PART III : Action Plan of Kenyan Industrial Development

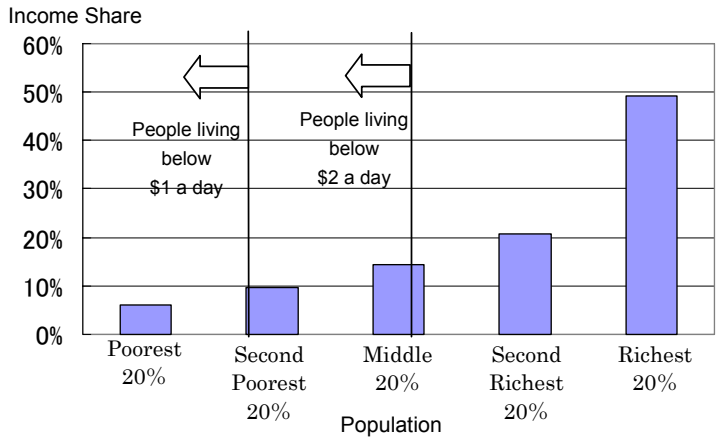
Chapter 7 Future Directions and Development Framework

Vision 2030 envisages that Kenya shall become a globally competitive and prosperous nation with a high quality of life by the Year 2030 and that industrialisation shall be one of the key driving forces to attain the rapid economic growth. For this to happen, Vision 2030 notes that the manufacturing sector needs to be revolutionised and improve in competitiveness. In line with Vision 2030, the Master Plan aims to present a set of industrial development frameworks. This Chapter first reviews preconditions surrounding the Kenyan Industry, and then it shall put forth a set of future directions and implementation framework that will enable transformation of the Kenyan industry.

7.1 Preconditions of the Kenyan Industry

7.1.1 Poverty Alleviation and Industrialisation

Poverty alleviation and job creation are of utmost importance to the policy agenda for Kenya. Although the Kenyan economy has been enjoying a steady growth for the last three years with 5.9 % CAGR between 2004 and 2006, Kenya is still far from graduating from poverty. This is critical not only in terms of low incomes but also in terms of wide disparity between the rich and the poor. GDP per capita was Kshs. 45,447 (US$ 630) in 2006 with 3.0 % CAGR in the previous three years.[94] Figure 7-1 shows the latest available data on income distribution. The data shows that 49 % of the total income was enjoyed only by the top 20 % of the population while 58 % of the Kenyan population lived under US$ 2 a day in 1997.



Source: WB 2007 World Development Indicators p.67

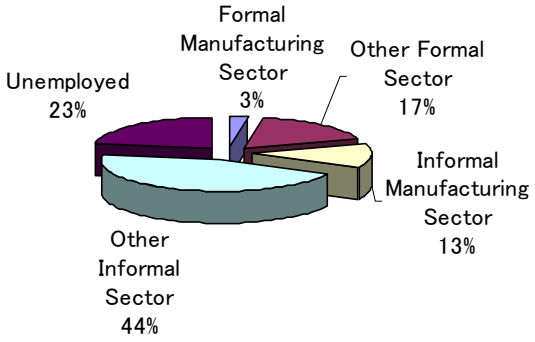
Figure 7-1 Income Distribution of Kenya in 1997

Some causes of this low level of income include the low monetised rural economy, low value addition in rural economic activities, and lack of adequate employment opportunities. It is estimated

[94] KNBS (2007) Economic Survey 2007, p.11

that approximately 23 % of the labour population was unemployed in 2002, while the formal sector absorbed only 20 % of the labour force, and the remaining 57 % were employed in the informal sector. However, income contributions from the informal sector are both unstable and low. It is probably right to assume that majority of the labourers are forced to work in the informal sector because they cannot find employment opportunities in the formal sector. Even many highly educated Kenyans now cannot find satisfactory jobs domestically, and many of them decide to find jobs abroad.

Relative to the issue of poverty alleviation, contribution by the manufacturing sector is still small. The manufacturing sector's contribution to GDP was 10 % in 2006. As for job creation, the formal manufacturing sector absorbed only 3 % while the informal manufacturing sector absorbed 13 % of the labour force in 2002 (Figure 7-2).



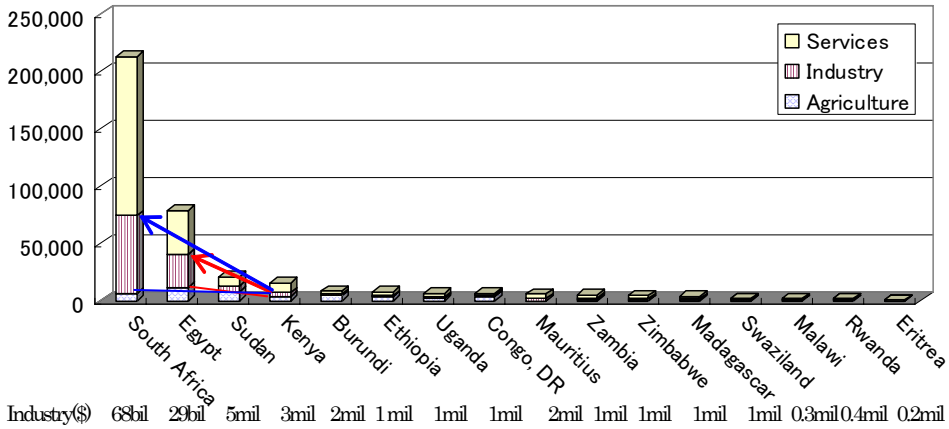
Source: Estimates based on Republic of Kenya (2004) Investment Programme for the Economic Recovery Strategy for Wealth and Employment Creation 2003-2007, Economic Survey 2006, KNBS

Figure 7-2 Employment Opportunities in the Manufacturing Sector in 2002 (Estimate)

However, it is not only in Kenya where economic contribution of the manufacturing sector is small in Africa. Figure 7-3 shows GDP structures among the COMESA countries and South Africa. Apart from South Africa and Egypt, the average GDP distributions were 31 % by the agricultural sector, 22 % by industry, and 46 % by the service sector in 2005. The service sector seems more dominant than the industrial sector. Yet, considering the fact that the industrial value-addition of Sub-Saharan Africa occupies only 1 % share in the World,[95] it is too early to disregard possibilities of industrial development in Sub-Saharan Africa. It is more plausible to consider that these countries, including Kenya, are yet to catch up with the process of industrialisation. Having no dominant industrial power in East Africa, it is still possible for Kenya to lead at becoming the third industrial pillar next to South Africa and Egypt if cross-ministerial policies support this commitment.

[95] WB 2007, World Development Indicators, p.200

Unit: US$ million



Source: WB 2006 World Development Indicators PP. 198-200

Figure 7-3 GDP Structure of COMESA Countries and South Africa in 2005

7.1.2 Fundamental Issues

Inability of the manufacturing sector to catch up on the path towards industrialisation is mainly attributed to the current fundamental conditions. In summarising discussions in the previous chapters, the fundamental issues surrounding Kenyan industry are analysed in the Diamond Model (See Box 7-1). The Diamond Model is an analytical tool, which shows that the competitive industrial structure is the one which has strong correlation among the four determinants. However, in the case of Kenya's industrial structure, it can be observed that the weak status in "demand conditions", "factor conditions" and "related and supporting industries" are negatively affecting the status of "firm strategy, structure, and rivalry" instead of the dynamic relationship among the four.

The main source of information for the analysis on the Diamond Model is the interview data from 92 companies. The interviews with the enterprises revealed weaknesses in industrial fundamentals, which negatively affect all industrial sub-sectors (See Chapter 9.3.3 for sampling and sub-sectoral analysis).

Box 7-1: Michael Porter's Diamond Model

Porter defines a cluster as "geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field that are present in a nation or region". He argues that the successful clusters are those in which the four "determinants" are most dynamically correlated. These four determinants are:

Demand conditions: quality of the national demand;

Factor conditions: conditions of the production process, such as, raw material, human resource, and infrastructure;

Related and supporting industries: existence of competitive suppliers and related industries; and

Firm strategy, structure, and rivalry: ways in which firms are created, organised, and managed and nature of domestic rivalry.

Source: Porter, M. (1990), The Competitive Advantage of Nations, Macmillan;
The Institute for Strategy and Competitiveness <http://www.isc.hbs.edu/econ-clusters.htm>

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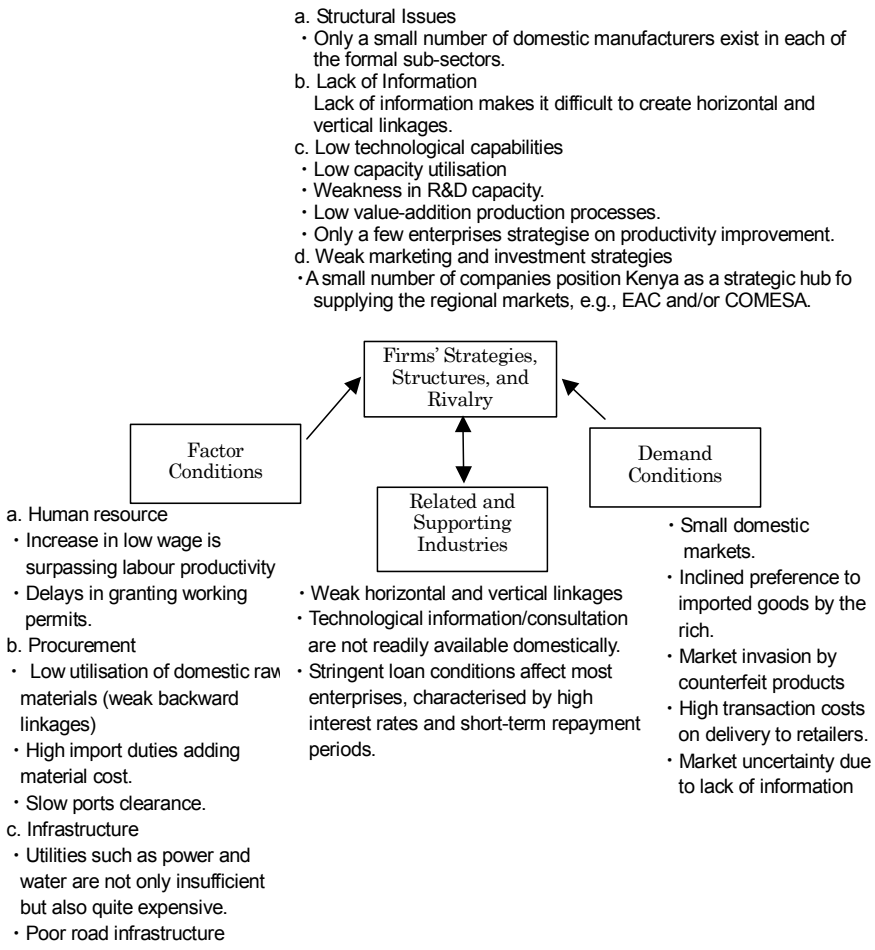


Source: The JICA Study Team

Figure 7-4 Fundamental Issues Surrounding Kenya's Manufacturing Sector

(1) Demand conditions

Demand conditions are the most influential determinants affecting the other three determinants. However, the domestic market in Kenya is not very encouraging. First, the size of the domestic market is too small to be the driving force for industrial development. Secondly, the inclined preferences towards imported products largely by those with reasonable purchasing power, giving even less opportunities for the local enterprises to expand their production volumes. Thirdly, pervasiveness of counterfeits, dumping, and substandard goods is destroying fair market competition. Fourthly, high transaction costs between the retailers and manufacturers. As discussed in Chapter 5.3.1, the smaller manufacturers have less bargaining power over retailers in terms of wholesale pricing and terms of payment. Finally, lack of statistics and market information makes it difficult for the manufacturers to have sales predictions in the long-run.

(2) Factor conditions

Favourable factor conditions are often the main reason for attracting investment to developing

countries which have comparative advantages in low wages and natural resources. However, Kenya has not demonstrated competence in these factors. First, the wage rate in Kenya is relatively higher than that in Asian countries. The most discouraging factor for the manufacturers is that the minimum wage has in the past been raised irrespective of productivity improvement. Secondly, agricultural activities are not effectively linked to industrial production in Kenya. NES stresses the importance of value added production instead of exporting agricultural products in raw form. MAPSKID shares the same view and finds it important to explore potentialities of value-added production utilising domestic resources. (Chapter 5.2)

On the other hand, many developing countries have a strong need to improve their infrastructure to attract much needed investment. Kenya has the same agenda to improve her road infrastructure, electricity and water, etc, and to provide them at competitive costs. Many companies interviewed by MAPSKID complained especially about high electricity cost and poor road conditions, especially the Mombasa - Nairobi highway. The poor road network causes them to incur high transportation costs, making their products uncompetitive. It is considered that the availability of energy is a prerequisite for industrial growth (Chapter 4.2).

Moreover, many enterprises feel that the current tariffs structure gives little incentives to manufacture locally because of the irrational balance between tariffs on imported final products (e.g. import duty, V.A.T, and excise duty) and those on imported raw materials. Considering high production cost and current tariff structure, it has often made more sense to import whole products than the parts for local assembly. Although the current global liberalisation does not allow going back to protectionism, the tariff regime has to be rational so as to provide a level playing field to the local industry.

(3) Related and supporting industries

The level of development of supporting industries shows strength of that sub-sector. In Kenya, the difference in this level is observed among sub-sectors. While the food sub-sector and the automotive sub-sector have relatively well established related and supporting industries, the other sub-sectors hardly show existence of horizontal and vertical linkages (Chapter 9.3). Even though there have been many initiatives to promote subcontracting from large-scale enterprises to MSMEs, notable progress has not been made. One reason for this is lack of information. The potential capacity of MSMEs is unknown to the large-scale enterprises. The other reason is high transaction costs. Large-scale enterprises have to be conscious of quality and productivity of products based on QCT standards. This high QCT standard is not easily shared by the MSMEs, which do not have experience in subcontracting. Unless it is targeting the highly motivated MSMEs, subcontracting assistance is very difficult to bear fruit. (Chapter 5.2)

Supporting mechanisms also have weaknesses. First, the public supporting mechanism has duplications of service menus while funding is not enough to support its wide spread activities. It is necessary to streamline service provision that meets industry needs. Secondly, linkages between R & D institutions and the manufacturing sector are not very strong. The majority of enterprises do not seek solutions from local R & D institutions and source for technological information from abroad.

Obtaining technological information from abroad is more costly and more difficult to modify or to innovate from because of limited access to the information as well as differences in factor conditions (Chapter 5.2). Thirdly, financial supporting mechanisms are not very favourable since lending conditions are based on short-term repayment periods with high interest rates. Moreover, MSEs have difficulties in accessing loans due to lack of collateral. Development of the financial support mechanism is an important factor to induce investment incentives for the enterprises (Chapter 5.6).

(4) Firm strategy, structure and rivalry

Due to the poor conditions in the above three determinants, most manufacturers are currently not taking an aggressive stance to see Kenya as a strategic location for further expansion. Many are currently suffering from under-utilisation of capacity due to the lower demand volume than that of the 90's. Because of this, most companies do not see the need for productivity improvement in terms of increasing production speed except for a small number of companies which are very conscious of global competition like the garment manufacturers in EPZ. Moreover, because most enterprises lack R & D capacities, their production activities are not of high value addition. Many mistakenly rely on machinery for technological capability and productivity instead of the human capacity variable (Chapter 5.2). However, there are also some positive signs. Among the interviewed companies, a few have shown interest in further investment if financial or joint venture arrangements can be secured. It is needed that the government provides more mechanisms to support such interest in further expansion.

7.1.3 Competition and Opportunities from Globalisation

Increasing liberalisation backed by WTO and improvement in transportation and ICT has globally integrated both manufacturing centres and markets. This globalisation, on one hand, is a great threat to uncompetitive enterprises, but on the other hand, it opens up global markets to competitive enterprises wherever they are located. Local manufacturers have no alternative now but, to compete against imported products in terms of quality and price. The companies which are not conscious of improvement in quality and productivity have very limited possibilities for their sustainable development. There is therefore the need for the government to double its efforts in creating an enabling environment which will motivate local manufacturers to improve their businesses.

The preferential access to the USA and the EU markets through AGOA and ACP–EU Cotonou Agreement has generated major inflow of FDI. While such benefits exist, Kenya should seriously pursue technology and productivity improvement so that technological capacity is transferred to Kenya before such temporary benefits expire.

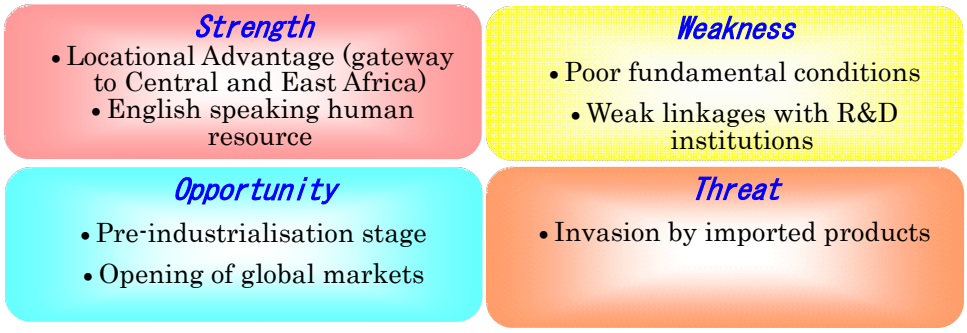
Regional economic integrations like EAC and COMESA are providing immediate market opportunities to the Kenyan industry. Kenya is in an advantageous position to exploit the market opportunities created through these regional economic integrations because of her long-term industrial foundation since early 1970's. Despite the advantageous position, Kenya has to compete with those member countries as a manufacturing hub. If her fundamental conditions remain poor, then investors will prefer investing in more investor-friendly countries. If the unfavourable situation

becomes dominant, it will be too late for Kenya to pursue her path to industrialisation. Therefore, this timing of presenting the master plan is very crucial. Its implementation needs not to be delayed for Kenya to favourably exploit this opportunity.

7.1.4 Existing Advantages

In spite of the threats which the Kenyan industry is facing from global competition, Kenya is still in an advantageous position if she seriously pursues the path to industrialisation now. First, she has English as an official language, with a large number of her work-force capable of conducting work in English. This is advantageous for global transactions and for absorbing technology know-how from abroad. A good number of highly intellectual people have been trained both domestically and abroad, and many R & D activities are going on in the research institutions. On the other hand, the current problem is that many of those highly educated people cannot find satisfactory jobs in Kenya, and this is causing brain drain. In addition, outputs of R & D institutions have been hardly linked to the industry.

Secondly, Kenya's strategic location as a gateway to East Africa should be able to facilitate more flow of goods and people. No other countries in East Africa have a large port facing the Indian Ocean like the Mombasa port and an international airport linking various destinations like Nairobi (Jomo Kenyatta) International Airport. Kenya should therefore take full advantage of these gateways and effectively improve the logistic system through more efficient service delivery by the public sector and providing better conditions in roads and railways that link her to the neighbouring countries. Moreover, Kenya's connection to the international optical fibre networks is going on. This will rapidly improve the ICT infrastructure in Kenya. The Government is expected to aggressively seek strategies to exploit these favourable conditions not only by the service sector but also by the manufacturing sector.



Source: The JICA Study Team

Figure 7-5 Summary SWOT Analysis of Current Situations

7.2 Industrialisation Scenarios

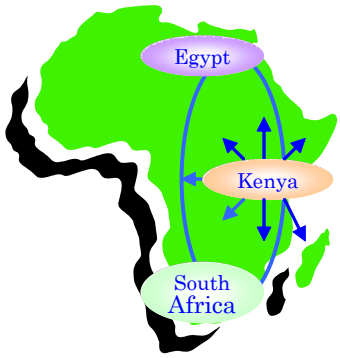
The previous section discussed four main preconditions surrounding the Kenyan industry. First, it discussed the serious need for industrialisation as a means for poverty alleviation. Secondly, the current global competition requires strengthening competitiveness of the manufacturing sector for its sustainable growth. Thirdly, the current poor state of the fundamental conditions calls for an urgent improvement for survival of the Kenyan industry. Fourthly, in spite of the current poor state of

conditions, Kenya does have some absolute advantages, which can enable her to pursue the path to industrialisation.

The above four conditions are not easy to link to industrialisation without a strong political commitment to support the industrial transformation. The Sessional Paper No.2 of 1997 was aiming for structural transformation of the Kenyan industry so that Kenya can join the Newly Industrialised Countries by Year 2020. However, little progress has been made on its implementation. MAPSKID intends to relay scenarios for industrial transformation, succeeding the intention of the Sessional Paper No. 2.

7.2.1 Vision for industrialisation

To support high economic growth targeted at 10 % CAGR by Vision 2030, the Industrial Master Plan depicts a scenario of rapid industrial development. MAPSKID proposes to set a vision of Kenyan industry becoming the third industrial pillar in Central and East Africa, heading towards the faster growing industries in South Africa and Egypt, and establishing a position as an industrial hub in East and Central Africa.



At the same time, employment creation, which is emphasised in ERS, shall remain important for developing the Industrial Master Plan. The Industrial Master Plan tackles the issue of attaining high growth while maximising employment opportunities generated through industrial development. Therefore, the industrial scenario seeks strategies for job creation that benefits:

i) not only the main cities but also outward areas where industrial activities are currently not very active;

ii) not only large enterprises but also MSMEs; and

iii) not only the highly skilled labourers but also ordinary and unskilled workers.

In formulating a scenario heading towards the vision, horizontal and vertical approaches are simultaneously sought. The horizontal approach is the four types of linkage creations, which are aimed to become the industrial transformation triggers. The vertical approach, on the other hand, shows the implementation framework categorised by four main subjects.

7.2.2 Linkage Creation as Industrial Transformation Triggers

The weakest nature of the Kenyan industry is the fragmented business operations. To change the situation, four types of linkage creations are recommended to become industrial transformation triggers.

i) Spatial Linkage Creation ⇒ Creating Industrial Corridor

ii) Foreign Linkage Creation ⇒ Promoting FDI

iii) Sectoral Linkage Creation ⇒ Strengthening Industrial Linkages

iv) Economic Linkage Creation ⇒ Integrating Informal Economy into Formal Economy

None of above linkage creations is possible to implement without inter-ministerial collaboration. This shows the importance of sharing the same vision among the key policy makers and across the ministries to actualise the industrial transformation.

