the minimum rate required to meet the Governments broad vision. That is followed by discussion of an eight percent growth rate. That would be consistent with the next five year plan targeted 10 percent growth rate for the economy as a whole.

Table 4.5 : Ethiopia: Hypothetical Commodity Composition of Growth

Commodity group	Base, percent	Growth rate		Share of growth	
Cereals	32	5	6	27	24
Livestock	33	7	9	39	37
Exportable	17	8	12	22	26
Other	18	4	6	12	13
Total	100	6	8	100	100

Cereals have a comparative advantage in Ethiopia at import parity prices, but it is doubtful if Ethiopia has a comparative advantage at export parity prices except for very small margins of production. Hence computing the rate of growth of domestic demand is an important exercise. The five percent growth rate for cereals in Table 4 assumes a 1.5 percent transfer of area from cereals to other crops. The five percent growth rate is consistent with the rate of growth of demand, calculated as follows. If per capita income growth is 5 percent, and the income elasticity of demand is 0.6, then demand would grow at 5.6 percent per year (2.6 percent population growth rate plus 0.6 times 5 percent per capita income growth rate) and real prices would actually rise slightly. Somewhat lower income elasticity would still equate with no change in real prices or a small price decline, since own-price elasticities for staples are also elastic.

High own-price elasticity's of demand are typical of low income countries with low caloric intakes. Thus, the food staples growth rate is feasible from the demand side.[32] Because of the low base that rate could be exceeded from the production side. Previous discussion showed the feasibility of that growth rate from a supply point of view.

With a per capita income increase of five percent a year, domestic demand growth will support a very rapid growth rate of livestock production. For example assume population growth at 2.6 percent, and an

[32] See also the CGE model simulations of the impacts of agricultural growth (Dorosh and Thurlow, 2009).

income elasticity of demand of 1.5 (normal for countries at Ethiopia's per capita income level); then demand grows at 10 percent a year. Even at a very low income elasticity assumption of 1.0 demand grows at 7.6 percent per year. Hence no increase in exports is required. The constraint is on the production side. For the past decade livestock production, according to national income statistics has been at a four percent rate.

A seven percent growth rate requires improvement in feed quality throughout the system. That in turn requires high yields and substantial shift of area in high potential areas from cereals for human consumption to high quality livestock feed. That in turn depends on raising cereal yields substantially. Later sections discuss other specifics of rapid growth in livestock production. The government, fully cognizant of the potentials, has placed a high priority on the livestock sector. Later discussion deals with the requirements for this growth rate in the livestock sector. Here we simply make the point of the high priority to the livestock sector if the high overall growth targets are to be met.

Growth of eight percent of export crops, dominated by coffee, could be achieved significantly from area expansion given the modest current area in that set of commodities and the rapid growth in demand for the high quality coffee produced by Ethiopia. The work of the Commodity Exchange on high quality coffee is a central part of the required strategy. Policies are needed to provide the incentives for the area increase, pus the technology research to bring down costs.

Other commodities have been arbitrarily set at a modest rate. For a discussion of various aspects of agricultural productivity growth, see Chamberlin et al., 2007, Diao 2007, Spielman et al., 2007; Alemu et al., 2008; and Seyoum Taffesse et al., 2007.

Two points are noteworthy in this exposition. First, achieving a six percent growth, even more so for eight percent, rate requires that all major sub-sectors participate. Second, the growth rates are sufficiently high that a focus on priorities within these sub-sectors will be required and explicit attention given to achieving those targets.

4.5.4 What Would the Composition of an 8 percent Growth Rate Look Like?

Table 4 provides hypothetical growth rates to achieve the eight percent target, on the right hand side of the respective columns. The eight percent growth rate required to meet the 10 percent overall GDP target is clearly difficult. Accelerating the growth rate of cereals production will bring cereals prices down somewhat and therefore speed the transfer of area from cereals to other commodities with stronger demand growth. The seven percent rate for livestock will be very difficult to achieve and the nine percent even more so, hence it seems imprudent to plan for more then nine percent for livestock. The move to 12 percent on exports (largely coffee) will require a major increase in resources to promote exports. Note the input sourcing of growth called for huge increase in the fertilizer, seed, irrigation and research growth rates. That will be reflected in the commodity growth rates.

Before concluding it is important to make a specific note on irrigation investment. Ethiopia has large areas of land with low population densities and potential for irrigation. Compared to the rate of return from increased intensity in the high population density highlands, the rate of return in those low

population density areas is much lower. That is because in the already farmed areas large investments in land improvements, and support of the labor force have already been made. In the low population density areas massive investment in roads, electrification, irrigation and land improvement are needed. If those investments are made largely with foreign capital that is not available for development of the highlands it makes sense to have that development – of course with due attention to the needs of the people who are already there. More important, from a poverty reduction point of view development of large scale farms, necessarily highly mechanized does little to reduce poverty in the areas of concentrated poverty. That is because much of the return to capital will be removed from the country and the expenditure patterns are in any case not oriented towards the employment intensive rural non-farm sector as is the case for the small commercial farms of the highlands. Therefore the analysis in this report concentrates on the priority policies and investments for development of the areas that are already being farmed.

The conclusion is that the eight percent growth rate is feasible but requires huge increases in investment and major policy changes. They are both discussed in subsequent sections.

CHAPTER 5
REVIEW OF POLICY, STRATEGY AND INSTITUTIONS

5.1 AGRICULTURAL POLICY: A REVIEW

Key documents that give a good grasp of Ethiopia's recent agricultural policies are the Revolutionary Democracy[33], Rural Development Policy and Strategies (RDPS, 2003), Industrial Development Strategy (2002), Implementation Capacity Building Strategies and Programmes (2003), Sustainable Development and Poverty Reduction (SDPRP, 2002), a Plan for Accelerated and Sustained Development to End Poverty (PASDEP, MoFED 2006), as well as the recent EPRDF[34] 7th Annual Meeting Report[35] policy and plan documents. In addition to these several relevant studies contain policy statements that are captured in various proclamations, regulations and directives. This include Millennium Development Goals Needs Assessment (MDGs-NA)for the Agriculture and Rural Sector and related MDGs reports ((MOFED, 2002; MoFED, & UN 2004); the Implication of WTO's Agreement on Agriculture, Sanitary and Phyto-sanitary agreements on Ethiopia's relevant sector economic policies, strategies and laws (1999). It is important to note that MDGs –NA has been used in the preparation of PASDEP and it seems that it will continue to be useful in the next phase of FYDP after the end of PASDEP period. In this connection the very recent, government document which is prepared as a basis for the 2010/11-2014/15 FYDP, issued towards the end of 2009[36] is also a key document to grasp the very recent agriculture sector policy direction of the GoE.

The very recent exhaustive agriculture sector-wide policy assessment was done as part of the CAADP Ethiopia study[37]. In this sub-section key policy issues are reviewed in three categories covering natural resources, agriculture development and marketing (Table 5.1). Within these three categories for the purpose of PIF preparation, for that matter as areas of emphasis, Ethiopia's current national agricultural policy regimes are classified in 10 subject/issues. It is important to note that the sources of these policies, in addition to the above mentioned documents are proclamations, regulations, and directives. For example the land policy of Ethiopia can be traced starting from the constitution and then in the subsequent Federal and Regional level land use and administration laws, as well as other related laws (proclamations), regulations and directives, such as the proclamation on land expropriation, valuation and compensation. The matrix set below therefore is designed to serve as the existing agriculture policy indicator matrix that captures policy subjects or issues with traceable written policy statements either in RDPS, PASDEP or subject matter policy and strategy documents such as the water development policy and strategy or the forest development and utilization policy and strategy documents issued in recent years.

[33] Text in Amharic
[34] Ethiopian Peoples' Revolutionary Democratic Front
[35] Text in Amharic
[36] Text in Amharic
[37] During the conduct of the CAADP Ethiopia study previous other studies and reports on agricultural policy were reviewed and the materials referred are listed in the reference section of the study.

Table 5.1: Core Policy Subjects/issues by Agriculture Sub-sectors Directly Responsible for Development

Sub-sector		
Natural Resources Management and Utilization[38]	Agriculture Development and Production	Agricultural marketing and trade
1. Land 2. Agriculture water (Irrigation) 3. Forest	4. Crop production 5. Livestock production 6. Farm inputs (seed, seedlings, fertilizer, pesticides, farm tools and machinery, feed, semen, drugs and vaccine etc.) 7. Pest management 8. Agricultural research 9. Agricultural extension	10. Agricultural marketing and trade

5.1.1 NATURAL RESOURCES MANAGEMENT AND UTILIZATION

The three critical policy subjects or issues in natural resources management and utilization sub-sector are related to land, agriculture water development, specifically irrigation, and forest and forest by-products.

Land

Available official documents on the national land[39] policy state that it is the policy of the FDRE government to:

- ***Provide land free of charge for every Ethiopian citizen who wants his livelihood to be in agriculture,***
- ***Prepare a sustainable and proper land use plan,***
- ***Ensure the right of access to land to private investors who wants to invest on land on long or short term lease.***

It is important to note that in some studies and fora there is a mention about the lack of land use policy. As can be seen from the above selected policy stances, it is not indeed the lack of policy in this area but

[38] One important natural resource sub-sector but yet difficult to put in one of the three pillars of the agriculture sector is fishery. Of course, the literature reviewed indicates GoE has a policy stance on fishery which includes that "Expand fishery development and production in water bodies where the potential is not fully exploited".

[39] Refer to FDRE. Constitution of the Federal Democratic Republic of Ethiopia. Federal Negarit Gazeta. 1st Year No. 1. Addis Ababa, 21st August 1995. FDRE. A Proclamation to provide for the expropriation of land holdings for public purposes and payment of compensation. Proc. No. 455/2005. Addis Ababa. FDRE. Rural Land Administration and Use Proclamation. Proclamation No. 456/2005. Federal Negarit Gazeta. 11th Year No. 44. Addis Ababa, 15th July, 2005. FDRE. Rural Land Administration and use Proclamation. Proc. No. 456/2005. Addis Ababa. Besides, for broader policy reading and analysis please refer to the following policies and strategies: The National population policy, 1993; The National Science and Technology Policy, 1998; The National Policy on Disaster and Prevention and Management,1997; The National Policy on Bio-Diversity Conservation and Research,1998; The Ethiopian Water Resources Management Policy, 1999; The National Health Policy,1993; The National Energy Policy, 1993; The National Agricultural Research Strategy, 1993; The National Drug Policy, 1994; The National Health Science and Technology Policy,1994; The National Land Use and Administration Policy, 2005

rather lack of strategy and/or institutions to implement this policy that is still a problem. These issues further discussed in the next sub-sections and also in Chapter 9.

Agriculture water (Irrigation)

In recent years agriculture water development has become one of the top priority policy area to review and formulate. For Ethiopia's agriculture to be emancipated from the vagaries of nature particularly from its depends on rainfall it is believed that the nation has to invest on agricultural water development specifically irrigation. Of course the literature reviewed in this area again indicates that there are adequate policy stances made by the government specifically in relation to the development and expansion of different size irrigation schemes. The existing agriculture water[40] policy documents explicitly incorporate, at least, the following policy positions:

- ***Ensure the development of multipurpose different size irrigation schemes[41] where appropriate,***
- ***Promote the availability of water nearer to pastoralists as much as possible by providing livestock water supply to all the regions particularly to PAP areas,***
- ***Promote participatory watershed development to enhance watershed based agricultural production.***

The visits to the various regions during this PIF preparation has indicated that both the Federal and Regional governments have started a determined expansion of irrigation infrastructure and use which by the end of the next FYDP almost the total cultivated land with irrigation seems to reach double of the present size[42].

Forest

There is a recent document issued on the national policy and strategy on forest protection and utilization[43]. Some of the critical policy positions included are:

- ***Fostering private forest development and conservation [44],***
- ***Expansion of forest development technology,***
- ***Expanding market development for forests,***
- ***Administration and management of state forests,***
- ***Protecting forest resources from threats[45]***
- ***Establishing modern information systems on forest development, conservation and utilization.***

5.1.2 AGRICULTURE DEVELOPMENT AND PRODUCTION

This sub-sector is the one which contains most of the existing written policy stances in the agriculture sector. Several broad or specific based policy matters have been addressed through various proclamations, regulations, and directives. It covers crop and livestock agriculture reflective of the backward and forward linkages in farm, non-farm agriculture, agro-processing, and support-services critical to the production to consumption system[46]. The agriculture development pillar area policy issues, in some instances, have

[40] The recent policies and strategies on irrigation are contained in the water resources management policy and strategy issued by FDRE MoWR in 1999 and 2001,

[41] One important recent policy statement related to irrigation area development is the need to integrate the modern honey and wax production to these areas. There is a stance which is stated explicitly that it is the policy of the government to develop and expand honey production with special emphasis in irrigated areas, integrating with fruit and agro forestry.

[42] For details refer to Chapter 6 of this report.

[43] MoARD. Ethiopian Forest Protection and Utilization Policy and Strategy, 2007, Addis Ababa.

[44] One of the most important umbrella policies is the Environmental Policy of Ethiopia (EPE) that was approved by the Council of Ministers in 1997.

[45] It is important to note that wildlife is the core resource that goes together with forest. At present it is handled by a sector outside agriculture. However, one of the core policies in this regard is that the wild life of the country is protected and developed.

[46] The agriculture marketing aspect, which in actual practice comes as a natural link to production in a value chain conception is dealt alone below.

called for distinction between pastoral and non-pastoral areas of the country. Knowing this complexity, few of the relevant[47] extracts connected to the agriculture development and production policy are listed below.

Crop agriculture

Whether it is for annual or perennial crops or whether it is for stable food crops or cash crops for domestic or export markets, the core policy subject or issues revolve around biological technology (varieties), seed and seedlings, fertilizer, and pest management. The following are found to be relevant to be included in this report since they are key policy areas to focus on for the next five to ten years public sector interventions to enhance the crop sub-sector productivity and production, as well as to ensure the fulfillment of the food security and farm income maximization goals.

- **Technology:** *Provide support and technology packages that enhance specialization and diversification appropriate to the different agro-ecological zones,*
- **Seed and seedling:** *Develop an effective seed production and supply system through the participation of public and private sectors* [48]
- **Fertilizer:** *Ensure adequate supply of fertilizer through domestic production and competitive and efficient fertilizer importation and marketing system*[49],
- **Pest management:** *Establish an environmentally sound system of plant protection using integrated pest management system*[50].

Livestock agriculture

Similar to the crop agriculture the livestock-subsector also has its own core policy subject or issues revolving around biological technology (breeds), animal feed, and health. There are also specific issues related to species or products. It is this sub-sector which also calls for specific policy position that are clearly distinct to pastoral and non-pastoral areas. Below are the few national policy reflections of this sub-sector chosen for paving the ground for the later chapter which discusses the weaknesses and gaps[51].

The core policy subjects or issues related to livestock agriculture in non-PAP Areas[52] are,

- ***Enhance livestock centered specialization development that includes the importation of exotic breeds,***

[47] again reminding the reader to refer to the recent CAADP Ethiopia Study to both the main report and the review volumes

[48] The national seed industry policy (NSIP) and strategy was issued in 1992. Several proclamations were issued to legally enforce and implement various activities underlined in the National Seed Industry Policy. They include the Plant Protection Decree (No. 56/1971), the Plant Quarantine Regulation (No. 4/1992), the Plant Breeders' Rights Proclamation (No. 481/2006), and the Access to Genetic Resources and Community Knowledge and Community Rights Proclamation (No. 482/2006). The most important of them all was the National Seed Proclamation No. 206/2000. In 2004, Proclamation No. 380/2004 gave MoARD the authority to supervise all government organs dealing with seed regulation, seed production and seed distribution.

[49] In October 1993, the government of Ethiopia articulated a national fertilizer policy document. Important are also the National Fertilizer Policy, 1999 and the Fertilizer Procurement, Import, and Distribution 2006 (Text in Amharic);

[50] IPM has been adopted as a national policy for pest control. The Plant Quarantine Regulations No. 4/1992 gives emphasis to and focuses on control of imports and exports and disposal of pesticides.

[51] The reader is advised to read the recent work by Tesfaye et.al, 2008 in order to have a good grasp of not only the policy positions but also to get highlights on areas of gaps and weaknesses.

[52] Ministry of Agriculture and Rural Development (MoARD), Livestock Breeding Policy and Strategy (Amharic Version), 2008.

- ***Enhance livestock productivity and production through breed improvement,***
- ***Develop livestock technological extension package for pastoral areas,***
- ***Expand and increase small ruminants in highly populated, fragmented landholding , degraded and arid climate,***
- ***Expand and increase poultry production in all mixed farming agriculture including agro pastoral areas.***

Some of the above relevant policy stances also serve for pastoral areas. Besides, the following also exist to address some of the policy subjects or issues specific to PAP areas.

- ***Ensure pastoral livelihoods and their asset bases through the participation of the pastoral community and the use of pastoralist traditional and formal institutions,***
- ***Expand and ensure access to basic social services,***
- ***Ensure settlement of PAP community members on a voluntary basis and with adequate and appropriate attention to natural resources and environment conservation.***

Some of the other policy statements relevant to livestock in the context of this PIF preparation are,

- **Animal feed:** *Promote animal feed production and development both in natural and compound form with due consideration for the protection of natural resources,*
- **Animal health:** *Improve and expand animal health services*.

Agricultural research and extension

For the agriculture sector to attain its goals in the NFYDP using the "scaling out/up" strategy, agricultural research and extension are the two systems to focus on in terms of policy and institutional arrangements. As will be seen in the policy and institution gap analysis, Chapter 9, they are among those areas where reviews and dialogues are expected to take place. As of now, the following are the core agricultural research[53] and extension policy stances of GoE.

- ***Enhance agricultural research programs for sustainable land management, wise use and maximum utilization of water and forest resources,***
- ***Improve and strengthen agricultural technologies supply, multiplication and distribution on a sustainable basis,***
- ***Undertake research on breed improvement, animal health care, feed resources, and adopt domestic and imported technologies by ensuring the collection and documentation of information on the same,***
- ***Enhance better extension services through improved crop agricultural research–extension–farmer and stakeholders linkage,***
- ***Enhance better extension services through improved livestock agricultural research–extension–farmer and stakeholders linkage,***
- ***Enhance better extension services in PAP areas with the participation of traditional institutions.***

[53] Important sources of agricultural research policy are EIAR (Proclamation No. 79/1997), the Institute of Biodiversity Conservation (IBC, Proclamation No. 120/1998) and the ESE (Regulation No. 154/1993).

5.1.3 AGRICULTURAL MARKETING AND TRADE

In recent years agricultural marketing and trade policy issues are increasingly occupying the forums organized for the agriculture sector development. An expanded review of the agriculture marketing and trade policy subjects and issues are covered in the CAADP Ethiopia study review volume II. This review used materials including the proceedings of a policy forum jointly sponsored by EDRI and IFPRI with the theme "The state of Food Security and Agriculture Marketing in Ethiopia" (Gezahegn et.al, 2003). RELMA[54] (2005) sponsored a study which was conducted both in Ethiopia and Kenya concurrently and the study document had an extensive reviewed materials in the process of assessing the competence gaps in linking agricultural production with value adding and marketing. The agricultural technology evaluation, adoption and marketing publication of the Ethiopian Agricultural Research Organization (EARO) edited by Tesfaye et.al (2004) has different articles which cover the marketing and markets issues in broader and specific commodity lines, such as fertilizer. For example Legesse and Hailemariam work on fertilizer markets, in the same document. Besides, agricultural marketing issues both in the input and output markets, including policy, are covered in other publications by different authors. For example, Dawit (2005) made a condensed insight on the status and challenges of crop and livestock agricultural marketing in Ethiopia. Some of the recent policy and strategic moves the country has followed in the commercialization of Ethiopian Agriculture were highlighted by Demese's (2006).

Trade related issues are extensively addressed in the MoTI/MoARD (1999) study report on the Implication of WTO's Agriculture, Sanitary and Phytosanitary Agreements on Ethiopia's Relevant Sectoral Economic Policies, Strategies and Laws. The Agricultural Economics Society of Ethiopia proceedings of the fifth annual conference were mainly dedicated to contributions on the international agricultural trade implications on Ethiopia's agriculture sector. In this document Demese (2000) made a contribution on trade agreements on agriculture and domestic support and what the position of Ethiopia should be in the years to come. A recent report on Ethiopia's Trade and Investment Policies is also made by Bulti (2008) as a contribution to the book published jointly by the Forum for Social Studies (FSS) and the European Union.

Cognizant of the above below, as done earlier, selected policy stances of GoE on agricultural marketing, markets as well as trade are listed. Some reflect the broader GoE development directing principles.

- ***Transform the traditional agriculture to modern and commercial agricultural through market driven development,***
- ***Accelerate market based agricultural development, and be competitive in the international market,***
- ***Accelerate private sector development by ensuring private operators remain abide by the rules of free market,***
- ***Expand and improve domestic markets emphasizing on value chain,***
- ***Expand export of agricultural products and their markets,***
- ***Enhance the competitiveness of the country in the global market,***
- ***Accelerate the process of Ethiopia's accession to the World Trade Organization (WTO)***

[54] Regional Land Management Unit of ICRAF

5.2 STRATEGY: A REVIEW

Inseparable from policy is the strategy to implement it. A strategy is a route to achieve the desired policy goals via specific elaborations of the resources to be mobilized (means) the institutions which will activate and control the means, and the conditions and situations which may constrain their use in a given development plan[55]. Strategies link the policy goals to programmes that are set in a given plan period. The Agricultural Development Led-Industrialization (ADLI) strategy was the first comprehensive strategy launched by the EPRDF government and it continued to influence the formulation of successive policy, strategy, and plan documents such as the Revolutionary Democracy document which includes both policy and strategic issues, and the sector specific policy and strategy documents such as RDPS and the Industrial Development Strategy documents as well as the two consecutive plans known as SDPRP[56] and PASDEP[57]. ADLI also remained the lead strategy which Ethiopia's agriculture sector vision and goals in the context of PIF are footed on. Chapters 3 and 4 of this report gave details on this[58].

According to RDPS the "***agriculture-centred rural development***" (ACRD) strategy, more specifically an **agriculture-led development strategy**, has been adopted as a major strategy and is expected to assist in the realization of the country's economic development objective. This strategy, as an outshot of ADLI, is not set to develop the strategic sector of agriculture alone. It is also a strategy to create a favourable environment for the accelerated and sustainable development of the non-agricultural sectors. It recognizes that development of trade and industry in Ethiopia cannot be sustainable without the development of agriculture, since it is growth in this sector that will form the primary market and generate capital and labour necessary for their development. Through agriculture-led and rural- centered development, trade and industry will be directed to grow faster following and in alliance with agriculture. With this strategy, agriculture is tuned to accelerate trade and industry development by supplying raw materials, creating opportunities for capital accumulation and enhancing domestic market.

Box2: Basic principles governing agricultu development *policy* (RDPS)

- *The labour intensive strategy*
- *Proper utilization of agricultural land*
- *A foot on the ground*
- *Taking different agro-ecological zones i account*
- *An integrated development path*

As clearly pointed out in RDPS, the basic directions of agriculture and rural centered development so far revolves around the extensive utilization of human labor; proper use and management of land, water and other natural resources; agro–ecology based development approach; integrated approach to development;

[55] A definition adopted in the CAADP Ethiopia study
[56] SDPRP is Ethiopia's First Generation PRSP and its successor development plan is PASDEP.
[57] Refer to Mekonen, 2002, for ADLI and the performance of the agriculture sector in the 1990s.
[58] It has been a practice to design strategies that are specific to chosen subjects, issues or agricultural commodities. It is important to note that the recent CAADP Ethiopia study has summarized the existing government strategies related to the four pillars addressed on the basis of broader subjects or issues. The strategies when listed in a form of statements are more than 150[58]. Most of them (31%) are on inputs followed by strategies related to markets, marketing and trade (20%). Annex A1 present some of the strategies that are relevant for the PIF preparation and implementation.

targeted interventions for drought–prone and food insecure areas; encouraging the private sector; enhancing the benefits of the working people; and enhanced use of agricultural technical and vocational training. In this regard, in part two section one of RDPS the basic principles (Box 2) that govern agricultural development policy in Ethiopia are presented and explained as follows.

Labour intensive strategy: The basic premise of this strategy is that accelerated and sustained growth can be brought about in Ethiopia not through capital-intensive but through ***labour-intensive*** production methods. This strategy focuses on developing the agricultural skills and work initiatives of farmers. The strategy does not envisage employing backward technology and excess labour. In RDPS it is explicitly stated that one of the main reasons for Ethiopia to adopt the strategy of Agricultural Development-led Industrialization is ***lack of capital***. It is believed that agriculture, especially smallholder agriculture, can be developed with relatively less capital outlay.

Proper utilization of agricultural land: This basic principle emanates from a believe that the path that will guide the agricultural strategies and policies depends on the use of land that ensures broad access in a manner that will maximize its contribution to overall development, and that promotes sustainability of the natural resource base.

A foot on the ground: This principle recognizes that it is necessary to record and pass on to the next generation practical experiences and ***indigenous knowledge***, and to make effective use of this knowledge in our development efforts. In other words the strategies for agricultural development will seek to draw opportunities for growth inherent within the available manpower and technology.

Taking different agro-ecological zones into account: This principle embodies that all efforts will be based on detailed development plans for each agro-ecological zone.

Integrated development path: This principle recognizes that agricultural development embraces a large number of different products and activities. Therefore, the agricultural development efforts will follow a development path that seeks to promote integrated activities.

Box 3. Fundamentals of Ethiopia's agricultural development strategy (PASDEP)

a. Adequately strengthen human resources capacity and its effective utilization,
b. Ensuring prudent allocation and use of existing land,
c. Adaptation of development path compatible with different agro-ecological zones,
d. Specialization, diversification and commercialization of agricultural production,
e. Integrating development activities with other sectors, and
f. Establishment of effective agricultural marketing system

As highlighted above, ADLI and ACRD, among other sector strategies are used to lead the preparation and implementations of the two successive PRSPs: SDPRP and PASDEP. The latest reviewed and conditioned policies, strategies and programmes of rural and agricultural development, infrastructure, trade, and markets and market access are contained in PASDEP. In the chapter that deals with sector policies, strategies, and programs of the PASDEP[59] there are six fundamental agricultural development strategies (see Box 3). These are expected spring boards for the PIF next ten years

[59] Chapter 7

identification of incremental investment areas and lead principles for increased spending on on-going programmes.

In the next FYDP, which is going to be the first five years of PIF implementation, similar to the PASDEP period, small farmers are expected to play a leading role in agricultural development of the country. Still focusing on small farmers, as highlighted in chapter 2 of this report, the three fundamental strategic directives for the NFYDP of the agriculture sector are

- The scaling up of best practices and technologies
- Promotion of natural resources conservation and improved irrigation
- Encouraging commercialization and high value crop production and marketing

In line with these, the Government remains determined to facilitate appropriate conditions through providing necessary infrastructure, land and new technologies to enable small farmers obtain relevant market information and fairly compete with well to do farmers, cooperatives, and the modern private sector at large.

The government has a firm stand that the emphasis on small farmers, however, is not deterrence for specialized, commercial farms undertaking. As one of the fundamental strategies indicate, specialization**,** diversification and commercialization of agricultural production has been promoted based on agro-ecological zones. In view of this, farmers and pastoralists have been encouraged to focus on agricultural activities where they have the best comparative advantage. Besides, this strategy provides for the acceleration of agricultural development as well as the development of agro-industry, and there by contribute to the overall growth of the economy. Furthermore, the strategy gives prominence for t**argeted interventions for drought prone and food insecure area:** areas that are characterized by erratic rainfall, soil degradation, and low per capita availability of farm land. In these areas the major agricultural development activity to be undertaken is aimed at increasing the income of the small farmers and pastoralists through activities focused to enhance food security with measures to reduce the volatility of production (for example through irrigation where feasible), and increasing off-farm income opportunities, and, where appropriate, voluntary resettlement to more productive areas. Livestock resource development with a special focus on small ruminants, small-scale irrigation and water harvesting are also part of this strategy.

5.3 INSTITUTIONS

5.3.1 THE POLICY AND INSTITUTIONS LINKAGE

There is no doubt that institutions are key elements of a policy formulation and implementation process. They can be seen from the aspects of organizational set-up and relationship or linkages among organizations. Both aspects are covered, in their relative importance, in policy documents including proclamations and regulations that notify the establishment and operation of the institute of concern. RDPS and PASDEP have explicit explanations on institutions which are responsible to implement the existing policies and strategies and programmes discussed in the previous section. It is possible to classify institutions in broader or detailed manner. Broadly the institutions can be referred as public versus non-public. Or as indicated in Annex A2, the institutions can be classified into seven categories. These are government (Federal, regional and woreda level); non-government organizations (NGOs); mass organizations including community based organizations (CBOs); private institutions; civil society organizations (CSOs); donors: bilateral/multilateral institutions; and domestic agricultural research and

extension as well as CGIAR affiliated institutions[60]. The role of these institutes and expected synergy is highlighted in CAADP Ethiopia study. Multilateral and bilateral donors are recognized as essential development partners in the execution of policies and strategies, while NGOs and CSOs are stakeholders and implementing bodies working in line with the GoE policies and strategies. RDPS also directs private sector institutions activities by providing favorable environment for production, investment, and market and trade. In this context, they are also stakeholders and beneficiaries of the agriculture and rural development policies and strategies.

5.3.2 PUBLIC SECTOR INSTITUTIONAL ARRANGEMENTS

In the public sector organizational set-up follows Ministries, Authorities, Agencies, Bureaus, Commissions, and Offices. The relationship or linkage refers to the formal system in place in order to facilitate the working relationships and linkages between or among such organizations at all levels of government (federal, regional, zonal, and woreda). Of course, Kebele is the lowest level of government set up with its own institutional arrangements. The following gives a highlight of institutions at different levels of government as well as those operating as non-government entities. At present, it is difficult to get neat document that shows the organizational set up of the different public institutions. This is mainly due to the on-going BPR exercise. Despite this attempt has been made to collect and visualize the organizational and relational aspects of existing public institutions at different levels (Federal, Regional and woreda).

Federal Institutions

At the federal government level, the main development tasks are (a) building the rural development capacities of regions, (b) setting up Universities and Research Institutes oriented to rural development, and (c) providing financial and technical support. Currently there are 22 universities, of which 17 have colleges or faculties of agriculture or veterinary sciences. Agricultural research is done by these higher learning institutions. However, the mandate to conduct and coordinate agricultural research at national level is given to the Ethiopian Institute of Agricultural Research (EIAR) that has about fourteen Federal research centres. The Federal Government also has the responsibility of preparing country-wide technology packages and improving these in collaboration with the regions. This task is accomplished by the agriculture extension system directorate in the MOARD[61]. ATVETS have played critical role in producing DAs that assist the promotion and use of technology packages. Further, the Federal Government performs the task of coordinating agricultural marketing and the supply of inputs on a countrywide basis. It performs these development tasks without any compromise to the decentralization policy of the Government (RDPS, 2002).

At Federal level, MoARD is responsible for the implementation of agricultural policies and strategies fostering a sustainable value chain development for the public and private actors engaged from the supply of inputs to the sale of raw or processed agricultural commodities using several directorates, institutes, and agencies. Diagram 2 gives the current state of organizational arrangements at Federal level as visualized during the PIF preparation, but still subject to the result of the on-going BPR exercise.

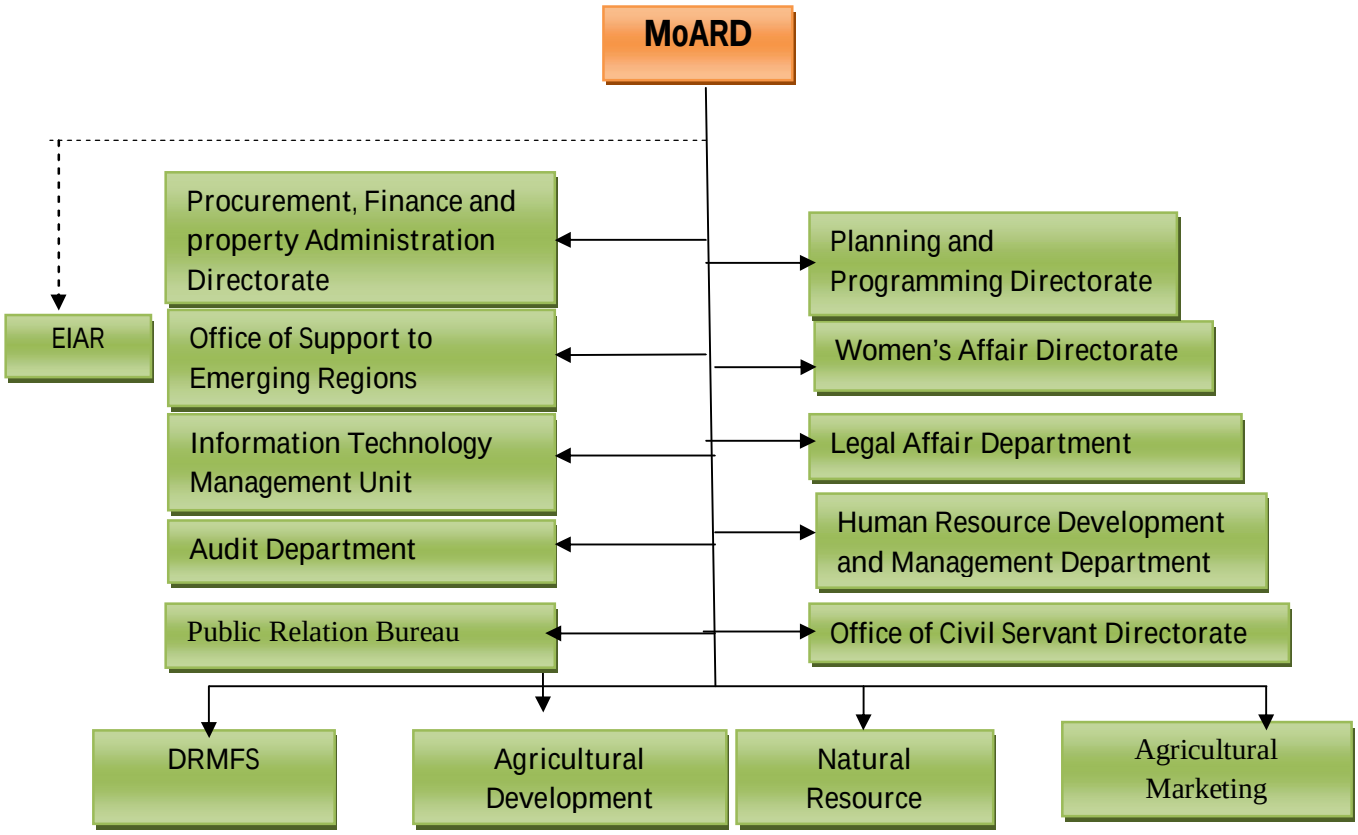
[60] Theses classification was also used to assess the state of existing institutions in the CAADP Ethiopia study. The CAADP Ethiopia study has also included a table that shows the organizational setting, responsibility, synergy and partnership.
[61] More on agriculture research and extension is said at the end of this chapter.

