

Annex 1 Development context IPMS Ethiopian Farmers Project

Part 1 Market-oriented Development Master Plan of the Ministry of Agriculture and Rural Development (MoARD)

1. Introduction

The Ethiopian Ministry of Agriculture and Rural Development (MoARD) has developed a master plan to enhance market-oriented production for priority crop (wheat, barley, tef, lentil, chickpea, faba and haricot beans, cotton, sesame, coffee and spices) and livestock (dairy, meat, poultry, apiculture, sericulture, fisheries, skins and hides) commodities. The master plan was released in June 2004. The objectives of the master plan are to:

- Develop a plan to enable the use of modern technologies to efficiently optimize production and productivity (at least doubling productivity of major crops)
- Encourage selected Woredas to specialize in one or two export commodities and gradually convert areas of other commodities to selected export commodities
- Strengthen non selected Woredas to double production and supply for the local market
- Use all means of mode of production such as water harvesting, irrigation, relay cropping, inter cropping to optimize productivity
- Be competitive in the international market and alleviate local food shortage

2. Crop Production

The average annual cultivated area is estimated at 8.5 million hectares. The proportion of area coverage for the main crops is teff 43.9%, wheat 23.1%, barley 17.7% , pulses 14.6% and sesame 0.7%. Total production was estimated at 9 million metric tons. Average productivity is about 1.1 tonnes per hectare. Area cultivated, total production and the national average yield for the major crops in 2000 is presented in Table 1.

Table 1. Area cultivated, total production and the national average yield for the major crops in 2000.

| Crop | Area ('000 Ha) | Total production ('000 tons) | Average Yield (Q/ha) |
|---------------|----------------|------------------------------|----------------------|
| Teff | 2141.3 | 17,218.8 | 8.07 |
| Wheat | 1173.2 | 13,689.6 | 11.8 |
| Barley | 837.3 | 7,583.6 | 10.3 |
| Lentils | 72.2 | 497.7 | 5.98 |
| Chickpeas | 150.9 | 1,462.0 | 8.71 |
| Faba beans | 359.2 | 3,886.8 | 10.1 |
| Haricot beans | 166.0 | 1,328.9 | 7.48 |

| | | | |
|--------|------|-------|------|
| Sesame | 38.2 | 156.6 | 4.58 |
| Cotton | 43.0 | 460.0 | 10.7 |

2.1 Status of production of some important crops

Cereal crops:

Area under teff cultivation is the largest and average production per hectare is the lowest among the major cereal crops. Much of the produce is consumed locally. However, teff has become one of the export commodities since 1999 and the main importers are Israel, USA, Djibouti, Saudi Arabia and Switzerland. In 2001, the total export was about 70,000 quintals and generated about 327 million Birr.

Although Ethiopia produces about 13,690 thousand tones of wheat, the country is a net importer. Between 1998 and 2000, on average annual importation of wheat was in the order of 827,000 tons at a cost of about USD 104.2 million.

Ethiopia produces both malt and food barley. Due to short supply of malt barley, the country on average imports about 67,453 tones annually valued at 22.7 million Birr

Pulses:

Lentils and chickpeas are the major pulse crops used for both local and export markets. About 19 to 21 countries import these pulses. Between 1998 and 2000, export of lentils increased from 29 tons to 1,686 tons, while that of chickpeas increased form 60.3 tons to 48,829 tons.

In 2002, the total area under faba beans was estimated at 369,151 ha and production was 4,471,000 qt, with an average yield of about 12 qt/ha. Between 1998 and 2002, export of faba beans increased from 38.5 tons to 2,562 tons and on average the country earned 2,04 million Birr per year..

Haricot beans is mainly grown for export purposes. The total area cultivated in 2002 was 166,040 ha and total production was about 1.3 million quintals; average yield being 7.48 qt/ha. Between 1998 and 2002, the country exported an average of 34,739 tons per annum and earned about 108 million Birr/year.

Oil crops

Ethiopia is the 7th major sesame producing country in the World and has an export share of 5.1%. There are 21 countries that are major importers of sesame from Ethiopia. In 1999, Ethiopia exported about 30 thousand tons of sesame worth 28 million USD. The total area under sesame in Ethiopia is estimated at 65 thousand ha and production is about 49 thousand tons and productivity is about 7.79 qt/ha.