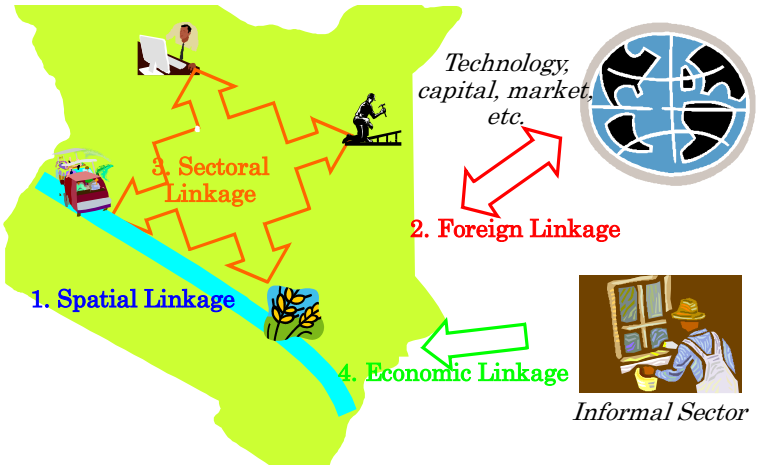
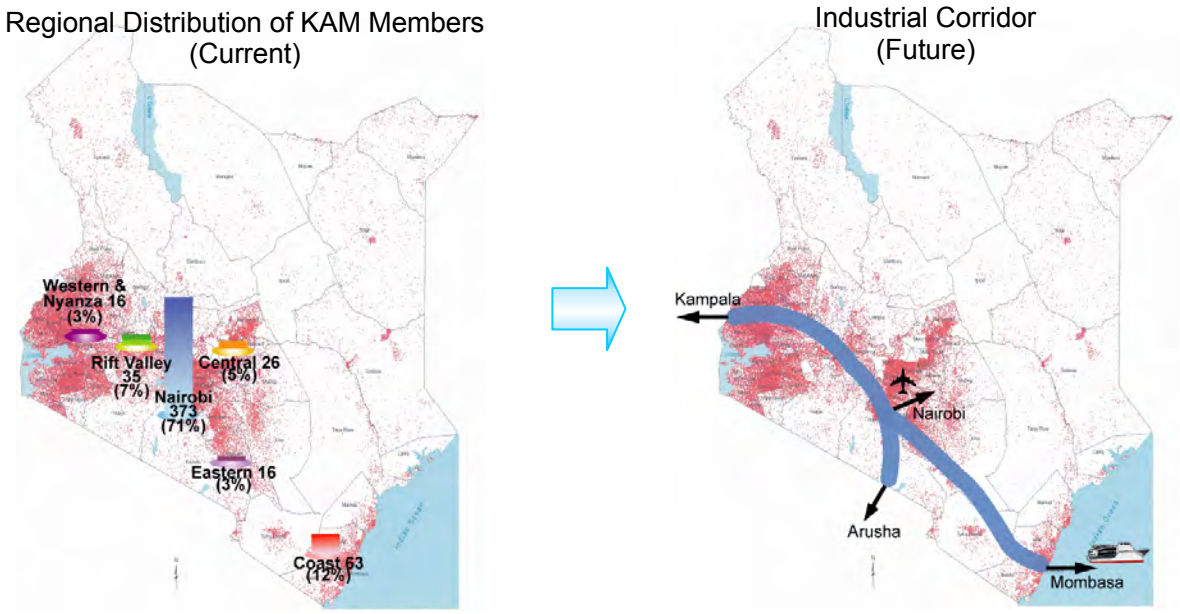


Figure 7-6 Four Types of Linkage Creation as Industrial Transformation Triggers

Linkage 1: Creating Industrial Corridor (Spatial Linkage)

Attaining rapid growth and minimising the income gap simultaneously is a big challenge. To minimise the regional income gap, a strategy for promoting investment outside Nairobi has to be developed. Currently, industrial activities are concentrated in Nairobi as it can be observed from the fact that 71 % of KAM members are currently located in Nairobi. Even Mombasa area, which is advantaged by having the port, is not fully developed. This is because the industrial supporting system is very weak outside Nairobi.

Yet, Kenya's strategic location as a gateway to East and Central Africa is the strongest advantage for Kenya that no other countries in the region can surpass within the near future. Strengthening in physical networks connecting to East and Central Africa would provide incentives for the private sector to enjoy Kenya not only as a hub for the distribution network but also as a hub for the market. Based on this strong service and market foundation in Kenya, a strategy should be developed to see Kenya as a production centre, targeting the East and Central African markets. This regional hub strategy would induce creation of industrial corridors alongside Mombasa-Nairobi-Busia to Kampala and Nairobi-Namanga to Arusha. For this to happen, some concrete strategic planning is necessary for investment promotion outside Nairobi, including infrastructural strengthening, national spatial planning, enhancing local administrative support, and creation of an incentive system outside Nairobi.



The figures in the left map indicates number of KAM members in each region
(source: Kenya Association Manufacturers Directory 2005/2006)
The red dots indicate the population distribution in 1999.
(source: CBS (2003) 1999 Kenya Population and Housing Census, p. 6)

Figure 7-7 Creation of Industrial Corridor

Linkage 2: Promotion of FDI (Foreign Linkage)

An annual 10 % economic growth, as targeted in Vision 2030, inevitably requires an enlarged volume of investment. While domestic investment is limited, it is necessary to promote FDI more proactively. FDI is also essential for technological transfer to Kenya so that the Kenyan industry upgrades its technological capability to global standards. While upcoming various policies following Vision 2030 are expected to enhance the overall environment for FDI, there are more pertinent issues that the Industrial Master Plan has to raise.

At present, there are some inhospitable voices towards multinational companies and strong calls for more support to the Kenyan-African owned enterprises, stating that the multinational companies have not made any impact on industrial development. Yet, it must be acknowledged that no other countries managed to experience rapid industrial development under discrimination of companies by their ownership. Take the examples of Malaysia and India, their industrial growth became rapid after they relaxed their protection of the locally-owned enterprises. Ownerships of the companies should not be criteria for receiving public support since wherever the origins of the ownership, they are providing employment to the Kenyans. It must be noted that it is difficult for any manufacturers to operate effectively under the current poor fundamental conditions as articulated in Chapter 7.1.2. Improvement in the fundamentals is a prerequisite for the multinational companies to have a greater impact on industrial development.

What the Government needs to seek is enhancement of the “pull-up” function by the multi-national companies to the local manufacturers. The Government has to support the multinational companies

in increasing local supply and local marketing. The Government also has to enhance education and training of the workers in order to encourage the multinational companies to go into higher value added activities. Localisation of the multinational companies is the best way to encourage them to set their foundation in Kenya as a manufacturing centre targeting at East and Central Africa.

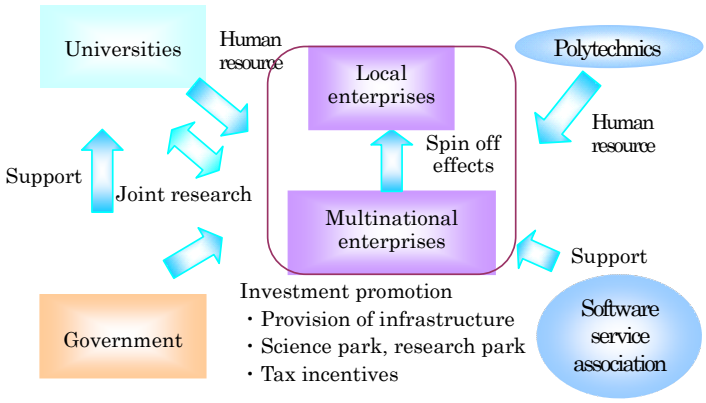
Although Kenya now has FDI concentration in garment and pharmaceutical sub-sectors, technological diffusion is very limited. The government needs to make full use of such investments and try to meet their demand for quality and productivity improvement. Some of the best practices utilising FDI have demonstrated promotion of investment initiatives through public-private partnerships, resulting in the creation of dynamic clusters which have made significant spin-off effects on the local industry (Box 7-2).

Spinning effects from multinational companies usually occur for the top local manufactures through business transaction or to those who have ex-employees of the multinational companies. Then gradually, such spinning effects occur to the middle- and lower- level. Artificial business linkage creation, ignoring capacity of the local manufacturers, is usually not sustainable.

Box 7-2: Best practices in industrial development utilising FDI

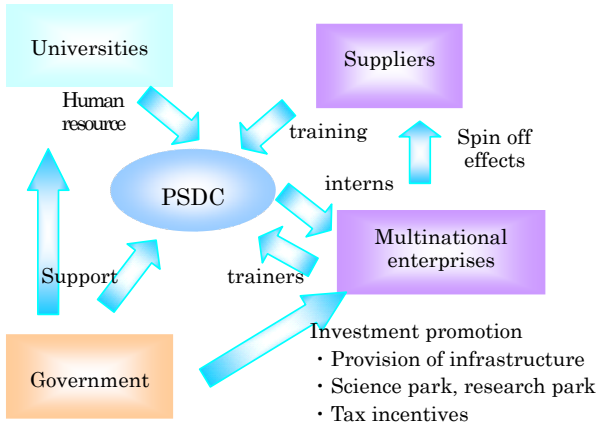
Bangalore, India (ICT)

Bangalore, which used to be a quiet academic city until 10 years ago, has become one of the most famous ICT clusters in the world after late 1990's. The support from industrial policy, public institutions devoted to the development of science parks, universities, polytechnics, and software associations all worked together to motivate enterprises to invest into ICT sub-sector.



Penang, Malaysia (Electric and electronic)

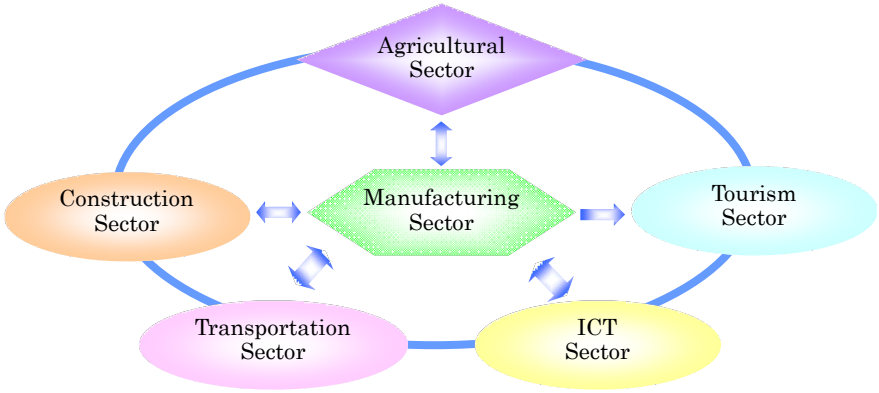
Penang has a concentration of electric and electronic sub-sector. The development initiatives from the government started from '70s with provision of infrastructures and tax incentives. A technological leap has occurred after 1989 when multinational enterprises and the government set up PSDC in which instructors from the multinational companies offer training courses to the suppliers and youngsters. This successful Public-Private-Partnership much improved technological capacity of the region.



Linkage 3: Strengthening industrial linkages (Sectoral Linkage)

For the Kenyan industry to increase its value addition and to bring about multiplier effects to other economic sections, a strategy to strengthen the domestic linkages with other growing economic sectors shall be taken up through both forward and backward linkages. The multiplier effect is also expected to make a larger impact on job creation with wider sections of the labour markets.

Except the linkage creation between the agricultural sector and the manufacturing sector, the policy makers have hardly taken note of interconnected effects across the sectors. Vertically, the segmented nature of the administrative system has often caused them to make decisions without consideration of possible impacts on the manufacturing sector. For example, public grant schemes relying on imported goods without placing priorities to the local products often deny market opportunities to the manufacturers. In another case, setting high quality standards without assistance to the manufacturers has resulted in increasing reliance on foreign outsourcing production. Considerations for strengthening cross-sectoral linkages and possible impacts on the manufacturing sector have to be kept always in mind.



Source: The JICA Study Team

Figure 7-8 Strengthening Industrial Linkages

Linkage 4: Integration of informal economy into formal economy (Economic linkage)

While recognising importance of informal sector as the main source of employment, informality makes it difficult to extend public support effectively. Being informal is also undesirable in terms of income generation of the nation. Under increasing global competition, it is necessary to place stronger emphasis on creation of competitiveness otherwise it would be very difficult for the uncompetitive manufacturers to sustain their business. It is therefore recommended that the Government places stronger commitment in assisting graduation of the informal manufacturers to the formal manufacturers with the aim of integrating the informal economy into the formal economy.

7.3 Development Framework

Although linkage creations are considered as the key strategies for triggering industrial transformation, translating them directly into the implementation framework would not be practical since their implementation overlaps each other. Consequently, the implementation framework for

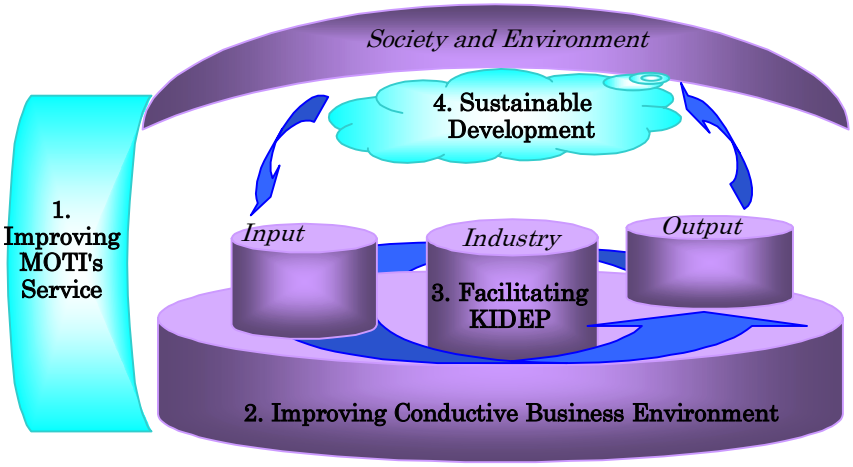
industrial development is proposed with four categories of development objectives, which are set vertically with detailed items under each objective category whereas the linkage creations are recognised as the horizontal objectives with possible relevant items horizontally. The implementation framework is to provide the Government with a set of tangible and concrete action plans to improve the supporting system of the industrial development.

i) improving efficiency of services delivery by MOTI,

ii) improving conducive business environment (improving institutional framework relating to public administration),

iii) facilitating internal innovation of industry over the Kenya Industrial Development Platform, and

iv) sustainable development with environmental and social consideration.



Source: The JICA Study Team

Figure 7-9 Industrial Development Implementation Framework

Objective 1 : Improving efficiency of services delivery by MOTI

(Chapter 3)

Being the responsible ministry for driving industrial development, the role of MOTI and the implementation structure is firstly defined. As the facilitator of industrial development, MOTI is recommended to strengthen its efforts on inter-ministerial collaboration and to take the leading role in negotiating policy issues with other ministries as a representative of the interests of the manufacturers. With limitations in the number of personnel in MOTI, the job description of MOTI officers is required to be defined based on specialisation strategy of each officer while putting stronger commitment on actual implementation. At the same time, institutional capacity in the field offices and foreign missions are needed to be reinforced to increase industrial linkages both domestically and internationally.

Objective 2： Improving conducive business environment

(Chapter 4)

Improving conductive business environment is a prerequisite for economic growth. MAPSKID has identified the legal and taxation frameworks, infrastructural conditions, and information delivery are the three key items of which the Government has primary responsibilities for implementation. Although many of the issues are already covered in PSDS, MAPSKID re-emphasises their importance from the views of industrial development.

Objective 3： Facilitating internal innovation of industry over KIDEP

(Chapter 5)

MAPSKID identifies seven key subjects of supporting system for facilitating internal innovation of the manufacturers; namely, i) technology, ii) management and marketing, iii) export promotion, iv) human capacity development, v) financing, vi) investment promotion, and vii) industrial networking. There are already many existing initiatives in each subject; yet, public and private agencies are not effectively connected with each other; thus each initiative has not really been effective. Moreover, the supporting system is generally weak outside the Nairobi Metropolitan Area.

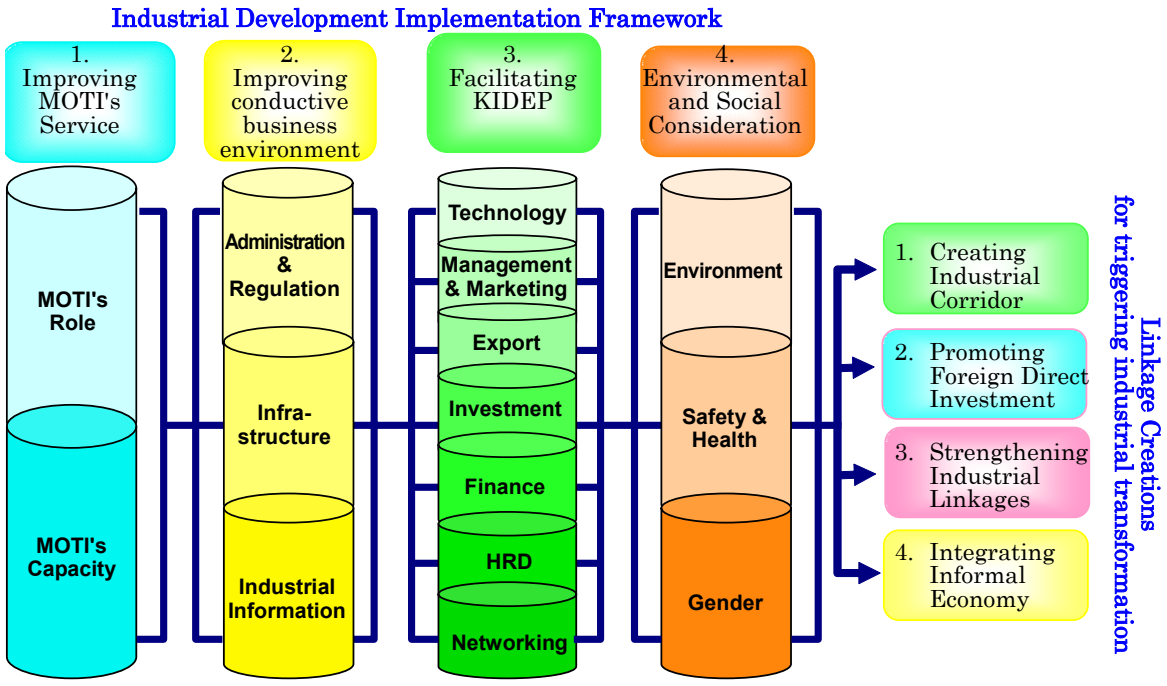
KIDEP aims to improve the service of above key subjects with a central one-stop shop. The one-stop shop has effective networks with various supporting institutions as well as service information of such institutions in their databases and becomes the contact window for the manufacturers who come for consultation. Then the one-stop shop directs the manufacturers into specific institutions or BDS providers. The service information shall become accessible nationwide over the Internet.

Objective 4： Sustainable development with environmental and social consideration

(Chapter 6)

Industrialisation has to be harmonised with conserving the environment especially since Kenya reserves ample natural resources, which are very important for the world. On this account, cleaner production, waste treatment, land allocation planning for industry and recycling are important to the agenda. Moreover, industry should produce environmentally friendly products such as bio-diesel and bio-plastics. At the same time, safety regulations and labour welfare should be taken into account so that the growth of the manufacturing sector can be appreciated by society and lay the foundation for sustainable development.

The following chart shows the relationship between the implementation framework with four categories of development objectives and linkage creations with horizontal objectives for reference.

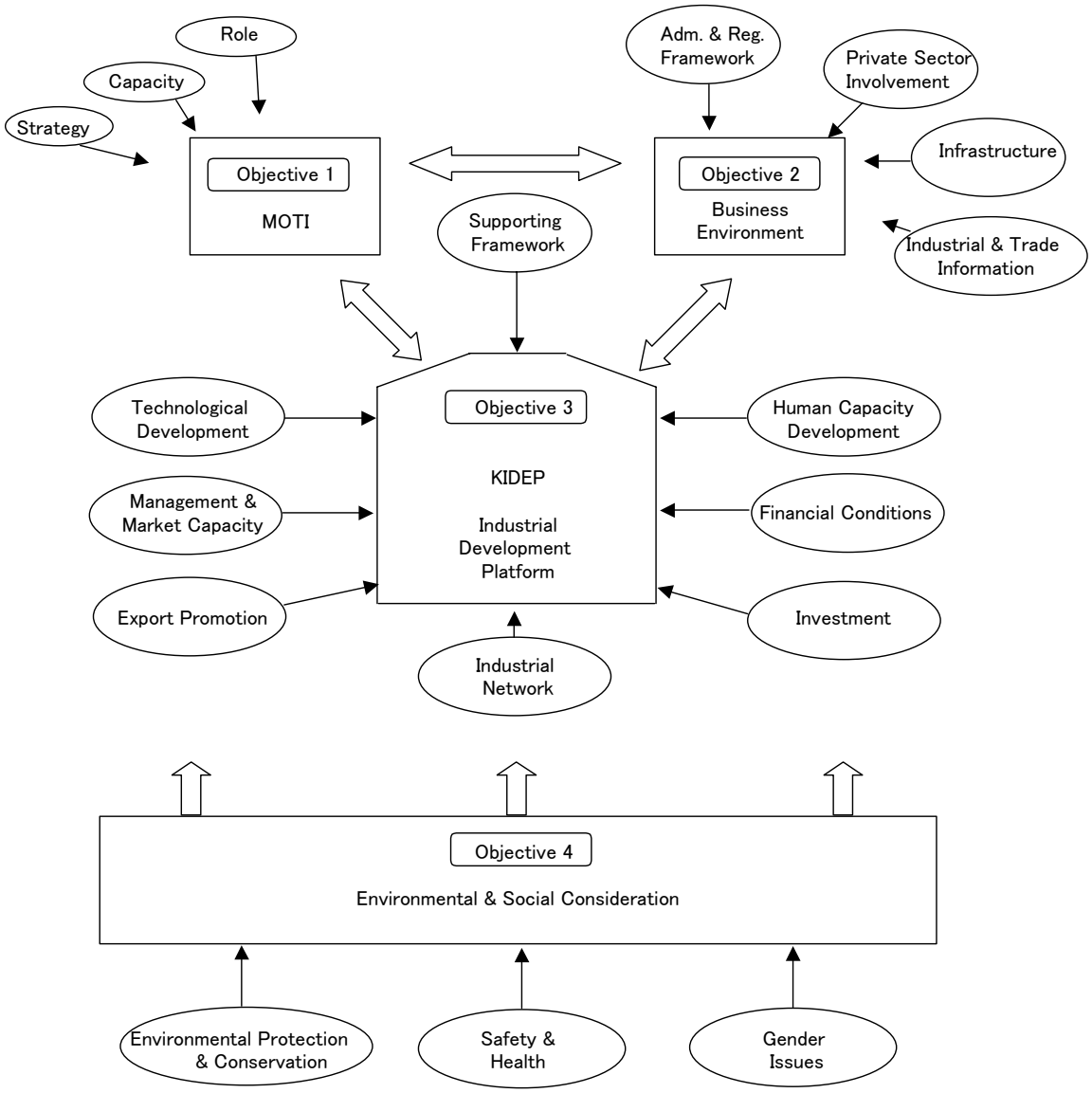


Source: The JICA Study Team

Figure 7-10 Horizontal and Vertical Approaches towards Industrialisation

In the process of preparing above framework and objectives the discussions with relevant stakeholders through seminars, forums, and workshops as well as the discussions with MOTI and MAPSKID Team are duly considered.

The framework table is shown from p.7-17. The following Figure 7-11 shows above mentioned four objectives and the detailed objective items under these objectives. Regarding 1) Improving Efficiency of Services by MOTI, three objectives were picked up based on the contents of discussion done in Chapter 3, titled Ministry of Trade and Industry---Its Role and Organization, and the detailed targets of objectives as well as present situation and future directions are described there. As for 2) Improving Conducive Business Environment, important four objectives were selected based on the contents of discussion in Chapter 4, Institutional Framework Relating to Public Administration. Under these four objectives the further detailed targets of objectives and present situation/future directions are shown there. Similarly the item 3) KIDEP has eight objectives including “establishing industrial support framework” and “supporting technological development” based on the discussion in Chapter 5, Contents of Industrial Development Support. The targets of objectives and present situation/future directions are also explained there. 4) is concerning Sustainable Development with Environment where social consideration and environmental protection and conservation, protection of safety and health, and consideration of gender issues are presented as detailed objectives together with present situation/future directions. As for 5) Development of target sub-sectors, supplemental explanation will be made in Chapter 10.