As can be seen from the diagram there are boxes indicating projects. For example under the natural resources management sub-sector there are projects like Sustainable Land Management, MERET, Participatory Forest Management Project, Participatory Small-scale Irrigation Project, Production Safety Net Programme (partly also in the DRMFS sub-sector), Community Based Integrated Natural Resources Management Project, Agriculture Sector Support Project, Enhancing Efficiency and water Management as a Tool For adopting to Climate Change project. In the Agriculture Development sub-sector some of the projects are Rural Capacity Building, Livestock Master Plan, Household Asset Building, Agricultural Growth projects[62]. There are also trade associations that are closely working with the ministry. For example coffee exporters, Ethiopian pulse and oil seed producers and exporters, and Ethiopian grain trade associations work closely with the Agriculture Marketing Sub-sector of MoARD.

In addition, inter ministerial institutions in the forms of committees or Boards of MoARD, MoFED, MoFA, MoTI, MoWR, MoE , MoST, MoWUD, MoJ and EPA play substantive role in implementing pastoral, agricultural and rural development policies and strategies. For example, MoWR is a key allay to MoARD through meteorology agency and irrigation directorate. MoJ is an important ally too since more than 20 agricultural professional and non-professional, like tarde, societies or associations are registered and monitored under it. The Quality and Standards Authority of Ethiopia (QSAE), and Revenue and Customs Authority are also among the institutions at federal level which are outside MoARD but directly or indirectly affect the agriculture development initiatives of the country.

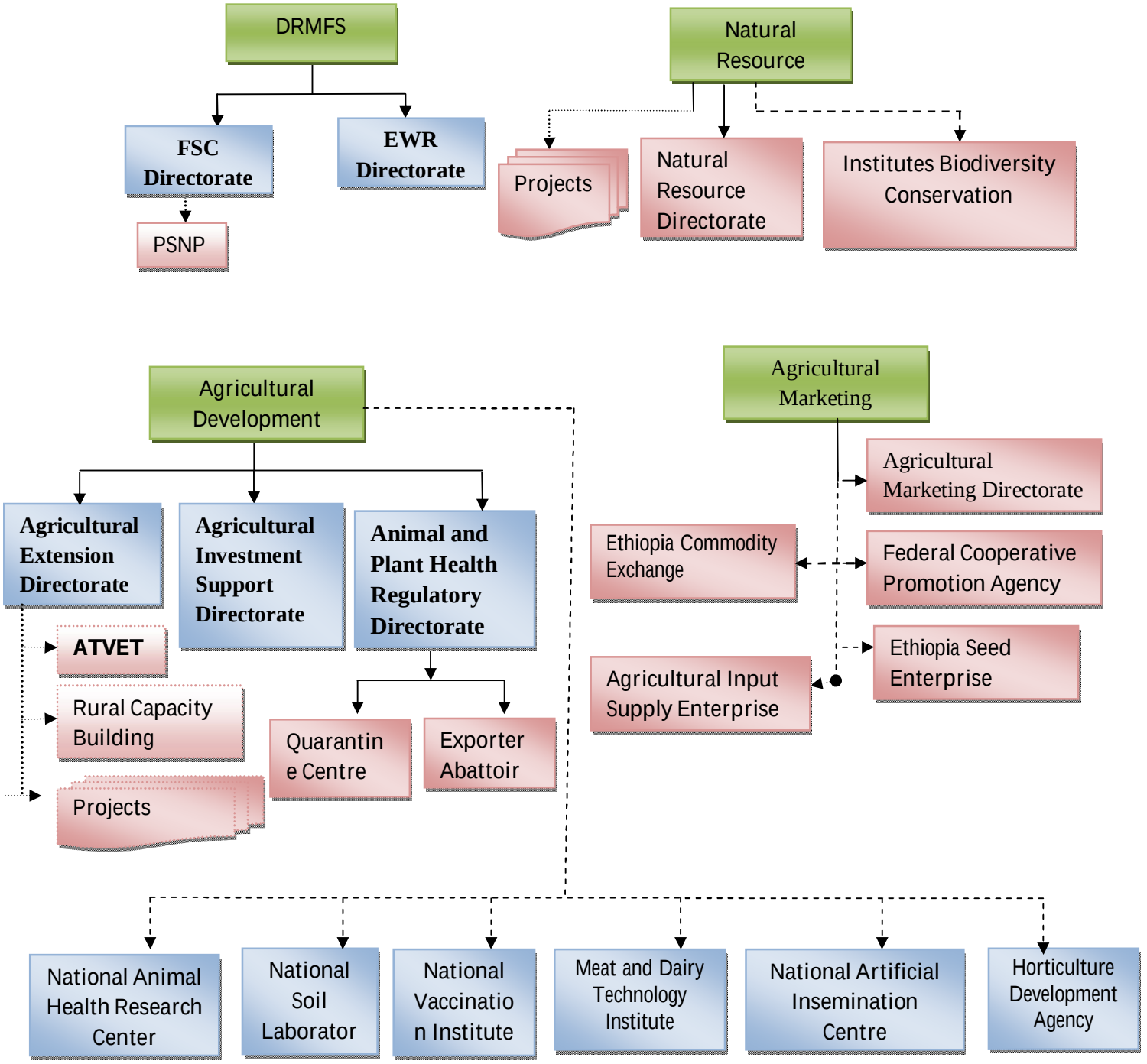
[62] There are also projects identified by the financiers e.g., JICA/FAO, BSF projects.

Diagram 2a: Organizational Structure of MOARD[63] -Sector Wide



[63] As visualized during PIF preparation

Diagram 2b: Organizational Structure of MOARD[64] - Sub-Sectors



[64] As visualized during PIF preparation

The relationship with MoFA is critical since the pastoral affairs coordination is handled by this ministry. Of course, in the PAP areas for the implementation of RDPS the institutional arrangement at the federal level include:

- Pastoral Standing Committee(PSC) in the House of Representative,
- Inter-Ministerial Board consisting of nine Ministers, coordinated by the Ministry of Federal Affairs,
- Pastoral Areas Development Departments, under the Ministry of Federal Affairs (MoFA), and
- Developing Regions Coordination Office in each of the nine Ministries.

The commodity exchange (ECX) and the warehouses receipt systems are also the two important institutional arrangements at the Federal level. As indicated in RDPS the establishment of commodity exchange centers was essential to facilitate the gathering of reliable, timely and complete information including market price information. The relevance and importance of international market information, especially commodity prices, is quite evident. Therefore, the commodity exchange center (ECX) is established to facilitate the gathering of such reliable, timely and complete information and it requires continues investment in terms of capacity building for wider coverage both in terms of area and commodities traded via the center.

Currently the Warehouse Receipts System is in place. It focuses initially on maize, sorghum and wheat, but currently works with other commodities and is strongly linked to ECX. It was initially initiated in the Ministry of Trade and Industry (MoTI) via a proclamation in October 2003 to provide a Warehouse Receipts System for stakeholders. Immediately the system became operational through establishment of an authority accountable to the MoARD.

Regional and Woreda Institutions

Every region, using its independent undertaking, has also similar institutional arrangements to that of the Federal Government. Institutions that directly or indirectly influence the performance of the agriculture sector at regional level include BoARD, BoFED, BoWR, EPLAUA[65], and RRA[66]. At Woreda level, the Woreda Administrative Councils, WoARD and Kebele Administrative and development councils are the key players in implementing the agricultural policies and strategies. Annex Diagram A1 gives examples of directorates, institutes, and agencies of BOARDs for the Regions visited during the PIF preparation.

Regional administrations are responsible in training professionals and technicians working in Woredas and Kebeles and deploy and promote them. Regional Councils approve annual budgets to Woredas, which is mostly is ARD budget, and support in implementing infrastructural projects, which are beyond the implementation capacities of Woredas.

In RDPS it is clearly stated that Woredas are mandated to coordinate the development initiatives of NGOs by creating a favourable environment in which the resources and technical know-how of local and international NGOs can be properly utilized. In the PAP regions, the civil service operational system starting from the regional level down to the lowest administrative rank is the same in terms of both

[65] Environmental Protection, Land Administration and Use Authority
[66] Rural Roads Authority

organization and manpower. The important point that is underscored is that the political leadership and organizational structure could change depending on the particular conditions prevailing in each region. RDPS explicitly states that with regard to community based organizations structures, there is no need to make PAP areas the same as those to be set up in other regions. If development works can be performed more productively under the ethnic structures, RDPS states that it should be done that way. Besides extension workers assigned to the PAP areas are being given training mainly on livestock development and related subjects. Specifically, the agricultural extension services are increasingly focusing on livestock feed, animal health and related activities.

Agricultural Research and Extension

In the public sector, be it at Federal or regional levels, the two critical agricultural institutions which deserve attention are the agricultural research and agricultural extension institutions.

RDPS has endorsed that sustained agricultural development requires a continuous process of technological change. Such continuous progress needs to be supported by a well-resourced institutional system for research and technology generation, development, multiplication, extension and distribution. Therefore, the strategy embodied in RDPS was to significantly augment the research capacity in terms of volume and quality. Today as a result of this strategy, the country has several Agricultural Research Institutes established by Federal and Regional State Governments of Ethiopia or affiliates of the CGIAR. Leading in this aspect are EIAR, Regional IARs' and ILRI. Specifically, at the beginning of SDPRP the FDRE Government took a major leap forward to strengthen the NARS by committing itself to borrow more than 78 Million USD, which includes the finance to establish new research centers to cover the uncovered agro-ecologies particularly in lowland, pastoral and agro-pastoral areas of the country. This task has continued by incorporating the research and extension component in the ongoing Rural Capacity Development Project. In addition to these, to boost the national capacity on agricultural research, the nation is taking advantage of the many Universities and Colleges that are scattered in the different regions and agro-ecological zones.

The agricultural extension service system has also been in focus during the whole process of strengthening existing and establishing new research centers. As pointed out in RDPS the generation and selection of appropriate technologies need to be disseminated through strong agricultural extension service system, a system that is a major component of the agricultural and rural development strategy. In addition to the research and extension system, for a successful promotion and use of newly generated or selected, and imported agricultural technologies the entire technology transfer process should embrace both multiplication and diffusion efforts. The lead technologies in this regard are improved seed, fertilizer, semen and AI and veterinary services.

The seed multiplication system has several institutions in it. In the public sector the major ones are the Ethiopian Seed Enterprise (ESE), and the recently established Regional Seed Enterprises (RSEs). On the livestock side there is the National Artificial Insemination Center, which is currently operating through four sub-branches located in Oromia, Tigray, Amhara and SNNP Regional States. There is also the National Veterinary Institute producing and supplying animal vaccines and drugs. These institutions primarily focus on the biological technologies[67]. In the private sector in the seed system there are Pioneer Hybrid and other Small Seed Enterprises. There are also institutions such as Agricultural Inputs Supply

[67] A detailed coverage is made in the Review Volume of this study.

Enterprise (AISE) which procure and distribute fertilizers and chemicals via different agents. In addition to these, there are several Public and Private Enterprises that are engaged in the multiplication and distribution of farm inputs including implements. Cooperatives are the major importers and distributers of fertilizer recently.

It is also important to note that the agricultural extension system of the country has federal and regional arrangements. Core in this regard is ATVETs and FTCs. These two institutions are currently functioning to produce as well as use the human capital that is embodied in Development Agents. ATVETs train DAs and the DAs in turn use FTCs to train farmers so that the later can augment their knowledge to increase the productivity of farm resources and ultimately increase their income via increased production and better marketing. At present the agricultural extension system deploy four DAs at each kebele, crop production, livestock production, natural resource management, and home economics. In addition, there is one animal health assistant per three kebeles, and one cooperative expert serving five kebeles. Furthermore, as part of the system, Research-Extension-Farmer Linkage Council has been established to oversee and advise technology generation, packaging and dissemination. It is structured from woreda up to the federal level with committed resources.

5.3.3 DEVELOPMENT PARTNERS: NGOS, CSOS, AND DONORS

NGOs, civil society organizations (CSOs), and bilateral and multilateral donors constitute the main development partners in the implementation of RDPS, specifically the development programmes. Currently there are more than 1200 NGOs in the country but less than 3% are working directly in agriculture development areas throughout the country. Most of them are under the umbrella of the Christian Relief and Development Association (CRDA). CRDA plays a leading role in facilitating the works of the NGO taskforce, but responsibilities of resources mobilization are that of the NGO. The government of Ethiopia considers that NGOs, Charities and Mass-Based Societies including professional associations, broadly the civil society[68], are recognized as actors to play a great role in the development of the country. NGOs shall acquire legal personality upon registration by the Charities and Societies Agency of the government in the Ministry of Justice.

Broadly the donors can be categorized into bilateral and multilateral. On the part of the Ethiopian government, MoFED plays the key role in donor coordination and resource mobilization, whereas sector ministries implement specific programs and projects. Bilateral assistance includes technical cooperation, project/program supports and sector development. Mostly the support that comes through the bilateral and multilateral institutions follows a project approach. The projects often have two major categories that combine technical assistance with capacity building. These are designed with specific high level as well as grass root oriented development interventions. Some pursue non-project support which includes sector development programs in education, health, road and water.

At present among donors, the overarching coordinating body in Ethiopia is the Development Assistants Group (DAG) which bring together most of the bilateral, multilateral, as well as UN Agencies. This group gets engaged in some policy and strategy formulation process, and they have had a participation in the two successive five years plan, SDPRP and PASDEP. Recently REDFS is established. It is established in April 2008 with the government, specifically MoARD, initiative to harmonize and align development partner's assistance to its strategies, priorities and programmes. REDFS has three sub-components or

[68] Charities and societies proclamation No 621/2009, Negarit Gazetta (year 15th No.25).

pillars namely disaster risk management and food security; sustainable land management; and agricultural growth. Each has its own technical committee. Virtually all of the 18 development partners support REDFS and it receives a quarter of all aid provided by DAG members[69].

5.3.4 COOPERATIVES AND MFIS

In the RDPS document it is stated that neither meaningful agricultural development nor an efficient agricultural marketing system can materialize in Ethiopia without having a visible breakthrough in the development of cooperatives. Cooperatives play a significant role not only in creating improved marketing system and providing market information, but also to render facilities to collect and provide storage services; credit services to farmers; access to credit by expanding rural banking; facilitate trade transactions; and provide agricultural machinery, equipment and implements to farmers on lease. Hence, setting up and strengthening cooperatives is critical in implementing rural development policies and strategies in Ethiopia. To date the establishment cooperatives has gone to highest level starting from primary up to Federation levels. The cooperative federation in SNNPR already took full responsibility to procure and distribute fertilizer, among other activities. One cooperative Federation is also formed to function in Oromyia.

Most of the work of cooperatives requires a strong rural agriculture oriented finance institutions arrangements. The policy and strategies, as well as the institutional aspects of the rural financial system are addressed in RDPS. In this document as a strategy considerable weight is accorded to strengthen institutions engaged in rural finance and create new ones, because otherwise agricultural development can be sluggish, and its contribution to the development of other sectors will be undermined. In RDPS it is stated that the major financial institutions which can contribute significantly to rural and agricultural development are the existing commercial and development banks, rural banks and cooperatives. The National Bank of Ethiopia should develop an appropriate legal framework to promote rural banks and coordinate their operations. Efforts are being made to forge between rural banks and cooperatives through cooperative banks; exemplary in this case is the Cooperative Bank of Oromia, as this is vital for rural and agricultural development in general.

The GoE in its RDPS document also recognized that the promotion of comprehensive farm input retailing system can be achieved through strengthening and expansion of rural Micro Finance Institutions (MFI) in addition to service cooperatives and farm input retailers. Indeed the creation of efficient and effective agricultural credit institutions, which have been liaising with the existing formal and informal financial institutions to extend the agricultural credit to farmers has increased farm input consumption, particularly fertilizer.

5.3.5 MASS ORGANIZATIONS

To implement agriculture and rural development policies, strategies and programmes, among the institutions recognized by GoE are women and youth associations. RDPS has a detailed discussion on why it is important to mobilize youth and what has to be done in this regard. To effectively mobilize the youth, they need to have their own organization through which they can campaign for their own rights and economic interests. Youth associations contribute a great deal to the active participation of youths in

[69] For details refer to the REDFS SWG, Annual Report, November 2008-December 2009.

rural development. Similarly women's associations organized at kebele level are expected to make a significant contribution to the political and developmental participation of women and the benefits they derive from such participation. Special development efforts targeting women have been made so that they can gain the benefits of rural development which they deserve. That is in order to ensure the participation of women in rural development, it was also necessary to increase their productive capacity so that women can be employed in all fields of activity on equal footing with men.

To date the establishment of women and youth associations has gone to highest level starting from kebele up to Federal League. The main task of these associations is to make them key players in the growth and development of the agriculture and rural economy both as self employed entrepreneurs or sources of skilled and unskilled labour for the growing and expanding rural agriculture industries. The government has promoted agricultural entrepreneurship to make the youth of rural areas stay around their communities via small business start up. Business start up, in addition to entrepreneurial ability, is receiving government support and facilitation for private sector expansion via Small and Micro Enterprises (SME).

5.3.6 PRIVATE SECTOR INSTITUTIONS

It is important to address the private sector institutions role in the agriculture sector development in line with the specifics stated in the policy and strategy documents. Starting from the beginning of SDPRP period, the current GoE upholds the role of the private sector in cognizant of the sustained economic growth and employment generation, which is necessary for poverty reduction and that, requires enhanced private sector investment (SDPRP, 2002). In RDPS the government has stated the participation of the private sector to play an important role in implementing the development policies, strategies and programs. Of course, one may say that private investors have made significant contribution to the agricultural development of the country since the period of the Haileselassie regime. The efforts made during this regime, however, were curtailed during the Derge era. With the change of governments, EPRDF during and after transition period, has revitalized the role the private sector. It started by privatizing the State Farms and opening them for private commercial farming. The floriculture business has also flourished in recent years as a result of the favorable policy environment GoE created for foreign investors. In addition to commercial farms, financial, higher learning and export-import organizations have also emerged and are being expanding throughout the country. The private commercial banks have supported the domestic agro-industry growth. The private HLI have started providing training in specific agriculture disciplines. This is expected to expand, and also for the institutions to embark in agricultural research. As well as described in the RDPS, Ethiopia provides organizations, management and financial resources to establish connection with internationally known companies, and this has helped many organizations engaged in export-import activities. In the private sector, there are several associations including Ethiopian Live Animal Traders Association, Ethiopian Meat Exporters Association, Horticulture Association, Coffee Traders Association, Pulses and Oil Crops Traders' Association.

One very important institutional arrangement recognized and promoted by RDPS is the out- growers' scheme. Linkage between private investors and smallholders in the agricultural production, will make to maximizing benefit for both partners, and contribute meaningfully to make agricultural development efforts more productive. One such link the policy and strategy in the agriculture sector encouraged is the out-growers scheme. Such schemes were strategic in densely populated highlands of the country, since

could address the land shortage often encountered by private investors wishing to engage in the production of high value crops. As a result such schemes are expanding in the coffee and tea investment areas, and there are beginnings in the horticulture industry. This is in addition to formerly established out-growers schemes in the area of malt barley production, and the sugar cane production.

5.4 ACHIEVEMENTS ATTRIBUTABLE TO THE POLICIES, STRATEGIES AND INSTITUTIONS HITHERTO

The Federal Democratic Republic of Ethiopia in its major rural development policies and strategies document underscores the basic objective of the nation's economic development endeavors:

To build a market economy in which (i) a broad spectrum of the Ethiopian people are beneficiaries, (ii) dependences on food aid is eliminated; and, (iii) rapid economic growth is assured.

Given these goals and the afore-mentioned policies, strategies and institutional setups, it is logical to ask what the achievements are made so far. Are there not gaps in the policies, strategies and institutes that might have been hindrance to achieve more? Is the government willing to review and adjust gaps and weaknesses observed? To start from the last question, the answer is yes. The government has made it clear that policy reviews should be considered where and when necessary. It is important to note that no country has policies that are exhaustive and be able to cater for all needed development interventions. What is important is to recognize the dynamics of policy formation which is conditional to national and international economic affairs changes[70]. Policy review as a policy stand by itself has not been also a problem in Ethiopia (see Box 4).

Box 4: Policies and Strategies are Subject to Review

"Building on policies already on the ground and taking into consideration practical experiences and lessons learnt over the past ten years as well as considering the development experiences of countries which have attained rapid economic development, the Government has now formulated specific policies and strategies to guide rural and agricultural development. The government also stands ready to translate these strategies into concrete action. …It is important to device policies, strategies and programmes that will help us implement the goals we have set. But it is perhaps even more important to be able to revise these as the need arises and to adjust our goals according to developments over time."

Policy, strategy and institutional gaps or weaknesses that should be subject for review or dialogue are identified and discussed in Chapter 9. In terms of achievements made due to the existing policies, strategies, and institutional arrangements it is possible to get detailed information from the CAADP Ethiopia study (2009). Below is a highlight of what has been achieved so far.

Due to the policies and following the ADLI and ARCD strategies and associated institutional arrangements Ethiopia's agriculture sector development in the last six years has been remarkable in terms of sector wide GDP growth and relative contribution of the sector to poverty reduction and increase in per capita food production. Since 2004/05 the average annual growth rate of the agriculture sector in terms of AGDP is about 13%, which exceeds the CAADP target of 6% (CAADP, 2009). This is a strong and sustained performance after a sharp decline which had hit bottom by 2002/03, including this ten year trend shows an average of about 10% growth rate (Fig 5.1). The last time the

[70] Refer to Just and Rausser (1985) on "Uncertain Economic Environment and Conditional Policies."

country experienced a continuous three years growth was between 1998/99 and 2000/01, even during this period the annual growth rate was on average around 6%. The economy is also showing a slight shift from agriculture dependence to non-agriculture sectors. The percent share of agriculture from GDP declined from 53.1% to 42.6%between 1995/6 and 2008/09[71] (Table 5.2). The food poverty head count decreased from 44% in 1999/00 to 38% in 2005/06 to nearly 33% and expected to be 28% by the end of the PASDEP period (2009/10)[72]. The per capita grain production increased from below 1.5 quintal in 2003/04 to 2.13 in 2007/08[73] (Box 5).

CAADP Ethiopia study reported also the positive change registered in the agro-processing industry too. For example the number of manufacturing of food products and beverage establishments in 1998/99 was 228 and increased to 381 by 2006/07[74]. For the same period, leather and related products establishments increased from 49 to 72.

Table 5.2: Share of agriculture, crop and forestry, livestock, hunting and fishing from GDP

Year	AGDP	Crop and forestry GDP	Livestock, Hunting and Fishing
1995/96	53.18	40.14	13.03
1996/97	53.01	40.11	12.9
1997/98	49.49	35.99	13.5
1998/99	50.82	34.08	16.74
1999/00	49.39	33.51	15.89
2000/01	50.43	35.27	15.16
2001/02	48.85	33.86	14.99
2002/03	44.62	29.88	14.74
2003/04	46.69	32.45	14.24
2004/05	47.05	33.66	13.39
2005/06	46.69	34.13	12.56
2006/07	45.7	33.58	12.12
2007/08	44.12	32.44	11.68
2008/09	42.62	31.26	11.36

Source: Author on the basis of data obtained from MoFED

[71] Data obtained from MoFED
[72] Source: MoFED, PASDEP Annual Progress Report, 2006/07.
[73] Ethiopia is almost meeting the 2100 Kcalorie per capita per day requirement. The equivalent of this in terms of production is 2.16.
[74] CSA, Annual Statistical Report, various years.

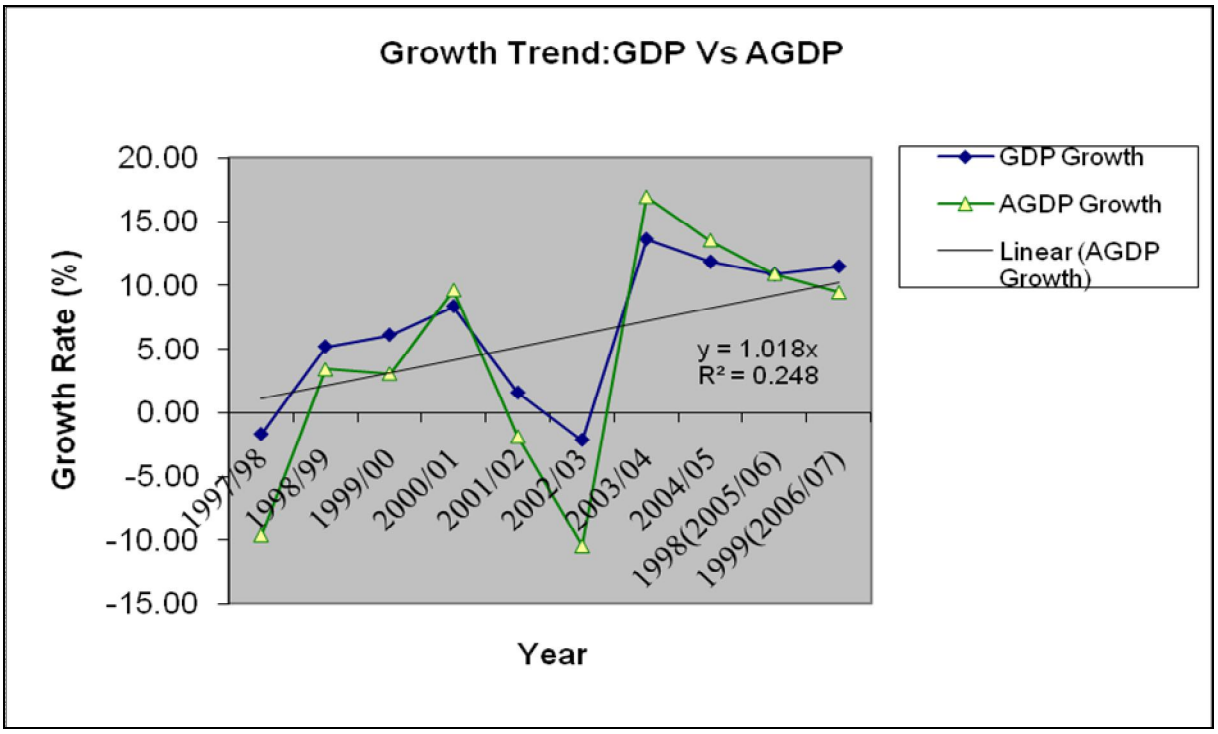


Figure 5.1

Similar achievements have been made in the area of basic infrastructure development that are important for agriculture and rural development. The road sector has registered a remarkable success. Between 1997 and 2008 the road density/100sq.km, including community roads, increased from 24 km to 104km. Road density /1000sq.km, including community roads, increased from 0.49km to 1.45 km[75]. The provision of telephone services has shown a tremendous growth since mid 1990s. As of 1998/99 there were only 6740 mobile users in the country. These increased to 1.95 million users by 2007/08. Another remarkable change in telecommunication services is the coverage of rural kebeles having subscribed lines, which increased from 60 in 2004/05 to 8676 by 2007/08. The number of beneficiaries[76] that got electricity under the Universal Rural Electricity Access program increased from 177 in 2005/06 to 1221 in 2007/08. The nation's capacity to generate and produce electricity has tripled since 1995. It increased from about 416MW in 1996 to more than 1300 MW in 2008/09.

Box 5: Per capita grain production

Year	P/C grain Production
1997/98	1.23
1998/99	1.40
1999/00	1.45
2000/01	1.68
2001/02	1.53
2002/03	1.41
2003/04	1.52
2004/05	1.70
2005/06	1.86
2006/07	2.02
2007/08	2.13
2008/09	2.20

Source: Author, compiled from CSA data

[75] Source: Ethiopian Road Authority, 2007/08
[76] Cities/kebeles/villages

In order to achieve the above and others that are reported in the CAADP Ethiopia study, the government has increased its budget for ARD and basic infrastructure sectors. The Federal government budget to the agriculture and natural resources sector has exceeded the CAADP target of 10% since 2005/06. Generally the total Federal budget allocated to agriculture and natural resources has increased from 9.4% in 1993/94 to 15.5%in 2007/08. The budget share allocated for non-salary items in the regular i.e., recurrent budget is also on the rise (Table 5.3). Recently the share of road construction is slightly exceeding the budget share of agriculture and natural resources, which still is a healthy move since the former is a critical input for the growth of the later.

Table 5.3: Recent Trends of Budget Allocated for MoARD

Year	Budget Total in Billions	% Share		% share of salary	
		Recurrent	Capital	Recurrent	Capital
2006/07	3.62	2.22	97.78	60.87	18.93
2007/08	4.45	2.23	97.77	52.65	17.83
2008/09	5.01	2.75	97.25	41.40	21.82
2009/10	5.21	2.94	97.06	46.55	24.87

Source: Author, compiled from MoFED data

The agriculture sector's revenue base is also getting diversified. The export share of traditional export revenue generating commodities such as coffee is declining, while oilseed and new entries in the business such as flowers are increasing. In terms of value the share of coffee is declining from more than 65% in mid 1990s to less than 40% in 2007. This shows the government diversification strategy is resulting to expected change. Diversification is also noticed in the livestock species mix, where camel is gaining an increased importance since 2005/06 (CAADP, 2009).

Finally, it is important to note that despite the above positive changes in the economy, the GoE still believes poverty and hunger are the daunting challenges of the nation and needs a concerted effort to eradicate hunger and reduce poverty, at least per the MDGs goal, both by Ethiopians and external development partners alike.

CHAPTER 6
PIF INVESTMENT AREAS: IDENTIFICATION AND PRIORITIZATION

6.1 INCREMENTAL INVESTMENT AREAS IDENTIFICATION

One of the major tasks of the Policy Investment Framework preparation is identification of priority investment areas for the agricultural sector and estimates the magnitude of investment resources required over the next five to ten years. While the existing programs and projects in the sector need to be continued with allocation of budgets and development resources that commensurate with the desired goals of the agricultural sector growth, the investment areas identified during PIF preparation are those which need additional finance through a project approach in order to achieve the desired goals of the NFYDP and the vision of reaching a middle income country by 2020.

Incremental investment areas were identified based on the criteria, clustering and pair-wise technique reported in Chapter 2. To recall the following were the criteria set a prior to identify the investment areas.

1 Alignment with government's vision and goals of becoming a middle income country by 2020 with significant employment growth and poverty reduction.
2 Alignment with the Government's agricultural sector pillars and strategies
3 The ease to attract external development support
4 Capacity sequencing to absorb development resources

The consultants' team has identified about 24 incremental investment areas by the time it submitted the inception report. After that the list increased. With a strict scrutiny and clustering of the investment needs by related thematic areas finally has been condensed into 10 intra-sector and four inter-sector areas. Table 6.1 presents these areas with elaborated focus issues or commodities. The extensive review of the governments' agricultural development policy, sector strategies, and programmes helped as major source of information to identify and cluster investment needs by these thematic areas. In addition, the team made extensive consultation with government officials and experts at the Federal and Regional levels, private sectors organizations, NGOs, and CSOs before finalizing the clustering exercise. After finalizing the identification of investment areas the next step was to prioritize them and undertake the cost-benefit analysis.