Cotton

Cotton is mostly grown in the lowland areas under irrigation using modern technologies. However, smallholder farmers also produce cotton traditionally in isolated areas and in small quantities. The strategic plan is to increase productivity and expand production in the lowland areas, mainly under irrigated system. Cotton and sesame are grown in similar agro-ecologies

3. Comprehensive Development Plan for Crops

The strategic plan is designed to introduce and develop technologies leading to sustainable productivity in selected Woredas for specialization. Opportunities to increase productivity include sound crop husbandry/management practices, integrating modern technologies such as chemical/organic fertilizers, improved and high yielding varieties, proper cultural practices, and use of crop rotation. There is also a strong need to upgrade the skills of farmers and transform subsistence mode of production into market-orientation.

In order to achieve these, potential Woredas have been identified for selected export commodities. Farmers in these Woredas are expected to grow the specified export commodities and diversify in other commodities. The strategy also focused on production during both the short and long rainy seasons, and attempt shall be made to produce 2 to 3 times per year using irrigation/water harvesting technologies.

3.1 Selected Potential Woredas

Based on agro-ecology and crop suitability, dependability of rainfall, adjacent Woredas have been identified for input distribution and crop collection for export. A total of 173 Woredas have been identified with potential for specialization in eight main food crops, while 38 Woredas have been considered for cotton production. Table 2 indicates the number of Woredas selected by the MoARD for development of priority crop commodities.

Table 2. Number of Woredas, potential area and potential production for priority crop commodities

| No | Crop | No. Regions | No of potential Woreda | Potential Area (Ha) | Potential production (qt) |
|----|---------------|-------------|------------------------|---------------------|---------------------------|
| 1 | Teff | 5 | 49 | 1,231,707 | 24,433,458 |
| 2 | Wheat | 4 | 25 | 584,516 | 29,097,601 |
| 3 | Barley | 3 | 16 | 342,955 | 11,607,533 |
| 4 | Lentils | 2 | 7 | 172,219 | 2,740,329 |
| 5 | Chickpeas | 4 | 25 | 509,749 | 14,905,475 |
| 6 | Faba beans | 3 | 15 | 291,985 | 7,300,575 |
| 7 | Haricot beans | 2 | 20 | 297,043 | 6,290,015 |
| 8 | Sesame | 4 | 16 | 188,998 | 223,720 |
| 9 | Cotton | 8 | 38 | 84,326 | |

Technologies identified for the different priority crops include alleviating determining factors (e.g. use of appropriate varieties), minimizing the effects of limiting factors (e.g. moisture stress) and reducing factors (e.g. diseases and pests, etc). In addition, activities have been designed to create enabling environment for farmers to be more effective and productive through strengthening research and technology generation, training of MoARD staff and strengthening the extension system; developing infrastructure; strengthening service cooperatives, market information system, linkages between investors and producer or cooperatives (to improve market outlet through various forms of arrangements such as contract farming); strengthening the credit systems to farmers and cooperatives, enhancing the use of traditional institutions and examining the potential use of locally available materials and ensuring the proper and efficient multiplication of proven technologies.

4. Livestock

4.1 Dairy Production

The major species used for milk production in Ethiopia are cattle, camel and goats. Cattle produce 83% of the total milk and 97 % of the cow milk comes from indigenous cattle breeds. The total population of animals used for milk production is 13,632,161 TLU. Although milk production is increasing by 1.2% per annum, the demand-supply variance for fresh milk is ever widening and the per capita consumption diminishing. The key development issues in dairy are low milk production complicated by widespread food insecurity, growing gap between supply and demand in urban areas, and low average milk productivity.

The strategy for dairy development include enhancing market oriented production system, development of appropriate technology packages and extension, training of farmers through the ATVET and FTC programs, integrating dairy development with promotion of dairy markets and concentrating development efforts in identified milk sheds. Technology packages have been prepared in 2002 to encompass the extensive, semi-intensive and intensive dairy production systems.