Source: The JICA Study Team

Figure 7-11 Industrial Development Implementation Framework

Table 7-1 Development Framework Table

Development Objectives	Targets of Objectives	Present Situation and Future Directions
Objective 1: Improving Efficiency of Services by MOTI		
1.1 Clarifying MOTI's role (Chapter 3.1)	1.1.1 Clarifying MOTI's role (Chapter 3.1)	Most of industrial issues are inter-ministerial matters. MOTI has to be the facilitator to push the process of industrialisation with other Ministries and agencies. However, current organisational structure of MOTI vaguely defines the responsibility of each officer to take the facilitation role. There is need for an organisational setting, which clearly defines the role of officers within MOTI so that MOTI can undertake the facilitation role effectively.
1.2 Institutional and capacity development of MOTI (Chapter 3.2)	1.2.1 Developing institutional framework of MOTI for implementing the Industrial Master Plan (Chapter 3.2)	Job description of MOTI officers changes ad-hoc basis and lack in specialisation. Clear job allocation is necessary for implementing the industrial master plan. With the budget constraint, it is also necessary to focus on areas which should be undertaken by MOTI and to transfer implementation of other tasks to the Private Sector or other Ministries.
	1.2.2 Capacity building of MOTI officers (Chapter 3.2)	MOTI officers have various chances to attend workshops and forums on various issues. However, without specialisation, it is difficult to accumulate knowledge and experience that can represent the voices of the industry. Closer contact with the industry and supporting institutions is foremost important for the capacity development of MOTI officers.
	1.2.3 Improving industrial support in the field services (Chapter 3.2)	Industrial support outside Nairobi is very weak. One district industrial officer has to look after several districts without enough budgets for transportation and telecommunication. Increase in personnel and budget are required for implementation of the industrial master plan nationwide.
	1.2.4 Allocating and disbursing budget for implementing the industrial master plan (Chapter 3.2)	PSDS supports more involvement of KPSA and Business Members Organisations in MTEF SWGs. In this context, private representatives from the manufacturing sector with the support from MOTI should take part relating to the industrial development in presenting issues papers to MTEF SWGs.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
1.3 The strategy of MOTI (Chapter 7.2, 7.3, 3.1, 3.2)	1.3.1 Formulating policy and action plans based on the needs of the private sector (Chapter 7.2, 7.3)	The role of MOTI is to assist growth of the industry, whose main actor is the private sector. For an effective formulation of policy and action plans, it is necessary to hear the voices of the private sector. It is recommended that sub-sectoral and district taskforce is set-up with members from KAM and other related ministries.
	1.3.2 Strengthening private sector advocacy (Chapter 3.1, 3.2)	KAM has been actively advocating the needs of the industry to the Government, but what has been missing is MOTI's support in implementation since many issues are not within the MOTI's mandate. However, having MOTI to be the representative of the voice of the manufacturing sector, that is having closer support from MOTI, shall strengthen the effects of advocacy.
	1.3.3 Monitoring and evaluation of joint collaboration (Chapter 3.1, 3.2)	Collaboration between MOTI and the private sector has not been criteria for evaluation. Strengthening institutional framework to support joint collaboration between the private and the public sector should be regularly evaluated so that it eventually improves to one that effectively benefits both the private and the public sectors.
Objective 2: Improving Conducive Business Environment (Improving Institutional Framework Relating to Public Administration)		
2.1 Improving administrative and regulatory framework (Chapter 4.1)	2.1.1 Enforcing economic and business-related legal system (Chapter 4.1)	In legal framework, it is pointed out that there are too many licensing procedures, lengthy bureaucratic processes, outdated laws, and so many amendments. It is necessary to review legal system, which would facilitate effective operations of investors, traders, and manufacturers.
	2.1.2 Rationalising tax structure and clearance procedures (Chapter 4.1)	Many manufacturers raise their concern that current tax structure and delay in tax clearance deteriorate the business environment. Moreover, the tax structure needs to be accommodative of the capacity of MSMEs. MOTI is recommended to set up a unit, which works with the MOF to make the tax structure rational for the manufacturing sector.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
	2.1.3 Facilitating establishment of regulatory framework for MSME development (Chapter 4.1)	MSME constitutes the largest part of the private sector of which the majority of MSEs are operating as informal sector where legal and institutional support may not be easily accessible. To facilitate regulatory framework for MSME is indispensable.
	2.1.4 Formalisation of the informal sector (Chapter 4.1)	Informality of the manufacturers is not only economically undesirable but also problematic in extending proper assistance for their growth. It is necessary to set a clear vision to incorporate all the informal manufacturers to the formal sector by Year 2020. Present reform level is too modest to attain this goal. More reforms and campaigns are needed to accommodate all.
	2.1.5 Protecting IPR (Chapter 4.1)	The flooding of counterfeit products in the market deteriorates the economy with low innovation, low consumption, and an unfavourable environment for FDI inflow. Although laws and regulations are well prepared, their enforcement is insufficient. Training of staff on IPR protection as well as promotion of public awareness is urgently needed.
2.2 Improving infrastructure (Chapter 4.2, 10.3)	2.2.1 Establishing institutional framework to improve industrial infrastructure (Chapter 4.2)	Industry related infrastructure projects have been managed by the ministries in charge and by the development partners, but in many cases, the coordination and collaboration among relevant agencies have not been enough for smooth implementation. It is necessary to coordinate and collaborate effectively among relevant parties.
	2.2.2 Financing in infrastructure development (Chapter 4.2)	Infrastructure development requires a lot of funds. Many development partners provide funds, but sometimes there is a lack of coordination among relevant parties though industry related infrastructure projects are inter-related. Coordination and collaboration among relevant parties are needed for effective financing and allocating funds.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
	2.2.3 Providing stable and cost efficient energy (Chapter 4.2)	Electric power supply is unstable due to frequent outages and fluctuations in voltages from the National Grid. Alternative sources of energy have to be developed and used. It is also necessary that best practices of use of energy efficiency are disseminated. Moreover, investment from the public and private sector should be enhanced to increase the availability of the energy.
	2.2.4 Providing stable water supply (Chapter 4.2)	Stable water supply is essential as well as electricity supply for industrial development. However, there still exist the water shortage and water supply infrastructure problem under water service providers. The WSB in each region is expected to play an important role to accelerate facilitation of stable water supply to consumers.
	2.2.5 Providing efficient transportation system (Chapter 4.2)	Poor state of roads in urban and rural areas including trunk roads and heavy traffic congestion in urban areas are causing high freight cost, time and fuel loss. Improvement of roads and traffic situation is urgently needed for industry. Railway transport, another means of surface transportation, requires efficiency and modernization of facilities. JKIA became an air passengers' hub in African continent. This means that JKIA is a perfect show case and/or market to introduce and provide Kenyan and East African commodities for maximizing users' satisfaction. From such point of view, JKIA should be positioned as place for trade commodities. Appropriate flavour of Airport design is also required for promote shopping. JKIA plays central role of Kenyan and East African air cargo's hub. Present facilities are fully-used. Some forwarding companies are now planning expansion of their capacity. If individual company starts expanding each capacity without harmonization, there are a lot of possibilities to conduce inefficient logistic system. Comprehensive master plan is to be required.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
2.3 Improving availability of industrial and trade information (Chapter 4.3)	2.3.1 Improving collection and analysis of industrial statistics (Chapter 4.3)	Although industrial statistics are the basic information necessary for making policy or assessing risks for policy makers and investors, very limited amount of data are collected and disclosed. It is necessary to strengthen collection and disclosure of industrial statistics. MOTI should reinforce its statistical section so that they can apply more practical data to their policy making.
	2.3.2 Improving collection and analysis of trade statistics (Chapter 4.3)	Trade data published by KNBS is easily obtainable data for export and import. However, these data is not presently responding to HS code, which is used internationally. This means that it is very difficult to understand international markets' conditions and trends. Therefore, harmonization of international trade data is required.
	2.3.3 Publishing industrial report (Chapter 4.3)	Due to lack of reliable information, many organisations spend collecting information by themselves instead of concentrating on their expertise. MOTI has to take responsibility in data collection, publishing, and disseminating reliable and up-dated industrial information. Industrial report is recommended to be published regularly with information on statistical analysis, status of the industrial sector, and best practices.
Objective 3: Facilitating Internal Innovation of the Kenyan industry over the Kenya Industrial Development Platform (KIDEP)		
3.1 Establishing industrial support framework (Chapter 5.1)	3.1.1 Formulating master plan for the Kenyan Industrial Development Platform (Chapter 5.1)	Supporting activities by present organizations for promoting industrial development under the umbrella of MOTI are highly overlapped. It is very difficult for potential users (private companies) of these activities to contact appropriate organization and/or get supporting activities. Simplification of institutional framework by restructuring present ones is to be required.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
3.2 Supporting technological development (Chapter 5.2)	3.2.1 Strengthening supporting activities to harmonise international standards (Chapter 5.2)	Standards provide the guidelines to upgrade quality of the Kenyan products. Yet, the standards are still not as high as the global ones. Because competition against the global products is severe, improvement of the standards to the global level needs to be sought constantly. At the same time, international accreditation bodies both the public and private ones have to be set up in Kenya so that the manufacturers can access them easily.
	3.2.2 Promoting R & D activities by the manufacturers (Chapter 5.2)	Kenyan manufacturers rely on technology information abroad and hardly undertake R & D activities internally. While the manufacturers are not motivated towards R & D activities, willingness to take the sees from the R & D institutions remain weak. There is need for some schemes to raise motivation of the manufacturers to undertake R & D.
	3.2.3 Strengthening design capacity (Chapter 5.2)	Although designing capacity is prerequisite to undertake R & D activities in engineering, Kenyan workers are rarely equipped with designing capacity. There is need for more emphasis on trainings of designing, starting from hand drawing, drafting and to CAD.
	3.2.4 Promoting technological transfer (Chapter 5.2)	While R & D activities among the local manufacturers are limited, technological transfer from academics, R & D centres, and transnational companies has to be promoted. Academics are eager to do this through setting up science and incubation parks. R & D centres are also trying to increase extension services. Some TNCs also collaborate with MLHRD in training. Such efforts should be further sought and supported.
	3.2.5 Commercialising innovations and technologies (Chapter 5.2)	Although a lot of R & D activities have been done in Kenya, very few innovation and technologies get commercialised. R & D institution's initiatives for commercialisation need to be strengthened. Formulation and implementation of policies for commercialisation of innovations and technologies are needed. Subsequently, institutional framework for commercialisation of innovations and technologies should be established.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
3.3 Supporting upgrade of management and marketing capacity (Chapter 5.3)	3.3.1 Strengthening business and production management (Chapter 5.3)	Improvement in business and production management is the source for productivity improvement. Currently, only a few enterprises practice production management. Recently, importance in productivity management is gaining interest from the industry through the advisory on Kaizen and energy efficiency. Further push is necessary through training more trainers who can provide hand-on advices to the industry.
	3.3.2 Assisting expansion of domestic markets (Chapter 5.3)	Domestic markets are the key to accumulate self-developing capacity of enterprises. Yet, the Government has paid little attention to assisting in the domestic markets while outlet function by Uchumi is the only existing tool. More measures need to be developed to link the local manufacturers to the domestic markets.
	3.3.3 Promoting B2B e-commerce (Chapter 5.3)	Productivity improvement requires not only internal efforts but also efficiency in procurement. E-procurement is indispensable tool to upgrade productivity of the Kenyan manufacturers to the global standards. E-procurement service is already available in Kenya. MOTI needs to raise awareness of the manufactures to adopt e-procurement.
	3.3.4 Developing B2C e-commerce (Chapter 5.3)	B2C e-commerce would provide equal opportunities to the manufacturers accessing to the markets with high purchasing power regardless of their size or location. Yet, setting up regulatory framework for B2C e-commerce is progressing slowly. MOTI is recommended to take the leading role to speed up the process of setting up regulatory framework for B2C e-commerce.
	3.3.5 Developing B2G e-commerce (Chapter 5.3)	The Government is currently the largest buyer in Kenya, but complicated and time consuming procedures of the Government procurement make it difficult for MSMEs to sell to the Government. E-Government is proceeding with a plan to set up E-procurement, which shall increase transparency and fasten the procurement process. Once E-procurement is set up, support should be extended to MSMEs to join in bidding.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
3.4 Export promotion (Chapter 5.4)	3.4.1 Providing information of international market and import requirements (Chapter 5.4)	Kenya's exporting commodities as well as destinations are highly concentrated based on historical experiences. For promoting Kenya's exports, diversification of export commodities and destinations are required. Information of present international market trends and current import requirements of potential countries are properly collected and provided.
	3.4.2 Improving packaging (Chapter 5.4)	Poor quality of packaging makes products less competitive in the global markets and shortens expiry date. For market expansion abroad, improvement in packaging quality is vital. Packaging has three functions, namely, i) protecting the contents, ii) improving convenience of handling and transport and iii) describing the contents and sales promotion.
	3.4.3 Building brand image (Chapter 5.4)	With the increase in global competition, establishing brand image is important to differentiate Kenyan products from others. Yet, both Kenyan manufactures and the Government have not adopted strategies for the brand building. Brand image starts from establishing the key concept of the products and identifying the target customers.
3.5 Investment promotion (Chapter 5.5)	3.5.1 Providing efficient services to investors (Chapter 5.5)	Attracting investment is under severe global competition. Investors' satisfaction is very important to call in sustainable investment into Kenya. KenInvest and other related agencies have to be conscious of the best practices adopted in other countries and have to achieve the highest standards in providing services to the investors to win the global competition.
	3.5.2 Promoting overseas marketing activities to attract investors (Chapter 5.5)	Calling in transnational companies is the most effective way to dramatically upgrade the technological capacity of the Kenyan industry to the global standards. To attract the overseas enterprises, more resources need to be allocated for the marketing activities overseas. Overseas marketing activities also require closer collaboration with the Embassies.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
	3.5.3 Establishing SEZs (Chapter 5.5)	Current EPZ strategy places many restrictions upon the EPZ companies, making it difficult for them to create local linkages. Moreover, poor access roads from the cities to the EPZs make them isolated from other social and economic facilities. EPZ strategy has to be changed through benchmarking study of the models in other countries. A strategy for establishment of integrated industrial zones is recommended to be formulated.
	3.5.4 Promoting investment outside Nairobi (Chapter 5.5)	Heavy concentration of the manufacturing sector in Nairobi deteriorates social and environmental conditions. Under-developed manufacturing activities outside Nairobi are caused by poor supporting system and lack of incentives. Improvement of the supporting system and setting up incentives schemes are necessary to activate the manufacturing sector outside Nairobi.
3.6 Improving financial conditions (Chapter 5.6)	3.6.1 Improving access to indirect finance (Chapter 5.6)	Financial sector as a whole is relatively well developed in Kenya. However, manufacturing MSEs have difficulty in accessing credit without proper collateral, financial knowledge/skills or information on financial sources. MSEs should be provided with environment where they have more options to access credit.
	3.6.2 Improving access to direct finance (Chapter 5.6)	Kenyan stock markets and venture capital (VC) are increasingly becoming active. The manufacturers should pay more attention to available opportunities of the direct finance through IPO and investment by the VCs. MOTI can support in raising awareness of the manufacturers and in introducing the potential manufactures to the related agencies.
	3.6.3 Improving cash flow (Chapter 5.6)	While there is a limitation in the third party finance, methodologies to improve cash flow need to be sought in parallel. Such methodologies include setting up regulatory restrictions on payment conditions and financial advisory services in management and cash flows.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
3.7 Human capacity development (Chapter 5.7)	3.7.1 Strengthening skills in science and technology (Chapter 5.7)	Low level of industrial development is a reflection of the status of the TIVET in Kenya. Training curriculum of TIVET has been focusing on job creation with appropriate technologies. However, the increasing global competition calls for more emphasis on creating competitive labour of the global standards. Tremendous support is needed to upgrade the quality of TIVET.
	3.7.2 Strengthening skills in business and production management (Chapter 5.7)	Since there are no enough sources of employment, many graduates face the needs to start their own business. To become a successful manufacturer, he has to be well equipped with production and management skills. Therefore, training in production and management has to be combined. Particularly, training in production management needs to be emphasised more since it is indispensable to compete in the global markets.
	3.7.3 Strengthening linkages between academics and industry (Chapter 5.7)	Industry is the only effective source of information that can upgrade the TIVET. Closer collaboration between TIVET institutions and the industry is foremost important to upgrade status of TIVET. Although TIVET is under MOST, MOTI as a representing interest of the industry has a role to play in strengthening linkages between the industry and TIVET institutions.
3.8 Creation of industrial network (Chapter 5.8)	3.8.1 Supporting incubators (Chapter 5.8)	Because the manufacturing sector requires longer operational period before they make the sale, the barrier to reach the stable stage is high. Consequently, many manufacturers die before they reach the stable stage. While the number of manufacturers is small, support towards incubation activities is important. Prompt and extensive networking between the incubators and supporting agencies would help reduce the barriers.
	3.8.2 Promoting clustering (Chapter 5.8)	While individual enterprise has a limited capacity, clustering / networking among the enterprises is very important tool for supporting MSMEs. Clustering requires facilitators that act as catalyst among the stakeholders. While the number of DIDOs is limited, it is necessary to set up a framework which appoints other agencies to take the role of the facilitators.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
	3.8.3 Setting SME parks (Chapter 5.8)	Vision 2030 envisages setting up SME parks. To have the SME parks as a tool for competitiveness creation, enterprises have to be selected on the basis of the growth potential. The SME park can also be a tool for clustering if the group of enterprises selected those which have common business interest so that the common facility and the business network can be created.
Objective 4: Sustainable Development with Environmental and Social Consideration		
4.1 Environmental protection and conservation (Chapter 6.1)	4.1.1 Environmental protection and conservation (Chapter 6.1)	3R is the platform for the sustainable production and consumption. This platform is already appreciated among the large manufacturers, encouraged by KAM. Yet, higher achievement of 3R requires technological transfer from the developed countries. It is also a big challenge to encourage MSMEs to raise their awareness.
4.2 Protection of safety, health, and gender (Chapter 6.2)	4.2.1 Protection of safety and health (Chapter 6.2)	Industrial development has to be in tandem with social welfare. Yet, observation of the safety and health regulations is very weak. Some areas for improvement include consolidating auditing between environment, health, and safety, including advices for improvement in time of auditing, and conducting campaigns to raise social responsibility towards compliance.
	4.2.2 Consideration for gender issues (Chapter 6.2)	The participation of women entrepreneurs and workforce in the manufacturing sector is still limited in comparison with other sectors. The participation of women in the manufacturing sector not only provides women with employment but also allows them to apply new ideas to the sector. Their viewpoint and way of thinking is necessary to find new needs and develop commodities.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
Objective 5: Development of the Target Sub-sectors		
5.1 Development of specific sub-sectors (Chapter 9)	5.1.1 Planning and implementation for sub-sectoral development strategy (Chapter 9.1, 9.2, 9.3)	While there are many constraints and countermeasures that are common across the industry, there are some that are unique to the sub-sector. Lack of the sub-sectoral development strategy has delayed the response to the needs of the industry. Formulating a sub-sectoral strategy would help to identify such unique issues and put actions that can help to leap the sub-sector.
	5.1.2 Monitoring and evaluation of the sub-sectoral development strategy (Chapter 9.4)	Situations surrounding the sub-sector changes over time. It is necessary to monitor and evaluate the sub-sectoral strategy with the sub-sectoral task force and revise the strategy if identified necessary. This joint monitoring and evaluation work would also increase the collaboration between the private sector and the public sector.
5.2 Development of agro-processing sub-sector (Chapter 10.1)	5.2.1 Strengthening of business resources (Chapter 10.1)	Immediate action can be extended to utilization of imported materials to processing into what can be exported to COMESA members because there are no sizable materials that can be offered to processing. Nurturing and training of technical staff in agro-industry have pressing need in restoring some of declining agro-industrial sub-sector.
	5.2.2 Developing product (Chapter 10.1)	Diversification of agro-processing commodities in conformity with changing domestic and international demands has to be addressed. In particular, cost- effective use of co-products, such as molasses and bagasse should be promoted and current waste of them must be rectified for further value addition.
	5.2.3 Developing market (Chapter 10.1)	It is indispensable to trace global trends of demand for agro-processed goods in order to adjust Kenya's export commodities to more market-oriented. As far as traditional semi-product exports are concerned there is only limited chance and possibility to expand or to defend. Further devices are crucial to acquire outlets to global markets in response to global requirements for commodities.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
	5.2.4 Strengthening linkages between enterprises (Chapter 10.1)	Both vertical and horizontal integration can develop agro-industrial activities in the light of current bottlenecks of inefficient productivity, doing everything within single factory. Participation of as many undertakers as possible to produce a commodity can dissipate risks and employ rural micro-enterprises.
	5.2.5 Monitoring and evaluation of the agro-processing development strategy (Chapter 10.1)	Benchmark is required to establish in monitoring and evaluating current processing system. Besides, frequent records are required in terms of target wise achievements or failures by action takers. Rural employment into agro- based industries is an indicator with change in industrial crop production.
5.3 Development of agro machinery sub-sector (Chapter 10.2)	5.3.1 Strengthening business resources (Chapter 10.2)	Development of machinery sub-sector is very slow compared to the growth of national economy. To meet the expectation of Vision 2030, development of machinery sub-sector is critical. Currently, machinery is much dependant upon importation. To change the trend, it is required to cut the production costs including steel materials, electricity, transportation and labour cost, which are beyond individual enterprise's power.
	5.3.2 Developing product (Chapter 10.2)	Extreme lack of mass production concept and technology. Centralize manufacturing on agricultural hand tools, farm implement, conveying facilities for food processing line, bicycles and parts for motor vehicles, most of which are available for mass production depending only on the present local technology with improvement.
	5.3.3 Developing market (Chapter 10.2)	COMESA market has big potential, which can make the Kenyan machinery industry COMESA's factory. However, growth of machinery export to COMESA is inferior against general commodities. Development of the machinery industry is the engine for driving export promotion to COMESA through concentrated market research and command of the market needs.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
	5.3.4 Strengthening linkages between enterprises (Chapter 10.2)	Definite lack of information and communication exchanges among enterprises in the same or the different machinery industry. Organize newly the food processing machinery manufacturers association and agricultural machinery manufacturers association and strengthen more the friendly competition for mutual upgrading of management power and technology level.
	5.3.5 Monitoring and evaluation of the agro-machinery development strategy (Chapter 10.2)	The outcome of development strategy should be periodically monitored and evaluated with verifiable indicators such as production, export, the number of companies, the number of employees and also by sampling 20 farm machinery manufacturers and 20 food processing machinery manufacturers, respectively.
5.4 Development of electrics, electronics / ICT sub-sector (Chapter 10.3)	5.4.1 Strengthening business resources (Chapter 10.3)	For MSMEs business resources are short in all aspects; human resources, technology, management know-how and market information, etc. Especially upgrading of technology is indispensable for the sub-sector. Promotion of FDI is vital to introduce advanced technology, whereas technical improvement, HRD and R & D activities for Kenyan manufactures are encouraged.
	5.4.2 Promoting linkages between enterprises (Chapter 10.3)	There exists very little linkage between enterprises, such as sub contracting system, mainly due to lack of information. Because Kenya has some excellent metalwork and plastic manufactures as supporting industries for the sub-sector, they can provide electric/electronic manufactures with their products with introduction of intermediation system or information sharing.
	5.4.3 Developing market (Chapter 10.3)	The size of domestic market for the sub-sector is mere US$ 360 million, of which US$ 280 million or 78 % depends on import, while export amounts to US$ 15 million. The domestic market is expected to expand with accelerating ICT development and electrification of rural households. The formation of COMESA Customs Union in 2008 may be advantageous for Kenya.

Development Objectives	Targets of Objectives	Present Situation and Future Directions
	5.4.4 Monitoring and evaluation of the electrics, electronics / ICT development strategy (Chapter 10.3)	The outcome of development strategy should be periodically monitored and evaluated with verifiable indicators such as production, export, the number of companies, the number of employees and by observation of structural development of the sub-sector.

Chapter 8 Action Plan of Industrial Development

8.1 Establishment of Action Plan

Based on the industrial development framework described in Chapter 7, feasible concrete plans are necessary. Considering current limited budget and human resources, to formulate action plans on every item of the framework would be futile and unrealistic. Consequently, five aspects for evaluation were considered to review the development objectives of the development framework; Impact, Urgency, Effectiveness, Efficiency, and Sustainability. These evaluation items were based on the five items of evaluation by Development Assistance Committee (DAC)[96]. In these items, "Relevance" was replaced by "Urgency". At the stage of setting up the development framework, since relevance is apparently confirmed, the aspect of urgency was introduced considering the need of prompt implementation of the action plan.

In the part of Impact, impacts of envisaged projects on manufacturers were examined. The development objectives having direct relation with and significant effects on business activities are development of the legal system, participation of the private sector, infrastructure enhancement, and the respective development objectives shown in 3.1 - 3.6, and at 3.8.