Table 6.1. Identified incremental investment areas by focus issues or commodities

Incremental investment areas[77] within the agriculture sector	Focus issues/commodities
Irrigation	• Small, medium (traditional and modern) with optimal structures that enhance water use efficiency • cost sharing/recovery • Technologies (motorized and manual pumps, …..) • irrigation agronomy (capacity building in irrigation extension) • Rate of growth that is related to the current state and planned expansion by each state.
Research (crop, livestock, land, soil, water, farm tools and implements, forest, fisheries)	• Urgent and focus on cost reducing technologies/ innovation • Urgent and technology generation applied research on self pollinated cereals • By 2015 to make agric research budget 2% of Ag GDP (currently is about 1.5%) • Special requirement for Teff, coffee, soil fertility, biotch, and commodities targeted for scale-up • Increased research on livestock breed, feed and health • Capacity for breeder and pre-basic seed production • Camel research • Capacity building in human resources and infrastructure (facilities, systems, equipments, means of transport)
Seed (multiplication, distribution and M&E)	• Capacity building of ESE and Regional Seed Enterprise for basic and certified seeds production and marketing • Strengthening the regulatory system of seed multiplication and distribution (marketing system) • Support for framers seed production and exchange system • Create Joint Venture with seed association for training of seed technicians, certification, and M& E system.
Livestock	• Laboratory info management system • Upgrade the Veterinary service • Upgrade vaccine production centres • Establish regional semen production centres (AI) • Promotion, multiplication, distribution of improved breeds, feeds • Integrated water and rangelands management and use in pastoral areas • Establishing international standard export abattoirs

[77] Inclusive of recurrent and capital expenditure.

Natural Resources management (SLM, Reforestation, Watershed Management)	• Soil and water conservation • Watershed management • Land rehabilitation • Land administration system (registration, certification) • Land use plan • Fuel wood production • Management of acid, saline and vertisols • Agro-forestry and reforestation (generation and distribution of seedlings)
Agric. Cooperatives (marketing, services, saving and credit)	• Support coops to make them fully competitive with private sector (credit/finance for warehouse and construction other facilities, for inputs and products procurement, management and governance training) • Investment needed to triple fertilizer sales • Capacity building of cooperative agencies (federal to woreda level) to enhance their efficiency in training, regulatory and auditing operations • Promote cooperative agro-processing businesses
Market system and infrastructure	• Upgrade market places and physical access • Storage and other facilities • Rural transport (carts, simple transport modes…) • Tracking routes, resting areas in pastoral areas and improved live animals transport services • Cold chains, • Mobile and non-mobile veterinary • Quarantine and inspection • Promoting value chain approach for all marketable crops and livestock commodities (studies)
Agric. extension	• Das/SMS education, knowledge and skill upgrading • Farmers trained in entrepreneurship and innovative farming • Strengthen and equip ATVETS and FTCs • Invest on demonstration farms to be used for innovation and income generation illustration, for new technologies testing by the research system • Documentation and M&E • Strengthening the promotion and adaption of farm management practices specifically record keeping tuned to farm profitability analysis
Private sector and non-government entities support	• Encourage the private sector to engage in feed processing • Support private seed producers to access finance for irrigation infrastructure setting • Loan for purchase of inputs • On-farm dairy expansion (commercial feed, AI, dairy processing) • Encourage smallholder dairy including out-growers scheme • Promoting Trade Associations • Training and capacity of user associations (water users, forest products by-products)

	• Promotion and formation of youth and women Entrepreneurs Clusters in rural areas (incl. BD and skill) • Setting and running stakeholders plat forms
Credit (rural finance)	• Formation of a national agricultural credit institution that can cater for Credit Needs of emerging and expanding small commercial farmers, and agriculture-rural based small and medium enterprises (SME)
Investment in other sectors relevant for agric growth	
Rural roads	• All weather roads • Feeder roads that connect all villages in rural kebele as well as kebeles with woreda towns
Rural energy	• Renewable household energy • Rural electrification
Nutrition	• Home economic with specific emphasis on food mix and utilization
Climate change issue	• Research and documentation • Awareness • Adaptation strategies and practices

Sources: Consultants' team

6.2 PRIORITIZATION WITHIN THE SECTOR

Prioritization of the identified investment areas was done in two phases. First by the consultants' team before the international consultant completed his first in-country working period and second at the regional level during the consultants' team visited the four regional states, namely Tigray, Oromyia, Amhar, and SNNP. As discussed in Chapter 2, a pair-wise technique is used in both phases. Following the discussions on the current state of performance of the agriculture, future strategies , resource needs and areas major investment in respective regions, experts drawn from the different institutions were requested to prioritize the investment areas provided in table 6.1. The experts that took part in the prioritization represented the Bureaus of Agriculture and Rural Development, Cooperative Promotion Agencies/ Commissions, Marketing Agencies/Departments, Bureaus of Finance and Economic Development, Bureaus of Water Resources/Irrigation, Regional Research Institutes. A total of 52 experts took part in the exercise- 12 in Oromia, 13 in Tigray, 14 in Amhara and 13 in SNNPR. Out of these, response data of 46 experts was analyzed while 6 were rejected for their data errors.

Prior to the ranking and prioritization, discussions were held with experts including explanations of the details in respective areas suggested for priority incremental investment. The prioritization and ranking exercise was also preceded by a careful and detailed explanation of the purpose and methods of the exercise to the experts. According to the method followed selection between two investment areas at a time is done by each expert. The frequency an expert has chosen a given area compared to others is a total score for specific area given by an expert. Final ranking considers the total score for each and every area for a given region. Overall ranking refers to the result of the four study regions. In cases when score rank ties of two or more areas occur, calculated standard deviations are used to break the tie. The results obtained are reported in Table 6.2 and Figure 6.1.

It is important to note that through the discussion it was possible to learn specific circumstances in respective region based on experts own past and current experience. In all regions the incremental

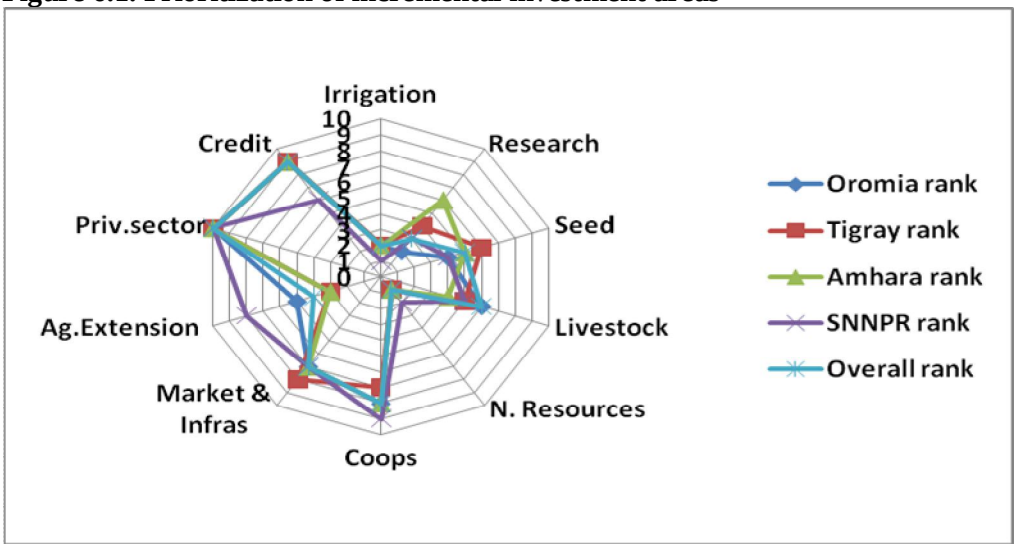
investment areas identified remained same as those identified and clustered by the consultants' team. The only addition suggested was the area of improved farm tools and machinery, which was raised for inclusion as one of the investment areas by BoARD of the Amhara Regional State . This suggestion was accepted by the consultants' team but since prior to that prioritization has been done in other regions on the basis of the 10 intra-sector areas, the same was also done in Amhara regional state. It is still believed that investment on improved farm tools and machinery, specifically to start with semi-mechanical ones like manual driven tractors, is encouraged and interested investors should consider it as one of the future development project areas.

Table 6.2. Priority ranking of incremental investment areas within the agriculture sector

Incremental investment area	Regional Rank				CT Rank	Overall
	Tigray	Oromyia	Amhara	SNNP		
Irrigation	2	2	2	1	1	2
Research	4	2	6	3	2	3
Seed	6	4	5	4	3	5
Livestock	5	6	4	5	4	6
Natural R. management	1	1	1	2	5	1
Cooperatives	7	8	8	9	6	8
Market system and infrastructure	8	7	7	7	7	7
Agricultural extension	3	5	3	8	8	4
Private sector support	10	10	10	10	9	10
Credit (agriculture and rural finance)	9	9	9	6	10	9

Sources: Consultants' team

Figure 6.1. Prioritization of incremental investment areas



Source: Consultants' team

Although there is a slight difference between regions, overall ranking provided a consistent result. Hence, overall the top priority for incremental investment in the agriculture sector of the country is given to natural resources. It is followed by, irrigation, research, extension, and seed, respectively. In other words these areas with their specific emphasis as elaborated in Table 6.1 earlier are the top five investment areas which the nation has to focus on in the coming NFYDP and beyond till 2020. In the overall ranking livestock became 6th, market and infrastructure7th, cooperatives 8th, credit 9th, and private sector support 10th. The consultant team's own initial ranking of priority areas, before consultation with regional experts, put irrigation, research, seed, livestock, and natural resources in the rank of 1 to 5, respectively.

Looking at the regional level prioritization a slight deviations is registered from that of the overall and consultants' team ranking. Natural Resources rank 1st in Oromia, Tigray and Amhara, but 2nd in SNNPR. Irrigation ranks 1st in SNNPR but 2nd in Oromia, Tigray and Amhara regions. Research ranks 2nd in Oromia, 3rd in SNNPR, 4th in Tigray, and 6th in Amhara. Extension ranks 3rd in both Tigray and Amhara, 5th in Oromia and 8th in SNNPR. Livestock is in the 4th place in Amhara, 5th in Tigray and 6th in Oromia.

The data collected was also analyzed to check whether there has been institutional bias in the prioritization exercise. The analysis of prioritization of areas of investment by institutional affiliation of experts reveals that although there is a difference in background and experience among experts, there is not much disparity in selecting and prioritizing the areas. Experts from the bureau of agriculture, BOFED, cooperatives, research and irrigation gave priority to natural resources and irrigation in similar way (Table 6.3). Beyond these, those from the bureau of agriculture more favoured extension than research compared to experts from other institutions. Except experts that work for cooperative promotion, all favoured cooperatives lower. Market and infrastructure, private sector support and rural credit are prioritized lower by all groups of experts. Researchers favour seed a slightly higher than their extension counter parts in the bureau of agriculture.

Table 6.3. Prioritization of investment areas by institutional affiliation of experts

Institution	Irrigation	Research	Seed	livestock	NR	Coop	Market & infrast.	Extension	Private sector	Credit
BOARD	2	6	5	4	1	9	7	3	10	8
BOFED	2	3	6	4	1	9	6	4	8	9
Coops	3	4	6	7	1	2	7	9	10	5
Irrigation	1	2	4	5	2	9	8	6	10	7
Research	3	1	4	5	2	8	7	6	10	9

Source: Consultants' team

The whole exercise of prioritization and the overall top five choices closely go with the government agricultural development strategy set for the NFYDP. Natural resources management and utilization including SLM, irrigation, research, seed and extension are very important for conservation and scaling up of technologies use and best practices. The other investment areas that did not join the top five by any means are not less important than others. Ethiopia, as one of the poor countries does need support in these areas too. Hence, both the government and donors are also expected to design development projects and solicit funding in these areas too.

6.4 SOME NOTES ON THE PRIORITY AREAS

As mentioned above, during the preparation of PIF, the consultants' team made an extensive consultation and discussion with the officials and experts in the various departments and divisions of the Federal Ministry of Agriculture, Ministry of Water Resources, MOFED, Regional Bureaus of Agriculture, Water, Finance and Economic Development, and other institutions in Oromia, Amhara, Tigray and SNNPR[78]. The discussions were led by a check list of issues/questions revolving around highlight of the current states of the performance of the agricultural sector, major threats for the agriculture sector in view achieving its expected goals in the NFYDP as well as to make the nation realize its vision of becoming a middle income country by 2020, relative magnitude of budget allocated for the sector, budget adequacy, and future priority areas of investment and resource requirements. The vast discussion and wide ranging issues raised during the consultations are summarized as given below.

6.4.1 NATURAL RESOURCES MANAGEMENT

Investment in conservation, rehabilitation and development of land and other natural resources is among the major areas all interviewed said should be considered for incremental investment in the next 10 years. GoE has already adopted and currently implementing the SLM (sustainable land management) Framework. At the national level, the need for harmonization of intervention and donors supports in the natural resources management has given rise to a long term investment framework of over 15 years period as contained in the ESIF framework adopted in 2008.

It is emphasized that investment in land and natural resources helps to create conducive environment for agricultural growth. Hence any growth initiative set in a development project context should be footed on the fundamental principles of natural resources management and use. MoARD considers that the country has a vast area of degrade land that needs to be rehabilitated, reforested and reclaimed. In the moisture deficit areas of the country, moisture conservation is a critical measure to support crop and livestock production. The on-going land administration program has got big public and donor attention over the last few years. This program needs huge investment in further works of geo-referencing in land administration information and the development of land use plan.

In the SNNPR one of the priority issues raised is the fact that the regional food security situation is very much linked to the state of natural resources. Here, the problem of land degradation is reported to be one of the serious obstacles to attaining food security. An entry point to tackle this problem should include SLM through watershed management and soil and water conservation. Effective watershed management is even suggested to precede investments in irrigation.

The Amhara regional state considers natural resources management as a first priority area of intervention to bring about sustainable improvement in agricultural production. Without better natural resources and environmental management, the region feels it will be difficult to attain food security. Although efforts have been made over years with respect to natural resources management, lack of synergy in ideas and resources among the various stakeholders is among the reasons for less achievement than expected. While the land use plan is one of critical elements of proper natural resources use and management, the lack of

[78] See list of persons met in Annex A3

enforceable land use plan in the region and the country at large is motioned as a limitation. A need for capacity building for resources assessment as an input for planning is emphasized.

6.4.2 IRRIGATION (AGRICULTURAL WATER DEVELOPMENT)

Agricultural water resources development, particularly the expansion of irrigation is given priority by the federal and regional governments alike. In all of the four major regions visited it was witnessed that one of the priority tasks considered ahead as highly important for agricultural growth is the expansion of irrigation. The Oromia region aims to increase irrigated land by three-fold reaching 54% of the cultivated land in the coming five years from the current level of 18%. It is reported that currently irrigated land in the region is about 360,000 hectares. In the SNNPR the plan is to reach 19% of irrigable land from the current 10%. So far the region has developed 52,000 hectares of irrigated land while the estimated potential is about 1 million ha (400,000 ha with gravity abstraction and 600, 000 ha with all other means of water abstraction). There is a plan to develop 200,000 ha of these in the coming three years. From the private sector perspective in irrigation sector development, the SNNPR also engages the private consulting as well as constructing firms in study and design works. However, it is reported that private firms lack adequate capacity.

The regional state of Amhara also considers water and irrigation development as the second priority next to the integrated natural resources management. The region has about 4 million hectares of cultivated land, and about 1.2 million hectares is potential irrigable land with traditional and modern means. Currently about 400,000 ha is irrigated and this is a big jump from the 1995 level when there was only about 86 thousand ha irrigated. Just like in Oromia and other regions, the Amhara regional government is aggressively moving onto irrigation development works. The region is planning to more than double irrigate land by 2010. Using all possible means, the Amhara region plans to increase irrigated area by 590,000 ha within the coming 5 years. The means include: dams, hand-dug wells, small dams, deep wells. This plan is estimated to cost 40 billion birr. Average cost estimates are reported to be based on past experience of cost of 15 dams. The average cost ranges from Birr 90,000 to 120, 000 per hectare.

In Amhara region, there are big irrigation projects financed by the federal government using external loan, like the large irrigation dam at Koga that is expected to develop 6000 ha of land. Another example is the ground water development project in Kobo-girana area that has been going on over years. There are upcoming projects under study. To support the irrigation development efforts, the region has invested in PVC factory at a cost of 93 million Birr. With respect to production of pipes and other tools needed for irrigation, the Oromia region also took similar initiative.

In the Amhara regional state, experts also report that recently there has been a shift in irrigation development strategy. Till the year 2005, the focus was on moisture deficit areas of the region (in the eastern, north eastern and south-eastern zones) which are also drought prone. However, the rivers here have no sufficient water flows making the investment in irrigation dams costly. Since 2005, emphasis is being given to the western zones of the region where there is a potential with better Flow Rivers. Ground water exploration and water harvesting for irrigation is also a direction being pursued by the region. It is envisaged that along the major rivers in western and eastern Gojam zones, it is possible to develop a deep well at every 2 km spot and use these for irrigation.

Higher officials of the BOARD from the regional state of Tigray stress that the policy of smallholder farms development should be maintained and that needs investment in extension services, irrigation (labour-based), community based watershed development, water harvesting, and other labour intensive works. As a large area of the region is a rain-deficit with big weather uncertainty, two issues are important: i) community capacity mobilization for water harvesting; and ii) expansion of irrigation and increasing budget to attain this goal. In Tigray region, the plan is to increase land under irrigation from the current 40,000 to 350,000 hectares during a three years period from 2009 to 2011. This will amount to 25% of the total cultivated land in the region. The major focus in Tigray region will be more on water harvesting and ground water development than building dams. In the year 2009/10, the plan is to reach 170,000 ha irrigated land. This will be done 65% by districts and 35% by the regional government bureau of water resources. Improving the knowledge of the available water resources (resources assessment), and concern with the water use efficiency are noted by the experts from the region. Promotion of irrigation also needs the purchase and use of water pumps by farmers. The issue of procurement is important in this respect. Alterative energy, in the face of rising fuel cost, for farmers to use water pumps is noted to be important. Average cost of irrigation development in Tigray region is 80,000- 120,000 birr per ha and is affected by the land topography and water scarcity facts.

6.4.3 AGRICULTURAL RESEARCH

Agricultural research is also singled out as one area for incremental investment in the coming years both by federal and regional experts as well as NGOs and CSOs. Among the major activities of research system, soil fertility improvement (use of chemical fertilizer, organic in the form of compost, manure and its relation to livestock, household energy improvements) are crucial. Also, improvement in land preparation, agronomic practices, and strengthening soil analysis and test laboratories are essential. Research is also expected to work more on technology generation and interventions on strategic commodities like teff and coffee. Though the country is in the course of diversifying its agricultural export base still in order to get the expected growth rate in agriculture in the NFYDP, there is a need to push coffee production for more quantity and quality. It is an important commodity of huge potential. The country should be able to support a world class coffee research for a high quality export product. Similarly, emphasis on teff research both as a major staple crop as well as newly emerging cash and export crop is essential.

In SNNPR the critical issues for incremental investment is the capacity of research centres particularly the newly established ones. In addition to facilities and equipment, the problem of shortage of research staff and how to retain theme there to do research, in relation to payments and other incentives, is emphasized. Starting from the headquarter the research institute in SNNPR also needs capacity building in terms of the necessary equipments and laboratory, and vehicles as well as irrigation facilities specifically for off-season improved seed multiplication which can enable to meet the increasing demand for improved seeds due to the scaling up and out strategy. Research is also constrained by shortage of operational budget. There was a region-wide consultation about the livestock research needs. The major issues that came up were feed, health and breed improvement. This also requires incremental investment. As regards soils, the more research has to be donein the area of fertility, acidity, and salinity.

Expert in Amhara region suggested that research should be strengthened in order to enhance works on high value cash crops, variety development of economically important staple and export crops and on

processing technology. One of these crops is sesame whose current yield level is less than 10 quintal per hectare. There is also a critical shortage of improved seed of maize, and improved livestock breeds in the region. Maize production accounts for 30-40% of the cultivated land in the region. With respect to livestock production services, although nitrogen is produced at four centres in the region, they do not have a single semen centre. The region's research institute also puts forward the need to invest on maintenance facilities for the varieties released by their research system as one of the priority areas. Investment in post-harvest technology and its research aspect is needed in order to enhance the capacity to improve the quality of agricultural products. They also pointed out the need for farm management unit facilities as well as investment in bio-technology facilities, specifically for upgrading the tissue culture laboratory in all research centres to bio-tech laboratory levels. The facilities can be organized in a kind of satellite system since the existing single bio-tech laboratory in ARARI cannot solve the current numerous production problems that can be easily solved by bio-technology research. .

The need for strengthening irrigation research is also emphasized by the Amhara region research institute. Example is given from many countries including Egypt, India and others where irrigation research is highly developed. The research system needs to be capacitated with human resources and facilities to initiate and strengthen irrigation based research. Investment in this kind of research benefits the development of irrigated high value crops. The regional research institute acknowledges the fact that they have a serious problem/shortage in supplying production technologies needed by the private sector engaged in horticultural production, particularly those aggressively emerging with irrigation infrastructure be it using traditional or modern technologies, such as water pumps. .

The Amhara region research institute also reported to have a serious shortage of vehicles as well as lack of technology transfer training centres. There is a need to train agricultural development workers in the process of technology transfer. An interesting example of investment needed in research capacity was discussed at ARARI, which is related to poultry. While the demand for smallholder farmers' poultry production is rising, one of the major constraints in this respect is availability of day-old chicks. To be able to supply day-old chicks on sustainable bases, the research system needs to have and hold parent stock. This needs a maintenance facility to keep selected parent stock for a longer period of at least 10 years. Otherwise, the parent stock needs to be replaced every year. Hence the near future incremental investment is this aspect is highly appreciated.

In the Tigray regional state, officials of the BOARD emphasise about the need for an agro-ecology based research system expansion. This calls for soil and water conservation-based research programme expansion, as well as research on livestock and oil crops development (in the western parts), bee keeping and shoats, especially goats (in the southern parts), vegetables and other lowland crops (in southern parts).

Currently such agro-ecology based research programme orientation is not strong in TARI because of constraints associated with poor infrastructure development and lack of senior staff with MSc and PhD degrees. TARI indicates that for the research to adequately serve the agricultural growth needs of the region it requires investment in capacity building. These include lab-facilities, seed laboratories, field equipments, harvest and post-harvest technologies, irrigation facilities. Especially, the need for strengthening a bio-tech lab is critical in order to produce non-disease seeds for fruits and vegetables in short period of time. Since the regional research system is dry-land agriculture- oriented, bio-technology

is considered as a short cut way compared to the existing conventional system that is adaptation research. The bio-tech facility helps to multiply diseases free and true-to-type seeds within short period of time. It is also emphasized that fertilizer/soil fertility ameliorating recommendations should be based on proper soil tests. Besides, the research needs a capacity to develop locally useful animal vaccines instead of transporting from the Addis Ababa centre.

Oromyia Agricultural Research Institute (OARI) gave emphasis on incremental investment on human resource development, particularly the recruitment and further training of researchers as well as putting in place laboratories and field equipments in the already established research centers. OARI had about 4 research centers 10 years ago and currently has 13 and most of them are in craving need of resources in terms of researchers, laboratory and field equipment. Of course OARI recommends sharing available senior researchers throughout the country, be it in EIAR or RARIs, by designing a strategic and feasible institutional coordination and cooperation arrangements.

6.4.4 AGRICULTURAL EXTENSION

During the discussions held with officials and experts at alllevels and institutions the need for incremental investment to overcome the serious capacity and extension programmes implementation problems at woreda level was vividly expressed. Specifically, investment is needed to enable effective and focused work at the FTCs and DF levels in the area of skill training, demonstration, knowledge transfer, revenue generating innovative practices. Moreover, the FTCs are not strong enough and they need to be supported and sustained. Besides, strengthen agricultural extension service is linked to investment to augment the capacity of extension staff, equipments, transport system, residential houses, farmers training centres (durable buildings, demonstrations), and farmers skill training. One explicitly mentioned challenge for extension service to adequately reach farmers is shortage of means of transport.

Overall, in all regions there is a plan to focus on practice oriented extension service over the next 5 to 10 years. Currently, although there are development agents (DAs) that are serving at the community level through the farmers training centres (FTCs), it is argued that they do not have sufficient practical trainings at the agricultural vocational training centres. They need further skill training and better incentives. For these strengthening ATVETs is suggested as one are of incremental investment.

6.4.5 INPUTS (SEED, FERTILIZER, FARM IMPLEMENTS AND CREDIT)

Respondents pointed out that expanded use of improved seeds combined with fertilizer and better agronomic practices will be instrumental to attain higher agricultural growth in the crop sub-sector. However, problems of seed and fertilizer shortage either in quantity or timely availability are widely raised.

According to the MOARD, a major problem with improved seed is one of availability. The major problem is with hybrid seed. It relates to research in terms of availing breeder seeds required, and long time reliance on one research centre, Bako, for instance, for Maize hybrid basic seed production . The private sector work in the seed is not considered adequate enough to contribute to the solution although the government thinks that it cannot solve this problem alone.

From regions' perspective the seed sector has two major problems. First, problem of adequate use of the available seed- farmers have the problem of proper selection and use of seeds. Second, improved seeds

that suit wider agro-ecological adaptations are lacking i.e. seeds are not available for many crops or for a crop growing in various agro-ecology. Lack of irrigation facilities in EIAR and RARIs did not allow producing breeder seeds more than once in a year. The performance of ESE is not much in terms of meeting the growing demand for seed. The RSEs are just emerging and little can be said in terms of their capacity to help bridging the gap between seed supply and demand. Outside the public sector, the performance of cooperatives and the private sector in seed business is illaudable. Like its public counter parts, the private sector also lacks capacity. It needs support, especially in having an irrigable seed production system. It is suggested that incentives and attractiveness of the seed business for the private sector investment are essential.

Side by side with the seed issue, the availability and use of inorganic fertilizer have been discussed. Although the demand for expanded use of fertilizer is high, the low level of infrastructure for distribution and timing of fertilizer arrivals hinder expanded use. The MOARD reports that this year there was a carryover of 300 MT of fertilizer. According to the Ministry, delay in fertilizer demand assessment and procurement have been the major challenges. For the year 2010, the plan is to increase fertilizer use by farmers to high of 530,000 MT from its level of 300,000 MT last year. The government considers fertilizer as one of the elements of scaling up strategies and practices in the agricultural sector. The plan is to increase fertilizer consumption by 15% for the coming 5 years. Currently, a large share of fertilizer trading is handled by farmers' cooperatives and unions. To get fertilizer uses expand, research should do more work on soil fertility test and other soil related technologies and knowhow. There is a need for strengthening cooperatives in order to cover the expansion of fertilizer use.

Better and improved farm tools and implements are mentioned among the priority incremental investment areas in Amhara region. Farm tools and implements are key factors like seed and fertilizer to enhance agricultural productivity and production. Improved land preparation in the vast lands with vertisol needs better technology in farm tools and implements, for instance, to make cumber bed for drainage improvement. However, as the later needs tractor for traction power it cannot be affordable by individual farmers unless done in group. Hence, this and other inputs promotion should be strongly tide with credit facility, broadly agriculture and rural finance system.

Currently, there is a lack of integrated rural credit system. For instance, there is no institution that gives credit for the development of small scale irrigation. Rural credit is mentioned to be one of the major development challenges by all visited regions. Rural finance is needed for grain purchasing activities by the cooperatives, fattening of livestock, processing activities and purchase of other inputs. While micro-finance can lend for agro-processing, rural credit scheme is needed for private farmers, particularly those who are becoming commercial. The MFI cannot adequately cover the demand of emerging and expanding smallholder commercial farmers. The rural credit needs to cater for small commercial farmers i.e. those who need finance beyond the limits of the current MFIs. Although microfinance institutions are operating over the last many years, their capacity is limited. Currently, what the MFI could lend to farmers is a maximum of 15,000 birr; however, the price of a single heifer reached over 12,000 birr. It is suggested that as the existing formal baking system is not accessible to the smallholder farmers, a rural finance system that can support diversified investment needs of smallholder farmers must be established. Experts interviewed in Amhara region believe that cooperatives can play role in the functioning of rural credit and

finance. The existing cooperative organizations do provide small credits. However, there is a need for an apex institution to coordinate the provision of rural credits.

6.4.6 LIVESTOCK

Growth in livestock production needs intensification of fodder in the highlands (transfer of some land to fodder crops, crop residue management, etc…). Facilitating conditions for private sector investment in feed processing (especially for commercial livestock production) is essential. Rangelands rehabilitation and improvement in the pastoral areas (bush clearing, sowing, etc) is considered as measures to enhance pastoral production system. In addition, the livestock sub-sector needs enhanced production and distribution of improved livestock breeds in the highlands areas (also selection of better local breeds from the lowlands), expansion of the use of AI System, strengthening veterinary service, etc. Smallholder dairy development needs improved feed, breed, better health system including functioning dairy market. All these are potential incremental investment areas in the livestock production sysstem

According to the SNNPR, there are lots of shortcomings/gaps in livestock subsector development. Experts and officials feel that not much has been done in this sub-sector particularly to improve the feed, water, and livestock health situation. The region has also vast pastoral areas in its Southern parts. Due to scarcity of land and small holdings, extensive livestock production is not feasible; hence, intensification through improved feed production and reduced stocking rate is seen by the region as a viable strategy. Means of livestock transport is considered a crucial factor in livestock marketing especially in the remote pastoral areas, hence opens wider room for investment. Similarly, in Amhara region high priority areas for livestock development include livestock feed processing technology, increasing maize production and the use of by-products for livestock feed. Again in Tigray region among the cited constraints to livestock development are inputs such as feed, and improved breed. In general, investment in the livestock sub-sector is low and government has to invest on promotion to invite private sector investors including investment on ranches.

6.4.7 MARKETING SYSTEM AND INFRASTRUCTURE, COOPERATIVES AND THE PRIVATE SECTOR SUPPORT

Investment to support the development of marketing system and infrastructure, and their efficient operations enhance agricultural growth and rural development. Among the rural infrastructure, road construction, especially rural feeder roads and roads that link major production areas to highways and major markets need major emphasis. Identification of better and affordable rural transport modes is also essential. Focus on high potential agricultural areas makes better returns to such investments. It needs to organize market centres and routs (especially for livestock).

The major problems that relate to the marketing of the livestock subsector and need solution are diseases, availability of drugs and other veterinary services, standard abattoirs, cold chains, means of transport for live animals, and lack of standard quarantine system. In this connection, with respect to livestock regulatory activities and market system development, major areas that need attention for investment are federal quality control laboratories, upgrading vaccine production system, international standard animal laboratory, AI, biotechnology centres, laboratory management system and constructing and upgrading market places. Other areas in the sub-sector include long term investment in hides and skin, management of obsolete chemicals, and raising an organization for livestock to the Ministry level.

With respect to crops marketing, high value crops like coffee still deserve attention, and this was found to be the case in the SNNPR. In the coffee sub-sector the region wants to increase quantity produced by expansion of coffee plantations through investment in raising seedlings and other technical supports to farmers ; and improving quality through change in the marketing system (collection, handling, quality control, etc.). These days cooperative unions are engaged in coffee collection, storage, pulping and washing. However, one of the constraints that limit their engagement is lack of own warehouses for majority of the unions. The private sector is considered to have ample room for investment in marketing infrastructure including transport, warehouses, cold storage system, abattoirs, etc.

Expansion and capacitating cooperatives and unions (skill in management, administration, finance, and governance) helps in creating better market access for agricultural growth and rural development. In relation to the agricultural marketing problems, the government has a vision of widespread establishment and operation of farmers' cooperatives and their unions. Cooperatives are believed to be able to play bigger and broader roles in agricultural marketing. Currently, there are 27,000 primary cooperatives and 175 unions. More than 80% of these are agricultural and multipurpose cooperatives. With around 5.5 million members, they are serving 31% of the country's population. The plan is to establish a minimum of one primary cooperative in every rural kebele. The major constraint to cooperative organizations is shortage of financial resources needed for their operations. Cooperatives rely on sales of shares to members and the poor farmers have no much capacity to buy shares. One of the areas where cooperatives are expected to be actively engaged is the fertilizer trading. There is already some experience of fertilizer import by unions. However, due to capacity (and also scale of operation) limitation, now cooperatives are not importing fertilizer, rather the Agricultural Input Supply Corporation is importing fertilizer on behalf of cooperative unions.

It was mentioned in the BOARD of Tigray that market–oriented agricultural extension service for livestock and crops needs to be developed. The key issue in this respect is establishing and strengthening cooperative organizations. Strengthening cooperatives needs roads (developed by public and community resources), communication (telephone), electricity, quality standard guidelines, warehouses, post-harvest management, etc. One of the incentives for establishing farmers cooperative societies is the fact that in rural economy with low infrastructure, farmers cannot easily market, and the government cannot reach down the community with its own civil servants system; hence, the need for cooperatives although they may note operate well during the transition period without support of the government. In terms of functions, it is less costly if the cooperatives distribute fertilizer than done by the government. Investment in agro-processing can also be done by farmers groups like cooperatives. They need skill and management training as well as financing.

Capacity for cooperative promotion institutions is necessary. At the cooperative promotion agencies level, there is a need for technical (promotional) capacity that includes the managerial, advising, auditing, etc. As auditing of the large number of cooperatives cannot be done by the government capacity alone, it is suggested that auditing of cooperative organizations can be outsourced to the private sector. The private sector needs support in this and other areas too. Encouraging private sector (in affordable way) to engage more in rural input delivery system is suggested as an area to be supported. The private sector should be competitive in fertilizer and other inputs delivery for a 100% coverage of, especially fertilizer,

use in the coming 5 to 10 years. The potential role of private sector in the areas of agro-processing is also well acknowledged in Amhara region.