The goals of the development plan include increasing milk production from indigenous cows by 100% and that of the crossbred by 25%, increasing milk processing industries by similar orders of magnitude, increasing milk processing plants by three-fold, improving quality of the milk produced by 50%, increasing per capita milk consumption by 6 litres and increasing farmer's income from dairy by 50%

4.2 Meat Production

The resource base for meat production includes cattle, goats, sheep, camel, and poultry. Cattle provide 76.8% of the meat produced nationally. Hides and skins are important by-products of meat production and are used for export and as input for the local leather industries.

The development direction is to focus on small ruminants-based meat production for both domestic and export market. Planned activities include supply of improved genetic material to smallholders and creating a conducive policy environment in relation to meat standards, animal health and quarantine services. The development strategy includes development of technology packages for meat production, and marketing plan, live animal and meat hygiene quality control and certification system and establishing disease-free zones.

4.3 Poultry production

The resource base for poultry production is local chicken. However, for commercial poultry production, exotic breeds and crossbred have been introduced to enhance production and consumption of poultry products. Ethiopia is one of the lowest countries in egg and chicken meat consumption/capita which stands at 57 eggs and 2.85 kg of meat per annum.

4.4 Beekeeping

About 95.5% of the honey is produced from the traditional beehives. The country has substantial potential for apiculture development and the MoARD has bee keeping as one of the priority commodities targeting the local and export markets.

4.5 Sericulture

This is only a recently introduced technology and just beginning to take root, at least in the south of the country. The major constraints are silkworm seed (cocoon) production, *Mombyx mori*, limited production of Mulberry cuttings (available varieties are Kanva-2 and Thailand s.36) and lack of appropriate reeling, weaving, dying and finishing technologies. The development plan is to introduce and expand sericulture with opportunities for local and export market.

4.6 Fisheries

The country is rich in inland lakes and rivers with large potential for development. However, there is lack of locally generated data on productivity, trained manpower in aquaculture and shortage of fish feed.

The development direction is to focus on fisheries and aquaculture development under smallholder production systems.

Part 2 Agricultural Technical Vocational and Educational Training program

The agricultural TVET program has three components: (i) middle level agricultural training, (ii) staff development, curriculum and applied research, and (iii) civil works.

Middle level Agricultural Training

The middle level trainees are trained in specific fields of agriculture. The training is carried out in 25 “Agricultural Technical Vocational Training Colleges” which are established and upgraded throughout the country. The syllabi or occupational areas are offered based on the need of the sector (Agricultural). For the next five years of the program period, the proposed syllabi include the following five major courses: animal husbandry, crop production, natural resources development and animal health and cooperatives. Besides to these major courses, English, Mathematics and Computer courses are also be offered.

The duration of the training program is three years -- two years of in-campus and one year of apprenticeship. The training is structured in such a way that trainees spend 70 percent of their time on practical and the rest on theoretical learning.

The program is envisaged to produce about 55,000 trainees in its medium term plan. The graduates will serve as development agents and train farmers in “Farmers Training Centres”

Staff development, Curriculum and Applied Research

Under this component, emphasis will be given to staff training, updating the current curriculum, teaching aids, handouts and manual development, and implementation skill test and qualifications system certification and accreditation, strengthening apprenticeship, assessment of training need, tracer and reverse tracer study, research coordination and dissemination, establishment of national standards, cost sharing, creation of linkages between TVET and higher education institutions to enhance the quality and standard of the agricultural TVET program. This component has 2 sub-components i.e.

- Staff development sub-component
- Curriculum development and applied research sub-component

The staff development sub-component

Staff development is a core aspect of any training program. The quality of all training activity is usually measured in terms of the ability of the training staff to understand and apply modern technology to the training system. As the technical vocational training is a relatively new method of training in the country, it will be difficult to find the type of instructors which the training program requires in the market. Hence, it would be necessary for the staff to have well developed skill in order to achieve the objectives of the program. Therefore, in the staff development sub-component the aspect which should be considered would be higher-level long term training, training of trainers, in-service training, etc.

Curriculum development and applied research sub-component

Curriculum is a core aspect of any training program. The program should have a well designed curriculum and put in place. Under this component, the curriculum requires regular revision as the need may arise. Part of this activity involves initial input into curriculum and teaching aids development. The certification and

accreditation standards are set as part of this component. Other activities in this context involve strengthening of apprenticeship, assessment of training need, and establishment of national tracer and reverse tracer study. Standards, cost sharing, and establishment of linkages between TVET colleges, research and higher education institutions.