In the part of Urgency, the items with the adverse effects currently arisen and issues required prompt improvement were selected. One of them is infrastructure which is causing the enormous inefficiency due to the delay of development. The other one is environment protection, and, health and safety management. The problems relating to this in factories are pointed out.

The items with a high rate of effectiveness are considered to be implemented in MOTI. Such items would be the role, systems/human development, and strategy formulation of MOTI. In addition to this, the initiative for improvement of industrial statistics information should be taken by MOTI as well. As for the supporting of technical capacity enhancement, its implementation framework development is in progress compared to other areas.

For efficiency, cost-benefit-performance during short and mid term was reviewed. The items considered to be with high efficiency are strategy formulation of MOTI, development of the legal system, infrastructure enhancement, supporting framework, management/marketing support, financing, human capacity development, and industrial network formulation.

As for sustainability, availability of long-term effects was reviewed. Those expected to produce great effects for a long term are industrial statistics information, enhancement of technical capacity, export development, investment promotion, environmental protection and safety and health management. As for human capacity development, its effect is expected to be brought not only for short and mid terms but also for a long term.

[96] DAC, established in 1961, is one of the largest three committees of Organisation for Economic Co-operation and Development (OECD).

Evaluation results of the development objectives are described in the following table. The evaluation items with "✔" were those judged relatively high. As for clarifying MOTI's role and Institutional and capacity development, they were excluded from the selection targets of the action projects because these action projects have been formulated in *Strategic Plan 2006-2011*[97] by MOTI. Meanwhile, the action projects of the target sub-sectors (Objective 5) were extracted to an independent item and placed under other appropriate development objective items.

Table 8-1 Evaluation of Development Objectives

Development Objectives	Impact	Urgency	Effectiveness	Efficiency	Sustainability
1.1 Clarifying MOTI's role			✔		
1.2 Institutional and capacity development of MOTI			✔		
1.3 Strategy of MOTI			✔	✔	
2.1 Improving administrative and regulatory framework	✔			✔	
2.2 Improving infrastructure	✔	✔		✔	
2.3 Improving availability of industrial and trade information			✔		✔
3.1 Establishing industrial support framework	✔			✔	
3.2 Supporting technological development	✔		✔		✔
3.3 Supporting upgrade of management and marketing capacity	✔			✔	
3.4 Export promotion	✔				✔
3.5 Investment promotion	✔				✔
3.6 Improving financial conditions	✔			✔	
3.7 Human capacity development				✔	✔
3.8 Creation of industrial network	✔			✔	
4.1 Environmental protection and conservation		✔			✔
4.2 Protection of safety, health, and gender		✔			✔

Note: Coloured development objectives are those selected for the action projects.

8.2 Scenario of Implementing Action Plan

Implementation schedule of the overall action plan was reviewed in three phases. The detailed schedule of each action plan would be decided in accordance with the actual contents and nature of each action project.

(1) First Phase (2007 – 2010): Stage of preparation and commencement

After determining an implementation framework (personnel and budget) within MOTI, collection and analysis of information necessary to grasp the current situation will be conducted. The current situation will be grasped by implementation actors and detailed schedule including implementation schedule by person in charge will be set up. In the case that new establishment/change of regulations and Parliament bills are necessary, such draft will be reviewed and studied to proceed with the procedure for approval.

[97] The chapter two, "Institutional Review" includes mandate, mission statement, policy priorities, current and proposed organizational structure, staffing levels and distribution to departments, and funding.

(2) Second Phase (2011 – 2015): Stage of actual implementation

As well as implementing necessary regulations/laws, basic infrastructure will be developed to establish a supporting system of industrial development. In the project, periodical monitoring/evaluation will be conducted and its plan will be revised, if necessary. Through activities in the project, it is aimed to achieve the goal of the action plan. Once the goal is achieved, continued plan or expanded/development program will be formulated.

(3) Third Phase (2016 – 2020): Stage of continuation/expansion

Through continuation/development program of the project, comparative advantage will be established, aiming to become a base of manufacturing in Central and Eastern Africa. As well as maximizing the hub function, the industrial network (forward/backward linkage) will be enhanced, too. Through comprehensive outcome of the action plan, formalisation of the informal sector will be expected to be achieved.

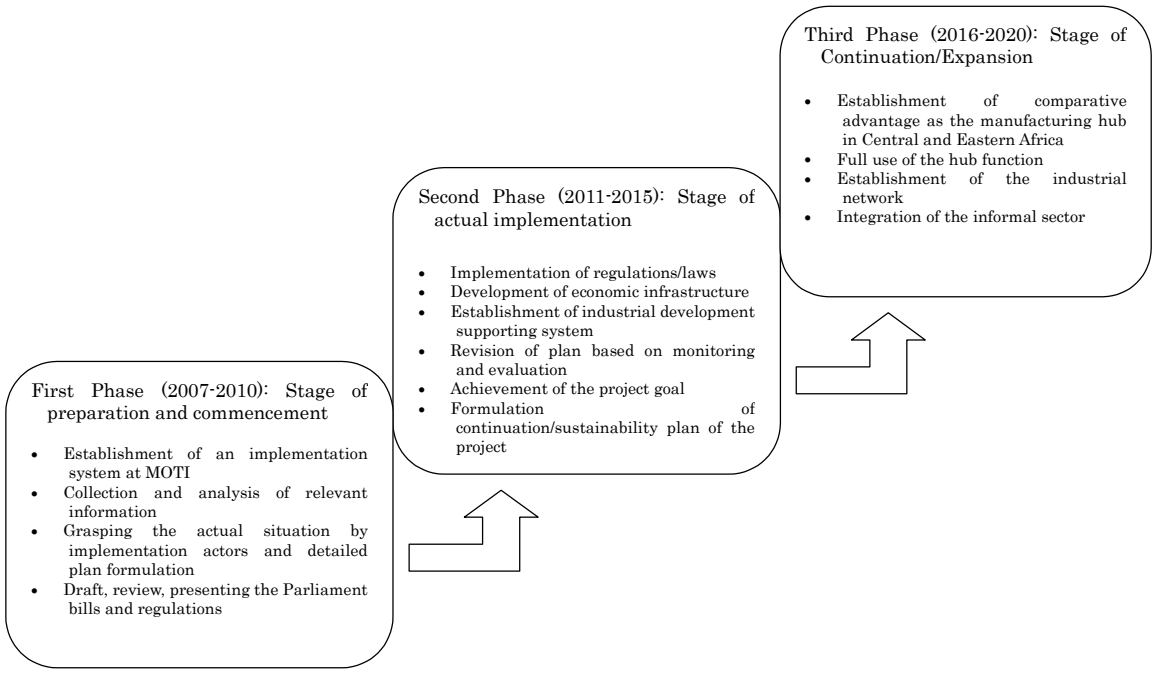


Figure 8-1 Scenario of Implementation of the Action Plan

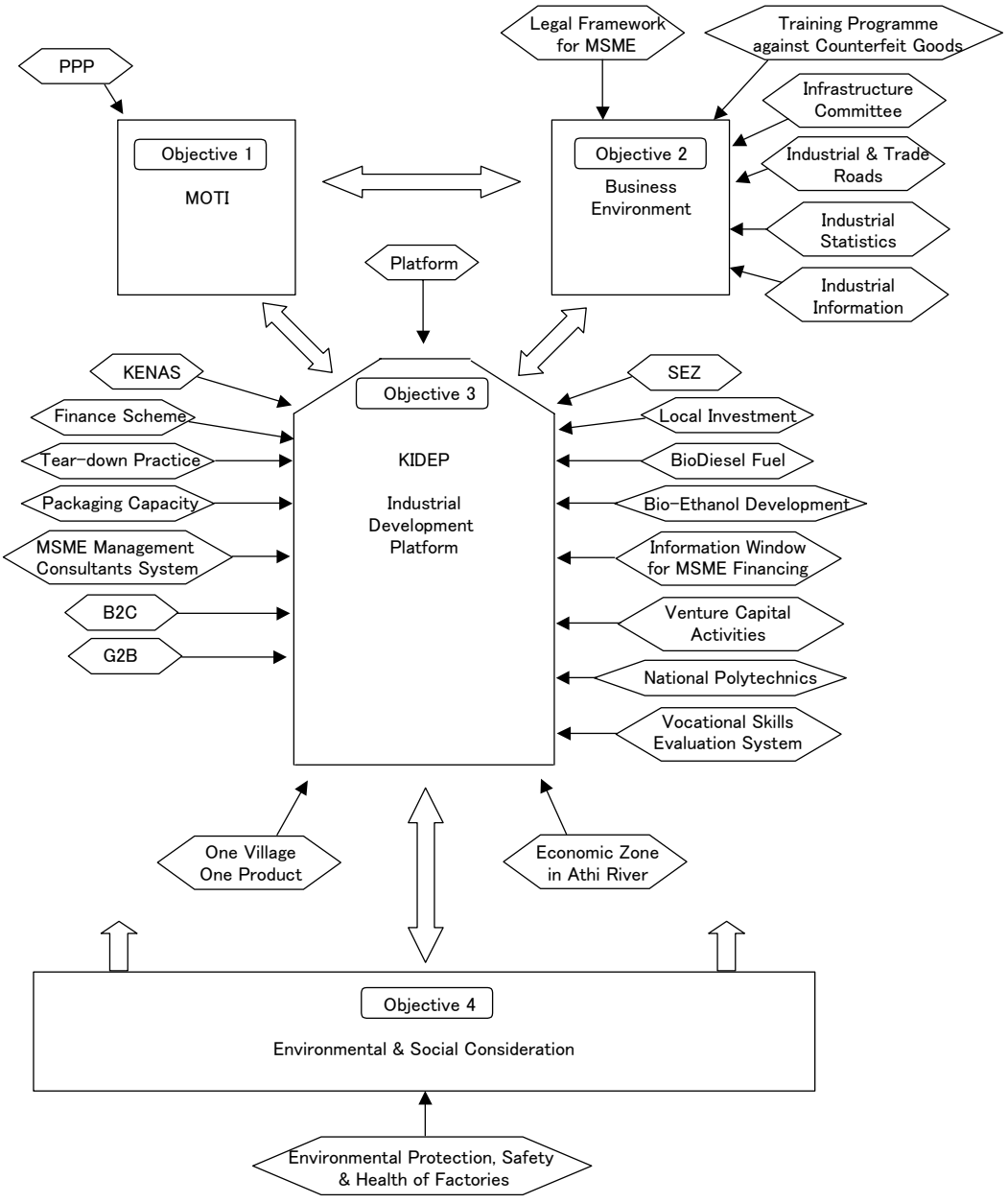
8.3 Outline of Action Plan

In the previous Chapter the development framework was prepared under the recognition of four objectives. Under such objectives the more detailed development objectives and target objectives were presented. Based on those detailed objectives, the possible action plans, which would be implementable and effective, were studied, discussed, and selected with MOTI. In this Chapter, as a result of such process, the detailed projects, which were formulated in each development objective, were presented.

In Item 8.3, Table 8-2 explains the project names and implementation agencies together with the items as impact, effectiveness, efficiency, sustainability, manpower requirement (M/M), facilities

required, and resources. At the same time, in order to identify the priority, action priority items, as urgency, ongoing (project/policy) relevancy and conditions (showing the readiness to start the project) are shown in the table. And as reference ongoing projects / related plans / policies are also described in the last column. Most of the projects presented are ready to start the first step of the projects and it is expected that such projects would be commenced at the earliest opportunity. Further detailed contents of each project are explained in 8.4 using project sheet form which includes among others the implementation time frame.

In the process of preparing these action plans, the same as the case of preparing development framework and objectives, the discussions with relevant stakeholders through seminars, forums and workshops as well as the discussions with MOTI and within MAPSKID team were duly considered. The following figure shows the action plan items relating to the four main objectives.



Source: The JICA Study Team

Figure 8-2 Outline of the Action Plan

Table 8-2 Priority Check Table of the Action Plans

Targets of Objectives	Project Name[98]	Implementing Agencies (Secretariat:) (Taskforce / in consultation with:)	Impact	Effectiveness	Efficiency	Sustainability	MOTI Officer/ Year (M/M[99])	Facilities[100]	Resources[101]	Action Priority			On-going Projects / Related Plans / Policies
										Urgency	Ongoing Relevancy	Conditions Ready up to Work item X	
Formulating policy and action plans based on the needs of the private sector	**1.3.1 Promotion of P-P-P in industrial policy planning and administration**	MOTI/DIDO KAM and stakeholders relating to agenda taken up by each committee including local government, other relevant ministries on the agenda, agencies under MOTI, BDS providers, academics			✔		2		MOTI			2)	PSDS-PIP 1.4
Enforcing economic and business-related legal system	**2.1.1 Studying legal protection over Business to Business (B2B) transaction by MSMEs**	MOTI Attorney General's Office		✔	✔		2		MOTI			3)	PSDS-PIP 1.5.6, 5.1.2
Formalisation of the informal sector	2.1.4 Promoting graduation of informal manufacturers	MOF (Business Regulatory Reform Unit) Attorney General's Office (Registration General Office), KRA, MOTI, and the local authorities		✔	✔		1		MOF MOTI		✔	5)	PSDS-PIP 1.5.2, 1.5.3 Draft Industrial Policy 3.11 (MSMEs) FIAS/WB Improving Regulatory Performance MSME Competitiveness Project Component 3

[98] The projects that MOTI will assume the secretariat are highlighted.
[99] Total Man*Month (M/M) shows required total months needed to be allocated to MOTI officers to complete the task per year. This does not mean to be completed by one person.
[100] Projects that need new facility or rehabilitation work on the existing facility are marked.
[101] Organisations that would be expected to allocate the project budget are named.

Table 8-2 Priority Check Table of the Action Plans

Targets of Objectives	Project Name[98]	Implementing Agencies (Secretariat:) (Taskforce / in consultation with:)	Impact	Effectiveness	Efficiency	Sustainability	MOTI Officer/ Year (M/M[99])	Facilities[100]	Resources[101]	Action Priority			On-going Projects / Related Plans / Policies
										Urgency	Ongoing Relevancy	Conditions Ready up to Work item X	
Protecting IPR	2.1.5 Establishment of training programme for actions against counterfeit goods	Counterfeit Goods Agency (CGA) / KIPI MOTI, MOF, KRA, KEBS, Attorney General (Copy Right Board)	✔	✔	✔		2		KIPI KEBS Donors (MOTI)		✔	1)	PSDS-PIP 4.4.1 Draft Industrial Policy 6 (Legal Framework) MOTI Strategic Plan 6.4.1
Establishing institutional framework to improve industrial infrastructure	**2.2.1 Infrastructure committee for industrial development (ICID)**	MOTI, Ministries relating to economic infrastructure, Relevant implementation agencies, Donors Coordinating agencies	✔		✔		2		MOTI		✔	1)	PSDS-PIP 1.1.2 Draft Industrial Policy 5 (Infrastructure),
Providing efficient transportation system	2.2.5 Rehabilitating industrial roads	DRC MOTI, Local Authority, KAM	✔		✔		2	✔	Local Authority Donors	✔	✔	1)[102]	PSDS-PIP 1.1.2 Draft Industrial Policy 5 (Infrastructure), ICAP Cluster 2.1, The Master Plan for Urban Transport in the Nairobi Metropolitan Area (JICA)
Improving collection and analysis of industrial statistics	**2.3.1 Strengthening collection and disclosure of industrial statistics**	MOTI and KNBS		✔		✔	12		KNBS	✔	✔	5)	PSDS-PIP 4.1.1 Draft Industrial Policy 2 (Economic) Statistical Capacity Building (STATCAP)

[102] Work items are suggested to be reviewed carefully because relating study has been already conducted.

Table 8-2 Priority Check Table of the Action Plans

Targets of Objectives	Project Name[98]	Implementing Agencies (Secretariat:) (Taskforce / in consultation with:)	Impact	Effectiveness	Efficiency	Sustainability	MOTI Officer/ Year (M/M[99])	Facilities[100]	Resources[101]	Action Priority			On-going Projects / Related Plans / Policies
										Urgency	Ongoing Relevancy	Conditions Ready up to Work item X	
Publishing industrial report	**2.3.3 Promoting easy access to industrial information**	MOTI e-Government (Office of the President), MOTI (KIPI, KEBS), KAM, MLHRD (Health and Safety Services), NEMA		✔	✔	✔	2		MOTI OOP			3)	PSDS-PIP 1.5 E-Government Strategy
Formulating master plan for the Kenyan Industrial Development Platform	**3.1.1 Establishment of Kenyan Industrial Development Platform (KIDEP)**	MOTI and OSS, which is proposed to be established in this action plan	✔	✔			12	✔	MOTI Donors	✔		1)	PSDS Goal 4 Draft Industrial Policy 2 (Economic) SSC (IFC) District Information Centre (EU) Business Solution Centre (UNDP)
Strengthening supporting activities to harmonise international standards	3.2.1 Strengthening capacity of Kenya National Accreditation Service (KENAS)	KENAS KEBS, MOTI, KAM		✔			1		KENAS Donors		✔	1)	PSDS-PIP 3.2.1 Draft Industrial Policy 2 (Economic)
Promoting R & D activities by the manufacturers	3.2.2 Introduction of tear-down practices	KIRDI MOTI, KAM KenInvest, EPZA, BDS providers		✔	✔		1		KIRDI (MOTI)	✔	✔	1)	PSDS-PIP 4.4.3.4 Draft Industrial Policy 3.2 (Agro-machinery)
Commercialising innovations and technologies	**3.2.5 Setting up funding scheme for commercialisation of R & D activities**	MOTI or MOST MOF, KIRDI, universities, contracted commercial banks, venture capital firms	✔	✔			3		MOF			1)	PSDS-PIP 4.4.2.3 Draft Science Technology and Innovation Policy

Table 8-2 Priority Check Table of the Action Plans

Targets of Objectives	Project Name[98]	Implementing Agencies (Secretariat:) (Taskforce / in consultation with:)	Impact	Effectiveness	Efficiency	Sustainability	MOTI Officer/ Year (M/M[99])	Facilities[100]	Resources[101]	Action Priority			On-going Projects / Related Plans / Policies
										Urgency	Ongoing Relevancy	Conditions Ready up to Work item X	
Strengthening business and production management	3.3.1 Introduction of MSME Management Consultant System	KIBT MOTI		✔			1		MOTI (Donors)			1)	PSDS 4.2.2.1
Developing B2C E-commerce	**3.3.4 Development of B2C e-commerce**	MOTI E-Government, MOIC, KICTAnet, Kenya Credit and Debit Card Association, Representatives of Courier companies, Chamber of Commerce	✔	✔	✔		12		MOTI OOP		✔	5)	PSDS-PIP 1.5.6 Draft Trade Policy MOTI Strategic Plan 5.6, 6.4.2 ICT Strategy
Developing B2G E-commerce	3.3.5 Development of B2G e-commerce	MOF Public Procurement Oversight Authority (PPOA), E-Government (Office of the President), MOTI	✔	✔	✔		2		MOTI OOP (Donors)		✔	3)	PSDS Goal 5 Draft Trade Policy E-Government Strategy
Improving packaging	3.4.2 Strengthening capacity of packaging	MOTI Institute of Packaging, Universities, KIRDI, EPC, KAM, PEAK/NEMA	✔	✔			3		MOTI Donors			2)	PSDS 4.4.3.2 Draft Industrial Policy (Economics) PEAK
Establishing SEZs	3.5.3 Transforming EPZ into SEZ	EPZA MOTI, KRA, MOF, KenInvest	✔	✔	✔		12	✔	EZAA (MOTI) Donors	✔	✔	3)	PSDS-PIP 4.3.1 Draft Industrial Policy 3.11 (MSMEs)

Table 8-2 Priority Check Table of the Action Plans

Targets of Objectives	Project Name[98]	Implementing Agencies (Secretariat:) (Taskforce / in consultation with:)	Impact	Effectiveness	Efficiency	Sustainability	MOTI Officer/ Year (M/M[99])	Facilities[100]	Resources[101]	Action Priority			On-going Projects / Related Plans / Policies
										Urgency	Ongoing Relevancy	Conditions Ready up to Work item X	
Promoting investment outside Nairobi	**3.5.4 Local investment promotion**	KenInvest, MOTI MOF, Ministry of Planning, EPZA, KAM, KEPSA, Ministry of Regional Development	✔	✔			6		MOTI			1)	PSDS-PIP 4.3.2 Draft Industrial Policy 2 (Economics)
Improving access to direct finance	**3.6.2 Promoting direct finance**	MOTI Venture Capital Association, CMA, MOF, KAM		✔	✔		2		MOTI			1)	PSDS-PIP 5.4.5 Draft Industrial Policy 3.11 (MSMEs)
Strengthening skills in science and technology	3.7.1 Upgrading training in the national polytechnics	National Polytechnics MOST, KATTI, MOTI, KAM		✔			1		MOST			2)	PSDS-PIP 4.2.3 Draft Industrial Policy 4 (HRD)
Strengthening skills in business and production management	3.7.2 Introduction of organized vocational skills evaluation system	TIVET Authority (to be established) MLHRD, MOST, KATTI	✔	✔	✔		1		MOST MLHRD			2)	PSDS-PIP 4.2.3 Draft Industrial Policy 4 (HRD)
Promoting clustering	**3.8.2 One village one product project**	MOTI Relevant ministries, District Offices, BDS Providers	✔	✔			12		MOTI Donors	✔	✔	2)	PSDS-PIP 5.3.1 Draft Industrial Policy 3.11 (MSMEs) Kenya Agricultural Productivity Project MSME Competitiveness Project Component 2

Table 8-2 Priority Check Table of the Action Plans

Targets of Objectives	Project Name[98]	Implementing Agencies (Secretariat:) (Taskforce / in consultation with:)	Impact	Effectiveness	Efficiency	Sustainability	MOTI Officer/ Year (M/M[99])	Facilities[100]	Resources[101]	Action Priority			On-going Projects / Related Plans / Policies
										Urgency	Ongoing Relevancy	Conditions Ready up to Work item X	
Setting SME parks	3.8.3 Creation of an integrated economic zone in Athi River	Proposed Nairobi Metropolitan Region Development Board (NMRDB) NESC, Ministry of Planning, MOLG, MOL, Mavoko Municipal Council, MOIC, MLHRD, MOTI, KIEL, EPZA	✔	✔			12	✔	MOTI MOIC MOP Donors	✔		1)	PSDS-PIP 4.3.1 Vision 2030 Nairobi Metropolitan Region Development Strategy Draft Industrial Policy 3.11 (MSMEs) Action Plan 3.5.1
Environmental protection and conservation / Protection of safety and health / Consideration for gender issues	4.1.1&4.2.1&4.2.2 Promoting environmental protection, safety, and health of factories	NEMA/ Ministry of Environment, DOHSS Cleaner Production Centre of Kenya, KEBS, KAM, Kenya Occupational Health and Safety Association		✔			1		NEMA DOHSS	✔	✔	3)	PSDS-PIP 1.5.4 GEF-KAM Energy Efficiency Project

8.4 Details of Individual Action Plan

The following are the project sheets on each proposed project as action plans. The contents of each project sheet are provisional ones and are expected to be updated and reviewed/studied further by main players of the project. Consequently, the implementing agencies and cost estimates as well as implementation items/schedules would be revised accordingly.

It is also noted that there are some other potential projects being prepared by MOTI. Once such projects are ready with necessary information, they are expected to be taken up as action projects.

1.3.1

Project Name: Promotion of P-P-P in Industrial Policy Planning and Administration

【Background and Issues】

The mission of Department of Industry of MOTI is to assist the growth of the manufacturing sector. However, its influence on industrial development is currently limited because 1) most industrial issues are inter-ministerial matters, requiring collaboration from other ministries for implementation, and 2) there is no institutional framework to absorb voices of the manufacturing sector in planning and implementing the industrial policy. Moreover, stakeholders differ by sub-sector and by district. Therefore, it is recommended that sub-sectoral and district committees be set up and to hold regular meetings. Each committee should comprise the key people on the agenda including those from industry, public, and the academics. At the same time, MOTI is requested to strengthen collaboration with KAM in increasing its members so that KAM can strengthen its role as a representative of the industry. These actions would enable MOTI to have a better understanding of the issues and measures for supporting industrial development.