The Oromia government believes that private sector is expected to increase the use of better technologies and be benchmark for smallholder farmers. Experts believe that policy has been designed to facilitate investments by private sector actors. For instance, private sector can engage in investments in large commercial farming as these require huge capital investment. In the SNNPR, the government plans to focus on intensification through agro-processing in of high value products - fruits, vegetables and root crops production. This enables higher productivity and value additions. Agro-processing calls for a better engagement of the private sector. The argument about the private sector, compared to farmers' cooperatives is that they are not yet adequately organized to profitably work for farmers in input supply.

6.5 PRIORITIZATION OF INVESTMENT AREAS OUTSIDE THE SECTOR

For the no-agricultural sector areas were identified based on their strong relevance to enhance, support and synergize development within the agriculture sector. With slight disparity among regions, the overall rank for the non-agricultural sector areas of high priority is in the order of roads, climate change, nutrition and rural energy, respectively (Table 6.4). The consultants' team ranked the non-agricultural areas with the order: rural roads (1st), rural energy (2nd), nutrition (3rd) and climate change issues (4th).

Table 6.4. Expert's prioritization of investment in non-agriculture areas

Region	Rural roads	Rural energy	Nutrition	Climate change
Amhara	1	4	2	3
Oromia	2	4	3	1
SNNPR	1	4	2	3
Tigray	3	1	4	2
Overall	1	4	3	2

Source: Experts' consultation

The issue related to rural roads is an important matter of how far the rural population should come close at 5 km distance from an all-weather road in the next five to ten years. According to the government plan 3 kebeles are to be served by 1 primary market centre. In addition, 1 rural kebele is to be served by 1 primary cooperative. All these services need road access.

According to Oromia Region BOFED, their assessment of the achievement gaps from past interventions shows that, in the future the regional government wants to focus on directly productive areas through three main interventions, namely: i) agriculture, ii) road access, iii) services to farmers specially in skill training and natural resources conservation.The near future plan with regard to road sector development in Oromia region is to be able to connect every village to woreda and then to highways through public resources and community participation. The current experience is that 30% of road investment is accounted for by labour input. Similarly the Amhara region notes that inaccessibility is among the major hindrances to development. Hence, investment in rural roads is very essential for agricultural growth in the region

The mounting pressure of climate change on environment, natural resources, livelihood and the national economy at large, calls for attention to climate adaptation measures, and as seen in the ranking it becomes the 2nd next to roads in the overall prioritization for incremental investment needs. Rural

energy/electrification is among the major current rural development program of the government. Hence, it is logical to consider rural energy as an area of investment. Nutrition is predominantly a domain of the health sector. Strengthening and improving health and nutrition in rural areas through expanded access to health facilities and clean water is essential. More interventions on better awareness and practices of improved household nutrition, family planning, home economics, etc. are needed. Climate change is a multi-sectoral and cross-cutting issue.

CHAPTER 7
PILLARS, PROGRAMMES AND RELATED BUDGET TYPES

7.1 PILLAR/SUB-SECTOR CONFIGURATION

The next 10 years requires resources not only for the incremental investment areas identified and reported in Chapter six but also for on-going activities too. The on-going activities are contained in various programmes and budgeting this programmes requires two things, ensuring the continuation of the programme as is and estimating the budget on the basis of the government economic targets in the years ahead. In this chapter the former will be discussed and in Chapter 8 the finance needs of both on-going and incremental investment areas is presented.

Though it has its own unique features in terms of setting a framework for the next ten years policy and investment of the agriculture sector, the preparation of Ethiopia's agriculture sector PIF has been considered as the logical next step of the CAADP Ethiopia Study. One of the recommendations in the CAADP Ethiopia study is that the GoE has to embark on programme consolidation[79] and development projects (incremental investment) in the public domain should be aligned to the programmes. But as it is reported CAADP study identified the different sector's recommendable programmes under the four pillars. It did not identify investment areas and calculate resource requirements, specifically finance, for on-going scaling up and new incremental investment needs. Furthermore, in the context of conventional investment plan making each of PIF's incremental investment areas should also be aligned to the CAADP recommended consolidated programmes too. In this Chapter an elaboration is made on the programmes and investment areas connectivity. The procedure followed to identify the incremental investment areas was highlighted in Chapter 2, and more on the techniques and results of prioritizing them is reported in the later part of this chapter.

The CAADP guideline for investment plan preparation points out that the programmes should be components of pillars/sub-sectors. Investment projects or time-and-resource-framed (TRF) related activities financed through recurrent and capital budget become parts of a programme. Chapter 2, sub-sections 2.2.2 and 2.2.3 highlighted the conceptual underpinning of pillars/sub-sectors, programmes and projects in the context of Ethiopia's PIF preparation. PIF adopted five pillars or sub-sectors. The fifth sub-sector is adopted in order to capture public expenditure activities on administration, management, planning, and M&E. The five pillars/sub-sectors identified are the following.

1. Agriculture development
2. Agricultural marketing

[79] The rationale for this is also elaborated in Chapter 9, sub-section 9.3.1 of this report.

3. Natural resources development, conservation and utilization
4. Disaster risk management and food security
5. Administration and management (support services)

From the current arrangements of programs and projects within the agriculture sector, and the procedure and format MoFED uses to allocate annual budget it is plausible to consider research on natural resources (land specifically soil, water, forest etc) and agriculture (both crop and livestock) either as a separate sub-sector or part of the agriculture development sub-sector. Table 7.1 pursues the former. That natural resources and agriculture research is listed as the sixth category. This is because natural resources and agriculture research programmes, though they can be contained in the agriculture development sub-sector, in terms of institutional setting since the 1960s they have remained in a separate arrangements outside the regular directorates/departments of MoARD or BoARDs .

7.2 PROGRAMMES, PROJECTS AND BUDGET

During the assessment of existing programmes for the PIF investment analysis, it was found out that 87 programmes are listed under the four focal areas of the MoARD BSC. On the basis of MoFED definition and budget appropriation framework there were 56 cost center programmes. The CAADP Ethiopia study final document did reduce them to 41 inclusive of modified and new ones[80]. Following the logic of consolidation and without excluding to retain programmes by modification or incorporating new ones if need arises, PIF preparation has ended with 36 agriculture sector programmes. These are listed in Table 7.1. This table also indicates where the programmes and projects are located in terms of sub-sectors or departments. It is mandatory for a programme to receive recurrent and/or capital budget to be recognized in the government budgetary framework as a cost-centre, public body or agency. Any project whether financed by internal source or external bi-lateral or multilateral sources is expected to come under the programmes designated. In view of this Table 8.1 link the PIF programmes with the very recent programme and projects that have been accepted by MoFED and received recurrent or capital budget by 2008/09. As discussed earlier it is difficult at this juncture to exactly relate programmes with institutional arrangements due to the ongoing BPR and the dynamics that is taking place in terms of process owing and case team formation and modification that is taking place. It is, however, plausible to suggest a linkage of PIF programme to plausible institutional arrangements. This is covered in Chapter 9 sub-section 9.3.1.

[80] It is important to note that some parts of the CAADP Pillar may not be directly related to the agriculture sector development plans including this PIF preparation. Because pillars related to infrastructure development or trade are having tasks to be accomplished by other sectors such as transport and road as well as MOTI. Recently there are attempts to refine the CAADP proposed programmes in line with the next five year development plan framework after examining the existing program.

Table 7.1 : PIF Proposed program versus programmes and projects under recurrent and capital budget of MoARD in 2009/10

sub-sector	Proposed PIF Programs		MoARD Programmes and Projects by Budget Category	
	Code	**Title**	**Recurrent Budget**	**Capital Budget**
Agricultural Development programs	AD1	Food crops		
	AD2	Coffee, Tea, Herbs and Spices		Coffee Improvement Project
	AD3	Industrial crops		
	AD4	Livestock and Fishery		Livestock Development Master Plan Study Project
	AD5	National AI	National Artificial Insemination Centre	
	AD6	ATVET		Agricultural Technical and Vocational Education and Training Program
	AD7	Agricultural investment	Agricultural Investment Support	Agricultural Sector Support Project
	AD8	Animal and plant health services and regulatory	Animal and Plant Health, Quality Control and Inspection Department	
			National Tsetse Fly and Render pest Control Centre	Migratory Pests Prevention Airstrip and Fencing Project
				Africa Stock Piles Program
				Avian influenza prevention
	AD9	Cooperative development		
			Agricultural Extension Department[81]	Rural Capacity Building Project

[81] In the current set up AD1-AD4 are congested in one directorate, namely agricultural extension, which also oversees the activities of ATVET.

sub-sector	Proposed PIF Programs		MoARD Programmes and Projects by Budget Category	
	Code	Title	Recurrent Budget	Capital Budget
			Office of Support to Emerging Regions	bull dam farm fence construction project
Agricultural marketing programs	AM1	Agricultural inputs supply and marketing		
	AM2	Agricultural inputs and products quality control and standard	Coffee Inspection and Standardization Centre	Livestock and Livestock Products Quality Project
				Agricultural Marketing Improvement Program
	AM3	Warehouse receipt and credit facility		
	AM4	Agricultural products marketing promotion		
	AM5	Agricultural marketing information system		
	AM6	Cooperative marketing		
	AM7	Rural – urban linkage		
			Agricultural Marketing Department	
Natural resources development, conservation and utilization programs	NRD1	Land administration and planning		
	NRD2	Sustainable land management		Sustainable Land Management Project
	NRD3	Agricultural water development and management		Participatory Small Scale Irrigation Development Program

sub-sector	Proposed PIF Programs		MoARD Programmes and Projects by Budget Category	
	Code	**Title**	**Recurrent Budget**	**Capital Budget**
	NRD4	Forest and forest products development, conservation and utilization		Tree Seeds Cleaning and Storage Construction
				Eastern Africa Bamboo Development Project
			National Soil Research Centre	
			Natural Resource Development, Conservation and Utilization Department	
Disaster risk management and food security programs	DMFS1	Food security	Food Security Department	Productive Safety Net Program
				Food Security Program
				Food Security Project
	DMFS2	Disaster risk management	Early Warning and Response Department	Early Warning & Response building
Sector-wide research programs	NAR1	Food crops		
	NAR2	High value crops (horticulture, spices, stimulants and fibres etc.)		
	NAR3	Essential oils and medicinal plants		
	NAR4	Natural resources research		
	NAR5	Agricultural engineering and mechanization		
	NAR6	Socio-economic and extension		

sub-sector	Proposed PIF Programs		MoARD Programmes and Projects by Budget Category	
	Code	**Title**	**Recurrent Budget**	**Capital Budget**
	NAR7	Dairy and meat		
	NAR8	Fishery and aquaculture		
	NAR9	Camel research and development		
	NAR10	Apiculture and silkworm		Silk Development and Post Harvest Technology Training Centre Construction
	NAR11	Animal health	National Animal Health Research Centre	Animal Health Research Program
Support services programs	SS1	Administration and management	Procurement, Finance and Property Administration	
			Audit Department	
			Legal Affairs Department	
			Women's Affairs Department	
			Public Relation and Notice Office	
			Information Technology Management Unit	
			Human Resource Development and Management Department	
	SS2	Planning and programming	Planning Department	
	SS3	Agriculture policy research coordination and documentation		

CHAPTER 8
INVESTMENT: ONGOING AND INCREMENTAL

In the previous two chapters the incremental investment areas and the agriculture sector programmes with expected consolidation are presented. Both require budget/finance to procure human resources and physical facilities that will enable them contribute to the achievement of the development targets of the Ethiopian agricultural sector in particular that of the overall economy by 2020. The next section presents the analysis and the 10 years annual budget requirement of the on-going programmes. Following this is the cost benefit analysis of the incremental investment areas.

8.1 BUDGET FOR ON-GOING PROGRAMMES

Recent years budget for the agriculture and natural resources is collected both at federal and regional levels. As Table A8.1 shows as of 2001E.C (2008/09) the total adjusted budget for the sector in this year was about Birr6.8 Billion. The share of capital budget was about 80% overall, and at the federal level it was about 99%. (Table 8.2, and 8.3). This shows at the federal level indeed the recurrent budget allocated is mainly for coordination purpose and the bulk is going for investment programmes/projects that are contained in the capital budget. It is worth noting that during the same period, of the total capital budget allocated for MoARD, 82% was under the food security programme, which is also the recipient of the PSNP budget (Table A8.12). Because of this, when the budget is examined on sub-sector basis about 66% of the total budget, goes to DRMFS (Table 8.5).

Based on the available data and information[82] the consultants' team has made budget estimation for the agriculture sector on-going programmes. In order to do the projections it was essential to follow some of the targets the government set for the NFYDP and the expected budget distribution among sectors on the basis of the field visits and the estimated priority areas of the future incremental investment areas. The team adopted the 10% minimum growth rate of GDP set by the government for the years ahead. It is assumed that this will be the expectation to make the country reach its 2020 middle income country status. In order to ensure that the budget allocated to the agriculture sector is in alignment to the expected GDP growth rate first the ratio of the agriculture sector budget to that of GDP for recent years was calculated (Table A8.6) indicates that the average ratio between 2003/04-2008/09 was about 4.32%. The available year's ratio trend was analyzed and a on the basis of the calculated ratio a curve fitting the trend was estimated (Fig 8.1). Following this the value of GDP for the years 2010 to 2020 was projected on the basis of the 10% growth rate. Then using estimated agriculture budget to GDP ratio the PIF period budget for the agriculture sector is estimated (Table 8.7). With this procedure the agriculture sector budget is expected to be more than tripled by 2020. The budget which was Birr 6.8 Billion (including both recurrent and capital) by 2008/09 is expected to be Birr 7.3 Billion by 2010/11 and Birr14.7 Billion by 2014/15, and Birr29.5 Billion by 2020. It is worth noting that the agriculture sector budget ratio from GDP is to increase at a decreasing rate (Figure 8.2). This is because agriculture has to give way for the

[82] It was not easy to get and compile budget in all areas and regions. The best have been done in this regard.

growth and expansion of other sectors with a proportionate shift of government budget share to the other sectors too. This is also in line with the ADLI strategy.

The total estimated budget for the sector was further distributed to the different sub-sectors. Table 8.9 shows the distribution on the basis of the current allocation proportions. Table 8.10 presents the changed proportion in terms of assessments done during the PIF preparation. Currently natural resources get only about 8% of the capital budget. Assuming that natural resources interventions contained in programmes such as PSNP and AGP will be under the appropriate development sub-sector, and the same in terms of other sub-sectors the PIF proposed budget estimates for the next 10 years allocated 31, 48, and 21 percent of the capital budget for natural resources, agricultural development (farm income improvement pillar), and agricultural marketing interventions, respectively (Table 8.10). In general, in the years ahead about 24% of the total budget is expected to come from treasury and the rest from external sources in the form of loans or grants. In the capital budget category more than 90% is expected to come from external sources.

Table A8.1 Agriculture and natural resources national Budget for selected years

Coverage	Total* Adjusted Budget					
	2003/04	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Oromia	336,635,469	329,265,840	505,317,869	489,650,603	768,110,153	916,016,308
Beshangul	12,450,450	17,239,555	14,280,516	17,313,182	14,185,846	21,915,389
Afar	28,555,024	27,296,112	48,721,692	42,799,442	58,209,660	71,947,596
Gambela	10,900,000	13,238,000	22,079,000	19,066,000	27,559,000	29,947,000
Amhara	263,648,671	276,748,686	315,431,956	318,849,783	498,638,563	512,987,489
Somalia	21,940,615	11,805,543	12,599,287	63,712,322	62,170,420	74,989,787
Tigray	20,599,571	17,135,325	35,365,204	39,059,420	88,435,531	102,675,933
Diredawa			5,960,000	14,170,000	15,260,000	15,100,000
Addis Ababa	6,350,574	5,601,110	10,756,758	7,757,975	11,429,974	13,791,549
Harere	5,048,300	7,547,318	3,606,600	4,371,900	12,774,900	5,092,400
SNNP	12,450,450	17,239,555	14,300,517	17,313,227	14,185,846	21,915,389
Federal (MoARD)	747,962,980	2,661,637,240	3,504,876,252	3,809,989,897	4,588,189,839	5,006,761,346
National	**1,466,542,104**	**3,384,754,285**	**4,493,295,651**	**4,844,053,752**	**6,159,149,732**	**6,793,140,186**

*Include recurrent and capital

Table A8.2 National budget distribution by Recurrent -Capital for selected Regions* and years

Budget category	**2003/04**	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Total	1,401,687,306	3,309,830,635	4,395,669,569	4,740,328,026	6,033,103,506	6,643,377,863
Capital	819,821,050	2,717,205,883	3,450,479,541	3,802,069,145	4,679,457,321	5,290,665,524
Recurrent	581,957,444	593,850,544	947,708,443	941,111,955	1,357,604,638	1,566,507,138
Proportion of Capital in %	**58.49**	**82.10**	**78.50**	**80.21**	**77.56**	**79.64**

*The regions included are Gambella, Oromyia, Amhara, Tigray and Somalia and MoARD

Table A8.3 MoARD Budget Distribution by Recurrent- Capital for selected years

Year	**Total**	**Capital**	**Recurrent**	**Share of Capital in %**
2003/04	747,962,980	637,869,380	**110,093,600**	85.28
2004/05	2,661,637,240	2,546,450,010	**115,187,230**	95.67
2005/06	3,504,876,252	3,378,062,950	**126,813,302**	96.38%
2006/07	3,809,989,897	3,664,572,240	**145,417,657**	96.18%
2007/08	**4,588,189,839**	**4,416,388,550**	**171,801,289**	96.26%
2008/09	**5,006,761,346**	**4,959,579,036**	**254,948,566**	99.06%

Table A8.6: The agriculture sector budget and GDP ratio (2003/04-2008/09)

	GDP	National Budget for agriculture	Ag Budget GDP ratio
2003/04	81,421,066.00	1,466,542,104.25	1.80
2004/05	91,044,094.00	3,384,754,284.69	3.72
2005/06	100,908,384.00	4,493,295,651.45	4.45
2006/07	112,468,464.00	4,844,053,751.71	4.31
2007/08	124,590,539.00	6,159,149,732.47	4.94
2008/09	135,450,497.00	6,793,140,185.87	5.02

Figure 8.1 Trend curve of ag. budget to GDP ratio

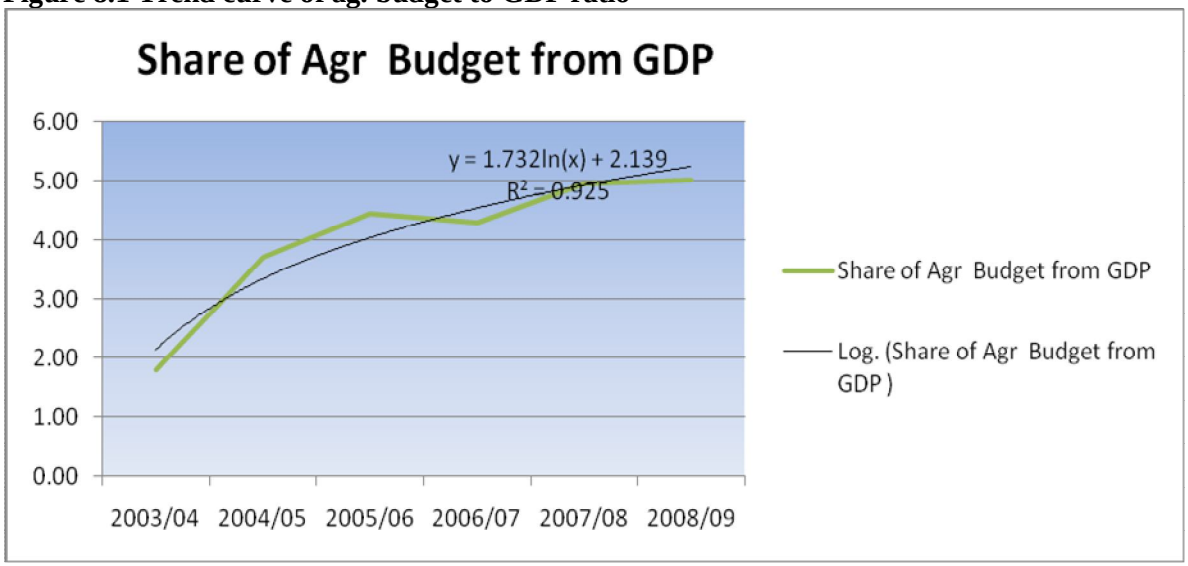


Table 8.7 PIF period agriculture sector budget estimate for on-going programmes

Year	Budget Estimate	Ag. Budget –GDP ratio	Ag. Budget-GDP growth rate
2009/10	7,340,334,837.97	4.927	
2010/11	8,591,917,807.53	5.242	0.064
2011/12	9,932,449,629.23	5.509	0.051
2012/13	11,384,345,871.80	5.741	0.042
2013/14	12,967,795,468.69	5.945	0.036
2014/15	14,702,462,456.65	6.127	0.031
2015/16	16,608,437,812.68	6.292	0.027
2016/17	18,706,850,056.91	6.443	0.024
2017/18	21,020,311,425.58	6.581	0.022
2018/19	23,573,284,137.06	6.710	0.020
2019/20	26,392,410,763.69	6.829	0.018
2020/21	29,506,833,556.62	6.941	0.016

Figure 8.2 Trend in % change of Ag. Budget-GDP ratio for PIF period

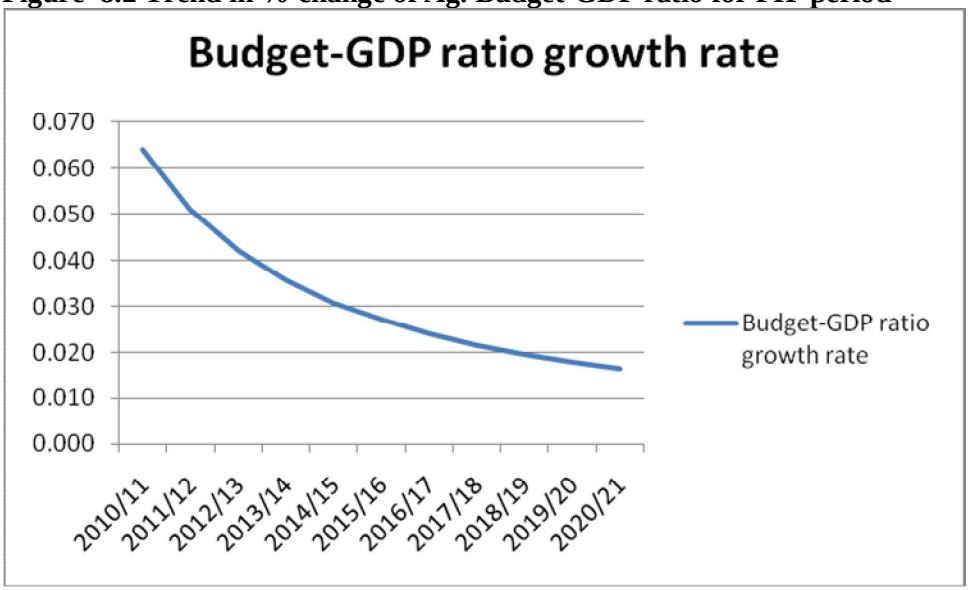


Table 8.5 MoARD three years (2007/08-2009/10) average budget distribution by sub-sectors

Sub-Sector	2007/8		2008/09		2009/10		Average in Million	Share in %
	Recurrent	Capital	Recurrent	Capital	Recurrent	Capital		
AD	48,812,900	500,905,882	61,103,600	330,903,251	77,406,194	391,985,101	235.2	9.49
AM	11,501,400	117,160,339	6,725,600	62,526,357	9,679,951	154,963,433	60.4	2.44
NRD	5,666,200	28,390,495	1,163,400	33,546,616	5,991,159	2,209,599,340	380.7	15.37
DRMFS	1,296,000	3,588,016,631	31,167,200	3,936,603,516	24,398,930	2,237,081,552	1,636.4	66.07
NAR	59,021,891	151,513,914	81,122,166	349,949,107	83,354,188	138,912,321	144.0	5.81
SS	27,598,800	10,103,715	29,747,700	7,094,616	35,525,498	11,291,468	20.2	0.82
Total							2,477.0	100

Table 8.9 Estimated PIF period on-going programmes budget (in Million Birr) on the basis of current norm

Year	National budget	AD	AM	NRD	DRMFS	NAR	SS
2009/10	8,591.92	815.37	209.64	1,320.58	5,676.68	499.19	70.45
2010/11	9,932.45	942.59	242.35	1,526.62	6,562.37	577.08	81.45
2011/12	11,384.35	1,080.37	277.78	1,749.77	7,521.64	661.43	93.35
2012/13	12,967.80	1,230.64	316.41	1,993.15	8,567.82	753.43	106.34
2013/14	14,702.46	1,395.26	358.74	2,259.77	9,713.92	854.21	120.56
2014/15	16,608.44	1,576.14	405.25	2,552.72	10,973.19	964.95	136.19
2015/16	18,706.85	1,775.28	456.45	2,875.24	12,359.62	1,086.87	153.40
2016/17	21,020.31	1,994.83	512.90	3,230.82	13,888.12	1,221.28	172.37
2017/18	23,573.28	2,237.10	575.19	3,623.21	15,574.87	1,369.61	193.30
2018/19	26,392.41	2,504.64	643.97	4,056.51	17,437.47	1,533.40	216.42
2019/20	29,506.83	2,800.20	719.97	4,535.20	19,495.16	1,714.35	241.96
2020/21	29,506.83	2,800.20	719.97	4,535.20	19,495.16	1,714.35	241.96

AD=Agricultural Development, AM=Agricultural Marketing, NRD=Natural resources development, DRMFS=Disaster risk management and food security, NAR=Natural resources and agricultural research

Table 8.10 Estimated PIF period on-going programmes capital budget (in Million Birr) on the basis of recommended reallocation measures

Year	Capital Budget *	Natural Resources Development (31%)	Agriculture Development (Production & productivity Enhancement pillar) (48%)	Agricultural Marketing (21%)
2009/10	6,536.73	2,026.39	3,137.63	1,372.71
2010/11	7,556.61	2,342.55	3,627.17	1,586.89
2011/12	8,661.21	2,684.98	4,157.38	1,818.85
2012/13	9,865.90	3,058.43	4,735.63	2,071.84
2013/14	11,185.63	3,467.55	5,369.10	2,348.98
2014/15	12,635.70	3,917.07	6,065.14	2,653.50
2015/16	14,232.17	4,411.97	6,831.44	2,988.76
2016/17	15,992.25	4,957.60	7,676.28	3,358.37
2017/18	17,934.55	5,559.71	8,608.59	3,766.26
2018/19	20,079.35	6,224.60	9,638.09	4,216.66
2019/20	22,448.80	6,959.13	10,775.42	4,714.25
2020/21	22,448.80	6,959.13	10,775.42	4,714.25

*Estimated to be76.1 % of the total.

AD (48%) includes agricultural research too.

Table A8.11 2009/10 MoARD Recurrent Budget share of department

Program/project list	% share
Ministry of Agriculture and Rural Development	100
Procurement, Finance and Property Administration	12.39%
Planning Department	5.81%
Public Relation and Notice Office	2.02%
Audit Department	0.28%
Legal Affairs Department	0.20%
Women's Affairs Department	0.33%
Human Resource Development and Management Department	1.81%
Information Technology Management Unit	0.31%
Office of Support to Emerging Regions	0.24%
Agricultural Extension Department	20.79%
Agricultural Marketing Department	1.22%
Natural Resource Development, Conservation and Utilization Department	1.26%
Early Warning and Response Department	14.70%
Animal and Plant Health, Quality Control and Inspection Department	15.74%
Food Security Department	1.21%
National Soil Research Center	2.64%
National Tsetse Fly and Render pest Control Center	2.30%
National Animal Health Research Center	6.01%
National Artificial Insemination Center	7.98%
Coffee Inspection and Standardization Center	2.22%
Agricultural Investment Support	0.54%

Table A8.12 2009/10 capital budget distribution among directorate

Program/project list	% share
Ministry of Agriculture and Rural Development	100
Agricultural Extension	7.44%
Agricultural Technical and Vocational Education and Training Program	3.13%
Rural Capacity Building Project	2.48%
Coffee Improvement Project	0.24%
Livestock and Livestock Products Quality Project	1.06%
Livestock Development Master Plan Study Project	0.01%
Silk Development and Post Harvest Technology Training Center Construction	0.01%
bull dam farm fense construction project	0.51%
Agricultural Marketing	1.75%
Agricultural Marketing Improvement Program	1.75%
Natural Resource Development, Conservation and Utilization	7.92%
Agricultural Sector Support Project	3.03%
Eastern Africa Bamboo Development Project	0.02%
Tree Seeds Cleaning and Storage Construction	0.52%
Participatory Small Scale Irrigation Development Program	1.25%
sustainable land mag't project	3.10%
Early Warning and Response	0.38%
Early Warning & Response building	0.38%
Animal and plant health, Quality control and Inspection	0.32%
Migratory Pests Prevention Airstrip and Fencing Project	0.00%
Africa Stock Piles Program	0.20%
avian infulenza prevention	0.12%
Food Security	82.19%
Food Security Program	39.54%
Productive Safety Net Program	38.57%
Food Security Project	4.08%
Centre	0.01%
Animal Health Research Program	0.01%

8.2 INCREMENTAL INVESTMENT AREAS: COST-BENEFIT

The preceding sub-section cover projections for increased spending on on-going programmes of the agricultural sector using budget trends analysis and expected economy wide growth. This sub-section is about estimating the incremental investment, cost, requirements in terms of human, physical facilities of the selected prioritized investment areas for the development of the Ethiopian agricultural sector in the next 5 to 10 years. It also explains the benefits expected from such investment.

Costing of priority incremental areas of investment basically refers to the costing of those critical elements (technologies, materials, institutions, facilities, etc) that are expected to affect and increase agricultural production and growth in relation to the expected targets set for the sector during the next 5 and 10 year plans. Chapter 3 and 4 of this report analyzed those critical elements and assessed how they relate to the required growth in production. Chapter 6 reported the priority areas of investment required to achieve such a future growth.

Overall, the task of acquisition of the extensive, large and disaggregated data set needed to do the costing of priority incremental investment areas has been challenging and took much longer time. The technical assistance provided by the MOARD in this respect is very much appreciated. Data acquisition took several approaches including exploration of the existing databases (like data collected for other CAADP related projects), search for relevant data during consultation with the various stakeholders in the Federal institutions and the regions as well, seeking data from all bureaus of agriculture and BOFEDs of regions, support and provisions by some PIF Technical Committee members, review of reports, etc.

Depending on the data availability, cost build up has been made using components and detailed activities of the chosen incremental investment area. Table A8.13 gives component and total investment finance requirements of each investment area and following it is further elaboration of the different priority areas. Overall, in addition to the annual budget requirement for on-going programmes, which ranges from Birr7.3-29.5 Billion per annum, during the PIF period at least additional Birr 74.1Billion is expected to be invested in the selected investment areas, mostly contained in the capital budget after the government put in place bankable projects together with interested donors to finance them. Put differently the agriculture sector is expected to get on average about Birr7.4 Billion in addition to the above mentioned annual budget appropriations per annum. This will make the annual budget of the sector almost tripled from the current level starting from the base year for PIF, i.e., 2010/11.

Table 8.4. Incremental investment needs of selected investment areas during the PIF period

Incremental area of investment	Major components	Incremental investment need (000 birr)
Natural Resources	Watershed management[83]	3,504,800
	Land registration and certification	390,000
	Land administration: motor bicycles and computers	84,000
Irrigation development	Irrigation infrastructure	48,750,000
	Credit for motor pump purchase for farmers	178,750
	Materials production (PVC)	250,000
Research	Increment in budget	55,100
	Research centers irrigation facility and operation	18,750
	staff training and development	87,794.413
	vehicle purchase	136,473.0
	bio-technology laboratories	441,551
Seed	seed production by public enterprises	1,057,025
	irrigation facility for seed enterprise	13,125
Livestock	veterinary laboratories	136,500
	production and distribution of cross-bred heifers	7,500,000
	Parent stock maintenance for poultry (Research)	22,220
Agric extension	Residential house, motor bicycles, computers	6,786,000
Cooperatives	purchase of fertilizer (credit), 60% of total per yr	2,700,000
	warehouse construction and facilities	150,000
	4-WD vehicles for regional agencies	24,750
	purchase of motor bicycles, district level	168,000
	2 computers each at district level	12,000
	Live animals transportation truck (credit)	67,500
private sector support	Skill training and information sharing[84]	50,000
National agric. Credit Institution	Estimated initial capital	1,300,000
	Operating costs (15 million USD over three years)	195,000
Total		**74,079,339**

Source: estimated.