Civil works component

The overall technical and vocational training programs depend mainly up on the type and availability of facilities and infrastructure at a given time. Almost all colleges and training centers existing in the country are operational but need more facilitation.

Part 3 Farmers training center program

At the PLS level the MoARD is planning to introduce the FTC system by assigning the newly educated DAs. Guidelines are being prepared for the operation of these FTCs, and a number of task tasks have been identified of which the most relevant for the IPMS project are:

- Agricultural training
- Extension services
- Provision of information
- Permanent centre of exhibitions

Agricultural training

This (formal) training is provided to farmers based on a number of crop, livestock and natural resource management modules. Within each module, there are different courses and for each course there will be curriculum guidelines (to be developed by the Federal extension services in English and be translated by each Region into local languages). The following courses are envisaged for the different modules.

- Livestock: fish, poultry, beef, sheep and goat production, hides and skins, beekeeping, dairy production, camel production
- Crop: field crop, industrial crops, fruit crops, vegetable production, coffee/tea/spice production and crop protection.
- Natural resource management: irrigation, alternative energy, non timber forest products, nursery management, water harvesting technology and plantation establishment.

Training will be theoretical and practical. The theoretical aspect will be classroom training using verbal and written communication using black boards, pictures and videos.

The practical training will be in FTC workshops (to make simple equipment) and in the field (to use implements and learn some improved practices), and by visiting other farms to exchange experiences.

The training for one module will take from 3 to 6 months according to the module size, (normally 2 days/week at 6 hours/day (4 practice hours, 2 theory hours). This will lead to a “module” certificate. Once a farmer has completed all three modules he/she will be issued a “green certificate”.

Upon graduation, the farmer is expected to be a role model for other farmers and be market oriented and environmentally conscious. He/she is also expected to keep records.

Extension services

The general extension strategy to be followed is based on the following principles

- improved crop and livestock productivity resulting in increased income and improved livelihoods
- sustained food security, and nutritional habits and maintain health
- teach/encourage farmers to organize in associations by gender, age, and in different commodities)
- produce agricultural raw materials for industry
- produce marketable and exportable crops to earn hard currency
- protect the natural resources of their communities (soil, water, forest and wildlife)
- help women to use new less labor-intensive technologies to improve their income and increase their role in agricultural development

The extension methodology is planned to be participatory in nature and based on the identification of farmer’s problems and potentials using Participatory Rapid Assessment (PRA) methods. Emphasis will be on market oriented commodities, taking into consideration differences in agro-ecological potentials and individual farmers’ resource base (household types).

The approach used will be to contact individual farmers with the objective of forming groups based on interest. DAs will advise on crop production, livestock production and natural resource management and formation of associations. They will also provide advise on markets, loans and savings and farm management economics, post harvest, agro processing. Cross cutting issues considered are: emphasis on mixed farming systems, increased role of women, record keeping, introducing saving culture and family based agriculture.

Use will be made of radio, pamphlets, posters, exhibitions, demonstration equipment, field visits and exchange visits. The usefulness of these different methods will be assessed by farmers.

In the technology transfer process, increased emphasis is put on feedback to and from farmers regarding the institutions concerned - including research.

The extension component also includes the “package approach”; however more care will be taken in involving only interested farmers and the socioeconomic and biophysical potentials of the farmers.

Provision of information

The FTCs will also be responsible for making information available to farmers on the following topics:

- Weather information and predications. This will require the installation of some weather measuring equipment and synthesizing and posting of weather bulletins received through the radios. (Including early warnings).
- Market information: This will involve information on marketable commodities, required quality, prices, time of delivery and quantities.
- Environmental information: land use (crop area, yield/ha-improved/traditional), weeds, diseases, insects (samples), livestock types and numbers, internal and external parasites, census of population by age and religion, households, education level, number of professionals/professions, institutions (schools, church, mosques, associations, finance) , natural resources. This information is to be collected and put on charts.

Permanent Centre of exhibition

The FTCs will have a permanent exhibition centre containing improved crop seeds, improved implements, post harvest technologies, samples of different weeds, crop diseases (insects), and inputs for new technologies.