【Purpose】

To promote industrial policy planning and administration based on the needs of the industry
Target beneficiaries: Medium and large enterprises and growth-oriented MSEs.

【Implementing Agencies】

Secretariat: MOTI/DIDO
Task force: KAM and stakeholders relating to agenda taken up by each committee including local government, other relevant ministries on the agenda, agencies under MOTI, BDS providers, academics

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 - 2020
1) Setting up/activating sub-sectoral and district committees and holding meetings regularly [MOTI(Department of Industry)/DIDO] i. Identify attendance rules to increase productivity of the meeting ex. time management, tasks of attendants, etc. ii. Identify long-term vision to be attained through the meetings iii. Identify short-term goal and work plan iv. Implementation, monitoring, evaluation	←	—	→
2) Collaborating with KAM to increase membership and strengthening activities in sub-sectoral and district divisions [MOTI(Department of Industry)/DIDO]	←	—	→

【Indicators】

1) Sub-sectoral and district committees hold meetings regularly.
2) MOTI functions as a single and reliable contact window to the Government for KAM.
2) Majority of middle and large manufacturers become members of KAM.

【Note for Taking Actions】 (Rough Cost Estimate)

MOTI will direct DIDOs to set up sub-sectoral task force, and DIDOs will take actions accordingly. MOTI, at the same time, will collaborate with KAM to take measures for Work Item 2). Immediate actions can be taken by MOTI. This action plan can be considered as a component of activities under PSDS-PIP 1.4.2, which has various activities for strengthening private sector advocacy.

(Kshs. 10 million)

2.1.1

Project Name: Studying Legal Protection over B2B Transaction by MSMEs

【Background and Issues】

Many MSMEs prefer to sell directly to customers instead of forwarding their products to retailers. The major reason for this is that the retailers tend to impose unfavorable payment conditions to manufacturers, resulting in cash shortage for the manufacturers. In some cases, payment is made only after the sales. In other cases, payment is made over 90 days after the receipt of products. There are no legal restrictions on the payment conditions. On the other hand, Japan, which has a notably good structure of supporting industries, has legalised payment conditions to subcontractors within 60 days of delivery of services/products (Act Against Delay in Payment of Subcontract Proceeds, etc. to Subcontractors; Law No. 120 of 1956). The Act also obligates outsourcers to make a written contract in time of order and prohibits breach of the written contract. Enforcement of the Act is overseen by the Fair Trade Commission. Such legal protection of subcontractors since 1956 helped to establish linkages betweens outsourcers and subcontractors. It also contributed to part of high productivity in Japan because more than 30 days difference in working capital can be used for more output. This lesson is worthwhile exploring in Kenyan cases where a vertical linkage throughout the value chain is notably weak.

【Purpose】

To establish the legal system for promoting creation of forward linkages by MSMEs with particular attention to payment conditions, which support reduction in running cost
Target beneficiaries: MSME

【Implementing Agencies】

Secretariat: MOTI
in consultation with: Attorney General's Office

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Studying problems in B2B transactions of services and products by MSM manufacturers [MOTI(Department of Internal Trade)]	◆		
2) Legalisation study with benchmarking of overseas models [MOTI(Department of Internal Trade)]	◆		
3) Drafting the legal document [MOTI(Department of Internal Trade)]	◆		
4)* Implementation [MOTI(Department of Internal Trade)]		◆———	———◆

* Critical issues before proceeding to 4) are legal documents and commitments of Attorney General's Office.

【Indicators】

MSM manufacturers find more business partners to sell their products/services.

【Note for Taking Actions】 (Rough Cost Estimate)

This action plan is implementable under the full responsibility of MOTI, particularly Department of Industry and Department of Internal Trade. Therefore, coordination of actions is relatively easy though the assistance of legal professional is indispensable. This action plan relates to PSDS-PIP 1.5.6, which plans to reform Kenya's core commercial laws, and 5.1.2, which is to draft MSE Bill. (Kshs. 25 million)

2.1.4

Project Name: Promoting Graduation of Informal Manufacturers

【**Background and Issues**】The informal sector is the main contributor to the labour force in Kenya. Likewise, the manufacturing informal sector is estimated to absorb approx. five times more employment than the formal manufacturing sector. Under the current complicated registration and tax administration system, it is rare for the informal sector to graduate into formal sector. Yet, the global competition would make it hard for the informal sector to survive. For MOTI to extend appropriate support to the manufacturing sector, having them registered is the first and prerequisite step. On going reform aimed at reducing licenses and tax rates are still not enough to make it applicable to the informal sector, whose owners often lack sufficient education. (For example, registration form has both English and Kiswahili instructions.) It is therefore important that formalisation of the informal sector is clearly emphasised in on-going efforts of the reform. The Component Three of "MSME Competitiveness Project" (2005-2009) by WB plans to combine business name registration from the Registrar General Office of the Attorney General, KRA PIN registration, and the local authorities' permits (including the SBP) into one interface. Then the Project plans to establish a Unified Tax system, whose collection is undertaken by KRA's regional offices or One Stop Shop. PSDS-PIP 1.5 also backs up implementation of the reform. This Action Plan intends to re-emphasise the importance of a proactive role of MOTI in registration and tax reform in order to promote the graduation of the informal manufacturer into the formal sector.

【**Purpose**】To lower the administrative barrier for the informal manufacturers to graduate into the formal sector. Target beneficiaries: MSEs, particularly the informal sector

【**Implementing Agencies**】Secretariat: MOF (Business Regulatory Reform Unit)
Task force: Attorney General's Office (Registration General Office), KRA, MOTI, and the local authorities

【**Scope of Work**】

Work Items [Lead Institution]	Phase 1 2007 – 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Develop and implement action for licensing reform as part of Regulatory Reform Strategy (PSDS-PIP 1.5.3; FIAS/WB Improving Regulatory Performance) [MOF]	◆		
2) Undertake baseline survey in relation to current licensing regimes (PSDS-PIP 1.5.3.3) [MOF]	◆		
3) Enact Business Reform Bill (PSDS-PIP 1.5.3.4) [MOF]	◆		
4) Establish Unified Tax system (PSDS-PIP 1.5.2, MSME Competitiveness Project; Component 3) [MOF]	◆		
5) Establish One Stop Shop for registration and tax clearance (PSDS-PIP 1.5.2, MSME Competitiveness Project; Component 3) [MOF]	◆		
6)* Carry out campaign to the informal sector for registration [MOTI(Department of Industry)]	◆	→	→
7) Continuous administrative improvement in supporting MSMEs for registration and tax clearance [MOF]	◆	→	→

* Critical issues before proceeding to 6) are the establishment of the One Stop Shop for registration, unified tax system and enactment of Business Reform Bill.

【**Indicators**】This Action Plan targets the entire informal sector to be registered by Year 2020.

【**Note for Taking Actions**】**(Rough Cost Estimate)**
Work Items between 1) and 5) are readily planned activities by PSDS-PIP under 1.5, and its main implementation will be handled by MOF. The role of MOTI is to make sure that the reform level is enough to support formalisation of the informal sector and to undertake campaign in work item 6).
(Kshs. 50 million)

2.1.5

Project Name: Establishment of Training Programme for Actions against Counterfeit Goods

【Background and Issues】

In Kenyan market extensive inflow of various counterfeit and pirated goods are observed, such as automobile parts, electric products, computer software, and audio and visual medias, causing significant loss of domestic consumers, holders of intellectual property and distributors of genuine products. Infringement of IPRs can also be one of factors to hinder FDI to Kenya.

Kenyan government has already announced the draft of new Counterfeit Goods Bill, which will be passed and come into effect in the near future. Under the Bill, penalties on manufacturing, selling and importing counterfeit goods will be strictly imposed and a new organization called Counterfeit Goods Agency will be established with board members from MOTI, KIPI, Centre for Enterprise Development, Police and other concerned agencies. However, although Kenyan laws on intellectual property are appropriately prepared, execution of the laws, i.e. practical actions against counterfeit and pirated goods are not necessarily appropriate because of several reasons such as shortage of knowledge and know-how by the staff involved in anti-counterfeit actions, and lack of awareness of IPRs by the general public.

With this background, training programmes for the concerned staffs are needed and the system to implement the training should be urgently established.

【Purpose】

Training systems for actions against counterfeit goods in the Kenyan market are established.

Target beneficiaries: All the manufacturers in the focus area

【Implementing Agencies】

Secretariat: Counterfeit Goods Agency (CGA), which will be newly established under the stipulation of the Counterfeit Goods Bill, may be an implementing agency. However, if the Bill does not become effective soon, alternatively, KIPI is suitable as an implementing agency.

Task force: MOTI, MOF

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Technology transfer from foreign experts to Kenyan officers in IPR protection issues [CGA/KIPI]	⟷		
2) Training of Kenyan officials on IPR protection issues abroad [CGA/KIPI]	⟷		
3) Development of training system and programmes for actions against counterfeit goods [CGA/MOTI(Department of Industry)]	⟷		

【Indicators】

1) Number of training programmes
2) Number of staff of concerned agencies who attended and completed the training programme
3) Situation of counterfeit in the domestic market (e.g. amount of loss)

【Note for Taking Actions】 (Rough Cost Estimate)

This is the area where MOTI is placing much effort recently. This action plan is implementable under the full responsibility of MOTI and its line agency, i.e. either CGA or KIPI. Therefore, coordination for actions is relatively easy. This action plan can be implemented in conjunction with PSDS-PIP 4.4.1, which plans on trainings and awareness raising activities to strengthen IPRs.

(Kshs. 30 million)

2.2.1

Project Name: Infrastructure Committee for Industrial Development (ICID)

【Background and Issues】

Many problems have been pointed out on infrastructure relating to industrial development. In transport sector, the improvements are required especially on roads and railroads as well as ports and airports. In energy sector the problems of tariff and unstable supply of electricity have been always said to be the obstacles of industry. Other issues relating to infrastructure include water supply and telecommunication among others. There have been huge amount put into such infrastructure projects from donors though the improvement of infrastructure has not been well achieved. There are donors consultation meetings based on sectors. However, basic and economic infrastructure is in fact inter-related and it is necessary to have well prepared coordination among relevant sectors and ministries. In order to improve infrastructure for industrial development the horizontal forum with relevant ministries and donors is required and effective.

【Purpose】

To secure implementation of infrastructure projects without delay in relevant sectors by establishing an Infrastructure Committee for Industrial Development to supervise the improvement and progress of economic infrastructure horizontally for industrial development of Kenya.

Target beneficiaries: All the manufacturers in the focus area

【Implementing Agencies】

Secretariat: MOTI

Task force: Ministries relating to economic infrastructure, Relevant implementation agencies, Donors Coordinating agencies

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Establishing an infrastructure committee [MOTI(Department of Industry)]	◆▶		
2) Infrastructure Committee in operation [MOTI(Department of Industry)]	◆▶		

* Critical issues before proceeding to 2) are the establishment of the committee and commitments of the task force.

【Indicators】

1) No. of Committee meetings held
2) No. of Periodical Reports issued
3) No. of infrastructure projects in progress and completed

【Note for Taking Actions】 (Rough Cost Estimate)

Since the infrastructure covers many sectors it is necessary, first of all, to decide the focus development area by MOTI such as industrial area improvement, Mombasa area improvement, etc. based on the MOTI's strategy. Then the identification of necessary infrastructure improvement in such area will be made and relevant ministries, agencies, development partners will be identified accordingly for establishing committee(s). MOTI needs to take the initiative to organize and manage such committee(s) for smooth implementation of infrastructure projects. This action plan can be considered as an implementation structure for PSDS-PIP 1.1.2, which has various activities for strengthening PPP in providing adequate and good quality infrastructure. (Kshs. 10 million)

2.2.5

Project Name: Rehabilitating Industrial Roads

【Background and Issues】

It is well recognised that poor road conditions are a hindrance to economic growth. While national roads have been considered for expansion and rehabilitation with the leadership of Ministry of Transport, priority of rehabilitation of the local roads is considered lower. It is necessary to raise more awareness to rehabilitate industrial roads linking to the markets. Because of the heavily loaded tracks, industrial roads are generally in very poor conditions. Moreover, they are very congested, thereby causing traffic jams. It is critical to rehabilitate industrial roads in order to increase productivity of the industry.

IP-ERS (p.38) highlights the importance of strengthening infrastructure for attaining competitiveness of the Kenyan industry. Cluster 2.1 in ICAP (2005-2007) also recognises importance of rehabilitating industrial roads and recommends developing an investment charter on roads. This project proposal intends to re-emphasise the importance of rehabilitating industrial roads.

【Purpose】

To increase productivity through improved road conditions between the city centre and the industrial areas.

Target beneficiaries: All the manufacturers operating in the industrial areas

【Implementing Agencies】

Secretariat: DRC

Task force: MOLG, MRPW, MOTI, Local Authority

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Develop an investment charter on roads (ICAP; Cluster 2.1) [DRC]	◆		
2)* Studying traffic volume and conditions of the industrial roads in Nairobi and in Mombasa [DRC]	◆		
3) Designing rehabilitation plan of the industrial roads in Nairobi and in Mombasa [DRC]	◆		
4) Conducting environmental assessment and project estimates [DRC]	◆		
5) Construction [DRC]	◆	⟷	

* Critical issue before proceeding to 2) is securing budget for industrial roads construction.

【Indicators】

1) Sound conditions of the industrial roads in Nairobi and in Mombasa.

2) Congestions are reduced along the industrial roads.

【Note for Taking Actions】 (Rough Cost Estimate)

This is one of the problems, which the Government has left for a long time. The role of MOTI is representing the voice of the manufacturing sector to DRC in order to improve operation environment of the manufacturers located in industrial area. PSDS-PIP 1.1.2 notes importance of improving urban roads particularly in industrial areas and has activities to remove procurement and construction bottlenecks.

(Kshs. 50 million excluding the construction cost)

2.3.1

Project Name: Strengthening Collection and Disclosure of Industrial Statistics

【Background and Issues】

Although industrial statistics are the basic information necessary for making policy or assessing risks for policy makers and investors, very limited amount of data are collected and disclosed in Kenya. Available industrial statistics are not only partial but also statistically unreliable. The Government is now implementing Statistical Capacity Building (STATCAP) project assisted by WB, and the Office of the President is also driving to implement the e-Government Strategy. It is the best time for MOTI to quickly construct the strategy to collection and disclosure of the industrial statistics and put it into the actions. Industrial statistics needs be reliable and compatible with international comparison. MOTI and KNBS are recommended to re-design the collection, analysis, and disclosure of the industrial statistics with reference to *the International Recommendations for Industrial Statistics* by UN in 1983.

【Purpose】 Industrial statistics are readily available for policy making and risk assessment for investors. Target beneficiaries: All the manufacturers in the focus area, relating and supporting sectors, potential investors, policy planners and analysts.

【Implementing Agencies】 Task force: MOTI and KNBS

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Deciding upon colleting data items (e.g. production volumes and values by products, purchasing of goods/services, capital formation, number of labourers, labour fees, etc.) (PSDS-PIP 4.1.1.1) [MOTI(Department of Industry)/KNBS]	◆		
2) Designing the new questionnaire form (PSDS-PIP 4.1.1.1) [MOTI(Department of Industry)/KNBS]	◆		
3) Deciding upon methodologies for collection (e.g. population, sampling frame) (PSDS-PIP 4.1.1.1) [MOTI(Department of Industry)/KNBS]	◆		
4) Deciding upon institutional settings for collection of data and analysis [MOTI(Department of Industry)/KNBS]	◆		
5) Producing the guideline of the industrial statistics [KNBS/MOTI(Department of Industry)]	◆		
6)* Data collection and analysis [KNBS/MOTI(Department of Industry)]	◆ - - -	- - -	- - - →
7) Publication and uploading on the Web (PSDS-PIP 4.1.1.1) [KNBS/MOTI(Department of Industry)]	◆ - - -	- - -	- - - →

* Critical issue before proceeding to 6) is the establishment of guideline of industrial statistics.

【Indicators】 1) Improved industrial statistical data is being published in the Statistical Abstract 2009. 2) Improved industrial statistics are uploaded on home page of KNBS and/or MOTI by the end of 2010.

【Note for Taking Actions】 (Rough Cost Estimate)

STATCAP would provide the best opportunities for above actions to be taken. More proactive role of MOTI is expected to be taken. Institutional setting and demarcation of responsibilities between KNBS and MOTI shall be discussed in Work Item 4). This action plan can be integrated into PSDS-PIP 4.1.1, which aims to conduct productivity and competitiveness survey. (Kshs. 20 million)

2.3.3

Project Name: Promoting Easy Access to Industrial Information

【Background and Issues】 There are many types of industrial information, which the Government has to disseminate to the public for industrial development, such as Acts, regulations, standards, and patents. However, the public agencies tend to charge high fee for the enterprises to obtain and/or search such information (ex. Kshs. 1,000 for one piece of printed regulations and/or standards). Some of the reasons for the high charge are that the public agencies have the mandate to generate some income by themselves, and partly because printed materials become expensive when they sell in small quantity. E-Government Strategy under the Office of President has a policy to set up Trade, Industry, and Tourism Information System on information and to promote disclosure over the Web. In line with the e-Government Strategy, cost of obtaining industrial information from the public needs to be reduced, and uploading information to the Web be encouraged.

【Purpose】 To make the industrial information easily accessible to the industry

1) Costs for obtaining and searching government-source information such as regulations, standards, and property rights are reduced.
2) Data base of regulations and standards are uploaded on the Web.

Target beneficiaries: All the manufacturers in the focus area

【Implementing Agencies】 Secretariat: MOTI

Task force: e-Government (Office of the President), MOTI (KIPI, KEBS), KAM, MLHRD (Health and Safety Services), NEMA

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 – 2015	Phase 3 2016 – 2020
1) Open information policy for the industrial development is agreed between e-Government and MOTI. [MOTI(Department of Industry)]	◆		
2) With consultation of KAM, relevant industrial information and ministries are identified. [MOTI(Department of Industry)]	◆		
3) Task force is set up with relevant Ministries. [MOTI(Department of Industry)]	◆		
4)* Task Force receives the price list, which is produced by each member ministry, for obtaining and searching government-source information. [MOTI(Department of Industry)]	◆		
5) Task Force makes a price reduction list while encouraging uploading the database on the Web, which is accessible free of charge. [MOTI(Department of Industry)]	◆		
6) Each ministry/agency reduces the price while uploading some of the data on the Web. [Each Agency]	◆———	———	———►

* Critical issue before proceeding to 4) is the agreement of the open information policy for the industrial development between e-Government and MOTI.

【Indicators】

1) Most industry-related regulations have become open on the Web.
2) Standards and property right information can be searched and obtained at an affordable cost.

【Note for Taking Actions】 (Rough Cost Estimate)

Because this action is inter-ministerial matter, obtaining to support from e-Government Office is needed as initial action. Although similar activities are currently not included in PSDS, this can be integrated into PSDS-PIP 1.5, which aims to reduce legal, regulatory and administrative barriers.

(Kshs. 30 million)

3.1.1

Project Name: Establishment of Kenyan Industrial Development Platform (KIDEP)

【Background and Issues】 There are many initiatives and services offered by BDS providers, the financial sector, universities, R & D institutes, and associations. Yet, manufacturers do not have one particular place where they can consult on various operational problems since each agency operates separately based on its own mandate. The current isolated status makes it difficult for the manufacturers to know where to go to solve their problems. There are various "one-stop-shop" initiatives on going for respective target groups such as KenInvest for investors, EPC for exports, and EPZA for EPZ enterprises. Donor agencies also support creating one stop shop; i.e. SSC by IFC, District Information Centre by EU, and Business Solution Centres by UNDP. In spite of all these initiatives, there is no general consultation point, open to any clients during office hours in a location easily accessible for MSMES in Nairobi. As a facilitator for industrial development, MOTI is responsible for setting up a central One Stop Shop. This OSS should be open to all traders and manufacturers regardless of their size and accept visits during the office hours without prior appointments. The mandate of OSS includes making a portal site, which connects to all the database and homepages of other supporting agencies. The portal site shall also connect to the Trade and Industrial Information System, which is planned to be set up under the initiative of e-Government. The portal site and the Information System shall be shared with other OSS initiatives. This networking of industrial supporting agencies shall enable the Government to identify the area where it should concentrate on since there are many initiatives offered by the private sector. There is a limitation in the direct intervention by the government due to budget constraints and its institutional difference from the profit-driven private sector. Creation of Kenya Industrial Development Platform (KIDEP) shall allow identifying what services the government needs to reinforce and/or streamline the redundancy of existing public services.

【Purpose】 To promote flow of industrial information and advisory services
Target beneficiaries: All the manufacturers in the focus area

【Implementing Agencies】 MOTI and OSS, which is proposed to be established in this action plan

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Formulate a strategic plan of KIDEP [MOTI(Department of Industry)]	◆		
2)* Streamlining existing supporting agencies under MOTI (concentration of areas of their expertise and merging with others if necessary) [MOTI(Department of Industry)]	◆	―	―
3) Construction of OSS in a location easily accessible to MSMEs in Nairobi [MOTI(Department of Industry)]	◆		
4) Equipping OSS with library and computers [OSS]	◆		
5) Consultation on marketing, management, and finance starts at OSS while some consultants are employed from the private sector. [OSS]	◆	―	―
6) Developing and maintaining Trade and Industrial Information System [MOTI(Department of Industry)/OSS]	◆	―	―
7) Developing and maintaining Portal Site of agencies and BDS providers which support development of industries. [MOTI(Department of Industry)/OSS]	◆	―	―

* Critical issue before proceeding to 2) is the formulation of the strategic plan of KIDEP by MOTI.

【Indicators】 1) Traders and manufacturers can receive general consultation without a prior appointment during the office hours at OSS. 2) Service information on trade and industry becomes easily accessible over the Web.

【Note for Taking Actions】 (Rough Cost Estimate)
KIDEP is a virtual platform, so investment size and schedule can be adjusted depending on availability of financial resource. Above actions are not to be selected on all-or-nothing basis. It is important to start with work item 1) so that the framework of action plan is clarified. KIDEP is considered as supporting platform for PSDS Goal 4 as a whole. (Kshs. 150 million)

3.2.1

Project Name: Strengthening Capacity of Kenya National Accreditation Service (KENAS)

【Background and Issues】

Kenya Accreditation Service (KENAS) was established in 2005 to be developed into accreditation of conformity assessment and service provision for inspection, testing, and certification. Its main aim is to become an internationally recognised accreditation body that will offer cost effective accreditation to its customers. KENAS is still at the infant stage as an institution and is highly dependent on KEBS in terms of financial resource and facilities. Establishment of an international accreditation body in Kenya would greatly benefit the industry, especially the export-oriented manufacturers, since it is currently very costly to obtain accreditation from foreign accreditation bodies. In order to realize its prime objective, KENAS is in the process of building the necessary technical capacity that enables providing accreditation services required by international best practices as enshrined in ISO/IEC 17011:2004 and other ILAC/IAF guidance documents that include the key performance indicators. This includes training of a pool of assessors and experts to support its accreditation programmes and creation of the necessary awareness on the needs and benefits of accreditation in the trade facilitation, i.e. "one inspection/test report/ certificate accepted everywhere''. For this to happen, the support towards KENAS needs to be strengthened.

【Purpose】

To establish a sound national accreditation body whose accreditation activities will be recognised internationally and facilitate the trade of the local manufactures products
Target beneficiaries: All size of manufacturers, particularly export-oriented ones.

【Implementing Agencies】

Secretariat: KENAS
Task force: KEBS, MOTI(Department of Industry), KAM

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Enhancing laboratory capacity; i.e. Supplying equipment and training lab personnel (PSDS-PIP 3.2.1.13) [KENAS]	← →		
2)* Overseas trainings for the accreditation staff of KENAS in the fields of calibration, testing, inspection, certifiction, medical laboratories, marketing of accreditation, and development of accreditation scope [KENAS]	←	→	→
3) Awareness seminars for the industry [KENAS]	←	→	→

* Critical issue before proceeding to 2) is securing budget for the trainings of the accreditation staff of KENAS.