[83] Based on ESIF-SLM and (assuming 25% of target achieved during 1st 5 years)
[84] 5000 trainees in 5 years (50% cost sharing)

8.2.1 IRRIGATION

Irrigation will be one of the critical and significant inputs to achieve an 8% agricultural GDP growth rate for the next 5 and 10 years period. Breaking down the growth into its sources and components imply that irrigated land would have to grow 1.5 times every 5 years compared to the base year. Rate of growth that is related to the current state and planned expansion by each state. Currently area cultivated is estimated to be 13 million hectares out of which only 5% (650000 ha) has been irrigated. Given the above growth rate additional area of 975,000 ha and 2,437,500 ha of cultivated land must be irrigated by the end of the next 5 years and 10 years, respectively. At current average cost of 50,000 birr per hectare of developed irrigation system, it needs an additional investment of 48.75 billion birr and 121.8 billion birr, respectively, for 5 years and 10 years. This amounts to 9.75 billion birr and 24.3 billion birr per annum over the 5 years and 10 years period, respectively. Currently, the irrigation development plan shows that the share of small and large scale irrigation is in the order of 75% and 25%, respectively. A study recently conducted for BMG foundation indicates that small scale irrigation and water harvesting will account for two-third of the future irrigation expansion in Ethiopia. These cost less than the large-scale irrigation schemes.

Small scale farmers need motor pumps to irrigate their farm plots. They need credit to purchase pumps. A small motor pump can cover 8 to 12 ha. Suppose that quarter of the incremental irrigated land needs to use pumps for water abstraction, and half of the smallholder farmers can afford to buy on cash. At 10,000 birr per piece, it will cost 162,500,000 birr. If fuel and operating cost is 10% of the investment, the total would be 178,750,000 birr. This will be useful particularly to irrigate lands using ground water boreholes and to extend water to areas not suitable for gravity irrigation. Government may facilitate access to this fund on credit bases to farmers.

Mechanism of cost recovery of irrigation investment may be thought. In some regions there is already an experience of cost recovery from irrigation scheme. Example, in Fentalle scheme in Oromia.

In Oromia region, the Bureau of water resources reported that it has applied for water resources and irrigation development in 8 zones of the western parts of the region. The bureau estimated that it would cost 1 billion birr to implement this plan.

Another important element in promotion of irrigated agriculture is investment in raw materials needed for construction. Example, production of PVC. The Oromia region has already invested in such a factory while the Amhara regional state is undergoing a similar construction. If 10 such a unit is needed in the country over the next 5 years, it will cost 250 million birr[85].

8.2.2 NATURAL RESOURCES MANAGEMENT

As discussed in the previous chapters, investment in natural resources management has been identified as one of the top ranking priority areas. Over the last decades Ethiopia has made many efforts to avert the massive natural resources degradation that has threatened the agricultural growth and livelihood of millions of rural populations. This effort has still continued with recent formulation of the sustainable land management framework (SLM) to help guide the investment and management of the natural

[85] The Oromia government spent 24 million birr some years back to construct one such factory.

resources of the country. The current program of the MOARD under the framework of SLM has identified 3100 micro-watershed for intervention in 177 food secure high potential woredas. The targeted micro-watersheds cover an estimated area of 1.5 million hectares. The estimated program cost is 440million USD. Relating to the land area for management development, this gives an average cost of 293 USD per hectare equivalent to 3800 birr. If the on-going SLM program, which is already large in intervention area, is proper put under implementation and expands to other areas at a rate of additional 10% per year, the area under SLM will be 2.25 million hectares (increase by 50% over the current SLM target area). Applying the investment requirement as estimated by SLM, the total resources requirement by the end of the next 5 years will be 880 million USD, equivalent to 11.44 billion birr.

On the other hand, the Ethiopian Strategic Investment Framework (ESIF) for sustainable land management estimates that incremental funding required over 15 years period (2009 -2023) is 5.392 billion dollars. This implies a 4.67 billion birr annual budget. Given this grand pogramm of a decade and half period, achievement of the desired target depends on experience of program implementation, and above all on the capacity and possibility of resource generation (both domestic and foreign).

If 25% of the development target could be achieved over the first 5 years of the three-phased plan, it requires incremental resources of 269.6 million USD per annum, equivalent to 3.5 billion birr per annum.

A recent report by the World Bank on Ethiopian rural land administration shows that about 6 million farmers received the primary level land use title certificates over the period 2003-2005. The report indicates that the average cost of land certification was 1USD. Adding differential handled GPS with more accuracy to record boundary coordinates would increase these costs by 60% to USD 1.60. The earlier low cost was attributed to the use of local inputs and voluntary service of local land administration committee in boundary identification and land measurement.

Suppose that between 2005 and now some more 1 million farmers got title certificate, and another 5 million farmers will get certificate within the next 5 years. At an average number of 3 plots per household, 15 million farm plots have to be registered over the next 5 years. If the cost of registering and certifying a plot of land is assumed to increase by 25% (materials and labour cost (reach up to 2 USD per plot), the total cost of reaching all the reaming 5 million farmers is estimated to be 390,000,000 birr.

The land administration program is relying on a new organizational structure with limited capacity and facility. The hedge task in the land administration system includes proper documentation of the land information. This needs computer, among many things, computer facility. If purchase of 2 desktop computers for land desk is considered per district, at the prevailing cost of about 10,000 birr per piece, the total cost for 600 districts in the country reaches 12,000,000. In addition, the newly established land administration desk at districts needs means of transport for travel and supervision of the works. If purchase of 2 motor bicycles is considered to improve mobility of the experts in the districts, at the prevailing cost of 70,000 birr per unit, the total cost will be 84,000,000.

8.2.3 RESEARCH

The average share of research in total capital expenditure for the agricultural sector during the periods 1996/97 to 2004/5 was 7.6%. The data shows there was no capital budget expenditure by either Federal government or regional governments for research after 2004/5 up to the year 2007/8. Referring to the above capital expenditure data for agriculture the average capital expenditure in research was 89 million birr per year between 1996/7 to 2004/5.

Assuming an increase of research budget from 1.5% of AgGDP to 2% will give an incremental of 0.5% points. In the year 2008/9, AgGDP was 43% of total GDP which is 55.1 billion Birr. The 0.5% of AgGDP of 2008/9 would give 55.11 million birr incremental budget for research. This amount of budget should all be for capital investment over the 5 years period in terms of building research capacity. In this case Donors aid can support including technical assistance.

The research centers need some irrigation facilities in order to be able to produce breeder seeds during the rest of the year without waiting for rains (i.e. off-season production)[86]. There are 55 research stations including the 6 newly established ones in pastoral areas. The later pre-dominantly work on livestock and pastoral areas development. Assuming 50 of them will have irrigation facility on a 5 hectare land, and that it costs them 50,000 birr per hectare to develop irrigation infrastructure and 10% of this additional operation cost, the total cost of irrigation infrastructure development will amount to 12,500,000 birr. The additional operation cost over the five years period will be 6,500,000 birr. This makes the total cost at 18,750,000 birr.

Discussion with the research management shows that there is a need for more capacity development in the research. This mainly includes staff training, vehicle, and bio-technology laboratories.

The recently completed famous ARTP program has supported the Ethiopian research and higher education institutions by training a large number research and academic staff mainly at M.s.c and PhD levels, purchasing research facilities and infrastructure. The total cost of that project was over 90 million USD. The project report shows that 354 staff experts were trained at M.Sc level while 110 at PhD level. Other staff had access to short term trainings: 197 in overseas and 4000 local. The total number of experts who got access to training opportunities is 4661. This was at a total cost of 9,379,745 USD.

Suppose that research system took 60% of these staff development resources and opportunity, and the future development need over 5 to 10 years period will be about the same that of ARTP program, and the current training cost will be 20% more than the then, it will cost 87,794,413 birr.

The ARTP program supported the purchase of over 250 vehicles at total cost of 8,615,719 USD. With a kind of similar need but a bit less, this would mean 3 vehicles (4-WDs) per the existing research stations in the country. The current price of vehicles can be more than double that price. At the prevailing exchange rate that time, average price was about 270,000 birr. This time the price of vehicles is tripled. At this prevailing average price the total cost of purchase of vehicles will be 136,472,989 birr.

[86] The Southern Nations Nationalities and People's Region Agriculture Research Institute reported that it has rented an irrigation facility from a private firm at a cost of 20,000 birr a hectare for growing basic hybrid maize seed.

Bio-technology centers are highly needed for the research system. It will enable enhanced technology generation, lowering cost of technology development at the research system level. Currently, a large and complex bio-technology centre is being developed at the Holeta national research centre. There is a diverse opinion as to the adequacy of the skilled manpower needed to effectively operate a bio-technology laboratory at the research centers. On the one hand, it is argued that as the bio-technology system needs a complex interdisciplinary team, such a strong team is lacking particularly in the areas like molecular biology. Hence, human resources development (training, retention and incentive) is considered as one of the critical needs. The other argument is that there are lots of researchers trained in the field of breeding, and there is some capacity to start runs the system. While the bio-tech under development is a large system, other satellite bio-technology laboratories of lower level are still needed for the federal research stations as well as research stations established by the regional states.

The cost of the on-going project has is about 7 million dollars including construction and procurement. Currently there are 55 agricultural research stations. Suppose all of these have to have a bio-technology laboratory capacity at a rate of 50% of them (27) over the coming 5 years, and the other 50% (27) in the second 5 years period. The smaller sized and less complex bio-technology laboratory suitable for the other research stations is estimated to cost about one-six of the laboratory currently under construction. This gives an estimated 420,525,084 birr in the first 5 years period. If 5% of this cost is allowed for annual operation it amounts to 21,026,254 birr. These include chemicals and other materials needed for laboratory. Hence, a total of 441,551,338 birr. Similar amount of budget may be needed for the second 5 years plan period that spans from 2016-2020.

8.2.4 IMPROVED SEED

The current improved seed supply meets only 20% of the demand. Also only less than 5% of the cultivated land is currently planted with improved seeds. The CSA data shows that over the 6 years spanning from 1994 and 1999, the volume of improved seed produced was declining by an annual average rate of 1%. From the year 2000 onwards, production of improved seed increased by 38% per annum. The volume produced in 2008 was 246,050 quintals of improved seeds of all types of crops. The investments in seed system involves production of breeder and foundation seeds by the research, basic seed by the Ethiopian Seed Enterprise and certified seeds by other agencies including the private sector.

What investment does research need and ESE as government institutions? The private sector can be considered self financing.

Approach: what amount of seed (at least major crops) will be needed for full coverage of the seed demand in the coming 5 years? For the major crops what will be the expected growth in area planted?

In 2009 Hybride Maize to be produced by governmental and private organization was reported to be 151,359 quintals. Out of this amount governmental organizations take share of 76,970 qt (51%) while the private agencies take the reaming share of the supply. In 2008, some 1144.67 qt of basic seed of Hybrid Maize was requested for distribution from Governmental and private seed producing organization and 1298.50 qt was supplied i.e. 13% more than requested was supplied.

According the agricultural census data of 2001/2 made by the CSA, out of the total area of land cultivated, cereals account for more than 80%, followed by pulses and oil seeds. Out of the total cereal

area, teff, maize, wheat, barley and sorghum account for 29%, 21%, 16%, 12% and 18%, respectively. In terms of production out of the total 11.4 million tons of temporary (annual crops) produced during the same time, grain took a share of 87% while cereals 77%. Out of cereals the major ones- maize, teff and wheat account for 32%, 19%, and 17%, respectively. The three contribute to two-third of the cereal food production.

Table 8.13: Agricultural land use in the 2007/08 cropping season

Land Use Total Area Average areas per farm holder	**Ha**	**%**	**(Ha.)**
Crop area*	12,382,438	78.9	0.93
Temporary crop area	11,343,121	72.3	0.87
Permanent crop area	1,039,314	6.6	0.14
Fallow land	1,165,337	7.4	0.09
Grazing land	1,529,603	9.8	0.12
Wood land	187,394	0.0	0.01
Other land use	422,172	2.7	0.03
Total	15,686,940		

Source: Ethiopian Economics Association (2009) computed from CSA (2008b), Agricultural Sample Survey. Report on Land Utilization, Volume IV.

The EEA (2009) report refers to the CSA (2009c) data and shows that of the 9.2 million quintals of the seed farmers used in 2008/09 crop year, only 0.22 million quintals (or 2.2%) were improved/certified seeds. The report further indicates that of the 12.47 million hectares of land cultivated by various crops, only 0.47 million hectares (or 3.7%) were planted by improved seeds. During the same time, out of the 21951 tons of certified seeds used by farmers, 8682 tons (40%) are maize, 9966 tons (45%) are wheat, 950 tons (4%) are barely and 701 tons (3%) are teff seeds (CSA, 2009c)[87].

Intensity of modern farm inputs utilization in 2008/09 (EEA, 2009), shows that farmers plant /sow teff, maize and wheat at a rate of 42 kg, 25 kg and 178 kg per hectare of cultivated land planted with improved seeds.

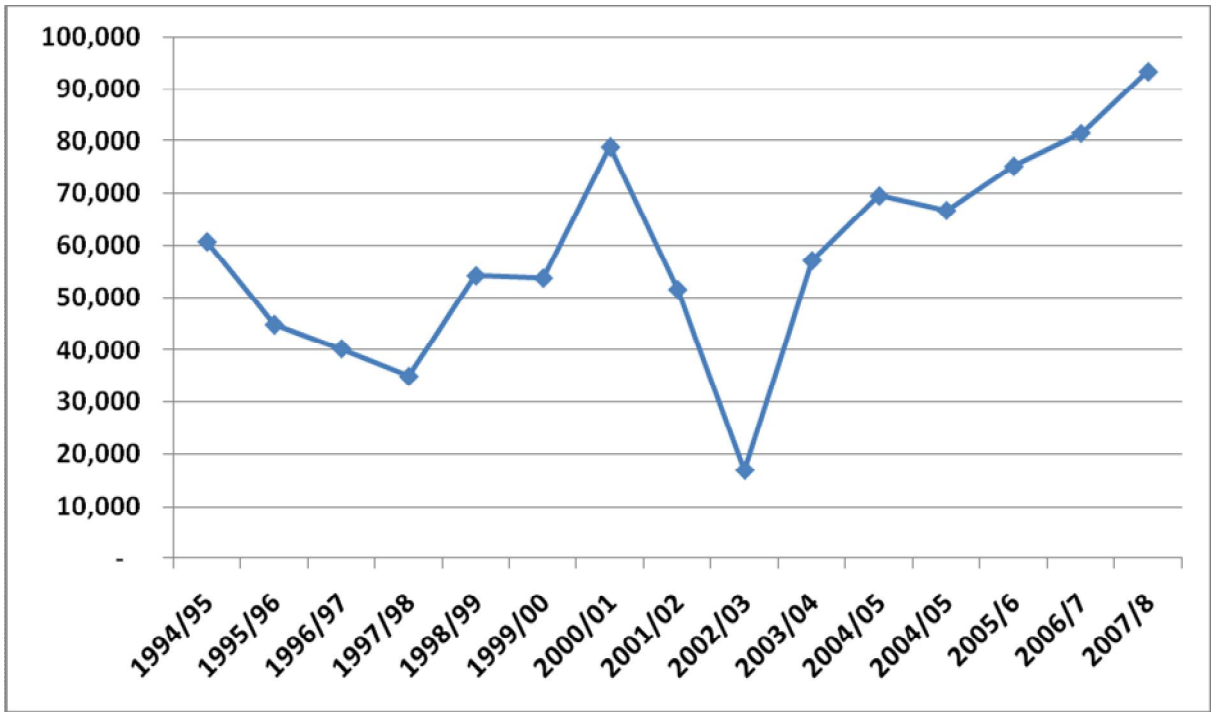
At this seeding rate the amount of improved seed produced in 2008/9 covered the cultivated land in the order: 347, 280 ha of maize , 56,949 ha of wheat, and 16,690 ha of teff lands. This is 4.0% of area of maize, 0.6% of wheat and 2.4% of teff. Assuming cultivated land with these major crops may increase by 10% in the coming 5 years, land to be covered by improved seeds in the coming 5 years would be 1,328,158 ha (maize), 1,899,081 (wheat), and 1,028,795 ha (teff). Assuming that all land cultivated with these crops would be covered by improved seed in the coming 5 years, it needs to produce improved seed of 33,204 tons of maize, 332,339 tons of wheat and 43,209 tons of teff.

According to a recent study made for BMG foundation, the substantial use in improved seeds is in maize (hybrid) which has reached 20% of overall hectares planted and wheat (self-pollinated), which exceeds 20% of hectares planted, considering normal replacement cycles. The report also shows that these two crops alone represent over 90% of the total commercial production from public and private seed growers.

[87] Ibid

As shown in the figure below (figure 8.3), the intermediated consumption value of improved seed was increasing over time. In 2007/8, the value reached over 90 million birr. The average annual quantity of improved seed produced per year over the last 5 years (2004/5 to 2008/9) was 21,071 tons. During the same period the average annual value of improved seed consumed in the agriculture sector was 3669 birr per ton. If 80% of this value is considered to be cost of production (20% being profit margin[88] for producers), the total cost of seed production would be **1,677,882,246** birr. In 2008/9 seed production was composed of pre-basic (1%), basic (7%), and certified (92%). Certified seed is produced by both public organizations and the private agencies. Suppose that a little bit over half (60%) of the certified seed is produced by the public agencies, and this holds for the next 5 years, the cost of production of improved seeds by the government organizations will be **1,057,025,311** birr. It gives **211,405,062** birr per year over 5 years period.

Figure 8.3. Improved Seed: value of intermediate consumption at constant price ('000 birr)



Source: computed based on the MOFED data.

The remaining cost in the order of 620,816,431 birr will be borne by the private sector at a rate of 124,163,286 birr per year.

Discussion with seed producing enterprises reveals that one important capacity required for enhanced seed production is irrigation facility at the seed enterprises. The Ethiopian Seed Enterprise (ESE) and at least the four regional enterprises recently established in Oromia, Amhara, Tigray and SNNPR need irrigation facility. A minimum of 50 hectare irrigation infrastructure may be needed. This facility will enable the enterprises to produce multiple times in a year and increase the supply of seed. At an average

[88] The Ethiopian Seed Enterprise is reported to have been currently making 10% profit on highbred maize seed.

cost of 50,000 birr hectare for the development of irrigation facility, and 10% operating cost for the total unit, the total cost per unit will be 2,625,000 birr, and 13,125,000 birr for all enterprises.

8.2.5 LIVESTOCK

In the preceding chapters that analyzed the agricultural growth rate, it is shown that growth rate of the livestock sub-sector has to double to meet the target agricultural sector growth. Improving the livestock sub-sector production needs heavy emphasis on several areas including expansion of high quality feed, breeds, AI services, veterinary services, laboratory information management system, training, improvement, vaccine production centre, marketing, etc. Investment in dairy development, dairy processing, and abattoirs of high standard need private sector participation and farmers cooperatives.

Smallholder dairy development needs improvement in livestock feed, promotion, multiplication, distribution of improved breeds and other services. The agricultural research system has to come up with better productive improved dairy breeds. Extension and has to support farmers in accessing improved heifers, production and milk management. Experience over the last decade shows that introduction of cross-bred dairy animals if accompanied with better extension service, feed and market development would bring significant changes in the dairy production and income of smallholder farmers. A good example is the efforts made through Small dairy Development in Selale and North Shoa areas.

Dairy heifer production at the livestock breeding and multiplication centers and distribution to farmers could be one of the strategies in this respect. Currently, although the demand is high the supply of heifers is very much limited. If distribution of dairy heifers to at least 0.5 million smallholder farmers could be achieved in the next 5 years, it would be a significant input to the smallholder dairy development. Reaching farmers with at least 1 heifer, depending on their demand, and purchasing capacity, means a lot of work at the existing reproduction centers and may be establishing new centers, too.

If 500,000 farmers get 1 cross-bred heifer, at an average cost of 15,000 birr (current purchase of pregnant heifers could reach up to 20,000 birr per cow), the total cost of supply over the next 5 years could be 7.5 billion birr. Farmers could buy the heifers on cash-based purchase of on credit basis. For this purpose, it needs rehabilitation of the reproduction centers, proper planning of the production and distribution of heifers.

One of the components needed to improve the veterinary service coverage is investment in vet laboratories. Given the agro-ecological diversity and the bring need to bring services in animal health and diseases diagnosis works to the livestock producing areas, it is advised that regional laboratories need to be created and strengthened. There are ample experiences in building and running such laboratories in regions like Oromia. Suppose some 30 centers are established across regional sates also considering livestock distributions to locate such laboratories. At an estimated cost of 2.5 million birr per unit for purchase of lab equipments and 1 million birr for civil and construction works, and 30% of the 3.5 million birr per annum is needed for operation, the total investment and running cost of veterinary laboratories over 5 year's period will be 136,500,000 birr.

Other areas of investment for better livestock production include upgrading the vaccine production centers. Given the increasing demand and scarcity, establishing regional semen production centers and AI services is also essential.

One of the current agricultural extension technology packages is provision of chicken for poultry production. Experts, however, argue that the current service in this respect is constrained by the lack of

parent stocks and, hence, the system needs to import chicken for reproduction. This way, the parent stock needs to be imported frequently due to the lack of facilities to maintain the stock for longer period of time. To alleviate this problem, experts propose to have a facility that will enable maintenance and use of parent stocks for many years and reproduction of chicks needed by multipliers, who further produce and supply to farmers. A parent stock can be kept producing for 4 to 5 years.

Such a facility will be composed of the chicken (parent stock), feed processing unit, and hatchery. The parent stock facility could be either for research system or production system. For a research system a parent stock with 1000 chicken can be considered. Chicken can be imported at 1 Euro per head. This is 20,000 birr. A single hatchery is estimated to cost 0.5 million birr. Similarly a feeding unit is estimated to cost 0.5 million birr. Feeding cost is a major cost component accounting for 70% of the running cost. A chicken consumes about 50 kg of feed per year. At going price of 4 birr per kg, this amounts to 200 birr per check. The total feed cost for the unit will be 200,000 birr per year or 1 million birr over the 5 years period. The estimated total cost of having and running a parent stock maintenance facility will then be 2,020,000 birr. If all federal and regional research institutes will have at least one such a unit over the next 5 years, the total budget required for this purpose would be amount t to 22, 220,000 birr.

8.2.6 AGRICULTURAL EXTENSION SERVICE

Agricultural development heavily relies on extension service and dissemination of better ideas, technology packages and farm management practices. Hence, improving extension service is instruments in agricultural growth.

In the past many years government has invested a huge amount of resources for training of middle level manpower at the agricultural TEVTs. The training program has produced large number of development agents- close to 70,000. DAs are currently working in Framers Training Centers (FTCs) in rural kebeles. For the full and effective utilization of the capacity created thus far, there is a need for strengthening the facilities at grass roots level. Hence, the farmers training centers and working environment for the DAs need investment, especially in - demonstrations and facilities, means of travel. Earlier, the DAs used to travel using horses and mules. In recent times they do not even have access to that. Moreover, a rural kebele now a days covers a large geographic area. The workers need to get better transport means for efficient and effective supervision of the farming activities, demonstration works and advice to farmers.

To improve the working condition, the DAs need a decent shelter, at least 2 motor bicycles and fuel costs, 1 computer to organize database needed for monitoring, reporting and planning purposes. A resident house of at least four rooms and 2 kitchen facility may be needed for the DAs team of 4 to 5 persons. The construction of such a house my cost, on average, 100,000 birr. Purchase of 2 motor bicycles suitable for rural travel costs up to 70,000 birr per unit (140,000 birr per FTC). Some 25,000 birr (125 birr over 5 year's period) may be allowed for fuel cost. A desk top computer (or preferably a laptop in areas where electricity is not accessible at kebele centre) may be acquired for 12,000 birr including accessories. This way the total cost is estimated at 377,000 birr. For close to 18,000 rural kebeles in the country, the total cost amounts to 6,786,000,000 birr.

8.2.7 COOPERATIVES

The current growth rate of fertilizer use is 5 to 6% per year. For full coverage of fertilizer needs using fertilizer at a rate of 20% per year from 2009/10 onward (planned level of 500,000 tons). This closely fits to the government's plan of increasing the use by 15% each year in the coming 5 years as per the consultation with the experts at the MOARD. Suppose 60% is traded by cooperatives and 40% by the private sector, it costs 2.7 billion birr per year. This amount of resource should be available to cooperative and unions to borrow for fertilizer import. This amount could be enough as revolving credit very year.

For enhanced marketing operations cooperatives and unions needs to invest in Warehouse at least at the union level. Currently there 147 muti-purpose agricultural unions. If the number is to be doubled in the next 5 years and 1 warehouses per union are need at accost 0.5 million birr each, the total investment needed will be 150 million birr.

The extensive nature of the work of capacitating , guiding and supervising cooperative and unions means that they need other facilities like WD vehicles for transport (at the agency levels in Federal and Regions). Suppose two 4-WD are required at the agency level. At the woreda level, 2 motor bicycles, and 2 computers for data management are essential investment needs. If 3 vehicles are need at the agcy level, at a unit cost of 750,000 birr, the total cost will be 24,450,000 birr. The purchase cost of 2 motor bicycles each for 600 district level cooperative promotion desks at a unit cost of 70,000 birr will cost 168 million birr. If 2 computers are purchased for the district office, this costs 12 million birr for the total number of districts.

Training of staff in auditing, management, accountancy, etc are important means of capacity building. They will train the cooperative and union management staff and experts.

For the predominately livestock producing areas (Afar, Somalie, Borana, parts of the SNNP), the cooperatives or unions established (to be established) to promote marketing of livestock need appropriate live animals transporting trucks. If in total some 15 trucks are needed in these areas, and an estimated purchase of such special truck cost is 3 million birr per unit, the total cost will be 45 million birr. If fuel and annual maintenance costs per 10% of the investment cost per years, these add another 22,500,000 birr over the 5 years period.

8.2.8 DEVELOPMENT OF NATIONAL AGRICULTURAL CREDIT INSTITUTION

As it is known one of the critical factors of production is capital. However, the large mass of smallholder farming population and pastoralists lack access to adequate capital to enable a reasonable investment in their businesses. Although the activities of the micro finance institutions (MIFs) have been very useful and significant in supporting rural as well as urban economic activities over the past years, there is still a big gap to be filled in availing the capital needs of the small and medium–sized commercial and commercializing farmers.

To cater for the needs of such agricultural producers, the establishment of national agricultural credit institution is suggest as one area of future investment. Such an institution could start with a capital of 100 million USD. Its initial operating cost can be assumed to reach 15 million USD over the three years period of establishment.

8.2.9 PRIVATE SECTOR SUPPORT

To realize the envisaged agricultural sector growth and development, there is need for strong support for the private sector engagement. This support includes, among others, training in business, trade, agro-processing, product quality control, input and output marketing, high quality improved seed production and distribution, commercial coffee seedlings raising, water resources development study, design and construction management, supervision, etc. In the livestock production, the private sector is encouraged to invest in standard abattoirs, cold chain systems, feed processing plants, etc.

If 1000 business people are trained per year, 5000 over 5 years, and an average cost of training is 20,000 birr per trainee (materials, trainers, accommodation, information package, etc) and the private sector contributes 50% to this, the estimated total cost of training would amount to 50 million birr.

In summary, the total incremental budget required over 5 years period will be 74 billion birr or 14.8 billion birr per annum. This is about 10.9% of the current GDP and equal to the projected budget for on-going sectoral programs by the end of the next 5 years. Although this seems to be on the higher side, the expected 8% agricultural sector growth and 10% national GDP growth rate per annum over the coming planning period will definitely dictate to allocate significant amount of resources for investment in the sector.

8.3. EXPECTED INVESTMENT BENEFITS

The priority areas of investment are identified and their costs are estimated in line with the projected and expected agricultural growth rate of 8% per annum in the coming 5 and 10 years. Hence, in general, the aggregate befit of the various incremental investments discussed above will be contribution to the growth rate of the sector.

At this stage comparison of the cost and befits of the individual incremental areas of investment need adequate and proper data in terms of benefits generated over the planning period. Unfortunately, data on the benefit streams is not easy to get. On the other hand it needs significant time to explore and assemble such data on streams of benefits from various investments. Some qualitative expressions in some areas could, however be possible.

Irrigation makes possible doubling or tripling of agricultural production by overcoming the moisture constraints and enabling multiple cropping in a year. Investment in the various aspects of the natural resources management will definitely improve the natural capital bases of the agricultural sector. Through improved maintenance of soil and water, land and labour productivity will be improved. Natural resources degradation cost the national economy through declining agricultural growth and lowered yield returns. Avoiding or minimizing the national income gap or national economic cost of natural resources degradation can be, in general, considered as benefit of investment in natural resources management.

The increased benefits from natural resources services are also the value add of investment in natural resources management.

Investment in research and technology generation will have a significant return in terms of higher agricultural productivity. As discussed on the earlier chapters on sources of growth and future implications, the future way out and strategy should be to harness the potential of technology and innovation generated and to be generated from the quality research systems in association with better natural resources management.

In terms of benefits of investment in other major areas, a reference can also be made to other recent studies. For instance, ESIF study on natural resources, specifically on SLM, or a study made for BMG foundation on irrigation, which estimates that over the next two decades Ethiopia could irrigate over 5 million hectares of land, contributing around ETB 140 billion per annum to the economy and ensuring food for up to 6 million households (~30 million direct beneficiaries). The same report indicates that (high-level estimates) irrigating 5.3 million ha would contribute an average annual ETB 140 billion over 25 years to Ethiopia's economy, or a 2.5 return on invested capital. Incremental agricultural production will directly benefit about 27 million people and indirectly develop the irrigation infrastructure by, e.g., generating demand for associated industries.

Referring to specific technologies and practices, adopting best practice techniques on a quarter of the crop area can increase maize production by over 60% and in self-pollinated crops over 30%. This corresponds to a crop increase of over 7m tons per year[89].

[89] source: study for *BMG foundation: seed executive report 2010.*

CHAPTER 9
POLICY, STRATEGY, AND INSTITUTION GAP ANALYSIS

9.1 LIST OF SUBJECT OR THEMATIC AREAS OF GAPS

In chapter five a review of existing agricultural policies, strategies and institutions is made. In this chapter analysis of the weakness of some of the existing ones and gaps are presented. Table 9.1 present the thematic list of areas where weaknesses or gaps are identified in the areas of policy, strategy and institutions.

Table 9.1: Policy, strategy, and institutional weakness and gaps

Subject or Thematic Areas of Gaps		
Policy	**Strategy**	**Institutions**
1. Agricultural investment and compensation 2. PAP areas land tenure and administration 3. PAP areas transformation 4. Land degradation and soil erosion 5. Gaps and lack of focus on livestock policy 6. The seed system 7. Investment on staple food crops and the credit system	1. Investment on AWDM and water-led-women centered green revolution 2. Fertilizer: strengthening the private sector role 3. Reducing pre and post harvest losses 4. HIV/AIDs and labor intensive agriculture 5. Enhanced animal feed and pasture development 6. Synchronized control breeding on small ruminants through AI; 7. Bee forage; 8. Forest resources utilization;	1. Programme, project, and directorate 2. Sector-wide linkages and relationships 3. Inside NARS 4. Strengthening the PM&E system 5. Agriculture sector studies' coordination 6. Dichotomization and the rationale behind development resources allocation 7. Pastoral affairs coordination: Revisit 8. Livestock sub-sector institutional issues 9. Institute for land administration and use 10. Irrigation: Infrastructure- to- use 11. Seed system: The institutional dimension 12. Nutrition: Building on what has been done 13. Gender mainstreaming 14. Climate change and DRM 15. Institutional capacity: Sector-wide and critical spots

A brief explanation on the same is given in the subsequent sections. These weaknesses or gaps have to be rectified for the successful implementation of PIF. It is important to recall the conceptual underpinnings of the policy, strategy and institutional weakness or gaps analysis. As indicated in chapter 2, if the policies, strategies and institutes are not catering to lead or accommodate implementation mechanisms for farm and non-farm sub-sectors, or pertinent natural resources issues, and spatially for pastoral and non-pastoral areas alike then they become subjects for policy, strategy, and institutional weakness or gap scrutiny.

9.2 POLICY GAP

It is important to recall the adopted definition of policy in this report. Agricultural policy is defined as a statement of course of action set by the Federal and Regional State governments in the management of agricultural development affairs. The policies could be formulated and implemented in the form of laws, rules, regulations, directives and broad goal oriented guiding declarations that affect different economic and social agents and institutions. Based on this definition, the few areas that need to be revisited are highlighted below.

9.2.1 AGRICULTURAL INVESTMENT AND COMPENSATION

In the 10 years ahead for the implementation of incremental investment areas the request for agricultural land will rise. Part of this may be fulfilled by having access to currently public land and part of it may have to be obtained via expropriation. The country's laws are becoming strict even for governments (Federal or Regional) to expropriate land for public development projects (PDPs). Proclamation 455/2005 stipulates that no expropriation should be made without compensation. The compensation may be in cash or kind. The option of compensating in cash also needs an adequate financial source. That means, for example, regional governments may face challenges to expropriate rural residents' landholdings for PDPs such as FTCs, TVETs or for rural roads without compensating in cash when substitute land increasingly becomes scarce. This will necessitate Regional administrations to allocate compensation budgets in lump sums or on the basis of sectoral requests as it is currently practiced by regions for investment in rural roads as well as for township expansion. However, the use of regional coffers for compensation purposes should, as much as possible, be minimized -- one way for this is to encourage rental arrangements to promote rural land based investment undertakings.