【Indicators】

1) KENAS attains international recognition at ILAC/IAF level
2) Reduction in cost of accreditation among the manufacturers
3) Values of accredited products exported overseas

【Note for Taking Actions】 (Rough Cost Estimate)

Above action plan is requested by KEBS, and MOTI is expected to support initiatives of KENAS financially. This action plan can be integrated into PSDS-PIP 3.2.1, which has activities on strengthening capacity of Kenyan manufacturers to comply with international standards.

(Kshs. 100 million)

3.2.2

Project Name: Introduction of Tear-down Practices

【Background and Issues】

Tear down is the initial step in reverse engineering, which is a popular methodology for learning from existing technology for the purpose of modifying or developing new product. Tear down involves a thorough breakdown of equipment followed by a detailed study on components and subassemblies of the equipment. Tear down is also a popular methodology to identify subcontractors to the original equipment makers by inviting potential suppliers to a forum. However, tear down exercises are not commonly practiced in the Kenyan industry whose R & D activities are not active. MAPSKID team made a first attempt to hold the tear down forum to introduce the tear down exercises to Kenya. It is recommended that this effort shall be continuously undertaken in Kenya for upgrading technological capability of the Kenyan industry and for producing higher value added products.

【Purpose】

To promote value added production and subcontracting

Target beneficiaries: Suppliers are MSM manufactures capable of producing parts (metal, plastics, rubber, etc.) with certain QCT standards while original equipment makers are the large-scale manufacturers.

【Implementing Agencies】

Secretariat: KIRDI

Task force: MOTI(Department of Industry), KAM, KenInvest, EPZA, BDS providers

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Holding tear-down forums periodically by MOTI and KIRDI. [KIRDI]	◀- - -	- - - - -	- - - ▶
2)* Holding tear down forums with the participation of original equipment manufacturers and universities. [KIRDI]	◀	- - - - -	- - - ▶
3) Subcontractors group is created by the original equipment makers for training and seminars. [Original Equipment Makers]			◀——▶

* Critical issue before proceeding to 2) is well-rooted implementation of tear-down forums periodically with collaboration from the taskforce.

【Indicators】

Domestic production of machinery and equipment is increased.

【Note for Taking Actions】 (Rough Cost Estimate)

This action plan involves three developmental stages. First stage is lead by KIRDI while MOTI, KenInvest, and EPZA learn about technological capabilities of the MSMEs so that they can promote involvement of original equipment makers. In the second stage, original equipment makers participate in the forums. Then the third stage is undertaken with the initiative of the original equipment makers on business basis. This action plan can be integrated into PSDS-PIP 4.4.3.4, which plans to extend support to KIRDI for further technology transfer initiatives. (Kshs. 10 million)

3.2.5

Project Name: Setting up Funding Scheme for Commercialisation of R & D Activities

【**Background and Issues**】Kenya has 20 top research institutions, receiving annual funding of US$ 100 million, including international institutions such as ICIPE, ILRI, and ICRAF. Although the research institutions have produced many R & D seeds, only a few have been commercialised so far. The reasons include a wide conceptual gap between the researchers and the manufacturers; difference in the research level; and a few ventures willing to take risks. To overcome these constraints, some instruments are necessary in both financial and human resources. In terms of the human resource, there needs an experienced "converter" who is specialised in business development and mobilises the stakeholders to work in the same project. Availability of the financial resources would stimulate activities of the converter and efforts towards commercialisation. Commercialisation of R & D seeds requires long-term funding, which is considered risky area. Since the required funding is quite large, combination of grant scheme, concessional loan-scheme, and mobilisation of the venture capital funding can be considered. The draft Science Technology and Innovation (STI) Policy proposes R & D fund, which promotes commercialisation of R & D findings. At the same time, funding by venture capital is to be promoted (See Action Plan for "Promoting Direct Finance"). In this action plan, setting of concessional loan scheme with long-term and low-interest rate is proposed. A loan scheme is considered appropriate because bearing risks for repayment would induce endeavour of the private sector towards the successful return. Since it is unrealistic to expect the government officers to be talented in lending and monitoring business cash flow, it is recommended that implementation is contracted to commercial banks and/or venture capital firms while the Government sets up an advisory committee to offer necessary assistance throughout the commercialisation process.

【**Purpose**】To promote commercialisation of R & D outcomes
Target beneficiaries: All the size of growth-oriented manufactures, which are willing to venture into new lines of production

【**Implementing Agencies**】
Secretariat: MOTI or MOST, to be decided in Work Item 1)
Task force: KIRDI, universities, contracted commercial banks, venture capital firms

【**Scope of Work**】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Clarifying implementation structure and schedules for the R & D commercialisation loan [KIRDI/MOTI/MOSE - Secretariat to be decided]	◆		
2)* Drafting a bill for the R & D commercialisation loan [Secretariat]	◆→		
3) Enactment of the bill for the R & D commercialisation loan [Secretariat]	◆		
4) Setting up revolving fund for the R & D commercialisation loan [Secretariat]		◆→	→◆
5) Setting up advisory committee (works also as evaluators and monitors) for the R & D commercialisation loan [Secretariat]		◆→	→◆
6) Disbursement of the R & D commercialisation loan through contracted commercial banks and/or venture capital firms [Secretariat]		◆→	→◆

* Critical issue before proceeding to 2) is completion of clarification work on the implementation structure for the R & D commercialisation loan.

【**Indicators**】1) Number of IPRs to be commercialised through the R & D commercialisation loan, 2) Amount of the royalty fee from the usage of the IPRs, which are commercialised through the R & D commercialisation loan

【**Note for Taking Actions**】 **(Rough Cost Estimate)**
This action is to be discussed in line with STI Policy and PSDS-PIP 4.4.2.3. Both of them are proposing to set up industrial R & D fund to promote commercialisation of R & D findings. (Kshs. 100 million)

3.3.1

Project Name: Introduction of MSME Management Consultant System

【Background and Issues】

It is effective to introduce MSME Management Consultant (MC) system to solve the following problems facing the MSME in Kenya.

- MSME in manufacturing sector needs support for marketing, collaboration with other sub-sectors, human resources (e.g. retired engineers), and obtaining technical information.
- Public sector does not grasp the needs of supporting MSME.

MSME MC system was introduced in Southeast Asia including Thailand and it was successful there. Once the system and training institute is introduced, maximum of approximately 100 qualified MSME MCs can be registered every year and the above situation will be improved in five years.

【Purpose】

To grasp the needs of public support for MSME and implement necessary supports to MSME by MC
Target beneficiaries: MSME

【Implementing Agencies】

Secretariat: KIBT
Task force: MOTI

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 – 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Preparing institutional framework and regulations [KIBT] 2)* Establishment of training institute for MC [KIBT] 3) Preparing training curriculum for MC candidates [Training institute for MC]	← →		
4) MSME MC system starts [MOTI(Department of Industry)] 5) Training for MC candidates [Training institute for MC]		← →	
6) Running a diagnostic check on MSMEs by MCs [Training institute for MC] 7) MSME MC's activities expand [KIBT]		←	→

* Critical issue before proceeding to 2) is securing budget for the establishment of the training institute for MC.

【Indicators】

1) Number of training programmes
2) Number of registered MSME MC
3) Number of diagnostic checks on MSMEs by MSME MC
4) Evaluation of diagnostic checks by MSMEs who received the checks

【Note for Taking Actions】 (Rough Cost Estimate)

It is necessary to study the information on the existing systems in different countries and to prepare the plan suitable to the situation in Kenya by KIBT in collaboration with MOTI at the initial stage. For designing and operating the system, the assignment of the management consultant system expert could be considered. This action plan can be considered as a part of PSDS-PIP 4.2.2.1, which plans to review curricula of leading management training institutions and initiatives as well as a gap analysis against international best practice for labour productivity and HRD. (Kshs. 100 million)

3.3.4

Project Name: Development of B2C E-commerce

【Background and Issues】

In developed countries, B2C e-commerce is generating more and more market opportunities to MSMEs. Because B2C e-commerce tremendously reduces the distance barrier, it offers market opportunities to the rural enterprises as well. However, development of B2C e-commerce has not received the highest attention in Kenya because there are many policy and regulatory issues to be addressed relating to ICT. Yet, considering tremendous potential opportunities to the industry, development of regulatory framework for B2C e-commerce needs to be speeded up. There is a model law made by UNCITRAL, but consumer protection is not covered by the law. Because the beneficiaries of B2C e-commerce are traders, retailers, and the manufacturers, MOTI is recommended to take a proactive role to set up regulatory framework for B2C e-commerce.

【Purpose】

To set up regulatory framework of B2C e-commerce

Target beneficiaries: all size of growth oriented manufacturers in the focus area

【Implementing Agencies】

Secretariat: MOTI

Task force: E-Government, MOIC (National Communications Secretariat), KICTAnet, Kenya Credit and Debit Card Association, Representatives of Courier companies, Chamber of Commerce, etc.

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Establishment of Committee for Promoting B2C e-commerce [e-Government]	◆		
2) Strategic planning for regulatory framework [e-Government]	◆		
3) Reviewing existing laws [e-Government]	◆		
4) Strategic planning for implementation structure [e-Government]	◆		
5) Drafting laws [e-Government]	◆		
6)* Implementation [MOTI(Department of Internal Trade)]		◆	◆

* Critical issues before proceeding to 6) is the establishment of legal framework.

【Indicators】

Sound regulatory framework is established to encourage B2C e-commerce business by the end of 2010.

【Note for Taking Actions】 (Rough Cost Estimate)

This action plan has been initiated by e-Government office. MOTI is requested to take more proactive role in the activities and quickly acquires knowledge on B2C e-commerce so that MOTI accumulates enough capacity to implement and monitor e- commerce. PSDS-PIP does not include specific activities on e-commerce, but activities under 1.5.6 have some relations since they are to reform commercial laws.

(Kshs. 20 million)

3.3.5

Project Name: Development of B2G E-commerce

【Background and Issues】

There has been an outcry from MSMEs to the Government to provide them with the business opportunities. However, the current status of complicated purchasing procedures by the Government makes it difficult for the MSMEs to join in the bidding. Consequently, the large-scale manufactures and traders are in a better position to be benefited from the Government purchasing, which is the largest buyer in Kenya. The e-Government Strategy formulated in 2004 has set up a target of establishing e-procurement in the Government. The e-procurement would simplify and increase transparency of the purchasing by the Government and would widen up the opportunities to the MSMEs to join in the bid. While the main agency of setting up the e-procurement lies in the hands of the MOF, MOTI is expected to support in speeding up the process and to assist the manufacturers in utilising the e-procurement.

【Purpose】 To provide equal opportunities for the local manufacturers to benefit from the Government purchasing

Target beneficiaries: all size of growth-oriented manufacturers with particular attention to MSMEs

【Implementing Agencies】

Secretariat: MOF

Task force: Public Procurement Oversight Authority (PPOA), E-Government (Office of the President), MOTI

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Reviewing the procurement process to be adopted in the e-procurement [MOF]	◆		
2) Drafting an amendment of the Public Procurement and Disposal Act (Act No.3 of 2005) and its regulations [PPOA]	◆→		
3) Designing the system and the programme [MOF]	◆→		
4)* Enactment of the amendment of the Act and regulations [PPOA/MOF]	◆		
5) Training the Government officers in the usage of the e-procurement programme [MOF]	◆→		
6) Disseminating the e-procurement to the public [MOTI(Department of Internal Trade)]	◆→		
7) Implementation [PPOA]	◆→	→	→

* Critical issue before proceeding to 4) is the establishment of legal framework.

【Indicators】

Increased values of the local products purchased by the Government

【Note for Taking Actions】 (Rough Cost Estimate)

With the back up by e-Government Office, above action has been initiated by MOF. The main task of MOTI is in Work Item 6), in which MOTI trains the manufacturers on the usage of e-procurement. PSDS does not have an activity relating to e-procurement, but this might be followed under Goal 5, which is to support entrepreneurship and MSE development. (Kshs. 30 million)

3.4.2

Project Name: Strengthening Capacity of Packaging

【Background and Issues】 Poor quality of packaging makes products less competitive in the global markets and shortens expiry date. Recognising importance of packaging, 70 countries have established packaging institutes under the World Packaging Organization. Kenya also established the Institute of Packaging in 1996 and has been holding occasional seminars and exhibitions using the membership fees. While MOTI has hardly provided support to the Institute, presence of the Institute has not been effective enough to make a big impact. Improvement in packaging involves various scientific subjects including designing, material, and production techniques. Some degree courses are available in USA, UK, and India at universities and packaging institutes. Yet, such courses are not available in Kenya. This makes very difficult to improve the packaging quality except a few top manufacturers who can access to technical information from abroad. Moreover, improvement in packaging is required in the light of environmental protection particularly in the use of plastics. With support from UNEP and UNDP, NEMA and KAM have set up PEAK initiatives, in which they try to raise awareness for recycling and to develop a policy framework for plastic waste.

【Purpose】 To expand the markets of the Kenyan products with the better packaging
Target beneficiaries: all size of growth-oriented manufacturers particularly food exporting producers

【Implementing Agencies】 Secretariat: Institute of Packaging, Task force: MOTI, Universities (UON, JKUAT, etc.), KIRDI, EPC, KAM, PEAK/NEMA

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Clarifying implementation structure and schedule among the stakeholders [MOTI(Department of Industry)]	◆		
2) Agreement is made with Packaging Institutes and/or universities abroad to establish packaging courses in universities in Kenya [Universities/Institute of Packaging]	✸		
3)* Trainers are trained through distance education and on-site training [Universities/Institute of Packaging]	◆		
4) Packaging courses are offered in universities in cooperation with the Institute of Packaging and/or universities abroad [Universities]		◆	◆
5) Packaging seminars are regularly held in association with MOTI, KAM, KIRDI, EPC, and Institute of Packaging [Institute of Packaging]	◆	◆	◆
6) Regulations on 3R for packaging are established (*on going by PEAK*) [PEAK]		◆	◆

* Critical issue before proceeding to 3) is the establishment of the implementation structure for the training plan.

【Indicators】 1) Students who took the packaging courses are employed in the manufacturing sector.
2) Quality of packaging is improved (consumer packaging and transport packaging).
3) Recycle rate of packaging increases.

【Note for Taking Actions】 (Rough Cost Estimate)
The issue of strengthening packaging quality has been rather neglected by the Government and universities. MOTI is recommended to take an initiative in raising awareness and planning in Work Item 1). Then actual implementation can be designated to the relevant agencies. Work Item 6) can be implementable separately from others (See Action Plan 4.1.1). PSDS-PIP does not have specific activities for packaging. The closest is 4.4.3.2, which is to develop sector-specific technology transfer programme. (Kshs. 20 million)

3.5.3

Project Name: Transforming EPZ into SEZ

【**Background and Issues**】 Current EPZ Act imposes many restrictions on the EPZ companies. For example, EPZ Act requires separate registration for manufacturing, commercial, and service activities. Moreover, EPZA internally sets up a rule to restrict domestic sales of EPZ companies up to 20 % of production. This restriction makes it difficult to motivate investors to join EPZ because the Kenyan markets are important for those who aim to penetrate the regional markets. EPZs have sought to be regionally dispersed to attract private sector investment in locations where public sector funding has not been sufficient and to facilitate a wider variety of activities including agro-processing closer to the raw materials. This has resulted in only 2 major public zones in Athi River and Mombasa with the remaining 30 small zones in which between 1 and 10 enterprises operate in each. This scattered set up of EPZ locations make it difficult to strengthen infrastructure and extend assistance to EPZ companies. Overall, present EPZ benefit proposition, strategy, and funding resources are not adequate enough to attract significant FDI. Under such conditions, contribution from EPZ companies to the economy and to the labour market is not well recognised by general citizens, and instead, they often receive criticism of working conditions from COTU. However, high economic target set forth by Vision 2030 calls for an urgent improvement of the EPZs to make it attractive place for FDI. EPZA is well aware of the necessity to revise EPZ policy and is now negotiating with MOTI to amend EPZ Act, which enables expanding activities in EPZ and relaxing restrictions to the EPZ companies. Furthermore, it is necessary to benchmark industrial zone models abroad, which integrate industrial area, commercial area, service area, residential area, and social and amenity area in order to provide comfortable living environment to the investors. Such successful industrial areas are often constructed under PPP scheme with initiatives taken by private developers who try to make their product most attractive to generate profit. While it is well recognised that amendment of EPZ Act is necessary, EPZA is also recommended to start working on reforming in the area where they have an authority under the current law such as relaxing restrictions on domestic sales and strengthening amenities and facility within EPZ.

【**Purpose**】To create attractive SEZs for promotion of FDI Target beneficiaries: all size of growth and export oriented manufacturers especially those of the foreign origins

【**Implementing Agencies**】Secretariat**:** EPZA
Task force: MOTI(Department of Industry), KRA, MOF, KenInvest

【**Scope of Work**】

Work Items [Lead Institution]	Phase 1 2007-2010	Phase 2 2011-2015	Phase 3 2016–2020
1) Bench marking study on industrial zones overseas (PSDS-PIP 4.3.1.1) [EPZA]	◆		
2) Write up a proposal for industrial zones policy (PSDS-PIP 4.3.1.3) [EPZA]	◆		
3) Drafting an amendment of EPZ Act (PSDS-PIP 4.3.1.3) [EPZA/MOTI]	◆		
4) Enactment of SEZ Act (amended EPZ Act) (PSDS-PIP 4.3.1.3) [EPZA/MOTI]	◆		
5) Relaxing restriction from domestic sales from EPZ (PSDS-PIP 4.3.1.3) [EPZA]	◆	→	→
6) Strengthening amenities and facility inside EPZ (PSDS-PIP 4.3.1.3) [EPZA]	◆	◆	
7) Strengthening infrastructure inside SEZ (PSDS-PIP 4.3.1.3) [EPZA]	◆	◆	
8) Improving access road to the city centre and the transportation hubs (PSDS-PIP 4.3.1.3) [MRPW]		◆	→

* Critical issue before proceeding to 4) are the establishment of legal framework and concrete industrial zones policy.

【**Indicators**】 1) Investment to EPZ increases from various sub-sectors.
2) Economic contribution from EPZ is appreciated by the citizens.

【**Note for Taking Actions**】**(Rough Cost Estimate)** While the proposal is made by MOTI and EPZA, actual implementation requires collaboration from other ministries. For instance, MOF and KRA on taxation, MRPW on roads, MOWI on water supply. This action plan needs to be considered with Action Plan 3.8.3 and to be integrated into PSDS-PIP 4.3.1, which is to develop an integrated zone strategy. (Kshs. 500 million)

3.5.4

Project Name: Local Investment Promotion

【Background and Issues】

Kenya lacks measures for attracting investment in industry, commerce, and service to the rural areas. This has resulted in heavy concentration of industry in Nairobi Metropolitan area and to a lesser extent in Mombasa. At present, poor infrastructure and a weak-supporting system outside Nairobi do not attract industries to invest outside Nairobi. The only existing attraction is geographical advantage if the industry is close to a specific natural resource. The industrial supporting system outside major towns is insufficient in terms of finance and human resource. Industrial concentration in one area not only causes environmental deterioration but also increases prices, especially labour cost. On the contrary, investment to the rural areas would reduce poverty through stimulating economic activity in those areas. Many Asian countries such as Thailand, Malaysia, and India have clear local investment measures by providing better incentives to the rural areas through zoning. Promotion of local industry, service, and commercial enterprises requires proper land planning in pursuing sustainable development, harmonising with agricultural and tourism activities.

【Purpose】

To promote investment to the manufacturing activities outside Nairobi
Target beneficiaries: All size of growth oriented manufacturers

【Implementing Agencies】

Secretariat: KenInvest, MOTI(Department of Internal Trade)
Task Force: MOF, Ministry of Planning, EPZA, KAM, KEPSA, Ministry of Regional Development, etc.

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Set up a Task Force for studying investment promotion outside Nairobi. [KenInvest/MOTI] Agenda: i. Studying on the national incentive system towards investment. (Comparative study with benchmarking abroad: ex. tax reduction, exemption from license fee, and reduction of electricity charges.) ii. Producing an industrial land use map for planning iii. Planning on establishment of industrial local supporting system	◆		
2)* The Task Force formulates a strategic paper. [KenInvest/MOTI]	◆		
3) Drafts a bill [KenInvest/MOTI]	◆		
4) Implementation [KenInvest/MOTI]		◆———	———◆

* Critical issue before proceeding to 2) is completion of study on national incentive system towards investment.

【Indicators】

The manufacturing activities increase outside Nairobi in terms of production volume and employment.

【Note for Taking Actions】 (Rough Cost Estimate)

This is the area where MOTI can symbolise its leadership in industrial development. Coordination with other ministries may not be easy, but MOTI needs to request commitment from other ministries since this is the area directly linked to the poverty reduction in Kenya. Although PSDS does not specifically address promotion of investment outside Nairobi, this can be considered in conjunction with PSDS-PIP 4.3.2, which has activities to strengthen international and domestic investment. (Kshs. 50 million)

3.6.2

Project Name: Promoting Direct Finance

【Background and Issues】

Although the manufacturing sector can find the financial resource through 1) indirect finance (loan), 2) direct finance (equity finance), and 3) internal reserve; policy discussion tends to lay emphasis only on 1) indirect finance. Yet, provision of long-term loan has limitations in terms of credit amount, high inflation, and unstable exchange rate. Crediting to the venture business is difficult due to high business risk. Accordingly, it is necessary that two other measures; i.e. 2) direct finance and 3) internal reserve; should be promoted in parallel with 1) indirect finance. As for 2) director finance, it is noteworthy that markets are calling for more involvement by the venture capital business. CMA has sent a bill for establishing "the Capital Markets (Registered Capital Companies) Regulations", which authorises venture capital activities. Moreover, Nairobi Stock Exchange is studying on opening a new market for venture companies. Yet, such new moves have not been well recognised by the manufacturing sector as well as its supporting policy.

【Purpose】

To promote direct finance to the manufacturing sector

Target beneficiaries: potential MSMEs; i.e. manufacturers whose stock values are likely to increase

【Implementing Agencies】

Secretariat: KenInvest, MOTI(Department of Internal Trade)

Task force: Venture Capital Association, CMA, MOF, KAM

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 – 2010	Phase 2 2011 – 2015	Phase 3 2016 – 2020
1) MOF, CMA, Venture Capital Association（leading venture capital firms）, MOTI, KAM (leading manufacturers) set up a Task Force, which holds meetings every half a year. [KenInvest/MOTI] Agenda: i. Setting up legal framework for promoting direct investment (ex. issuance of convertible bonds in US$, etc.) ii. Public relations of the venture capitals	◄- - -	- - - - -	- - - ►
2)* Implementation based on recommendations raised from the Task Force [KenInvest/MOTI] i. Drafting the Legal Documents ii. Public Relation activities of venture capital business	◄——	————	——►

* Critical issue before proceeding to 2) is setting up legal framework.

【Indicators】

1) Task Force is set up (by the end of Year 2008)

2) Venture capital investment increases（After Year 2011）

3) Number of listed manufactures increases (After Year 2013)

【Note for Taking Actions】 (Rough Cost Estimate)

Above action plan assumes having MOTI as a secretariat since the purpose of the action plan is for the benefit of the manufacturing sector. Yet, if considering more weight on the supply side, another agency may take the role of the secretariat such as CMA. Important thing is to make MOTI involved in the discussion of the venture capital activities. This action can be considered as a component of PSDS-PIP 5.4.5, which is to promote the provision of long-term finance to MSMEs.

(Kshs. 20 million)

3.7.1

Project Name: Upgrading Training in the National Polytechnics

【Background and Issues】 TIVET Programme has a complicated structure in Kenya. MOST is now drafting the National Science and Technology Skills Training Strategy, which is likely to propose setting up an inter-ministerial committee, i.e. TIVET Authority. It has been well recognised that there is a need of upgrading technological capability of TIVET in order to supply human resource that enable global competition in the industry. One important strategy for this is to have closer linkage between the industry and TIVET institutions. For this purpose, it is recommended that MOTI and KAM be more involved in TIVET activities. PSDS-PIP 4.2.3 also recognises this issue. Since TIVET consists of many institutions, this Action Plan particularly focuses on the national polytechnics (Kenya/Nairobi, Mombasa, Kisumu, and Eldoret) because they are currently under reform through Sessional Paper No.1 of 2005, which proposes allowing national polytechnics to offer degree courses and to have operational autonomy. Government of Italy has collaborated with upgrading of training curriculum and facilitation of the Department of Electric and Electronics in Kenya Polytechnics and Mombasa Polytechnics from 2004 to 2007. While it is recognised that quick implementation of upgrade cannot be achieved without the support from the donor agencies, this action plan intends to focus on areas where more attention needs to be raised for the national polytechnics to become centres of excellence of training high skilled workers for the industrial development.

【Purpose】 To upgrade the trainings at the national polytechnics for industrial development
Target beneficiaries: Polytechnics students willing to be employed in the manufacturing sector

【Implementing Agencies】 Secretariat: National Polytechnics
Task force: MOST, KATTI, MOTI, KAM

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 - 2020
1) Establishment of TIVET Authority with participation of MOTI, KAM, KEPSA (National Science and Technology Skills Training Strategy) [MOST]	◀▶		
2) Annual review of training curriculum of the National Polytechnics - with the participation of the industry and - with more emphasis on production management and technical designing [National Polytechnics]	◀ - -	- - - - - -	- - - - ▶
3)* MOTI and KAM collaborates with allocation of industrial attaches for the National Polytechnics [MOTI(Department of Industry)]	◀———	————	———▶

* Critical issue before proceeding to 3) is the establishment of TIVET Authority with participation of the task force.

【Indicators】 Majority of graduates from the national polytechnics can find employment in the sub-sector if they are trained by Year 2020.

【Note for Taking Actions】 (Rough Cost Estimate) Establishment of TIVET Authority is being planned by MOST. Participation in the TIVET Authority shall clarify the role of MOTI to be taken in TIVET. This action plan particularly proposes MOTI to collaborate in allocation of industrial attaches (Work Item 3) and in receiving more collaboration from the Industry (Work Item 2) for the development of the national polytechnics as the top TIVET institutions. This action plan can be integrated with PSDS-PIP 4.2.3, which is to articulate interests of private sector in the TIVET reform process.
(Kshs. 10 million)

3.7.2

Project Name: Introduction of Organised Vocational Skills Evaluation System

【Background and Issues】

The industrial development necessitates continuous upgrade of worker skills. Although the industrial training levy system is designed to provide training opportunities to employees, it is difficult for the employers to release employees from jobs to attend training courses, whose certificates are not appreciated to have high values in undertaking jobs. On the other hand, the national trade test system can overcome constraints from sacrificing working time if the test is designed for those who study by themselves outside the job. Kenya already has national trade tests, but they are for craftsmen and considered lower qualification than diploma or degrees. If the national trade test is designed at various levels from the basics to the highest, employees will be motivated to receive higher certificates. Japan, for example, has the national trade tests in 137 job categories. Each trade test has from 3 to 5 levels of certificates so that applicants can take tests according to their knowledge level. This trade test system in Japan is greatly contributes to acquiring technical skills after employment. Currently, the national trade test in Kenya is designed by the MLHRD. Upgrade of the national trade test is recommended to be taken up as one of the agenda in TIVET reform.

【Purpose】

To provide life-time opportunities in technical trainings
Beneficiaries: All the engineers who wish to upgrade their skills

【Implementing Agencies】

Secretariat: TIVET Authority, MOST
Task force: MLHRD, KATTI

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Benchmarking study on trade test system abroad [TIVET Authority/MOST]	◆―◆		
2) Designing new trade test system in Kenya [TIVET Authority/MOST]	◆―◆		
3)* Pilot tests [TIVET Authority/MOST]	◆―◆		
4) Annual implementation [TIVET Authority/MOST]		◆- - -	- - - -◆

* Critical issue before proceeding to 3) is the completion of design work on new trade test system with collaboration from the task force.

【Indicators】

Holders of qualifications from the trade tests can exert high technical skills on the job.

【Note for Taking Actions】 (Rough Cost Estimate)

The national trading test is currently administered by MLHRD. It needs to be discussed in the TIVET Authority, which ministry is responsible for above action, either MOST or MLHRD. MOTI's task is to represent the interest of the manufacturers in the TIVET Authority and encourage the sub-sectoral committee towards involvement in the process of developing the system. PSDS-PIP does not have specific activity on the qualification system, but this can be considered under 4.2.3, which aims to articulate interest of private sector in the TIVET reform. (Kshs. 50 million)

3.8.2

Project Name: One Village One Product Project

【Background and Issues】 One Village One Product is a movement promoted by the Japanese Government in assisting regional economic development in developing countries. This movement is popularly adopted in Japan in 1980's and 1990's and successfully created a regional economic development model. The movement starts from creating a network among the community and comes up with a vision to transform the community to produce more value-added products and to expand the markets. It finds the way to utilise the local resources including commodities, technology, and human resources in the most effective manner. This movement is most applicable in the Kenyan rural development through empowering the local community. It is also noted that this approach is similar to community projects undertaken by the Kenya Agricultural Productivity Project (KAPP).

【Purpose】 To create local initiatives towards transforming themselves to more active economic entities Target beneficiaries: MSMEs in rural areas

【Implementing Agencies】 Secretariat: MOTI
Task force: Relevant ministries (e.g. MOA, MOLF, etc.), District Offices, BDS Providers (universities, NGO, consultants)

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 – 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) MOTI holds the national seminar for introducing One Village One Product movement [MOTI(Department of Industry)]	✸		
2) Meetings and workshops with stakeholders - Making a development plan and action plans - Deciding upon implementation structure and work schedules - Selection of target products - Identifying necessary supports and trainings [MOTI(Department of Industry)/DIDO]	⟷		
3)* Implementation of the supports and the trainings [DIDO/MOTI(Department of Industry)]		⟷	
4) Monitoring and evaluation of Work Items [MOTI(Department of Industry)]		⟷	
5) The best model is introduced in the national seminar [MOTI(Department of Industry)]		◆	
6) A strategy to expand the model nationwide is formulated [MOTI(Department of Industry)]		◆	
7) Expansion of the model [MOTI(Department of Industry)/DIDO]			⟷

* Critical issues before proceeding to 3) are the identification of target products, the establishment of implementation structure, and provision of appropriate supports.

【Indicators】 Community group takes initiative in activating the regional economy with the support of the Government and various BDS providers including consultants, academia, and NGOs.

【Note for Taking Actions】 (Rough Cost Estimate)

Considering all necessary aspects, the implementation structure is expected to be established for effective implementation and well coordinated consensus among the stakeholders. The key to success of above action plan is to motivate the local community to produce value-added products, which meet the needs of target markets. The best practice needs to be produced so that the lessons can be followed nationwide. PSDS-PIP 5.3.1 notes various on-going value-chain and BDS projects in Kenya. This model drawn from the Japanese experience has to be shared with other on-going projects in a framework of PSDS-PIP 5.3.1. (Kshs. 150 million)

3.8.3

Project Name: Creation of an Integrated Economic Zone in Athi River

【Background and Issues】 Athi River has a huge potential as an economic centre. Athi River shows the highest concentration of large-scale industries next to Nairobi City and Mombasa. EPZ Athi River is the largest EPZ, hosting 24 companies and 10,000 workers in 108 hectares out of 339 hectare fenced site. From a transport perspective, the location is at the confluence of 2 major roads, the Mombasa-Nairobi highway and the Nairobi-Namanga road, which connects to northern Tanzania. It is also next to the Nairobi-Mombasa Railway line and only 19 km from Jomo Kenyatta Airport. Due to the development of EPZ companies, the local Mavoko/Kitengela area has developed into a major commercial, residential, and industrial hub, supporting farming and residential developments along the Mombasa Highway and on the Kajiado-Isenya-Kitengela axis. The fibre optic cable linking Mombasa to Nairobi passes right through EPZ. In addition, the Technology Development Centre managed by MLHRD is adjacent to EPZ. The Centre is designed to serve the needs of EPZ companies by providing technical training at vocational level. Vision 2030 recognises the importance of Athi River and plans to set up a BPO Zone under MOIC and first-tier retail shops under MOTI. It also plans to improve access roads to Athi River. However, strengthening Athi River as a manufacturing centre is not mentioned. Instead, Vision 2030 calls upon creation of strategic industrial clusters and SME parks as flagship projects under the manufacturing sector. It is considered that Athi River is the best location to initiate the two flagship projects under the manufacturing sector as well. In order to meet the high economic growth targeted by Vision 2030, it is recommended that four flagship projects contained in Vision 2030, including BPO and retail shops, and the Technological Development Centre be consolidated into one Integrated Economic Zone. This will increase externality of the economic entities located in Athi River. Since Athi River is in high demand for various activities, urgent mapping is necessary. Without proper development and promotion support, potential capacity of Athi-River as an economic zone will be decreased. This action plan will be considered as a part of Nairobi Metropolitan Region Development Strategy, which is also under the activities of Vision 2030.

【Purpose】 To transform Athi-River into an Integrated Economic Zone
Target beneficiaries: All size of growth oriented manufacturers and the service sector as well as new investors

【Implementing Agencies】 Secretariat: Committee for Integrated Economic Zone in Athi River (proposed to be established in Work Item 1); Task force: Proposed Nairobi Metropolitan Region Development Board (NMRDB), MOL, Mavoko Municipal Council, MOIC, MLHRD (Technology Development Centre), MOTI(Department of Industry), EPZA, KIEL

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Establishment of committee for Integrated Economic Zone in Athi River (CIEZ) [NMRDB]	◆		
2)* Formulating a concept paper for the integrated economic zone and land mapping of Athi River [CIEZ]	◆		
3) Designing and constructing BPO Park (Vision 2030) [MOIC]	◆		
4) Designing and constructing retail shops (Vision 2030) [EPZA/MOTI]	◆		
5) Designing and constructing SME park (Vision 2030) [KIEL]	◆		
6) Drafting an amendment of EPZ Act, enabling expansion of activities within EPZ and strengthening amenities, facility, and infrastructure inside EPZ Athi River (PSDS-PIP 4.3.1; Action Plan 3.5.1) [MOTI(Department of Industry)/EPZA]	◆		
7) Formulating a strategy to strengthen linkage between EPZ companies, SME Park companies, and the Technology Training Centre [CIEZ]	◆		
8) Construction of school and hospital [MOED, MOH]	◆		
9) Installing optical fiber network [MOIC]	◆		
10) Improving access road to Nairobi and to Namanga (on going: AfDB project) [MRPW]	◆		
11) Improving electricity and water supply [MOEN&MOWI]	◆		
12) Opening a railway station in Athi River [MOTI]		◆	
13) Promotion and marketing activities for the Zone [EPZA/MOTI]	◆	◆	◆

* Critical issue before proceeding to 2) is the establishment of the CIEZ in Athi River.

【Indicators】 Dynamic economic zone is created in Athi River by the end of 2015.

【Note for Taking Actions】 (Rough Cost Estimate) Since above action involves many stakeholders, leadership from NMRDB, being proposed to be established by NESC, is required. Success of above action plan would demonstrate the transformed economic nature of Kenya in contrast from the current fragmented and uncoordinated nature. This action plan is to be integrated into PSDS-PIP 4.3.1 together with Action Plan 3.5.3. (Kshs. 2 billion)

4.1.1&4.2.1&4.2.2

Project Name: Promoting Environmental Protection, Safety, and Health in Factories

【Background and Issues】 Industrial development has to be in tandem with environmental conservation and social welfare. Kenya is one of the leading developing countries whose policy makers have much awareness in environmental conservation. NEMA established under Environmental Management and Co-ordination Act (1999) has a responsibility to exercise general supervision and co-ordination over the environmental policies. While NEMA's responsibly spreads across the sectors, KNCPC under MOTI provides training, seminars, and advisory services to promote 3R in the manufacturing sector. KAM also takes importance of contributing to the environmental conservation and runs projects on energy efficiency and reduction of plastic usage. Furthermore, increased demand for ICT calls for better recycling system of e-waste (electrical and electric waste). On the other hand, auditing of the safety and health issues are administered by DOHSS under MLHRD. While the private sector is making its efforts to conform to the regulations, the sudden changes in regulations and tax rates as well as strict auditing have been a big discouragement to the industry. Moreover, some overlaps between the environmental audit and safety, health audit are a hindrance to productivity improvement of the factory operation. Hand-in-hand cooperation between the Government and the private sector needs to be pursued for the improvement in environmental and working conditions in the factories.

【Purpose】 To build an institutional framework supporting environment, safety, and health in factories
Target Beneficiaries: All the workers in the manufacturing sector

【Implementing Agencies】 Secretariat: MOTI; Task force: NEMA/Ministry of Environment, DOHSS, Cleaner Production Centre of Kenya, KEBS, KAM, Kenya Occupational Health and Safety Association

【Scope of Work】

Work Items [Lead Institution]	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 – 2020
1) Setting up a consultative group for environment, safety, and health. The tasks of the consultative group are: a. Formulating an annual action plan for improvement in 3R, safety, and health with clear and practical targets b. Making policy recommendations that require actions by the manufactures - improvement in self-auditing system - rationalising environment, safety, health audits - methodologies to promote ISO 14001 (e.g. with preferential tax) - increasing accountability of private auditors for statutory auditing (in price structure and performance) - setting up a guideline for recycling Any policy changes which affect operation of the manufactures (e.g. regulations and tax rate) are to be discussed in the group [MOTI(Department of Industry)]			
2) Self-auditing system of the manufacturers is promoted [DOHSS, NEMA]			
3) Annual best practice award is printed in the newspaper (in an aim to raise awareness and incentives of the manufacturers) [DOHSS, NEMA]			
4)* Trainers training of auditors [DOHSS, NEMA]			
5) Implementing a campaign for ISO14001 [NEMA]			
6) A recycling guideline is disseminated to the manufactures and consumers with set up of collection system [Ministry of Environment]			

* Critical issue before proceeding to 4) is the formulating an annual action plan with targets in collaboration with the task force.

【Indicators】 1) Number of manufacturers receiving environmental audit and safety, health audit
2) Number of manufacturers holding ISO 14001 3) Recycle rate of glass bottles, plastics, cans, paper

【Note for Taking Actions】 (Rough Cost Estimate)

Although the main implementations of above action plan are DOHSS (MLHRD) and NEMA (Ministry of Environment), MOTI as representing the voice of the manufacturers is expected to lead the discussion in Work Item 1). MOTI's position is to identify the optimal point between the benefit of workers and the business viability of the manufacturers. This action plan is considered in relation with PSDS-PIP 1.5.4, which is to institutionalise regulatory best practice. (Kshs. 30 million)

PART IV : Development Plan of the Target Sub-sectors

Chapter 9 Selection of the Target Sub-sectors

9.1 Intention of target sub-sector selection

The industrial master plan has a dual structure; actions covering issues applicable to whole manufacturing sector and those of the target sub-sectors. While there are many constraints and countermeasures that are common across the industry, there are some that are unique to the sub-sector. Lack of sub-sectoral development strategy has delayed the response to the needs of the industry. Formulating a sub-sectoral strategy would help to identify such unique issues and put actions that can help to leap the sub-sector. Selection of the target sub-sectors does not mean neglect of supporting other sub-sectors since they shall be benefited through the action plans covering the whole manufacturing sector. Development strategies of the target sub-sectors aim to create institutional framework, whose lessons are expected to be followed by other sub-sectors.

9.2 Selection process

Three target sub-sectors shall be selected based on potentialities for contributing to industrial transformation along ERS and Vision 2030. Industrial transformation shall have the following characteristics:

i) industrialisation accompanied by technological innovation,

ii) industrialisation strengthening industrial linkages, and

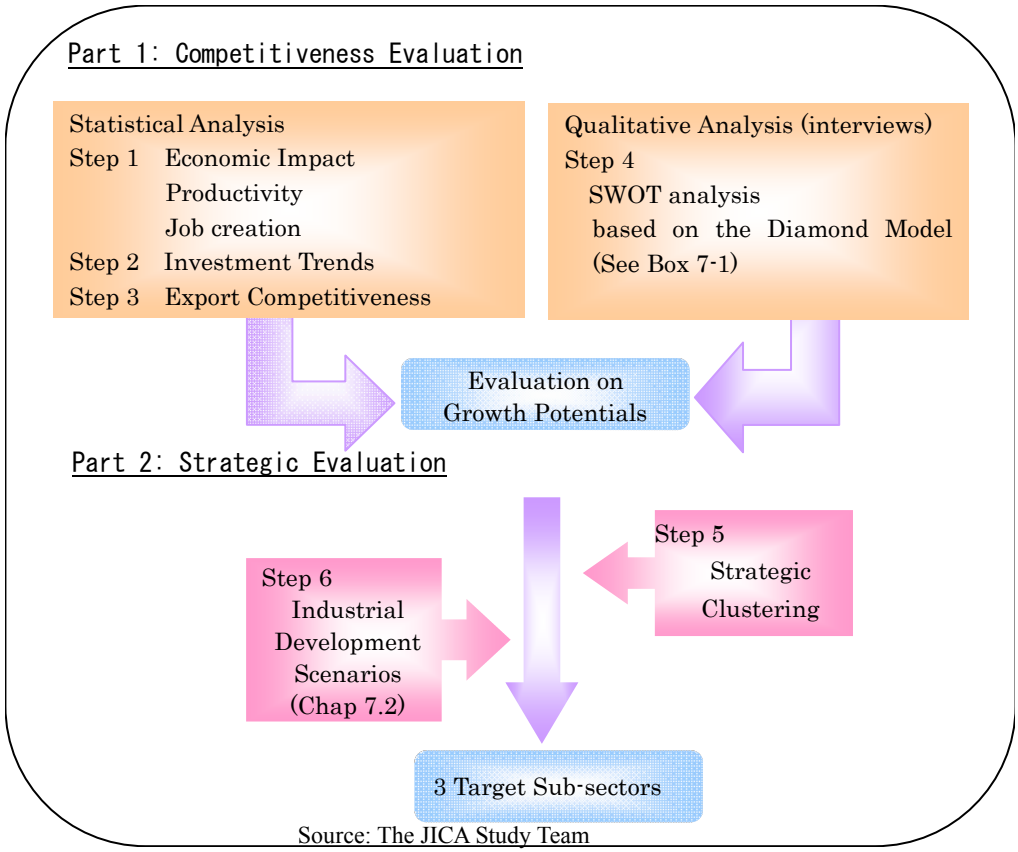
iii) industrialisation contributing to regional development.

Upgrading technological capability and strengthening industrial linkages are essential for strengthening competitiveness of the Kenyan industry while nationwide spread of manufacturing activities is required for alleviating poverty, which is fundamental development issue in Kenya. Therefore, the target sub-sectors should be selected from those which support development strategies accompanying above three features. This calls for strategic analysis which looks into internal strength of the sub-sector.

The Study Team and the counterpart of MOTI jointly selected the target sub-sectors through close consultation in the Stage 1. In this chapter, the result of the selection shall be verified. Figure 9-1illustrates the verification process consisting of two parts. In the first part, evaluation is conducted in order to identify factors that would increase competitiveness of Kenyan industry. The first part combines quantitative analysis with qualitative analysis. Although statistical analysis is suitable for identifying trends in competitiveness of sub-sectors, it has much limitation due to data availability and problems in sampling (See Chapter 4.3.1). Moreover, statistical linkage analysis cannot be conducted due to lack of input-output table. Therefore, the outcome of statistical analysis is cross checked with interview data, which are analysed by the diamond model (See Chapter 7.1 for the diamond model). The outcome of the first part provides a short list of candidates, which are to be

carried to the second part.

In the second part, the candidate sub-sectors are strategically classified into clusters, which group sub-sectors along the value chain together. This clustering would affect wider industrial section through the development and is designed to support the industrial scenario of strengthening industrial linkages.



Source: The JICA Study Team

Figure 9-1 Verification Process of the Target Sub-sectors

9.3 Part 1: Competitiveness evaluation

9.3.1 Evaluation criteria

(1) Statistical analysis

The statistical analysis is divided into three parts;

i) value addition, productivity, and job creation evaluation based on ISIC,[103]

ii) investment trend analysis classified into ISIC, and

iii) export competitiveness based on HS codes 2002.

[103] Kenya's manufacturing classification is based on the 4 digit codes of ISIC Rev.2

1) Value addition, productivity and job creation evaluation

In Step 1, 20 sub-sectors based on ISIC are evaluated in terms of:

i) economic impact, evaluated based on value addition (volume and growth rate),

ii) productivity (input productivity and labour productivity), and

iii) job creation and sub-sectoral concentration.

The above three criteria are directly linked to the purpose of industrialisation, which aims for income increase and job creation.

2) Foreign direct investment

In Step 2, trends in FDI classified by ISIC are analysed. Since FDI is considered as the driving force of technological transfer, it is taken as important criteria for brining in technological innovation.

3) Export Competitiveness

In Step 3, export competitiveness is evaluated because export potentialities are an important factor for market expansion. In this analysis, commodities classified by the HS codes are evaluated by use of international competitiveness index, which is calculated as per the following equation.

International Competitive Index: (Exports*i* - Imports*i*) / (Exports*i* + Imports*i*)

(2) Qualitative analysis

Competitiveness evaluation from the statistical analysis is cross checked with qualitative analysis by using the diamond model. The data collected from the interviews is evaluated on the points as listed in Table 9-1. The questionnaire as in Annex 3 is designed accordingly. Obtained information gives insights on the market conditions, input availability, suppliers' availability, extent of assistance from the supporting institutions, etc. These types of information are not obtainable through statistics; thus supplementing statistical information by qualitative information through the diamond analysis is indispensable in determining competitiveness of the sub-sectors.