Although the practice of Regional budgetary allocations for compensation purposes is appreciable at the same time it is also arguable for reasons of sustainability[90]. As the extent of land based investment increases unless reliable and sustainable land and property related revenue sources is developed compensation using treasury fiancé becomes a daunting challenge. The option however, should be one which took in to consideration the nature of investment i.e., public versus private. Without denying properly vetted government budgetary allocations for rural lands to be expropriated for PDPs, when it comes to private investment promotion, the choice should be first to let the rural landholders rent their lands but through government regulated, legally binding contractual agreements. Such facilitation by the Regional administrations will reduce the compensation financial burden on governments, reduce bureaucratic costs of expropriation, valuation and compensation and at the same time reward farmers

[90] Partially, obtained from Assessment of Rural Land Valuation and Compensation Practices in Ethiopia (ARLVCE) Study, MoARD/USAID-ELTAP, October, 2007, Addis Ababa, Ethiopia.

better and ensure that they have secure landholding rights, which are transferable for a preferred deal after the contract period expires in a market-driven competitive investment environment.

9.2.2 PAP AREAS LAND TENURE AND ADMINISTRATION

The next ten years development path in the agriculture sector should be well set to exploit the potential resources or commodities that can be produced both in pastoral and non-pastoral areas of the country. Already huge investment is being made in pastoral and agro-pastoral areas in terms of expanding road networks, water system be it for human and animal drinking and irrigation, electricity and telecommunication. All these social overhead capital investments should be used to attract incremental agricultural investment in PAP areas be it in the livestock or crop sub-sectors. In this connection PAP areas existing land tenure policy is one critical policy areas that calls for checking.

In Ethiopia land policy is one area of policy which has been extensively covered through legislations and studies. Despite this there are still gaps in terms of adequate coverage of the land tenure issues of PAP areas. The existing land administration policy is mainly designed to cater the problems of land administration and use in non-pastoral predominately highland and sedentary areas.

A very recent study[91] on this issue after exhaustively reviewing and analyzing exiting policies (proclamations, regulations and directives)[92] did conclude that there are no policies and guidelines that could be applied by any existing institution towards the management and administration of land resources in PAP areas. Examination of the current policies and laws shows that pastoral areas are treated marginally and the blanket policy and legal frameworks on land use and administration cannot in the main serve the pastoral and agro-pastoral areas in this respect. For example, factors like population pressure, bush encroachment and expansion of crop agriculture, as well as drought have become main threats to pastoralism. In a situation where they get access to secure livestock feed, water, livestock and human health service, market place and education for their children; pastoralists repeatedly expressed their willingness to settle. The propensity to settle is accompanied with the search for and adoption of alternative livelihoods. For this they start enclosing piece of land. In fact some rich pastoralists are

[91] Pastoral and Agro-pastoral Land Tenure and administration Study, MoARD/USAID-ELTAP, August 2008, Addis Ababa.

[92] RDPS, and PASDEP documents; FDRE .1995. Constitution of the Federal Democratic Republic of Ethiopia. Federal Negarit Gazeta. 1st Year No. 1. Addis Ababa, 21st August 1995; FDRE 2005. Rural Land Administration and Use Proclamation. Proclamation No. 456/2005. Federal Negarit Gazeta. 11th Year No. 44. Addis Ababa, 15th July, 2005; FDRE Proclamation 89/1997; FDRE. 1997. Federal Rural Land Administration and Utilization Proclamation; FDRE. 2005. Expropriation of Landholdings for Public Purpose and Payment of Compensation, Proclamation No. 455/2005, Federal Negarit Gazeta: 3124-3132; FDRE. 2005. Federal Rural Land Administration and Utilisation Proclamation; FDRE. 2007. Payment of Compensation for Property Situated on Landholdings Expropriated for Public Purposes, Council of Ministers Regulations No. 135/2007, Federal Negarit Gazeta: 3622-3629; GPNRS. 1998 E.C. Rural Land Administration and Use Proclamation. Draft. Tahsas 1998; Ministry of Agriculture and Rural development (MoARD). 2004. PADS (pastoral areas development study) Phase I Report. Review of the Past and Present Trends of the Pastoral Areas of Ethiopia. Addis Ababa, Ethiopia; Oromia National Regional State (ORNRS). 2007. Proclamation No. 130/2007 to amend Proclamations No. 56/2002, 70/2003, 103/2005; Oromia Rural Land Use and .2007Administration. Finfinee; Sothern Nations,Nationalities,and Peoples Region (SNNPR). 2004. Rural Land Administration and Utilisation: Implementation Rule. 16/2004; SNNPR. 2007. SNNPR Rural Land Administration and Utilization Proclamation. 110/2007.

enclosing private grazing lands while at the same time they are also sharing the communal grazing lands with others. In this process women remain disadvantaged. Women in PAP areas have no secure rights to land.

Resource management and administration in PAP areas is predominantly under the customary system and there are no adequately established and capable government land administration institutions. Some strongly demand instruments like land use plans in order to curb the afore-mentioned unregulated expansion of farms at the cost of pasture. On the other hand, while those who attempt cultivation consider it as right, customary practices seem not to accommodate such farming practices both in terms of land management and administration. As a result, many of those who are putting up farms are turning to the Kebele administrations to establish their rights to access and use land for farming.

Besides, urbanization is one major occurrence that is bringing challenges to traditional and formal institutions to administer land in rural PAP areas. Pastoralists have increased propensity to settle in small emerging and expanding towns. Because of this and the various public and private investors' development interventions, pastoralists and agro-pastoralists are taking their own measures including individualization of pasture land for residential and business purposes. The land use and administration issue related to the urbanization process needs an urgent reaction in terms of land use and administration policy and legislation provision and implementation.

In general, examination of the current policies and laws shows that pastoral areas are treated marginally and the blanket policy and legal frameworks on land use and administration do not fit the pastoral areas. There is a need to formulate new once and review existing land use and administration as well as expropriation and compensation policies and legislations.

9.2.3 PAP AREAS TRANSFORMATION

Existing policy documents have clear policy positions in PAP areas on issues of voluntary settlement, provision of socio-economic infrastructure, as well as the environment to work with traditional and customary institutions. What is not clearly covered is the policy to direct the transformation process to cope-up with alternative livelihood options in PAP areas. Individuals are changing from pastoral to non-pastoral occupations be it in agriculture, commerce, and urban businesses. Particularly the recent conducive local administration setting as a result of the decentralization policy which increased the expansion of road networks, water, rural electricity and telecommunication infrastructure, and the enhancement of urbanization created a new interest in pastoral communities to become part of the new domestic and international economic order. These are also attracting external investments. This complex process must be tuned to orderly socio-economic system supported by well designed visionary socio-economic policy that encompass *at and after* the transformation process period.

9.2.4 LAND DEGRADATION AND SOIL EROSION

Soil and water conservation as part of land management requires due attention by government to have clear policy and strategy which accommodate all the agro-ecological zones of the country. The current focus on soil and water conservation is either related to drought prone areas, relief operations or considers

it as part of a strategy in watershed management (ESIF, 2008)[93], while the issue of soil erosion is everywhere in the country.

9.2.5 GAPS AND LACK OF FOCUS IN LIVESTOCK POLICY

In general, the livestock sub-sector is not policy deficient nor is the existing policies are hindrance to its development. The problem lies on **gaps** and ***lack of focus*** which should have been addressed via regulations and directives. Recently, a livestock Breeding Policy and Strategy has been formulated[94], however, it has been criticized for not being comprehensive[95] enough to include related issues such as animal health, and animal feed. In turn this should not imply that there is no need for detailed separate policies on animal health and animal feed. A policy attention is still needed in terms of managing free grazing practices.

Besides, the livestock resources are untapped as they should because of less emphasis given to the policy of putting up the necessary development and regulatory programmes with visionary long lasting investment thinking in the core commodity groups i.e., dairy, meat, egg and honey with value chain concept. The dairy and meat industry is a highly potential industry to make Ethiopia gain more foreign revenue from niche markets in the Middle East, Asia as well as West Africa. But as reported by a recent study[96] Ethiopia is lacking an official policy specifically that could guide development direction in the dairy sub-sector. This study also indicated lack of policy against adulteration in the area of several products and more severe is in honey and beeswax production. Finally, the policy documents in the afore-mentioned areas should also include institutional mandates and responsibilities.

9.2.6 THE SEED SYSTEM

The policy issues revolving around the seed system are on the mandate of production, pricing and distribution among public and private enterprises, seed import and the issue of harmonization with other countries seed system, as well as the extent of government intervention in the private seed enterprises operations.

The government's FYDP scaling up strategy on farm production response needs explosive growth in production of certified seed. At present the certified seed production is handled both by the public and private sector and in the case of the later currently the certified seed production is growing hardly at all. This has to change radically and requires major changes on policy at each of the three stages in the process. The policy changes are to provide business like procedures at every step: breeder, pre-basic, basic and certified seed production.

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[93] Ethiopian Strategic Investment Framework for Sustainable Land management. Prepared for the FDRE MoARD SLM Secretariat, august 2008, Addis Ababa.

[94] The formulation process is coordinated by MoARD, for details refer to CAADP study vol. II (2009)

[95] It is important to note here that there are proclamations on animal diseases and control (Proclamation No.267/2002), meat inspection (Proclamation No. 81/1976), and public health (Proclamation No. 200/2000). These proclamations do give emphasis to animal health disease control and public health. But draft regulations on diseases prevention and control, animal movement and registration and licensing animal health professionals are on the process to be proclaimed.

[96] Tesfaye kumsa et.al., 2008, pp. 72-73.

Breeder and pre-basic seed almost universally is produced by the research system. The supply is currently grossly inadequate. It has to remain in the national agricultural research system (NARS, which includes EIAR and RARIs). Besides the following policy changes are essential to a monitorable, business like operation of the breeder seed sector. The breeder seed will continue to be produced within EIAR and RARIs, with overall responsibly with the Director Generals of these two sub-systems of NARS. Some of the specific policy measures to consider are

a) Set up autonomous entity within the institutes under the overall direction of the Director Generals, to which the DGs will appoint a high level scientist/administrator with full responsibility to ensure adequate supplies of breeder seed for all commodities.
b) This entity (the breeder/pre-basic seed multiplication) to have the responsibility to ensure fully adequate supplies of all breeder seed and rapid growth in those supplies. It must have access to land and all other inputs needed to meet the growth targets. It must be run on a no loss basis with the price of seed covering all costs or the Government providing explicit subsidies to that entity. It should build overtime substantial reserves to tide over any difficult periods.
c) The entity will sell to ESE and RSE so that they can produce the basic seed meeting basic quality standards.
d) The entity will make estimates based on research station information as well as extension sources of demand for each seed variety and ensure a fully adequate supply to certified seed producers. This is a change from the present system of estimates by the extension agents in a system that gives inadequate scope for new varieties.

Foundation seed sometimes called basic – international experience is varied on this, but to have it produced by Ethiopian Seed Enterprise (ESE) and emerging regional seed enterprises (RSE) would fit with common practice. The supply is grossly inadequate at present. At present basic seed for self pollinated crops is multiplied predominantly in the research system. It is also the practice the basic seed for hybrid maize is mainly produced at Bako ARC. This is changing as result of emerging RSE. In the future it should not be only ESE and RSE, both are in the public domain, but also the private sector should have entry at the basic seed production. Till the private sector gets fully engaged in this seed production, ESE and RSE will produce and sell to certified seed producers as well as directly to farmers. However their primary responsibility is to ensure fully adequate supplies of foundation seed.

Certified seed – the product finally sold to the farmer. This too is grossly inadequate. Government has almost without exception found that constraints in government finance limit public sector seed producers from meeting rapid increase in demand. That problem shows itself as soon as the bulk of farmers are buying certified seed. Ethiopia is now in that situation. Besides, there is a shortage of adequately skilled seed producers in the private sector so the requisite expansion requires supplying (and supervising through certification) existing private sector suppliers and providing major technical assistance to bring new producers in. Innovations such as village level farmer producers are all to be encouraged as long as rigorous certification procedures are applied. Furthermore pricing policies need to be revisited so that to provide strong incentives for rapid expansion of the private sector. Seed production must be profitable for the required expansion to occur. Connected to this the recent directive of the government to make private sector hi-bred seed producers to allocate their seeds to government designated areas should be revisited. Government can do that on seed produced by the public sector.

Improved seed has become a strategic commodity to influence the productivity and production of the crop sub-sector not only in a given country but also continental and worldwide. The short run shortage of seed, particularly of hybrid maize, could be ameliorated by regulated imports if Ethiopia would sign the regional seed agreement. Since imports favor international companies it would be desirable to provide technical and other assistance to national producers. That would level the playing field in a manner that would ensure increased seed supplies to farmers. As of now, in Ethiopia the policy and strategy[97], as well as the proclamation did not have articles that direct regional and international harmonization issues (ASARECA, 2001). There was an attempt to harmonize the Ethiopian seed system with the East and Central Africa countries via the issuance of a regulation but which has not been finalized. This has to be revisited and the necessary policy and regulatory framework need to be in place in the soonest possible time since some of the East and Central African countries have already started to trade seed on the basis of the harmonization document they signed.

9.2.7 INVESTMENT ON STAPLE FOOD CROPS AND THE CREDIT SYSTEM

The production of major staple crops is still left for the many smallholders with traditional practices. The efforts made so far are to increase productivity at the small holder's level using mainly biological and chemical technologies such as seed and fertilizer. Investment on agriculture water development and improved farm tools and machinery is yet lagging. On the other hand, it is the core policy of the government to promote both smallholder and large scale commercial agriculture. But the available statistics shows very little progress has been made in this regard mainly because of paucity of capital. There is no strong rural agricultural finance system that caters for commercial emerging and expanding farms specifically that are tuned to produce staple food crops. The emergence and expansion of such farms would have saved most of the foreign exchange that is being spent for the imports of wheat in recent years. Besides, the agriculture sector would have been performed much higher than what it has had if it had been supported with increment to capital use, for example having access to capital goods by attaining up to 5% of the capital goods import of the country. In the last ten years the sector has been receiving less than 1% of the total import and less than 2.5% of the value of imported capital goods (Table 9.2). This indicates agriculture was subjugated to generate the foreign exchange which the other sectors benefited for their capital goods import while it is denied to have a fair share of the same for its own development in the form of having access to foreign exchange for the procurement of modern crop and livestock producing equipment and machinery.

The capital goods import share within agriculture also goes to commodities such as exportable horticultural crops and flowers. Moreover, these sub-sectors have enjoyed the 30/70 % own capital and investment loan arrangement, respectively while those in the staple food crop production have a problem of getting access to fiancé to cover the 70% of their investment project even if they manage to generate the 30%. If the country has to embark on irrigation agriculture, modern large scale private commercial staple grain producing farms, as well as agro-processing firms, there is a need for a policy review in terms of allowing investors in staple food production to enjoy fair loan arrangement and access to foreign exchange. Part of this may have to be addressed by setting rural agricultural credit system which will

[97] The seed policy and strategy was first issued in 1993 followed by a Proclamation No.206/2000 in 2000.

Table 9.2: Trend in Capital goods Import and the share of Agriculture

Year	Share of capital goods from the total import	Share of agricultural capital goods from total import	Imported capital goods percent distribution by sector		
			Agriculture	Transport	Industry
1990/91	45.27	0.70	1.55	46.96	51.47
1995/96	34.31	1.03	2.99	47.91	49.12
2000/01	28.57	0.51	1.8	34.61	63.61
2001/02	28.31	0.41	1.46	29.14	69.42
2002/03	29.60	0.32	1.07	31.67	67.26
2003/04	33.89	0.42	1.23	34.03	64.76
2004/05	33.01	0.66	2.00	30.98	66.96
2005/06	31.64	0.84	2.66	29.59	67.75
2006/07	36.45	0.64	1.77	33.92	64.31
2007/08	28.01	0.6	2.14	19.97	77.88
2008/09	32.02	0.41	1.26	15.53	83.21

Source: Author, compiled from National Bank Ethiopia Annual Reports.

cater for the emerging and expanding domestic investment needs in small and large commercial crop and livestock agriculture and agribusinesses. Even from the list of incremental areas reported in Chapter 6, the future definitely requires increased investment in agriculture, for example in irrigation infrastructure development, in advanced research technologies and facilities, market infrastructure, ATVET and FTC facilities and equipment as well as for mechanized agriculture both at small and large scale farming. The smallholders have to start to use semi-automated tractors and harvesters to gradually exit from centuries' old oxen and hoe culture.

At this juncture it is also important to recall the suggestion made in Chapter 4 that the analysis of priority policies should put in scrutiny the investment disparity that has existed between the highland and low land areas of the country. In view investment on irrigation in that chapter it was pointed out that relatively in the low population density areas massive investment in roads, electrification, irrigation and land improvement are needed because in the already farmed areas large investments in land improvements, and support of the labor force have already been made. If those investments are made largely with foreign capital that is not available for development of the highlands it makes sense to have that development – of course with due attention to the needs of the people who are already there. More important, from a poverty reduction point of view development of large scale farms, necessarily highly mechanized does little to reduce poverty in the areas of concentrated poverty, at present the highland areas. That is because much of the return to capital will be removed from the country and the expenditure patterns are in any case not oriented towards the employment intensive rural non-farm sector as is the case for the small commercial farms of the highlands.

9.3 STRATEGY GAPS

As discussed in chapter five one can find several strategies set in order to make different programmes achieve their annual and five year development plan goals. Despite this there is absence of strategy on the following[98]:

9.3.1 INVESTMENT ON AWDM AND WATER-LED WOMEN- CENTERED GREEN REVOLUTION

Ethiopia's agriculture in the years ahead should be driven by enhanced investment and a paradigm shift in agricultural water development and management (AWDM). The future AWDM investment in Ethiopia should ***avoid size, scale and spatial and agro-ecology biases*** and investment on any appropriate AWDM initiative should be made based on a prior set vision and goal. In line with this there should be also a paradigm shift to ***water-led women- centered green revolution*** instead of repeating the past seed-cum-fertilizer based green revolution[99].

Enhanced gender main streaming is one key element of Africa's Integrated Water Resources Management framework. Cognizant of this the paradigm shift in AWDM entails women to be the lead actors of water led green revolution. In Ethiopia, where rural agricultural land is highly fragmented the need for such a revolution with women as decision makers and leaders in the AWDM projects is timely and appropriate. The revolution augments women labour which is currently inefficiently and ineffectively spent in many rural areas mostly to fetch water for domestic use and other domestic functions. Some initiatives, especially by NGOs, have demonstrated that women's empowerment in irrigation is feasible, particularly when financial, technical, and organizational support is explicitly targeted at women. As active participants in irrigated agriculture in most countries, women can bring their own perspectives and distinct sets of interests in how the water should be managed for the benefit of each rural agricultural household. Hence women should be systematically consulted, empowered, and closely associated in AWDM projects.

In this connection it is also important to use irrigation **for food crops and feed production.** So far irrigation is used for fruits and vegetable production in smallholders' case which are directly linked with markets and infrastructures. In large scale it is used for the production of industrial crops such as cotton and sugar. As a strategic input it should not be limited to these products only. It should be used even at smallholders' commercial agriculture for the production of high value staple food crops, fattening and feed productions which have a significant role in income generating at house hold level as well as in promoting import substitution strategy of the government.

9.3.2 FERTILIZER: STRENGTHENING THE PRIVATE SECTOR ROLE

It is known that ensuring adequate supply of fertilizer through domestic production and competitive and efficient fertilizer importation and marketing system is the center of the government's fertilizer policy[100]. In the period of PIF implementation a tripling of the rate of growth of fertilizer use from the current approximately five percent growth rate to the 15 percent needed requires utilizing all potential importers and distributors of fertilizer. No doubt that the cooperatives need to expand and also there should be a

[98] Some of these are reported in the CAADP Ethiopia study, 2009, too.

[99] Refer to the "New Paradigm for Agriculture Water Development and management: Analyzing Ethiopia's Position in Africa," by Demese Chanyalew in the Proceedings of the 10th Annual Conference of the Agricultural Economics Society of Ethiopia, July 27-28, 2007, Addis Ababa.

[100] In October 1993, the government of Ethiopia articulated a national fertilizer policy document, this is followed by revised National Fertilizer Policy, 1999 and the Fertilizer Procurement, Import, and Distribution directive in 2006 (Text in Amharic).

means to bring other private sector traders in as a major component of the import and distribution system. For this the first requirement is that foreign exchange must be allocated fairly to both cooperatives and other private traders. Cooperatives and private sector shall import and distribute in a competitive environment with little involvement by the government in the domestic fertilizer market. The government needs to monitor the entire system to ensure that cooperatives; private traders and their private trucking systems are doing their job.

Cooperatives have a critical role to lay in keeping the distribution of fertilizer competitive and low cost. But in the new requirements for agricultural growth they must do this on a far larger scale than on the past. Besides, the cooperative system should continue as a core institution for input supply and marketing. The fertilizer import and distribution strategy must grasp the importance of tripling of the growth rate; take that as a real target for cooperatives with the complementary management decisions and investments in warehouses, trucking, membership encouragement and other requisites of such a major change in the growth rate of fertilizer distribution.

Fertilizer distribution is a trading activity – something the Ethiopian grain trade private sector is good at. Cooperatives do not reach all farmers. A broad international experience shows, e.g. India, Pakistan, and all the more developed countries, that when the private sector traders are brought into fertilizer distributing the growth rate and total quantities provided to farmers increase greatly. The large grain traders have broad contacts with farmers, access to credit, access to trucks, and knowledge of dealing in bulk commodities that facilitate immediate impact. Having competition between cooperatives and private grain traders will bring down costs to farmers. The cooperatives do well in competition with private grain traders to the clear benefit of farmers in grain trade. The same needs to happen on fertilizer distribution.

9.3.3 REDUCING PRE AND POST HARVEST LOSSES

Ethiopia has focused on the increase of productivity and production agricultural products to increase availability of food crops. More would have been gained had the nation was focusing with a well set strategy to reduce pre and post harvest losses . The country looses annually a tremendous amount of agriculture produce due to pre and post harvest losses. The pre-harvest loss is related to endogenous and exogenous problems. Endogenous is referring to farmer's failure to properly manage the necessary agricultural practices starting from land preparation to harvest. Exogenous factors are those related to natural uncertainties like drought and pest outbreak. Available data indicates annually 15-20% loss of potential grain production due to pre-harvest mal-practices and natural disasters. Similarly up to 30% of post harvest losses are reported due to inappropriate collection, transport, storage, treatment of pests and rodents, loading and unloading etc. For example, the data for 2007/08 indicates the nation would have gained additional about 32 million quintals of grain had it reduced the loss say to 10%.

9.3.4 HIV/AIDS AND LABOR INTENSIVE AGRICULTURE

For the country to continue with its labor and land intensive agriculture, a special strategic move has to be made to curb the incidence of HIV/AIDs in rural agricultural areas. Although there are extensive interventions by the MoH and MoWA[101], still the incidence and influence of HIV/AIDs in ARD and its effect on the availability and productivity of labour is being addressed through limited studies. In spite of

[101] Ministry of Health and Ministry of Women Affairs, respectively.

the positive performance of agricultural growth, this sector is facing a serious challenge by HIV/AIDS. Hence, the existing limitations in expediting the assessment of the impact of HIV/AIDS in the productivity of agriculture labour and as a consequence on production need to be addressed without ado.

9.3.5 ENHANCED ANIMAL FEED AND PASTURE DEVELOPMENT

Under PASDEP, livelihood and Asset Building, and Basic Social service strategies for the PAP areas are well addressed. However, the existing animal feed strategy gives attention to the development aspect and very little on reserve. Traditional feed reserve practices exist mostly in non-pastoral areas. This is highly associated with the annual crop cultivation practice which again is not the case in pastoral areas. Recently, the increased incidence of drought, particularly in PAP areas has exacerbated the problem of animal feed and is necessitating for a strategic intervention in feed reserve both in natural and commercial aspects. The strategy should be based on the emerging principle of disaster risk management rather than addressing emergency situation.

In general, improving animal feeds and nutrition are critical issues in the Ethiopian livestock development context. Feed shortage is becoming a very critical issue both in the highlands, where land shortage is prevalent, and in the lowlands, where range degradation and invasion by invasive weeds is spreading. In the midst of this, the expansion of compound animal feed industry by the private sector is non-existent. The households are still following the traditional livestock rearing system, which is open grazing. An alternative livestock rearing, feeding, and management system need to be sought. It is high time that, the traditional and subsistence livestock production system needs to be replaced by scientific management and production system. A system which can augment the productivity and production of the nation's livestock resources with a well designed policy and strategic goals, including the maximization of livestock owners income and improving their living standards.

9.3.6 SYNCHRONIZED BREEDING[102]

Synchronized breeding is an artificial manipulation of the reproductive cycle of animals for the purpose of fixed time breeding through AI and as a result to achieve compact calving, lambing or kidding. The system allows aligning the breeding programme with feed availability and marketing. This programme can be accessible to individual farm household use through public services or undertaken by private investors through value chain development approach. Currently, this is reported to be practiced by some private firms. Its use in the public sector is still under discussion. The core issue here is whether it is to be practiced by the public or private sector or both, the country need to have a clear strategic direction.

9.3.7 BEE FORAGE

The current GoE policy on apiculture is to develop and expand honey production with special emphasis in irrigated areas, integrated with fruits and agro-forestry. Traditionally, honey production is common in almost all agro-ecologies that are endowed with water resources and vegetation that serve as a nectar source for bees. Recently, the need for bee forage practice is getting importance especially with the promotion of modern beehives in different agro-ecologies. All these are in place without a strategy on bee forage.

[102] For details of this and on bee forage refer CAADP Ethiopia study, 2009.

9.3.8 FOREST RESOURCES UTILIZATION

The Policy, strategy and the proclamation on forest development, conservation and utilization document compiled by MoARD (2007) does include statements with the term utilization. Most of it is related on how to collect, organize and analyze information or to undertake studies. It is not clear on the strategy of how to utilize forest and forest products with an apt forest conservation practices.

In forest management and protection, all the policy statements concentrate on expansion of forest coverage through plantation. The utilization of forest and forest products and non timber products including dry land species products, management should get due attention from the economic value of the resources, example, incense, resin, bamboo, honey and forest coffee etc.

In our country the demand of household energy depends on woody bio-mass which contributes to deforestation and land degradation. To alleviate this problem it is recommended to look for alternative household energy through community woodlots development, use of fuel saving technology and renewable energy sources.

9.4 INSTITUTIONAL GAP

9.4.1 PROGRAMME , PROJECTS AND DIRECTORATES

In recent years it has been argued that Ethiopia has well written agricultural policies and strategies covering various sub-sectors but is not implemented efficiently and effectively. Mostly this problem is attributed to weaknesses in institutional arrangements and capacity[103]. Specifically it revolves around how agriculture development activities are organized both from the technical and budgetary coordination and allocation perspectives as well as how the available human, financial and physical resources are used. The government has already embarked on a task to rectifying these problems via the BPR process. BPR primarily focuses on assessing on the way things are being done in view of addressing the ultimate beneficiary needs which the targets of the institute in focus is realized by putting together a group of logically related tasks that use time and resources efficiently and effectively. BPR expected to show changes on as-is in a manner that targets are achieved in an expedited manner without ado. It is a process embodying a critical performance measuring mechanism be it in terms of benefits to costs, quality, and promptness of services or goods delivery. Although in principle BPR is not an exercise to change the structure of an organization, the result of the exercise is not totally immune from bringing changes in this regard too.

Following the above basic principles of the BPR and the on-going BPR study the MoARD as well as regional BoARD may come up with a changed organizational structure inclusive of directorates (process owners) and institutes. Prior to this, however, the result must ensure to halt the haphazard formation of programmes, the confused use of the programe notion in the regular government budgetary process and that of externally financed projects, as well as the establishment of project implementing units and directorates at par which also derail the technical channel of communication to sub-sector leaders (State Ministers) by by-passing the programme (process) owners or directorates.

For PIF to be an effective framework for the next 10 years agriculture sector policy and investment implementation, both the technical and budgetary coordination and allocation systems and mechanisms should fall under the strict compliance of the programme definition and formation of the FDRE government. According to the FDRE government budget manual a programme is a broader cost center of a public body or a broad objective of expenditure. Expenditure has to be related to output. In the context of current MoFED practices, a programme by definition imply a framework that contains similar activities designed to bring developmental changes (result-based); and enhance growth with a continuous resource allocation from internal and external sources via annual recurrent budget or capital budget i.e., set in a project format. A programme can have sub-programmes and further contains projects as the government budget manual and the Public Investment Programme (PIP[104]) document defines and bound by resources (human, financial, and physical) via the capital budget appropriation or non-project regular government development interventions with the recurrent budget (resources) provisions.

[103] As reported in the CAADP Ethiopia study, 2009 and others.
[104] PIP is a three year rolling plan for capital and recurrent expenditure which uses indicative planning figures for the resource envelope.

In recent years MoFED is increasingly tightening the programme concept by asking a number of federal institutes to start a pilot "programme budgeting". This includes MoARD. This indeed is a essential and timely change in order to ensure that investment on on-going programmes or incremental investment areas in a project format be recorded under a given existing or newly approved programme. In this way the programme becomes subject for performance evaluation to ensure that each Birr invested is returning the expected benefit. Furthermore this entails that whether the finance is coming from treasury or external sources or whether it is a recurrent or capital budget activity, activities should be configured in a project format with a clear starting and ending time with a prior set, as much as possible, measurable targets. Implicit in this is that a programme cannot be solely footed on external finance. Any support that is coming from external sources shall take a project format which brings resources that are to be used for a specific life time known as the project period. In this context PSNP, SLM or AGP are projects and not programmes by definition. PSNP remains part of the GoE food security programme. AGP is a project with various components whose implementation should be conceived as activities contained in and lead by different programmes. Given the spatial coverage (regions and woredas) of the present AGP, in the coming ten years several AGPs are expected to be designed and become implements for the PIF proposed investment areas and components.

The institutional arrangements in terms of Directorates, Authorities, Institute, or Agencies should be anchored on the programmes. Diagram 5.1 and Table 8.1 shows the present arrangements of programmes, projects and directorates in MoARD. Some of the projects mentioned in Chapter 5 are headed by offices that are directly answerable to the State-ministers. For example, currently the Natural resources sub-sector of MoARD has only one directorate and institute (IBCR), but equally answerable to the State-minster are also the project offices including SLM. Implying SLM activities that are not financed by the SLM project are falling directly under the Director of Natural Resources, and those of the project areas under the SLM project coordination unit. The question is what will be the fate of the activities started when the project phased out. It is expected to be picked up by the regular programme. In this case either the SLM has to be established from the very beginning as a programme run by a Directorate or remain as part of the existing structure under the current Director for Natural Resources. In the PIF context it is recommended to have three directorates under the State-minster of the sub-sector, and a similar arrangement to be followed at regional levels. Uniformity is not a necessary condition, but projects should be under programmes, and programmes should come under a directorate or to be shared among directorates with clear intra-and-inter-institution coordination mechanisms, such as boards, technical committees of the REDFS types, or purposely crafted stakeholders platforms.

As a follow up of the work done during the CAADP Ethiopia study for PIF the agriculture sector is expected to have about 36 programmes at Federal level in contrast to the present 56 cost centered programmes listed in the budget registry of MoFED. The PIF proposed programmes indeed calls for the government to take a bold measure to consolidate existing cost centers for efficient and effective use of resources. The consolidation enhances the technical performance while contributes to the reduction of process handling costs. It is expected also that the ongoing BPR exercise may end up with such consolidation requirements in order to make the sector gain from economies of scale and size to manage programmes. The wastage of resources will be increasing when activities that can be put together under one programme or directorate are split in various programmes or directorates. Support resources (staff, buildings, equipment and machinery) should be used efficiently and effectively and resources gained from

such efficiency be shifted to technical works. Any development project that is financed be it by treasury or external source for a specific time should fall under a programme but can be managed by a PCU, answerable to the director. It gives a room for a capacity building of the directorate itself in terms of running projects as well as ensures the continuity of interventions through the regular programmes even if they are started by projects.

Given the above explanations it will be thoughtless not to suggest the plausible institutional arrangements for the proposed PIF programmes. Table 9.3 presents a suggested directorate and institute arrangements for the agriculture sector programmes but still subject to changes due to the up-coming BPR and BSC results within the sector. In view ministerial setting, the PIF programmes SS1-SS3 and the proposed two directorates will fall directly under the minster. Research programmes and the institute can continue with the status it has currently. The rest will remain under the four state-ministers.

9.4.2 SECTOR- WIDE LINKAGES AND RELATIONSHIPS

It was possible to identify institutional gaps related to linkages or relationships i.e., synergy. This includes issues of information exchange; linkages among GOs, NGOs, and CSOs; RE&D; quarantine, standard and quality control; warehouse receipts and ECX; irrigation construction and use; and pastoral affairs coordination. In the existing RE&D system the pastoral and agro pastoral issues are not adequately covered. Hence it is timely to review *the* RE&D *system putting the agro-ecology and integrated approach into perspective.*

Sector-wide institutional arrangements, specifically linkages and relationships, should be tuned to make farmers income increased and their standard of living improved in the coming 10 years to the level that commensurate with the national vision of having middle income country citizens whether they are in agriculture or non-agriculture occupation.

Table 9.3: List of PIF proposed programs by institutional arrangement

sub-sector	Program		Proposed institutional arrangement	Remarks
	Code	Title		
Agricultural Development	AD1	Food crops[105]	Directorate	Horticultural crops, other than flowers, could be considered as part of this directorate or a separate institutional arrangement can be considered
	AD2	Coffee, Tea, Herbs and Spices	Directorate	The SHS directorate caters for coffee, tea, other stimulants, as well as the broad spectrum of herbs and spices.
	AD3	Industrial crops	Directorate	
	AD4	Livestock and Fishery	Directorate	National AI as a programme remains part of the livestock directorate. There could also be consideration for separate programme and institutional settings for the dairy and meat industry.
	AD5	National AI		
	AD6	ATVET	Institute	This institute could be responsible for the broader sub-sector cross-cutting farmers/DAs/ SMS training and skill augmenting tasks as well as the capacity building associated with FTC and DFs.
	AD7	Agricultural investment	Directorate	Services in special investment areas, e.g. Floriculture can be considered as part of this directorate or be established with special institutional arrangement if need arises.
	AD8	Animal and plant health services and regulatory	Directorate	Functional relations with that of AM2 below can be worked on.
	AD9	Cooperative development	Agency	
Agricultural marketing	AM1	Agricultural inputs supply and marketing	Directorate	The director could be assisted by a deputy director office
	AM2	Agricultural inputs and products quality control and standard		
	AM3	Warehouse receipt and credit facility		
	AM4	Agricultural products marketing promotion		
	AM5	Agricultural marketing information system		
	AM6	Cooperative		

[105] In the current set up AD1-AD4 are congested in one directorate, namely agricultural extension, which also oversees the activities of ATVET.

		marketing		
	AM7	Rural – urban linkage[106]		
Natural resources development, conservation and utilization	NRD1	Land administration and planning	Institute	
	NRD2	Sustainable land management	Directorate	
	NRD3	Agriculture water development and management	Directorate	
	NRD4	Forest and forest products development, conservation and utilization	Directorate	
Disaster risk management and food security	DMFS1	Food security	Directorate	
	DMFS2	Disaster risk management	Directorate	
Natural resources and agriculture research	NAR1	Food crops	Institute	The existing arrangement of EIAR can be used to accommodate the proposed programmes.
	NAR2	High value crops (horticulture, spices, stimulants and fibres etc..)		
	NAR3	Essential oils and medicinal plants		
	NAR4	Natural resources research		
	NAR5	Agricultural engineering and mechanization		
	NAR6	Socio-economic and extension		
	NAR7	Dairy and meat		
	NAR8	Fishery and aquaculture		
	NAR9	Camel research and development		
	NAR10	Apiculture and silkworm		
	NAR11	Animal health		
Support services	SS1	Administration and management	Directorate	SS3as a programe remains as part of the planning and programming directorate. For its uniqueness from the NAR6, reference can be made to the CAADP Ethiopia study.
	SS2	Planning and programming	Directorate	
	SS3	Agriculture and food policy studies coordination and documentation		

[106] For the rationale refer CAADP Ethiopia Study, and also for detailed background information, Gete et.al., 2006.

Inadequate vertical and horizontal collaboration among research institutes and weak research extension farmers' linkage tended to the woreda level appears to be some of the institutional challenges contributing to the lack of effectiveness in the RE&D chain that has to target increased farm income as a goal. Productivity and production gains should not be the major performance indicators of the R&E systems in the years ahead. Rather it should be the systems contribution to farmers' income and levels of living changes. Put differently, from relational aspects one area of investigation is the linkage among research and extension, technology development, multiplication and distribution, farming and agro processing, as well as marketing and trade institutions[107]. The farming and processing can be examined in view of use of modern versus traditional technologies in both small and large scale set up. In economic analysis all of them can be examined in view of prices and incomes explained by the laws of supply and demand where final demand (consumption) may remain as the driving force for research and extension programmes designed to enhance farm and agro-processing and related businesses incomes.

Agricultural inputs quarantine, standard and quality control both in crop and livestock agriculture calls for a strong linkage among relevant institutions such MoARD's Animal and Plant Health Regulatory Directorate, Agricultural Marketing Directorate, Customs Authority, Private input producers and traders. As appropriate CSOs, particularly those established within the agriculture sector should come in a formal linked institutional arrangement in order to address national issues of agricultural inputs and outputs quarantine, standard and quality issues.

9.4.3 INSIDE NARS

Above the relational aspects of the agriculture research and extension institutions is explained. However, there are organizational issues that need to be rectified within, particularly in the national agricultural research system (NARS).

The agriculture research system of the country, which is also referred as the NARS includes EIAR, RARIs, HLI, IBCR, and Ethiopia based CGIAR affiliated institutes such as ILRI. There are existing problems of coordination mostly institutional, though some say they are policy problems by feature. By proclamation it is EIAR mandate to coordinate NARS. But the coordination role and the activities related to it are not clear from that of the mandate of EIAR to conduct agriculture research at its Federal research centers. RARIs complain that EIAR first did not understood its coordination role, secondly because of this it has not build its capacity to coordinate over the years, and in turn remain weak to coordinate and share resources that are obtained from treasury and external sources. Thirdly they complain that EIAR is indulging in research programmmes and activities that are the mandates of RARIs. The notion of "Center of Excellence" and the possession of some research center by EIAR for this purpose seem also to create a wage between some RARIs and EIAR. Similar blurredness exists between EIAR and HLIs. The linkage between EIAR and IBCR is also wanting.

The GOE hase started to take a measure to rectify the problems between EIAR and RARIs. The PIF consultants' team was informed that a document that seemingly contains the solution to the existing

[107] Marketing and trade encompass issues of infrastructure such as storage, transports as well as practices such as packing and assembling. Trade issues as usual require the assessment of the import and export activities.

problems or lack of clarity in terms of institutional mandates was prepared in June 2008[108] but still not finalized. Even if it is finalized it is the filling of some of the interviewed experts that it will have little value addition to solve the problem that is in place between the RARIs and EIAR. Some members of RARIs also relate some of the issues to the Federal and Regional Constitutions and the rights enacted for them to discharge their duties and responsibilities. Implying that even if the document gets finalized, they will continue to operate and discharge their duties and responsibilities provided that they are not negating the constitutions and the mandate proviso given to their institutes establishment. In short, there seems to be a serious institutional arrangement and coordination mechanism problem that needs to be resolved by the concerned bodies in the soonest possible time. This is urgent for the agriculture research system to remain one of the key players scaling up/out, enhanced interventions in natural resources utilization and management, as well as the commercialization of smallholders' agriculture via the possible import substituting agro-processing business ventures development strategies in the NFYDP.

The above being on the technical side of NARS, during the PIF preparation it was also noticed the resource provision, budget, for agricultural research is also an issue to be addressed by Federal and Regional governments soon. For agriculture to excel within and without investment on agriculture research is a driving engine. Despite the problems highlighted above, Ethiopia is fortunate in having a highly competent NARS composed of EARI and RARIs with dedicated research staff. However, especially given the quality the expenditure is not sufficient to maintain a high response to the NFYDP scaling up and out specifically to increased use of biological (variety) and chemical (fertilizer) technologies as well as the use improved farm tools, equipment and machinery. In this regard there should be an increase in the expenditure on agricultural research to a modest level, for example, increasing it from the current share which is below 1.5% of AGDP to 2% as agreed by IGAD member countries. One strategic approach to solve resources constraints is to increase collaboration with the CGIAR member institutes.

9.4.4 STRENGTHENING THE PM&E SYSTEM

The next 10 years agriculture development programmes and incremental investments to be embarked on should be well fitted with sound planning, monitoring and evaluation (PM&E) systems. Good practices of PM&E need to be instituted in the sector and among related sectors at all levels of government and non-government agencies. Field visits and discussion with experts revealed that there is no coordinated development activities planning and implementation among federal, regional governments, as well as NGOs and donor communities. Sometimes different offices or NGOS intervene in the same woreda with identical development projects. It has been pointed out, for example, that donors are good in agreeing quickly to have established joint programmes but drag a lot or remain unwilling to pool resources for the agreed programmes and plan and M&E the same from one coordinating body. This needs to be corrected. Besides, the programmes and projects run with government recurrent budget often fail due to lack of proper and adequate PM&E system. Activities are not planned from the local government up to the top level with participation which eventually pave the ground for follow up and accountability. Interviewed officials and experts in various institutions agree that it is good to decentralize development activities implementation and give more authority and responsibility to woreda administration. But at the same time

[108] The document is in Amaharic dated June 2000 E.C.

there should be a clear guideline on how to plan, monitor and evaluate starting from kebele up to federal level.

9.4.5 AGRICULTURE SECTOR STUDIES' COORDINATION

Quite a number of agriculture and food sector studies have been conducted be it in sub-sector, commodity, thematic or sector wide manner be it by the commissioning of the government, NGOs, or donors. Most of the time these have been done without coordination for traceability and use throughout the nation be it by federal or regional research and development institutes. Besides, during and after conduct, each study has contributed very little in terms of building a national capacity for agricultural development and policy research. The need for various studies in the area of agricultural policy, markets, marketing, market access, prices and trade is explicitly stated in existing policy and strategy documents of the government. Following this even in recent years several studies have been done in the sector but mostly by institutes of external origin, say IFPRI. The capacity of undertaking such studies within the country by institutions such as EDRI and EIAR, RARIs, or HLIs are wanting and even in the case of EIAR it seems vanishing. Often, the private sector consulting firms are also engaged through external firms. In such a situation there is a need for a programme and a body that should be responsible within the MOARD to coordinate and document various agriculture, food, marketing and price policy or development studies. It is suggested in the CAADP Ethiopia study recommendation and also adopted here. To start with it could be placed under the Planning and Programming Directorate with an initial capacity building resources provision. The programme must be able to establish a system of researchable problem identification, identifying potential research institutes both in the public and private sector, soliciting finance for the study/research, ***outsourcing*** the research or study for national and international firms such as EDRI, EIAR, RARI, HLIs, and IFPRI. It should have its own planning, monitoring and evaluation (PM&E) system, and be responsible to prepare policy briefs to policy makers as appropriate.

9.4.6 DICHOTOMIZATION AND THE RATIONALE BEHIND DEVELOPMENT RESOURCES ALLOCATION

Recent studies[109] indicated that classification of woredas as Food Secure (FS) and insecure (FIS) is creating resource provision disparity for works that are important to mitigate natural resources degradation as well as provide preventive assistance to those whose assets in rural agricultural areas are denuding due to natural catastrophist. The present classification of woredas on the basis of one problem and one program, for example ***food insecurity cum PSNP***, is causing damage to the so called high potential, food secure woredas in terms of not having faire share of available resources to work on natural resources conservation practices, engaging them in income and job generating public works such as community roads, as well as attracting fair share of NGOs and donors spending on basic socio-economic infrastructures such as water supply and sanitation, and health services that are targeting malnourished children and mothers. Similar derailing seems to emerge with the ***Agriculture Growth Programme (AGP) which is appearing with a dichotomization of woredas as high versus low potential.*** It is possible to have projects that are location specific and time bound. But it is a mistake to follow what they followed to specify their project area as a guideline for the overall government budgetary allocation procedure. Let development budget follow strictly the financial system and the federal –regional linkage mechanism and externally financed projects connect only to the Federal and regional programs. They should not create any confusing regular recurrent or capital annual budget propelling derailment.

[109] The Sustainable Agriculture and Rural Development in Mountain Regions (SARD-M) Study in Ethiopia, Global Mountains Programme, February 2009, Addis Ababa Ethiopia.

In short, there is an urgent need to halt the current project coined dichotomization of woredas and the ways and means financial resources are allocated for various development activities in this regard. One should recognize that policy formulation should not be caught in the single problem trap[110]. The future should be built on a programme and project management framework that opens up for resource allocation on subjects or problems to be solved without prior lump sum spatial fashionable dichotomizations.

9.4.7 PASTORAL AFFAIRS COORDINATION: REVISIT

There is a gap in terms of having a legalized body which have the mandate to mobilize internal and external resources (fund) and align indigenous traditional institutions with formal institutions (research centers, Universities, administration etc) for the purpose of development in the PAP areas.

The Government of Ethiopia has given a high priority for the wholestic development of the PAP areas. This is manifested through the establishment of the Pastoral Standing Committee in the House of Representatives, and Inter-Ministerial Board under the MoFA, and the special coordination Offices of the PAP areas. Currently, the pastoral institutions located in the different Federal institutions are not communicating systematically with strong legal base.

In this regard, on pastoral affairs there is a need to reexamine the role of coordination offices in various ministries and that of the technical committee[111]. Each institute appears to take its own course of action. There is a gap in terms of having a legalized body which has the mandate to mobilize internal and external resources (fund) and align indigenous traditional institutions with formal institutions (Research Centers, Universities, Administration etc) for the purpose of development in the PAP areas.

9.4.8 LIVESTOCK SUB-SECTOR INSTITUTIONAL ISSUES

Recent extensive studies in the livestock sector argued that livestock sub-sector in Ethiopia warrants a much more organizational arrangement than it has at the moment. Specifically the study by Tesfay et.al (2008) recommended that the livestock sub-sector should grow to a Ministry level. By the time they made this recommendation livestock has had a mere Departmental level position under the MoARD. Besides fishery has been detached from its previous structural linkages and not received appropriate position in view of the role it can play to meet the associated food demand. It is high time to revise the livestock and fisheries status both in terms of programme formulations and organizational setting. As can be seen from Chapter 8, in terms of programmes three distinct ones are identified, and these at least deserve to be housed in one separate Directorate of livestock and fisheries (Tabl3 9.3), if not at a higher level, say with a state-minster portfolio.

9.4.9 INSTITUTE FOR LAND ADMINISTRATION AND USE

There is no significant rural land administration and utilization activity at the Federal level while there are related issues to be addressed in an organized and coordinated way. One reason is because there is no unique institutional arrangement for the land administration and use policy and strategy implementation at the Federal level while there are institutions established and operate, with minor variations, at Regional

[110] Demese, 2004

[111] CAADP Ethiopia Study, 2009 has a detailed discussion on this issue.

level[112]. For example, in Amhara, Environmental Protection and Land Administration and Use Authority (EPLAUA) is directly accountable to the Regional Administrative Council, whereas in Tigray EPLAUA operates under the Bureau of Agriculture and Rural Development. In Oromyia and SNNPR, rural land administration and utilization activity is handled by separate bureau named "Bureau of Land and Environmental Protection".

Recent studies[113], has indicated the absence of a rural land administration and utilization institution at the Federal level. At the federal level land administration and use plan should be urgently institutionalized since the gap in comprehensive land use planning is constraining the proper administration and utilization of land and conservation of land resources to enhance productivity and production[114]. Without proper land use plan in place, the current trend of using the land unwisely will further exacerbate the current problems on agricultural production and economic growth.

9.4.10 IRRIGATION: INFRASTRUCTURE- TO -USE

The linkage between MoARD, MoWR, BoARD and BoWR on irrigation infrastructure construction and use still needs a reexamination. During the regional visits the PIF consultants' team has noticed quite a big jump in terms of institutional arrangement between BoARD and BoWR on the planning, construction and use of irrigation infrastructure. However, more should be done on institutionalized linkage between them and between MoARD and MOWR in terms of transfer of the physical infrastructure, the work to be done jointly till the actual targeted beneficiaries are in use of the facilities, as well as in terms of repairs and periodic maintenance of the physical infrastructure. Beyond the initial stage, they have to also have unambiguous task division in terms of repair and maintenance interventions and use of established and institutionalized CBOs, like those of Water Users Association in the small-scale irrigation facilities use and management.

9.4.11 SEED SYSTEM: THE INSTITUTIONAL DIMENSION

Improved seed as a national strategic agricultural input needs emphasis with its complexity starting from production up to marketing distribution and use. In cognizant of this, quality control and the integration and working relationship among public and private research, development and multiplication agencies have become vital to facilitate the production and supply of improved seeds to the farming communities. However, this relationship falls short of the desired level of integration and coordination and as a result there is lack of adequate quality control measure, and certification of improved seeds[115]. Furthermore, the existing system is not giving a fair competitive ground for ESE as well as private seed enterprises. ESE is at a cross road of being a profitable parastatal and a non-profit making development supporting enterprise of the government functioning with controlled prices and protected labour. The private sector is not supported to expand particularly in the area of having support to access credit. Recently it is also facing intervention in terms of where and how much to sell, negating the profit driven competitive market business deal. Besides, the linkage between the ESE and the emerging RSEs need to be clear not only in

[112] During the PIF preparation time the consultants' team has been informed that already progress has been made to establish a land administration and use body at Federal level. The institutional type is not yet known by the time this report is out.
[113] For example, theELTAP study to Assess Rural Land Valuation and Compensation Practices in Ethiopia (ARLVCE), October 2007, Addis Ababa, Ethiopia.
[114] It is important to note that the PIF team is informed that an institution, be it a separate or a Directorate within MoARD, has been considered and is getting close to approval by the executive wing of GoE.
[115] Refer CAADP Ethiopia Study, and also the Report on Assessment of the Formal Seed System in Ethiopia, October 2, 2009.

the marketing sphere but also in the use of sole basic and pre-basic seed supply ARCs like Bako, in the case of hybrid maize. Both ESE and RSEs as public enterprises need also to adjust to the production of pre-basic and basic seed living space for the private seed producers, including farmers, to handle the certified seed production. In general, the system should be reassessed in terms of organizational and relational aspects so that all actors can work closely i.e. the public, private sector dealers, CSOs, specifically the newly organized Seed Association, NGOs, development partners as well as those enterprises working in the seed business but located in neighboring countries.

9.4.12 NUTRITION: BUILDING ON WHAT HAS BEEN DONE

The availability and access to food is the responsibility of MoARD while the utilization and dietary health and care is that of the MOH. On the basis of this nutrition strategy has been drafted and revised about five times in the last two decades. During this time claims of ownership of nutrition programmes by different institutions specifically MoARD and MoH has contributed to prohibit effective implementation of designed strategies. Currently it seems this problem is getting a solution. The recent National Nutrition Strategy (NNS) issued by MoH,[116] which was based on the study coordinated by MoARD/UNICEF in 2005[117] indicates clearly that it is the MOH which will form and lead a national coordinating committee, and in turn this committee is expected to ensure the presence of integrated and wholestic nutrition programme designing and implementation at different levels of governments. The consultants team appreciated the coverage of the latest NNS document but still additional focus and efforts are needed to integrate adequately and appropriately the nutrition issues of PAP[118] communities, the standardization and explicit nutritional values of the diverse crop and livestock products and by-products, and to adequately address the productivity effect of malnutrition on food insecurity[119].

9.4.13 GENDER MAINSTREAMING

The rural workforce is proportional in terms of sex distribution. However, the women labour is still not adequately and properly used in the direct agricultural productivity and production enhancement and farm income augmenting context. As has been explained the next ten years high priority investment areas, natural resources management and irrigation, are those which need these labour source utilization to an optimal level. The small scale irrigation schemes use should be women centered. These and other agricultural development practices require an aggressive mobilization of the resources through increased gender mainstreaming works from the grass root up to the top development management echelon.

It has been noticed that efforts of mainstreaming gender are put in place in the various programmes of the agriculture sector. But they are not done as fast as expected. Some stakeholders relate the prevalence of problems in adopting appropriate processing technology and post-harvest to gender issues. For example, **i**n the rural Ethiopia, whole milk is not marketed, but butter and cheese, locally processed, are. But both the processing and marketing is done mainly by women using traditional methods. Attempts to improve the traditional processing methods have not been successful so far partly because the gender conflicts related to the control of cash income from sale of these items. Same is true in poultry rearing. Similar

[116] FDRE, National Nutrition Strategy, MOH, January 2008, Addis Ababa (Text in Amharic).
[117] An Assessment of the causes of malnutrition in Ethiopia: A Contribution to the Formulation of a National Nutrition Strategy for Ethiopia, November 2005.
[118] The NCs are aware of recent undertakings in this regard. (See USAID, 2009)
[119] For details refer Demese's contribution (Chapter 3) of the above study.

efforts to promote high value cash crops, specifically horticultural crops are being challenged with the gender issue. It is mostly women that practice home gardening or have time to manage small-scale irrigated agriculture. But rewards to labour are not often going in terms of labour contribution made to such activities. In general gender mainstreaming needs to be strengthened and expedited in order to increase the marginal benefit obtained from rural labour (men and women) and in aggregate to enhance value addition in the agriculture sector.

9.4.14 CLIMATE CHANGE AND DRM

Climate change has recently become the major concern of the GoE. Particularly the government has given due attention to the impact of climate change on meeting the goals of reducing hunger and setting a sustained food secure country. Ethiopia at large and its agriculture sector specifically is extraordinary sensitive to climate change that impact everyday practices. Global warming (carbon emissions, high fuel consumptions, and environmentally unfriendly manufacturing and consumption practices) will seriously affect Ethiopia's agriculture. Reports indicate that by 2020 up to 250 million people in the Sub-saharan Africa are expected to have less water. In areas where agriculture is dependent on rainfall yields will drop by 50% and many livestock breeds may not be able to tolerate the climate change.

A rise in temperatures as well as increases in rainfall variability are expected to reduce crop yields, exacerbate livestock losses, and a s a result impose food stress on households livelihoods, and undermine development interventions. Therefore during the next FYDP implementation period the Disaster Risk Management (DRM) wing of MoARD and BoARDs have to design various interventions to mitigate the problems of climate change in the country at large and the agriculture sector specifically. In this regard two points are worth noting. First, climate change is a long term process and therefore requires well thought out long term solutions – what happens in a few years time is not climate change. Secondly, research must provide much of the solution to the climate change problem – shorter season varieties, more risk tolerant, etc. need research on what the problems will be, defined in detail and then research to help solve them. Also vital to reach the Governments growth and transformation vision so can better deal with the range of climate change problems. Very poor countries will be helpless.

9.4.15 INSTITUTIONAL CAPACITY: SECTOR-WIDE AND CRITICAL SPOTS

At the start of this sub-section it was mentioned that among the reasons given for poor or failed policy and strategy implementation is problems associated to institutions be it in the form of organization, linkages or capacity building. It is obvious that ultimately MoARD and BoARDs role is not to produce but to ensure those who are producing, more than 95% are private entities, are producing to the level best in terms of input use including knowledge and technology. For this to happen most of the public investment in the sector may have to go for service rendering and tangible public goods production in the areas of natural resources management, research, extension, and marketing and as recently started to the promotion of agricultural investment. In the context of the first three most of the investment has to be done at the woreda level, specifically in the form of capacity building.

Capacity gap indeed is a serious one in its entire dimension i.e., human resources, working premises, equipment, machinery, furniture and other facilities. BPR is bringing new and encouraging way of doing things. As one of its guiding principles BPR is to make efficient and effective use of available resources. Tasks are expected to be accomplished with least number of staff, timely with a support of modern

equipment such as computers. But according to the discussion with various stakeholders, the problem is that the means to provide the necessary support and hence to achieve the designed change is not in place. Because of this, pressure is mounting on few individuals who are not equipped as expected in the BPR principles. In general the good intentions of BPR are being challenged by the practical absence of the needed capacity in program implementing institutions from Federal up to woreda level.

The problem is severe at the grass root, specifically at woreda levels. In ARD core in programme implementation are the woreda ARD offices. But most of them have no adequate and appropriate offices, equipment and furniture; hence the recent effort to put trained and educated human resource is subjected to underutilization. ATVETs and FTC require incremental capacity building interventions in terms of DAs/SMS skills up grading, providing them with the minimum instruments such as housing and means of transport, putting in place the least required FTC infrastructure, furniture and equipment, and ensuring demonstration farms to be exemplary in terms of centers of research results demonstration and revenue generating entities with innovative practices that did not derail their major responsibility of demonstrating new things or new ways of doing things to farmers.

CHAPTER 10
ETHIOPIA IN THE CONTEXT OF INTERNATIONAL EXPEREINCE

10.1 BACKGROUND

Each country is a unique development experience. The historical background, the resource base, the level and spread of formal education, institutional structures, and the nature and orientation of leadership are among the many sources of differentiation. Nevertheless there are many constants about the evolution of economies, the process of economic growth and particularly the characteristics of rapid growth in agriculture. The experiences of other countries are of special relevance with respect to these constants. In a brief chapter the lessons must be simplified and only a few of the more relevant features discussed. Seven of the constants are of special importance to Ethiopia. They are as follows:

h. Development is a process of transforming an economy from largely agricultural to largely service and manufacturing. Agriculture can accelerate that transformation.

i. Most farmers are constrained by limited land area. Therefore growth in their production and income is largely a function of technological change and shift to high value commodities –both raising the value of production per hectare.

j. Farming is most efficiently pursued by a family size labor force, with consequent lack of ability to realize scale economies in many complementary activities, and therefore government plays a critical role in provision of technology and some of its accompaniments.

k. The small size of farms, in terms of labor force, requires organization of farmers to provide scale economies for many aspects of the agricultural value chain.

l. The nature of agricultural production processes requires specialized agriculture oriented financial institutions.

m. Market prices and private business play a key role in rapid agricultural growth

n. Roads and other physical infrastructure are vital to growth

These seven constants are discussed in the context of experience of five countries that have special lessons for Ethiopia. They are Taiwan (with brief mention of related features of Japan and the United States); Ghana (with brief mention of Malaysia and Rwanda); China; India, and Egypt. Obviously the most that can be provided in this chapter is a set of very judgment based vignettes. There is however a

vast literature[120] lying behind these vignettes and they do serve a useful purpose in setting Ethiopians efforts in a comparative perspective. It is important to note that in learning from other countries one should learn from errors and the corrections of those errors as well as from what was done right from the beginning. National agricultural credit institutions are a good example of learning from correction of earlier errors. In general the Ethiopian effort is commendable in those contexts.

10.2 TAIWAN, JAPAN AND THE UNITED STATES

Taiwan is the striking success story in pursuing the vision and ADLI model espoused by the Government of Ethiopia. It used agriculture to accelerate the economic transformation. It built highly productive agricultural research and extension systems in the public sector. It is a small farm model, averaging less than one hectare per farmer, in which farmers went from being very poor to very prosperous with little increase in size of farm. Within the context of ensuring stable food supplies and prices to consumers and taxing agriculture quite heavily market prices generally prevailed. Farmers were organized into powerful farmer run institutions. Likewise for agricultural finance. Taiwan, as a Japanese colony for a long period generally followed and implemented the Japanese model of facilitating growth in agriculture through strong research and extension, especially for the food crops. The similarities and some differences with the US example are instructive.

1. The Economic Transformation[121]

Taiwan is the clearest example of a country tht reduced cost of production in agriculture through research base technological change and used that success to accelerate growth in the non-agricultural sector. Agricultural growth provided low cost food for the urban labor force, transferred capital from agriculture to non-agriculture through prices and taxes, and raised foreign exchange to pay for capital good from agricultural exports.

T. H. Lee (1973) documents the massive transfer of resources from the increasingly productive agriculture to the non-agricultural sector. That fostered its rapid growth and rapid absorption of excess population from the farm sector. Although the Government of Ethiopia has had a more explicit strategy of agricultural development led industrialization Taiwan is a striking example of success in that policy. Because the non-agricultural growth was farm income led it led to a highly geographically diffused pattern of industrialization. Rural market towns became vibrant places of business. Many of that business

[120] Each of the primary references has lengthy bibliographies most of which were referred to in the process of accumulation for this chapter. Readers can refer to the following for country specific experiences. **TAIWAN**:Lee, T.H. 1971, Intersectoral Capital Flows in the Economic Development of Taiwan, 1895-1960, Cornell University Press, Ithaca, NY. **GHANA**: Mellor, John W. 2009, Lessons from Ghana's Agricultural Growth and Poverty Reduction, Ministry of Agriculture, Accra, Ghana. **INDIA**: Mellor, John W. et. al. 1968, Developing Rural India, Cornell University Press, Ithaca, New York; Mellor, John W. 1976, The New Economics of Growth, Lessons for India and the Developing World, A Twentieth Century Fund Study, Cornell University Press, Ithaca, New York. **CHINA**: Fan, S., C. Chan-Kang and A. Mukherjee. 2005. "Rural and Urban Dynamics and Poverty," Evidence from China and India." DSGD Discussion Paper 23, FCND Discussion Paper 196, International Food Policy Research Institute, Washington D.C.; Fan, S.C., L. Zhang and X. Zhang. 2002. Growth, Inequality, and Poverty In Rural China. Research Report 125, International Food Policy Research Institute, Washington, D.C.**EGYPT**: Mellor, John W. and S. Gavian. 1999. Determinants of Employment Growth in Egypt: The Dominant Role of Agriculture and the Small Scale Sector. Impact Assessment Report No. 7, Abt Associates, Bethesda, MD.

[121] . This section draws heavily on the definitive book on Taiwan by T. H. Lee. Lee worked for many years in the Taiwan equivalent of a Ministry of Agriculture, won the US Agricultural Economics Associa9ion award for best Ph.D. dissertation for the predecessor to his definitive book and served as President of Taiwan during the period of rapid democratization. Work by Bruce Johnston also influenced this section.

engaged in small scale industrial production, built that into serving the large cities and from that into export markets. The strategy was entirely different to that of South Korea who emphasized large scale, large city based industrialization driven substantially by very large foreign capital inflows.

For Ethiopia, Taiwan illustrates how successful the ADLI strategy can be. It also illustrates, per the following paragraphs the basic requirements of success for such a strategy – massive investment in roads and education, development of a sophisticated research and technically competent extension system and widespread institutional credit designed for agriculture.

2. Government Institutions and Technological Change

The most striking feature of Taiwan is the development of public sector research and extension to increase farm productivity and income and from this success in agriculture to assist the rapid growth of the industrial sector.

Taiwan has a long history of emphasis on agricultural research. It begins with the Japanese transferring their successful model of research and extension to Taiwan for increasing rice production. Japanese colonialism differed from European in emphasizing food crops rather than export crops and hence having a much broader impact on the agricultural sector. The extension system followed the Japanese model in being tied to the agricultural research stations thereby increasing the technical competence of the extension agents. In that respect it differs from the current Ethiopian model in which there is an attempt to coordinate research and extension but they are not organically bound at the research station level. Ethiopia would benefit from the closer tie epitomized by Taiwan.

3. Family size farms

Farms in Taiwan have always been family labor force size, plus for many farmers an additional hired person. Because of the scattered nature of farms and their small size they were able to do no more than a minuscule amount of research and certainly could not draw upon modern basic science. Thus, following the Japanese model, Taiwan early on developed a complex set of agricultural research institutions and constantly expanded the budget support. Explicitly government saw agriculture as a source of resources for growth of the non-farm sectors, but emphasized increasing agricultural productivity in order to enlarge the pool of resources to be drawn upon.

4. Farmer Organizations

Throughout its history Taiwan has had strong farmer's organizations that were able to adapt to changing conditions providing farmer market power and organization to meet changing market needs.

5. Agricultural Credit

Again, consistent with the Japanese model Taiwan has amongst the highest coverage in the world of institutional credit with the government playing a major role in its development.

6. Market prices and private business

The government has throughout played an important role in determining basic cereals prices to ensure urban labor force stability. There were also major periods in which technological changes reduced cost of production for agriculture and prices were manipulated downwards to pass some of the benefits on to the urban labor force, lowering the cost and stabilizing the cost of labor for industrialization.

7. Roads

Right from the period of Japanese occupation the rural road system was expanded and steadily improved in quality. That was initially to favor exports of rice to Japan, but later served to foster growth in farm incomes and to provide a base for taxing agriculture directly and through manipulating price ratios.

A note on Japan and the United States

Taiwan is best understood in the context of the policies of the imperial power, Japan. Three features of Japan's early economic development are noteworthy. Prior to 1868, in the Tokugawa period, the central government understood the importance of quick communications with the provinces and provincial leaders understood the importance of roads to their agricultural growth. The result was massive investment in road infrastructure. That provided a solid base for the next period. Following the Meiji restoration in 1868 the government grasped the importance of yield increasing technology to agricultural growth and established a national system of research institutions. Those institutions soon developed practical education programs for farmers and interacted intimately with farmers in developing improved technologies. These two thrusts, roads and research based yield increasing technology provided the basis for agriculture to assist the economic transformation of the country. Since it is per capita growth that is important and since population growth was slow, the growth rates that provided major stimulus to the non-agricultural sector were modest by present day standards. Japan of course has always been family labor force dominated agriculture with farms that are more nearly the size of those of Taiwan than other high income countries.

The early history of the United States is instructive on two counts – the major emphasis on scientific research and the length of time to obtain benefits. In 1863 the legislature introduced a major system for financing a huge expansion in practical research in agriculture and the mechanical arts. The result was strong research institutions tying together research and extension and those both tied to agricultural education. The tie to higher education is a point of departure that has worked very well for the US but is different to that of many countries, including Japan. The tie to education mobilized high level teachers for research expanding that capacity greatly. It is generally agreed that the huge expansion in expenditure and institutional structure for research did not begin to pay off in a major impact on production until the later 1920's. That is long time and suggests patience in development – but we have learned a great deal since then that should allow a far faster impact.

Another major legislative innovation was the founding of the farm credit administration in the 1920's. That established. After lengthy analysis of the experience of other countries, a national system of agricultural credit – set up, financed and run initially by the government but quickly evolving to farmer owned farmer managed cooperatives. It was recognized that agriculture had very specialized credit needs and therefore a specialized credit agency was necessary. Occasionally agriculture has suffered across the board, requiring government interventions – of course never on such a large scale as the recent bail out of

the mega banks. Ethiopia lacks a broad, national rural financial system and could benefit greatly from the numerous examples in other countries, the occasional short comings in those institutions and the measures taken to rectify those short comings. There has been a tendency in recent decades to see some of the shortcomings and conclude that national rural credit institutions should not be formed. That is of course the wrong conclusion as the longer history attests.

10.3 GHANA, MALAYSIA AND RWANDA

Ghana has much in common with Ethiopia. It had a multi decade long period of instability and rural insecurity, followed by a government explicit in its support of agricultural growth. Like Ethiopia it has had a few decades of rapid agricultural growth, based heavily on area expansion. Increased area devoted to cocoa has been the primary driver of agricultural growth. Like Ethiopia the strategy will have to move in the direction of increased yields based on rapid growth in fertilizer use and improved seed and expansion of additional tropical export crops. The resource base as compared to Ethiopia is much more low fertility, high rainfall tropical areas suited to tropical tree crops – including rubber, oil palm, and cocoa. The relative role of the export crops is as a result greater than in Ethiopia. Nevertheless there are several useful lessons in this major success story.

1. The Economic Transformation

While agriculture has grown rapidly and the market towns have seen rapid growth in employment, the urban based industrial sectors growth has been disappointing. That growth, as for Ethiopia is needed as a complement to the basically agriculture led strategy. The problems are many. However, like most contemporary countries Ghana, like Ethiopia has been urged not to provide protection for import displacement industries. With foreign competitors having an advantage in early initiation of such industrialization imports seems to have kept domestic import displacement from happening. That has led to an imbalance in the growth story. It should be noted that any protection to industry places a financial burden on agriculture. Taiwan shows how technological change on agriculture allows it to bear that short term burden of fostering the industrial sector.

2. Government Institutions and Technological Change

Like Ethiopia and unlike most African countries, Ghana has put substantial resources into the agricultural research and associated extension system. Unlike almost all countries agricultural research is within the Ministry of Science and Technology, not agriculture. This has certainly impeded gaining a practical orientation and the links with extension. Nevertheless the need for those links is recognized and modest steps taken to develop them.

3. Family size farms

Like Ethiopia essentially all farms are family labor force size with the consequent need for public institutions to provide scale economies and to develop institutional structures suited to agriculture. The few large scale plantations for export crops are used as nuclei for fostering growth of satellite small scale farms. This has been a generally successful effort, although commercial small holder agriculture is also successful where such large scale nuclei do not exist.

4. Farmer Organizations

Farmer's organizations are strong in the cocoa sector, less so elsewhere.

5. Agricultural Credit

Again, like Ethiopia the agricultural financial systems are not well developed on a broad scale. This is characteristic of most late developing agricultures because of the widespread view that the occasional problems of specialized rural credit institutions meant that all were failures.

6. Market prices and private business

Market prices prevail generally at present; in an earlier period cocoa marketing was entirely handled by the state with very large spreads between farm and international prices. The change in that policy is an important factor in the recent rapid growth in the cocoa sector. Those spreads are still on the large side.

7. Roads

The government is spending heavily on road construction with the basic grid largely provided but the farm to market road system way underdeveloped.

Malaysia, Rwanda

Malaysia and Rwanda provide useful lessons on the context of Ghana. In physical resource base Malaysia is very similar to Ghana – the bulk of land in low fertility high rainfall tropical uplands with fertile alluvial soils in the river basins. However, Malaysia developed a highly professional rubber research system that has constantly reduced cost of production of rubber so that it has competed very effectively on international markets with synthetics. In the 1960's Malaysia concluded it had a future in oil palm which was then of little importance. They sent a mission to Africa, particularly to learn from the world class oil palm research station in the then Belgium Congo, INEAC, and from that developed a world class oil palm research station and embarked on rapid expansion of oil palm acreage. Unlike rubber which was estate oriented, the oil palm was done entirely with small family size operations with substantial subsidies for planting oil palm. The result was a competitive sub-sector that effectively put the African countries out of the oil palm business. It was the research driven, cost reducing research carried out in Malaysia that provided the competitive success. There are useful lessons for Ethiopia in the policies for very rapid expansion of smallholder oil palm. Subsidies for planting where the prime mechanism, backed by world class research.

Rwanda, like Ethiopia has leadership with a vision for the country that includes agricultural growth although not as central as Ethiopia. It too had a period of insecurity and destabilization and has an excellent soil base. In general however it has been slow to build the research and extension institutions. It has drawn effectively on foreign assistance to expand coffee reduction rapidly. All farming is smallholder with farms generally as small as or smaller than Ethiopia.

10.4 INDIA

India has tried many approaches to agricultural growth, with a huge amount of measurement and analysis and adaptation. In a sense most approaches that do not work and most that do work have been tried and measured. Most important programs have evolved over time. Some of the most important examples of large scale farmer's organizations and cooperatives have developed in India and provide excellent role models. Prices have been stabilized to the benefit of consumers and producers, but at very large fiscal cost. The institutional structures have been generally effective. The economic transformation has proceeded rapidly, but with a less explicit strategy than Ethiopia's ADLI. Rural infrastructure has grown very slowly and been a major retardant to agricultural growth, States like Punjab are an exception with all village son all weather rods and electrified and have shown huge agricultural growth.

1. The Economic Transformation

India has had a clear vision of transforming the economy from largely agricultural to largely manufacturing and services. While it has had modest success in agriculture it has not had nearly the degree of success in using agricultural growth to help transform the economy. Ethiopia's strategy is more explicit and developed.

2. Government Institutions and Technological Change

The Government right from the beginning placed huge emphasis on extension (called Community Development) it was seen as much as a means of keeping rural people in support of the government as bringing technical change. As for Ethiopia there was a view and an approach aimed at bringing rural thinking into the modern world. Support for the agricultural research system was strong and because of the efforts of the Rockefeller Foundation and USAID a large highly competent system was built. That not only backed the green revolution but provided the base for continued growth. The system has not adapted well to the radical change in the structure of Indian agriculture – once dominated by cereals, and now over held agricultural GDP from livestock and horticulture.

As a result the very high growth rates of agriculture that can be achieved n middle income countries have not been realized.

3. Family size farms

Farms are not only family size in India and small, comparable to Ethiopia, but a large literature developed comparing productivity within Indian agriculture on small and large farms. The early literature showed clearly that the small farms were more productive and efficient than large farms – that was due to lower cost labor and hence more intensive husbandry – an important lesson for Ethiopia. However, with modernization the larger farms had better access to technology knowledge and capital and began to exceed the small farms. The lessons learned are that small farms need to be assisted in access to technology and capital, they then maintain the labor input advantage but do not lose out on technological advance.

4. Farmer Organizations

The record on farmer organizations is mixed. Indian has amongst the world's most impressive cooperatives – entirely run outside of, although supported in important ways by government. The diary industry is the best example but there are others, including oil seeds and sugar. In contrast, India has had a poor experience with government departments forming cooperative and managing them through the government bureaucracy. Those cooperatives have siphoned off large sums of money and not contributed much. Ethiopia has a much clearer national policy on cooperatives than India, even though Ethiopia cold learns from the most successful large scale cooperatives such as Amul in the diary industry.

5. Agricultural Credit

Indian has a huge national credit system that reaches a high proportion of farmers. Commercial Banks are required to lend ten percent of their funds to farmers – helping large farmers and bringing a useful competitive element. The institutional system has run on more or less cooperative grounds, but with a long history of political interference and hence high overdues rates. On the one hand the system has been hugely successful in getting financial resources to farmers with very favorable impact on fertilizer and improved seed use. On the other hand the system with such large (40 percent typically) overdues has been of questionable long term viability. These features of the system are gradually being fixed. Lessons can be learned to avoid those problems as Ethiopia move to forming a national specialized rural financial system.

6. Market prices and private business

The government provides massive subsidies – to consumers for subsidized food and to farmers for subsidized fertilizer. The former is done for political stability in urban areas and along the way has stabilized basic cereals prices to farmers (something most Asian governments do.) Fertilizer subsidies were introduced when usage was very low and hence the cost was low – but have been politically impossible to remove as usage rose above six million tons, with consequent huge budgetary costs. The lesson for Ethiopia - if subsidies are to be introduced it is important lay out the exit strategy at the beginning. In general India has left the private sector free to distribute inputs, in the case of seed gradually loosening the monopoly of state seed enterprises so that the private sector has become strong throughout the seed industry. Before that loosening the public sector was unable to meet demand and agriculture was held back by lack of seed.

7. Roads

India has been quite backward compared say to China in developing its physical infrastructure – rural roads and electrification. This is probably the most important current constraint to agricultural growth.

10.6 CHAINA

China is of course a virtually unique case of a radical shift from large scale cooperative and state farming to small scale family size labor force farming with a host of other changes accompanying that shift. From that unique experience comes several useful lessons.

1. The Economic Transformation

During the Communist period agriculture was exploited to provide resources for the economic transformation. Large resource transfers were made though price manipulation as well as taxes. That provided a very poor incentive system for agricultural growth and growth was poor and in some periods negative with consequent immense privation for poor people. However, education was expanded and made roughly universal even in rural areas and the road infrastructure was expanded in rural areas. A wide range of public institutions essential to agricultural growth were also instituted. Hence much was put on place for rapid agricultural growth, except for the farmer incentive system. In that period industrialization proceeded rapidly financed in significant part by exploiting agriculture. This is the opposite of the Taiwan strategy, which also drew resources from agriculture, but did so in the context of rapidly increased farm productivity and an encouraging incentive system.

2. Government Institutions and Technological Change

The Government has from long before the Communist period had a strong agricultural research system and has constantly increased expenditure and upgraded it so that it is now a leading system by world standards. That has been the technological base for rapid growth. Combined with the research is a large technically competent extension system. Unlike India and most Asian countries, China did not n the modern era receive large scale foreign assistance for its agricultural research, extension and teaching system. However, an important was laid n the 1920's with substantially technical assistance from UD universities. And, China has always drawn heavily on the CGIAR system for training and research output.

3. Family size farms

During the period of collective and communal farms incentives were low and growth slow, including some periods of immense privation due to lack of food production. Despite a strong institutional structure for research, extension, education and roads the growth rate was slow and at times negative. Prior to the communist period and once again the system is basically of family labor force size farms. When the incentive system changed rapidly is reverting to the family size labor size of operational unit growth sharply increased.

4. Farmer Organizations

From the commune system came a strong legacy of farmer's organizations, encouraged by the widespread education system.

5. Agricultural Credit

Compared to Ethiopia, China has a highly developed broad based agricultural credit system

6. Market prices and private business

China has always controlled prices – during the Communist period keeping farm prices very low to finance the urban labor force and industrial growth and more recently to provide stability of urban and farm prices.

7. Roads

As stated previously the Communist system emphasized rural roads and made huge progress. There continues to be such an emphasis.

10.7 EGYPT

Egypt is a middle income country, a status to which Ethiopia aspires, although falling in the upper ranks of middle income countries. Drawing lessons from Egypt is complex. On the one hand it has superb agricultural resources, more responsive to income raising measures than Ethiopia, on the other hand it has exploited a substantial proportion of those potentials and so further growth is less catching up to levels reached by others and hence slower. The agricultural research system is excellent, it is linked well with the extension service and there is a national rural credit scheme that works well. It has a private sector run high value crop export sector that is efficient. Ethiopia can learn much as it develops its potentials in these crucial areas. Egypt still has some scope for raising yields to catch up with countries with comparable resources and the shift to high value exports could move more rapidly. Thus, the agricultural growth rate is not only modest but proceeding well below potential. Past growth in farm incomes has resulted in major transformation of the rural and small town economies. The rural non-farm sector driven by from incomes is far larger than that of Ethiopia, demonstrating the potentials for Ethiopia.

1. The Economic Transformation

Egypt has transformed its economy to one dominated by industry and services. Agriculture is well under 20 percent of the GDP. The rural non-farm sector, driven by demand from farmers is larger than agriculture as is to be expected in a middle income country. Because of moderately slow growth agricultural employment growth is very slow creating substantial problems of unemployment in urban areas. The industrial sector operates well below its potential growth rate because of an archaic regulatory system.

2. Government Institutions and Technological Change

The government, with significant help from foreign assistance has provided a large, diverse national research system that is reasonable well integrated with extension. There is a widespread national agricultural credit system. Ethiopia can learn from the Egypt experience in both of these areas.

3. Family size farms

As is generally the case farms are small, similar in size to Ethiopia and family labor force driven. The government's response is to ensure supply of critical scale economy based services that the private sector is reluctant or unable to provide.

4. Farmer Organizations

Cooperatives and other farmer's organizations are widespread.

5. Agricultural Credit

There is a widespread national agricultural credit system.

6. Market prices and private business

Egypt has a long history of interference in market prices. The most ubiquitous intervention is huge subsidies of bread to consumers. That has played a major role in holding poverty levels at a low level but at very large fiscal costs that preempt funds from productive investment. Poverty rates are substantially lower than would be predicted from the average income level.

7. Roads

Egypt has invested heavily in roads for a long period with resultant excellent rural road system.

10.8 OVERVIEW/CONCLUSIONS

In all of the middle income countries examined the economy has been substantially transformed from largely agricultural to largely industrial and services. In most cases agriculture contributed substantially to that process – through export earnings to finance industrial capital, providing low cost food and conserving on use of foreign exchange for food imports, and in some cases through direct and indirect taxes on agriculture.

In all cases the government played a major role in agricultural research and extension and provision of specialized rural credit institutions. Ghana, for reasons explained is somewhat laggard compared to the ideal with respect to these institutions, but still more developed than most other low income countries. In most cases farmers organizations, particularly cooperatives have played a major role with the role of government in helping or hindering that development varied. Similarly for specialized rural credit institutions. The countries vary among themselves and over time in degree of market price orientation and role of private business. Interference with prices is substantial in several of the countries, primarily in order to ensure low cost food to urban populations, but over time that has evolved towards protecting incomes of farmers through price support, usually enforced through import controls. China had the most radical change from the highest degree of interference with market prices and private incentives to a radical reduction – that change was concurrent with a very large acceleration in the agriculture growth rate. That in turn is clearly related to greatly improved incentives to farmers, but in the context of technologically based potentials to drastically reduce cost of production. Without exception the private sector handles fertilizer distribution and in most cases multiplication of certified seed and sale to farmers.

The lessons to Ethiopia are clear. Most important Ethiopia is on the right vision and strategic track – better articulated than most of the countries – in its ADLI vision and strategy. Countries that have pursued a reasonable approximation to that strategy have had more rapid transformation of their economies than others. Taiwan is the poster child for this – following the Japanese and to some extent the US example. Ethiopia is on the right track with a large scale extension system and building indigenous agricultural research capacity. All the countries cited here show very high marginal returns to research – they are all under spending on research and most are spending much more than Ethiopia. Ethiopia is right in building the cooperative movement as a strong institution and in being explicit about not using force in that effort and in minimizing the role of government in management of cooperatives. Ethiopia has done less well on building specialized agricultural finance institutions – perhaps better than Ghana but way behind all the others. That will become an increasingly important issue in the future

A notable feature of these comparisons is the large role of foreign assistance in developing the three key public sector oriented institutions for research, extension and credit. In all the earlier developing countries (excluding China) foreign assistance to higher agricultural education, research, extension, credit and development of cooperatives has been very large both in financial transfers and technical assistance. That was true for Ethiopia in the 1960's as well. However in recent decades that type of support at the national level has largely disappeared. Ethiopia and Ghana have made significant national investments in these areas, but would have benefited immensely from large scale foreign aid. The CGIAR system has filled some of that gap. However, empirical studies by Robert Evenson at Yale University show that the more a government spends on its national system the more it draws upon other countries and the international system. Thus national expenditure on research is a complement to the international system not a substitute. Note that in the investment chapter investment in research is rated on top depending on the rating group – but foreign aid does not give that priority.

In summary, the comparisons strengthen the case for Ethiopia's vision and basic strategy. They offer useful lessons for developing agricultural research, extension, credit and cooperative systems as well as in several policy areas. They confirm the value of freeing areas appropriate to the private sector for those activities. In general Ethiopia is following the positive lessons. It needs foreign assistance in the key areas that were historically important in foreign assistance.

CHAPTER11
CONCLUSION AND RECOMMENDATION

11.1 CONCLUSION

The main objective of the 10 years PIF preparation was to produce a national level strategic investment planning framework that can be used to guide the prioritization, planning and implementation of current and future public and development assistance investments that contribute to sustainable agricultural growth and rural development, food security, and poverty reduction. PIF is also prepared to assist the GoE and its development partners to identify salient policies linkages and any policy changes, institutional arrangements and coordination mechanisms that might be recommended for the next nationwide development plan aligned with CAADP investment pillars, investment areas and, investment programs.

The assessments and findings of Ethiopia's agriculture sector PIF preparation reaffirm that the GoE vision of reaching a middle income country status by 2020 is possible but conditional to its adherence to the ADLI strategy. Agriculture should continue to lead the transformation of the economy to industrial with a slight adjustment to the ARDC strategy. The adjustment required is to pursue a combined land, labour and capital using strategy by availing capital for the public and private sector in areas of investment that yield an acceptable rate of return comparable to other sectors.

Agriculture, based on extensive land and labour use, has contributed to the recent years registered economy wide as well as sector specific growth in terms of increased revenue and foreign exchange. Most of the benefits gained from the growth of the agriculture sector have been diverted to the growth of service, industry, energy, and telecommunications sectors, as ADLI imply. Now it is time to invest in agriculture itself to conserve natural resources, promote the scaling up/out strategy and promote and realize modern smallholder and large scale commercial agriculture both in livestock and crop (staple and others) sub-sectors. The investment portfolios should be diversified and specialization should be encouraged with the backing of increased investment in crop and livestock high value and specialty commodities that may be also be conducive for out growers scheme linked with agro-processing businesses. In the later case government investment to support the private sector expansion and vigor should remain one of its major tasks during the initial years of the PIF period. Spatially the low land areas should receive increased capital investment particularly in promoting irrigation agriculture and modern livestock husbandry, processing and marketing.

The PIF document has identified 10 incremental investment areas within the sector and 4 outside the sector. The GOE and its development partners should work in harmonized and coordinated manner following a project approach to invest in these areas. Specifically the assessment done indicates that in the coming 10 years Ethiopia's agriculture will make the expected contribution to sector specific and

economy wide development goals if augmented investment is made in natural resources wise use and management, irrigation, and agricultural research and development as top priorities.

Finally, the documents reviewed and the discussions held revealed that the GoE has made tremendous efforts to perfections in terms of setting policy, strategy and the necessary institutions. But as it is everywhere in the world policies are conditional and subject for review. The government in its RDPS (2003) document also clearly stated that policy review is part of its working imperatives. Hence, on the basis of this the gaps and weaknesses identified and listed in chapter nine of this report should get focus and be subjected for review for the PIF implementation. If this and the afore-mentioned concluding remarks are considered then reaching a middle income country level with an agriculture sector that will grow fast but with more rapidly declining GDP share can be achieved at the same time by making it absorb significant employment with high contribution to reduction of food insecurity and income poverty.

11.2 RECOMMENDATIONS

11.2.1 GENERAL

PIF has identified and presented investment areas of on-going and incremental programmes and projects for the next 10 years. The GoE and its development partners, specifically the REDFS SWG are expected to align their efforts to these programmes and projects. Specifically in the case of incremental investment areas it is recommendable to take a project approach whereby the government or development partners has to take the initiative to prepare bankable projects and present them to those financiers who may have special interests in specific areas of interventions. It seems there is a CAADP plat form initiative that can finance the preparation of bankable projects and this should be taken as an advantage and gullible opportunity. Besides, synchronized to these programme and project financing measures, appropriate policy making bodies have to have a close look at the policy, strategy and institutional gaps listed and discussed in Chapter 9 and address them by reviewing and legislating promptly.

11.2.2 SPECIFICS

Programme consolidation and the project approach: In the agriculture sector program consolidation has to be made to take advantage of economies of size and scale in the future. Programmes' management overhead costs can be reduced tremendously through this effort and the saved amount can be redirected to productive development augmenting investment areas. Putt differently, the current 56 cost centered programs should be reduced to 36. The PIF proposed 36 programmes are expected to be adopted as a framework for coordination and harmonization of agriculture sector interventions nationwide. The PIF proposed programmes should become the cost centers whereby any other projects and interventions financed by treasury or external sources will be registered under them. Each programme can have several sub-programmes further classified by interventions and activities as deemed necessary for Planning, Monitoring and Evaluation (PM&E) purposes. A programme can be implemented by one or more than one institution at Federal and/or Regional State governments. Besides, a programme may contain elements of policy and strategy that are broad based and shared with other programmes.

Programme budgeting: Programme budget should be practiced. Programme (process) owners (directorates, Institutes or Agencies) should set appropriate *monitoring and evaluation* mechanisms to

efficiently and effectively implement existing programmes with available resources. It is only through this way that one may be able to see how much each Birr invested in the public sector is returning positively by benefiting the target group considered at the planning stage.

Land administration and use: The already started initiation to establish a land administration and use coordination body at Federal level should continue with due urgency. Together with its Regional counter parts this body has to embark on a comprehensive land use planning task. It should also commission the conduct of studies and recommend to policy makers (a) improvements to be made in the areas of transferring part of compensation payment to the private sector in a way that benefit existing land users, (b) required legislative measures to legalize access to land for investment purposes as well as land use and urbanization effects in PAP areas.

Agriculture research and extension: Although the government policy and strategy documents, starting from the Revolutionary Democracy, specify the role and importance of agricultural research and extension in development and the required integration and coordination among research and extension institutes, still much is desired to be done. There is still a gap in terms of integrating education, research and extension in the agriculture sector institutions. Specifically the NARS needs a revisit either in search of a policy or institutional solution to the many problems that are being raised by the RARIs, and HLIs and other stakeholders of NARS. Rectifying this problem the GoE has also to take a policy stance that the budget for agricultural research becomes 2% of the AGDP.

The livestock sub-sector: The livestock sub-sector despite its huge potential seems a forgotten sub-sector in the national economic development endeavors and specifically in the agriculture sector development initiatives. The sector has still several problems to be resolved in the area of animal feed, health, bred improvement and associated production, processing and marketing activities. In order to enhance the national contribution of the livestock sub-sector to GDP it should get appropriate position in the agriculture sector ministerial and bureau level arrangements. The least should be that it has to have its own process owner (Directorate) in the MoARD and regional BoARD.

Agricultural Credit: The agricultural credit system in the country does not provide a comprehensive national system of competitive agricultural credit to small and large scale commercial farmers. The current system of MFIs can probably sustain the credit growth required for the many traditional smallholder farmers and rural small-scale entrepreneurs. Over the longer run major changes are needed. Commercial agriculture and agro- processing by smallholder individual farmers, cooperatives, or large-scale commercial agriculture investors has to take place. In this context, the credit requirements of the agriculture and rural sector will be highly specialized and require a comprehensive national system. Such a system is the norm in countries with successful agricultures ranging from the United States, to Japan, South Korea, Taiwan, India, and many other countries. However, in view of the challenges that these countries face, the GoE should first commission a study that makes a thorough assessment and recommend for a sustainable agriculture and rural credit system and institutional arrangement. The chosen system must of course be adapted to the conditions in Ethiopia and the existing institutional structures. Given the very large and varied experiences of other countries the study can benefit by having members with extensive international experiences. Thus a composition that includes both Ethiopian nationals

experienced in Ethiopia and international experts experienced in a range of other countries with successful systems should be members of the study team.

Guiding the dynamic economic development of PAP areas: GoE has made huge investment on infrastructure development in PAP areas. The investment in roads, electricity, and telecommunication and water resources, both for agriculture and drinking purposes, is attracting investors from outside as well as ignited changing livelihoods within the PAP community itself. Pastoralists' livelihood changes and diversification in alternative income generating enterprises including agriculture and non-agriculture alike is taking place. All these are searching for appropriate policy measures to guide them. Besides, the emergence and expansion of small towns as part of the urbanization process is further adding to this complexity of the dynamic economic development undertakings, calling for ex-ante policy and institutional formation or reviews

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ANNEX

Annex A1: Existing Strategies relevant to PIF[122]

No.	Strategy Subject/issue	Strategy
1	Natural resources management and utilization	• Development of different irrigation schemes with emphasis on small scale and multipurpose medium and large-scale irrigation. • Promote and enhance land tenure security. • Establish land information database at different level. • Promote and strengthen forest plantation.
2	Inputs	• Ensure the provision and supply , distribution and application of agricultural technologies in a sustainable manner • Ensuring availability of fertilizers to smallholders in the required quantity , right product mix at the right time and reasonable prices • Creation of enabling environments of the active participation of private and public seed enterprises and farmer groups to promote the seed system • Regulate seed quality, seed import-export trade, quarantine and other seed related issues • Manage pests, rather than eradicate • Select and apply pesticides in a way that minimizes adverse effects on beneficial organisms , humans and the environment • Improve forage production and supply • Expand industrial animal feed • Improve quality of crop residue • Strengthen the quarantine and inspection services • Expand and improve rural finance institutions • Increase production and productivity and harvests from ***Vertisol*** fields
3	Products	• shift to higher-valued crops, and increase the volume and quality of production for these crops • Strengthen the effort of specialization, diversification and commercialization of field crops on agro-ecological settings , where their productivity is the highest (adequate rainfall, and low moisture) • Reduce pre- and post-harvest losses to incrasev quantity and improve quality • Improve indigenous goats through cross-breeding with *dropor* goats • Increase production of meat through cross-breeding of imported breeds with indigenous breeds ; • Increase the supply of chicken through the importation and distribution of highly productive pure line chicks and hybrids • Import and adopt artificial production techniques of bee-queen;

[122] This are extracts from the CAADP Ethiopia Study. For a detailed list of strategies by sub-sector and programmes the reader is advised to refer to the study report.

4	Markets, marketing and trade	• Transform the traditional system of agricultural production and adopt market-oriented approach • Promote specialization, diversification and commercialization of agricultural production, • Strengthening Rural-Urban Linkage (RUL) • Facilitate for the commercialization of agriculture, • Improve institutions, value chains, information flows, quality and standards support, and cooperatives to strengthen the position of farmers in domestic and international markets. • Establish agricultural marketing capacity with a special emphasis on agricultural marketing information system • Promote, establish and strengthen cooperatives • promote niche high-value export crops, • Improve existing or establish new infrastructure and other facilities to cater for selected strategic sub-sectors: Textile and Garment; Leather and Leather Products; Sugar; Flowers, High-Value Fruits and Vegetables • Specifically in pastoral areas facilitate local and cross-border livestock trading, with better market information, credit provision, and certification for quarantine; restoring the stocker/feeder program through private or livestock cooperatives; and promotion of 'commercialization' of livestock production;
5	Rural basic infrastructure	• Providing electricity services with a priority to woreda development centers and towns • Encourage private investors and cooperatives to supply electricity using diesel generators. • Promote the participation of regional administration and NGOs in the exploitation of energy sources such as solar and wind.
6	Farm/firm structure	• support the development of large-scale commercial agriculture • Linking agricultural production-marketing and processing via out-grower scheme • Develop relationships with and seek the participation of relevant world renowned multinational companies • Create an efficient country-wide network of road arteries. • Build rural roads with the right grades in such a way they can be upgraded when the need arises. • Set appropriate system that ensures proper and timely repair and maintenance of rural roads • Expand rural transport services by using alternative means. • Expand the supply system by improving traditional sources of energy like woody biomass • Upgrading and expanding the telecommunications network • Strengthen the participation of the private sector
6	Agricultural Research	• Variety generation and development with improved agronomic and protection practices that can be used in crop diversification and specialization for food crops and high value vegetables , spices, coffee and tea • Maintain improved varieties and multiply breeder and pre-basic

		seeds and seedlings of released varieties of crops and distribute them to stakeholders • Improve the production and productivity of livestock using appropriate technology and release
7	Agricultural Extension	• Strengthen existing TVET and FTCs; and establish new ones when necessary to transfer improved agricultural technologies and give adequate services within individual farmers/pastoralists reach • Strengthen the research-extension-farmer linkage at different levels • Increase the quantity and quality of development agents by enhancing their skills and education • Generate better technology information packages to be utilized by actors in the livestock industry

Annex A2 Agriculture sector institutions category

Category		Organization
Government	Federal	MoARD, MoTI, MoFED, MoWR, Cooperative Agency, DRMFS, EIAR , Higher Learning Institutions (HLI), Investment Agency (IA), EPA,QSAE,ERA,PEPA, Customs Authority, Wildlife Authority
	Regional	BoARD, BoTI, BoFED , BoWR, EPLAUA, Cooperative Agency, IA, RRA,TVET, FTC
	Local	Woreda Administration, Woreda Development Offices, Kebele Council and Administration, Community Based Organizations
NGOS		CRDA, Agri-service, Sasakawa-2000, Pastoralist Forum, MFIs, SLUF
CSOs		14 disciplinary based agricultural professional societies; EAAP, Think-Thank Groups
Donors and bilateral/multilateral institutions		FAO, UNDP, WFP,RED&FS, DAG
Mass Organizations		Cooperatives, Women Association, Youth Association
Private		Commercial farms, Import/export organizations, HLI, Consulting Firms, Commercial Banks
CGIAR Affiliated		ILRI, Global Mountains Programme

Source: CAADP Ethiopia Study, Vol I, Final Report-Main, July 2009.

Annex A3

Persons Met[123]

Abera Deressa	State Minster, MoARD
Abebe Diriba	Head, Agricultural Extension, BoARD, Oromiya Regional State (ORS)
Alemu Admas	D/Bureau Head, Bureau of Agriculture and Rural Development, Amhara Regional State (ARS)
Alyie Hussen	Director General, Oromia Agricultural Research Institute (OARI)
Amanuel Assefa	Agri-Service Ethiopia
Amare Abate	G.Manager, Irrigation Development and Scheme Adminstration Agency, SNNPR
Anesa Melko Hebero	G.Manger, Cooperative Development Agency, SNNPR
Awole Estifanos	Livestock Researcher, Tigray Agricultural Research Institute (TARI)
Assefa Mulugeta	Director, Agricultural Marketing, MoARD
Asefa Taa	D/Director, OARI
Bedru	D/Director, Federal Cooperative Agency
Belayneh Bancha	D/Bureau Head, and Agriculture Output Marketing Core Process Owner, SNNPR
Berhe Gebre Egziabher	Director, Animal and plant health Regulatory, MoARD
Berigude Bancha Bagaje	Head, SNNPR Bureau of Finance and Economic Development
Bewket Siraw (Dr)	Director, Livestock Research, Amhara Regional Agricultural Research Institute (ARARI)
Bezualem Bekele	Agricultural Investment Support Directorate, MoARD
Ermias Abate	Researcher, Bio-technology ARARI
Eyasu Abraha (Dr)	Bio-technologist, TARI
Gebrezabhere Gebreyhones	Director General, TARI
Gebrehiwot H/Mariam	Socio-economist, TARI
Gebremichael Negussie	Socio-economics, TARI
Gebru Desta	Head, Cooperative Promotion and Market Development Agency, Tigray Regional State (TRS)
Girma Tesfaye	D/Head, Bureau of Finance and Economic Development, ARS
Getachew Adem	Head, Development Planning and Research Department, MoFED
Kebede Yimam	Head, BoARD, ARS
Lacha Garuma	D/Bureau Head, and Agriculture Extension Sub-process Owner, SNNPR
Mehari Woldu	Agricultural Engineer, TARI
Melaku Admassu	G. Manager, Pioneer Hi-bred Seeds Ethiopia PLC and President of Ethiopian Seed Trade Association
Mesfin Tarkegn	Extension Expert, BoARD, ARS
Mezgbe Tsegai	D/Bureau Head, and Agricultural Research and Extension Process Owner, TRS
Mohamed Nur Faris	Food Security Case Team Coordinator, SNNPR
Mulugeta Diro (Dr)	Director, Crop Research, SIAR
Newaye- Christos Gebreabe	Minister, Economic Advisor to the PM and Director of EDRI
Samuel Hussen	Head, Bureau Water Resources, Oromiya Regional State (ORS)
Sileshi Getahun	Director, Natural resources, MoARD

[123] The Consultants' team met members of the donors' community, and the Technical committees of REDFS in a meeting format

Semachew Checole	AGP Focal person, SNNPR
Sisay Asres	Irrigation and Drainage Study Design and Construction Process Owner, BOWR, ARS
Solomon Abera	D/Bureau Head, and Irrigation and Water Supply Core Process Owner, TRS
Solomon Assefa (Dr)	Director General, EIAR
Solomon Belete (Dr)	President, Ethiopian Association of Agricultural Professionals
Sonja Palm	GTZ, South Africa
Techane Adugna	Director, Planning and Programming, MoARD
Tenaw Ejigu	Irrigated Agriculture Development Process Owner, BoARD, ARS
Tesfaye Belay (Dr)	Crop Researcher, TARI
Tesfai Mebrahtu (Dr)	GTZ, Ethiopia
Tesfaye Mengistu	Extension Process Owner, BoARD, ARS
Tolossa Gedefa	Head, Bureau Finance and Economic Development, Oromiya Regional State
Wondimu Bayu (Dr)	Director, Crop Research, ARARI
Wondirad Mandefero	Director, Agricultural Extension, MoARD
Yewendwosen Bikila	Information and Public Relation Process Owner, OARI