Table 9-1 Interpretation of the determinants in the Diamond Model

1. Factor Conditions	
1) Human Resources	
a. Labour cost, quality and productivity	Availability of human resources in terms of skills and cost
b. Number of employment	Contribution of the sub-sector to attract employment creation
2) Raw Materials	
a. Production volumes, quality and price	Availability of raw materials
b. RIC	Availability of domestic materials against imported goods
3) Infrastructure	
a. Energy	Competitiveness in availability (volume and stability) and price
b. Water	Competitiveness in availability (volume and stability) and price
c. Transportation network	Competitiveness in availability
d. Telecommunications	Competitiveness in availability and price

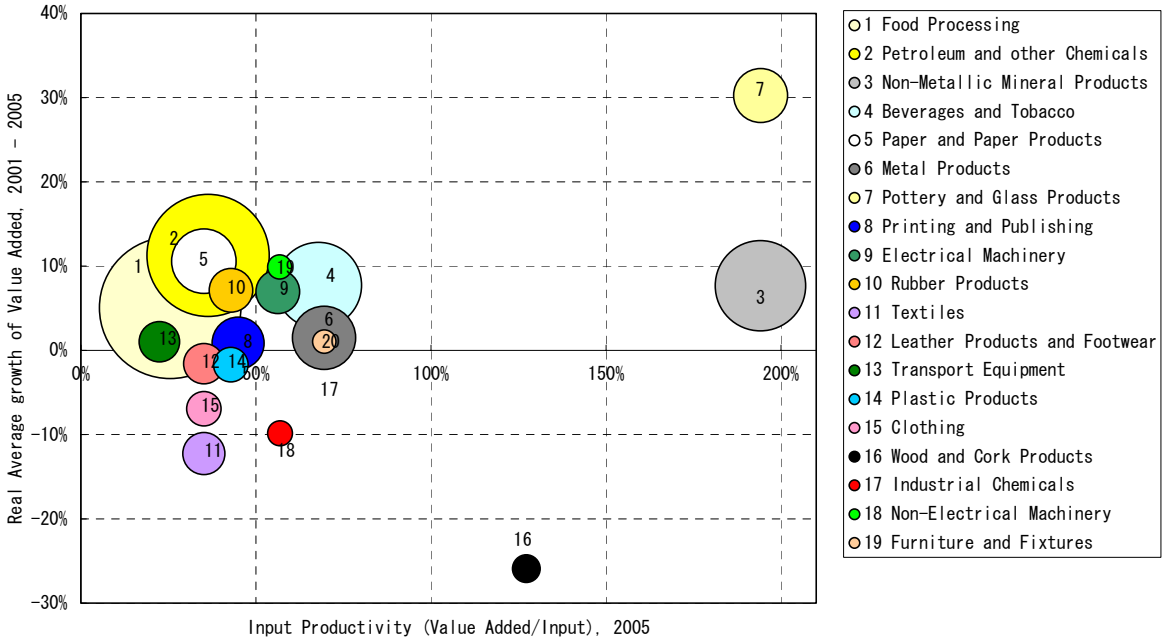
2. Demand Conditions	
1) Domestic Market	
a. Quality and Price	Type of goods the domestic market prefers in terms of quality and price
b. Market size	The trend in demand volume in the domestic market
2) Regional Markets	
a. Quality and Price	Type of goods the regional markets prefer in terms of quality and price
b. Market size	The trend in volume of the demand in the regional market
3) Market Erosion Caused by Imported Goods	The effect from the imported goods
4) Market Liberalisation	Whether there is any restrictions in the sales settings
3. Firm Strategies, Structures, and Rivalries	
1) Rivalry among the Domestic Enterprises	Existence of rivalry structures, which force enterprises to upgrade
2) Investment Liberalization	Any restrictions on investment
3) Quality Control	Enterprise's strategies for quality control
4) Industrial Associations	Collaborates through association activities
5) Investment Strategies	Enterprises' strategies for investment
6) Locational Strategies	Enterprises strategies for selecting location
4. Related and Supporting Industries	
1) Suppliers	Availability of competent suppliers
2) Related Industries	Availability and support from the related industries
3) BDS Providers	Support from BDS providers
4) Human Resource Development Institutions	Impact from human resource development institutions

Source: The JICA Study Team

9.3.2 Statistical analysis

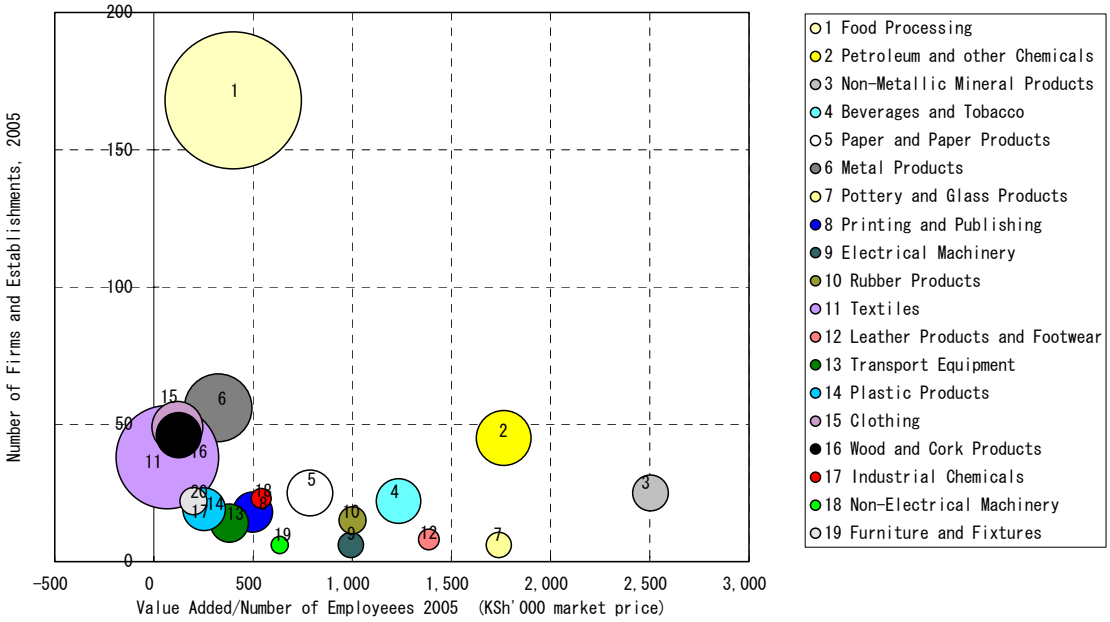
(1) Value addition, productivity and job creation assessment

In the first step, value addition, productivity and job creation impact are assessed. Comparisons between Figure 9-2 and Figure 9-3 show growth trends of sub-sectors in terms of value addition, productivity, and job creation.



Note: Circle size: Value added in 2005
Source: Data from KNBS

Figure 9-2 Value added and Input Productivity (all establishments)



Note: Circle size: number of employees
Source: Data from KNBS

Figure 9-3 Employment and Labour productivity (large enterprises only)

The characteristics observed from Figure 9-2 and Figure 9-3 show high input productivity enjoyed by non-metallic mineral products, pottery and glass products, and wood and cork products. These three sub-sectors are more likely to use local resources. The non-metallic mineral sub-sector also shows high labour productivity. As for the pottery and glass products, labour productivity is high, but

contribution to employment is not significant. On the other hand, the wood and cork product sub-sector shows weakness in its minus growth in value addition due to shortage of raw materials.

The food processing sub-sector is also distinctive. Its value addition is the highest, contributing one-quarter of the total value addition. Although growth rate of the value addition is just the average at 5 % per annum, its contribution to employment is also the largest at 33 % of the total labour force in large enterprises. The breakdown of food sub-sector shows that grain milling occupies 37 % of the sub-total and recorded highest growth and highest labour productivity. This implies that commodities which serve basic needs of the mass population take dominant position in manufacturing sector. Among large-scale producers, 43 % of labour force is categorised as in "other foods", which includes tea, coffee, cocoa and salt.[104] On the other hand, “petroleum and other chemical” sub-sector is the second largest contributor to value addition, in which petroleum refining occupies 71 % with 16 % annual growth rate between 2001 and 2005.

Table 9-2 Value-Addition, Productivity and Employment

	Figure 5-2 (all establishments)				Figure 5-3 (large-scale enterprises)				
	Value addition (2005)		Input productivity (2005)	Real Annual Growth of Value Added (2001-2005)	Number of Employment (2005)		Labour productivity Thousand Ksh (2005)	Number of Companies (2005)	
1 Food Processing	31,461	25%	26%	5%	71,183	33%	400	168	27%
1-1 Meat and Diary	6063	5%	28%	1%	7,925	4%	707	18	3%
1-2 Canned Vegetables, Fish, Oils and Fats	4773	4%	27%	-2%	8,564	4%	522	21	3%
1-3 Grain Mill	11692	9%	27%	13%	5,818	3%	1,790	16	3%
1-4 Bakery	3019	2%	27%	0%	2,070	1%	1,102	24	4%
1-5 Sugar and Confectionery	3329	3%	27%	6%	16,504	8%	202	14	2%
1-6 Other food	2585	2%	16%	7%	30,302	14%	78	75	12%
2 Petroleum and other Chemicals	23,472	19%	36%	11%	11,553	5%	1,764	45	7%
3 Non-Metallic Mineral Products	12,880	10%	194%	8%	4,953	2%	2,504	25	4%
4 Beverages and Tobacco	11,654	9%	68%	8%	7,579	3%	1,234	22	4%
5 Paper and Paper Products	6,584	5%	35%	11%	8,061	4%	787	25	4%
6 Metal Products	6,313	5%	69%	1%	17,476	8%	325	56	9%
7 Pottery and Glass Products	4,596	4%	194%	30%	2,468	1%	1,740	6	1%
8 Printing and Publishing	4,268	3%	45%	1%	6,204	3%	499	18	3%
9 Electrical Machinery	3,021	2%	56%	7%	2,481	1%	994	6	1%
10 Rubber Products	3,011	2%	43%	7%	2,887	1%	1,002	15	2%
11 Textiles	2,795	2%	35%	-12%	40,365	19%	68	38	6%
12 Leather Products and Footwear	2,625	2%	35%	-2%	1,669	1%	1,386	8	1%
13 Transport Equipment	2,593	2%	22%	1%	5,549	3%	382	14	2%
14 Plastic Products	1,897	2%	43%	-2%	6,946	3%	253	19	3%
15 Clothing	1,888	2%	35%	-7%	9,985	5%	119	49	8%
16 Wood and Cork Products	1,224	1%	127%	-26%	7,806	4%	126	46	7%
17 Industrial Chemicals	1,007	1%	57%	-10%	1,583	1%	541	23	4%
18 Non-Electrical Machinery	953	1%	57%	10%	1,184	1%	635	6	1%
19 Furniture and Fixtures	879	1%	70%	1%	2,840	1%	200	22	4%
20 Miscellaneous Manufactures	1,088	1%	70%	-8%	4,093	2%	194	14	2%
TOTAL	124,209	100%	40%	5%	216,865	100%	505	625	100%

Note: Other foods among large enterprises include black tea, coffee (milled, grounded, instant and roasted), cocoa & cocoa products and salt.
Source: Data from KNBS

In this first section of statistical analysis, three sets of criteria that demonstrate economic impact and

[104] The low labour productivity of "other foods" could be misleading because this may contain statistical problem arisen from the division between the data for agriculture and that for manufacturing sector.

growth potential were given importance:

i) Economic impact (value addition over 10 % of total) or

ii) High productivity (Both input productivity and labour productivity are over the averages.), but those whose value addition is less than 1 % of total are excluded because of low economic impact and

iii) High growth rate (average growth of value addition from 2001 to 2005 is above the total average of 5 %).

The following eight sub-sectors passed the above criteria.

i) Food processing,

ii) Petroleum and other chemicals,

iii) Non-metallic mineral products,

iv) Beverages and tobacco,

v) Pottery and glass products,

vi) Electrical machinery,

vii) Rubber products, and

viii) Non-electrical machinery.

However, it should be noted that the data in Table 9-2 does not include performance of EPZs. Therefore, data of EPZ has to be analysed in addition (See Table 9-3). Production of garments is a major contribution from EPZs as it accounts for 68 % of the total garment output in Kenya. Combined with the data in Table 9-2, the large enterprises in textile and garment sub-sectors[105] employ 85,000 people, 33 % of total employment in the large enterprises including EPZ. Therefore, textiles and garments sub-sectors are assessed as important in terms of job creation. Apart from the garment sub-sector, production in EPZ does not much affect the result of the analysis from Figure 9-2 and Figure 9-3.

[105] Textiles include cotton spinning. Although the garments sector hardly utilises output from the textile sub-sector, for this analysis, these two are combined due to potentialities of creating linkages between the two sub-sectors.

Table 9-3 EPZ Sub-sectoral Performance in 2005

	Sub-sector	Local Workers	Sales Amount (million Ksh) market price	Sales Share	Local Expenditure Rate
1	Garments	34,234	15,180	67.1%	28%
2	Printing	332	3,304	14.6%	19%
3	Chemicals	336	1,689	7.5%	88%
4	Agro Processing	1,093	1,159	5.1%	75%
5	Electronics	198	378	1.7%	13%
6	Dartsboard	130	288	1.3%	32%
7	Spinning	322	281	1.2%	32%
8	Pharmaceuticals	149	246	1.1%	33%
9	Plastics	94	95	0.4%	28%
	Total	36,888	22,620	100%	

Note: Local expenditure includes local material, local salaries, power, telecommunication water and others.
Source: EPZA (2006) EPZA Annual Report 2005

Observations from Figure 9-2, Figure 9-3 and Table 9-3 are summarised in Table 9-4.

Table 9-4 Characteristics of Value Addition, Productivity and Employment

Legend	Sub-sector	Characteristics
1	Food Processing	"Food Processing" is the most dominant sub-sector in terms of volume of value-addition (25 % of total), employment in the large enterprises (33 % of total) and the number enterprises (27 % of total). But, its productivity is lower than the average in terms of input productivity and labour productivity. The breakdown shows that grain milling, mainly for staple foods, shows the highest value additions and highest labour productivity in food processing. However, none of the sub-categories surpassed the average in input productivity.
2	Petroleum & Chemicals	Petroleum and chemical sub-sector is the second largest contributor to value addition (19 % of total), in which petroleum refineries occupies 71 %. Although its input productivity is lower than average, labour productivity is about 3 times of the average. The average growth rate of value- addition is twice as rapid as the average.
3	Non-metallic mineral	Non-metallic minerals sub-sector is the third largest contributor to value addition (10 % of total). Both input productivity and labour productivity are 5 times of the averages. But the number of employment is not significant (only 2 % among the large enterprises).
4	Beverages and Tobacco	Beverage and tobacco sub-sector is the fourth largest contributor to value addition (9 % of total). Labour productivity is over twice of the average. Its growth rate of value addition is also above average (8 %), but employment among the large-scale enterprises is only 3 %.
5	Paper & paper products	Paper and paper products sub-sector is the fifth largest contributor to value addition (5 % of total). Although its labour productivity is over twice of average, input productivity is lower than the average.
6	Metal Products	Metal products sub-sector is the sixth largest contributor to value addition (5 % of total). Although its input productivity is higher than average, labour productivity is lower than the average. This may be because of scrapped metal used by some enterprises and labour intensive production process.
7	Pottery and Glass	The distinctive characteristic of pottery and glass sub-sector is its highest input productivity, almost 5 times of average, and highest growth rate of value addition at 30 %. Its labour productivity is also over three-times the average.

8	Printing and Publishing	In terms of productivity, "Printing and Publishing" is just about the average. But its average annual growth is only 1 %.
9	Electric Machinery	Although contribution of value addition from electric machinery is only 2 %, input productivity, labour productivity and growth rate are higher than average.
10	Rubber Products	Similar to Electric Machinery, contribution of value addition from rubber products is only 2 %, but input productivity, labour productivity and growth rate are higher than average.
11	Textiles	"Textiles" has both positive and negative distinctive features. The positive feature is the second highest contribution to employment (19 % excluding EPZ), but its growth rate is second lowest (-12 %). Moreover, labour productivity is lowest. Although contribution of textile is dominant in job creation, growth potential of textile is small.
12	Leather & Footwear	Although labour productivity is more than twice the average, input productivity is slightly lower than the average. Moreover, this sub-sector experienced -2 % growth for the last 4 years.
13	Transport Equipment	Transport equipment sub-sector is lower than average in all variables: input productivity, labour productivity and annual growth of value addition.
14	Plastics	Although input productivity is higher than average, labour productivity is lower. The average growth rate is -2 %.
15	Clothing	Clothing sub-sector outside EPZ is not doing well. Input productivity, labour productivity and annual growth of value addition are all lower than average. However, its labour contribution is large (17 % of total employment including EPZ).
16	Wood & Cork	Input productivity of wood and cork sub-sector is third highest, but its growth rate is lowest. Labour productivity is lower than the average.
17	Industrial chemicals	Industrial chemical sub-sector has higher input productivity and labour productivity than the average, but its growth rate is -10 %.
18	Non-electric machinery	Although contribution of non-electric machinery sub-sector to value added is only 1 %, both input productivity and labour productivity are higher. Moreover, its growth rate is twice the average.
19	Furniture and fixture	Although input productivity of furniture and fixture sub-sector is higher than average, labour productivity is lower. More over, it is experiencing -8 % growth rate for the last four years.

Source: The JICA Study Team

(2) FDI trends

In the second step, FDI trend is analysed in order to identify which sub-sectors foreign countries are willing to invest in Kenya. Figure 9-4 and Table 9-5 show the sub-sectoral analysis of FDI within the manufacturing sector from 2001 to 2005. Top sub-sector is petroleum and other chemicals, in which pharmacy and ethanol have a high proportion. Second sub-sector is clothing, which is affected by AGOA. Combined with investments in EPZs, the clothing sector received the highest FDI (Figure 9-6). In terms of investment trends, the following five sub-sectors are found to be prominent:

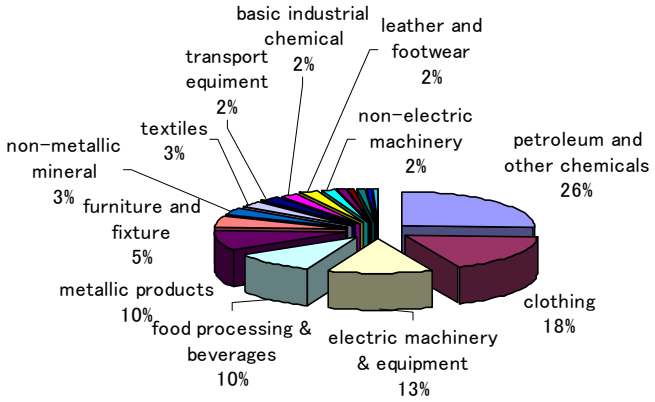
i) petroleum and other chemicals

ii) clothing

iii) electric machinery & equipment

iv) food processing & beverages

v) metallic products



Note: Aggregate investment amount from 2001 to 2005 based on market price of each year.
Source: Data from KenInvest

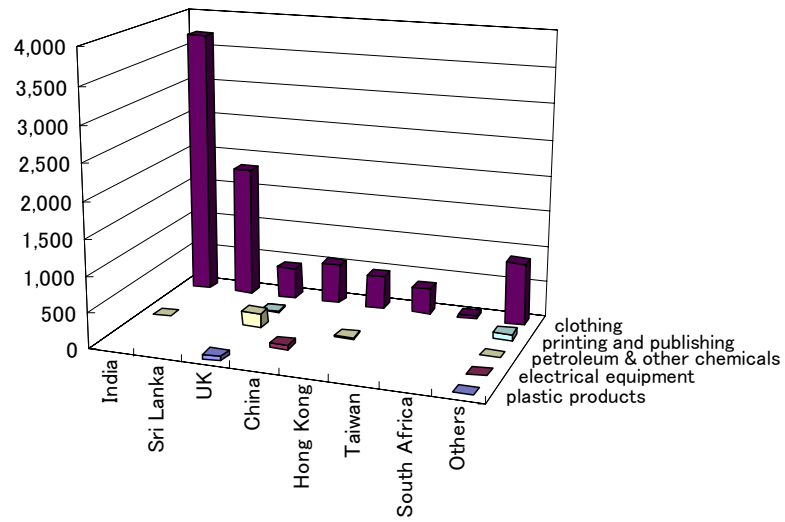
Figure 9-4 FDI in Kenya from (2001-2005)

Table 9-5 FDI in Kenya from (2001-2005) (details)

Unit: Million Kshs.

Classification	FDI amount		No of projects	Average investment Size
petroleum and other chemicals	1,286	25.7%	6	214
phamacy	726	14.5%	2	363
ethanole (molasses)	470	9.4%	1	470
paint	40	0.8%	1	40
others	49	1.0%	2	25
clothing	888	17.8%	6	148
electric machinery & equipment	634	12.7%	10	63
food processing	511	10.2%	15	34
meat and dairy products	6	0.1%	2	3
canned vegetables, fish, oils and fats	368	7.3%	7	53
bakery	30	0.6%	3	10
beverage	108	2.2%	3	36
metallic products	493	9.8%	4	123
furniture and fixture	243	4.9%	2	122
non-metallic mineral	166	3.3%	4	42
textiles	140	2.8%	7	20
transport equiment	123	2.5%	6	20
basic industrial chemical	121	2.4%	3	40
leather and footwear	106	2.1%	4	26
non-electric machinery	83	1.7%	2	42
plastic products	54	1.1%	2	27
printing and publishing	48	1.0%	3	16
rubber products	45	0.9%	1	45
clay and glass	41	0.8%	2	21
tobacco	18	0.4%	2	9
wood and cork	3	0.1%	1	3
Total	5,002	100.0%	80	63

Note: Aggregate investment amount from 2001 – 2005 based on market price of each year.
Source: Data from KenInvest



Unit: million Kshs.
Note: Aggregate investment amount from 2001 – 2005 based on market price of each year.
Source: Data from EPZA

Figure 9-5 FDI in EPZs (2001-2005)

(3) Export competitiveness

In the third step, export competitiveness is analysed by international competitiveness index.

International Competitiveness Index (ICI) = (Export *i* – Import *i*) ÷ (Export *i* + Import *i*)

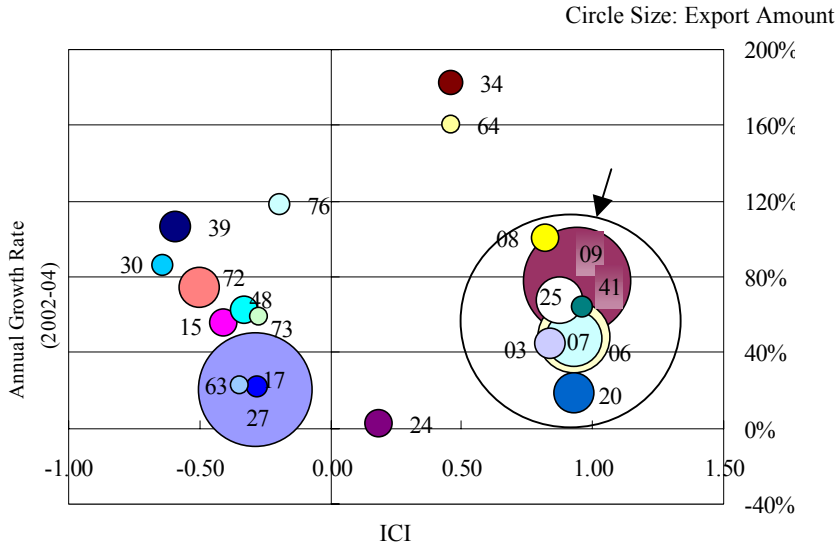
Figures closer to one are considered exported oriented commodities while figures closer to minus one are considered imported oriented commodities. Figure 9-6 and Table 9-6 give the lists of major exported commodities, and commodities within the circled area in Figure 9-6 are found particularly competitive in export. They are: (Each head number is the code of HS2002)

09 coffee, tea, mate and spices;
06 live trees and other plants (horticulture);
07 edible vegetables and certain roots and tubers;
25 salt, sulfur, earths and stone, plastering material;
20 preparation of vegetables, fruit or nuts;
03 fish and crustaceans, molluscs and other aquatic invertebrates and
08 edible fruit and nuts; peel of citrus fruit or melons
41 raw hides, skins and leather.

All the above are processed or unprocessed commodities supplied from the agro industry. In terms of growth rates, following two commodities are showing rapid growth.

34 soap, organic surface-active agents
64 footwear, gaiters and associated ingredients/products.

Within the category of Code No. 64, 68 % is plastic or rubber shoes and 24 % is shoe polishes and creams. Exported destinations of soap and footwear are mostly African regions except Italy and UK for shoes (Table 9-7). This implies that products successfully targeting the African region have potentialities for rapid growth.



Legend: See Table 9-6
Note: Above data includes all exported products over US$ 20 million.
Source: UN Commodity Trade Statistics Database

Figure 9-6 International Competitiveness of Exported Commodities in 2004

Table 9-6 Major Exported Commodities in 2004 (over US$ 20 million)

HS2002	Commodity	ICI 2004 (x)	Export Growth 2002-04 (y)	Export Amount (circle size) million US$	Export Share
27	Mineral fuels, mineral oils and products of their distillation	-0.29	19.7%	616	23.0%
09	Coffee, tea, mate and spices	0.95	77.6%	559	20.8%
06	Live trees and other plants;	0.93	48.1%	273	10.2%
07	Edible vegetables and certain roots and tubers	0.93	46.6%	161	6.0%
25	Salt; sulfur; earths and stone; plastering materials	0.88	67.2%	119	4.4%
72	Iron and steel	-0.50	74.2%	91	3.4%
20	Preparations of vegetables, fruit or nuts	0.93	18.6%	85	3.2%
03	Fish and crustaceans, molluscs and other aquatic invertebrates	0.84	44.3%	53	2.0%
39	Plastics and articles thereof	-0.59	106.4%	52	1.9%
15	Animal or vegetable fats and oils	-0.41	55.8%	46	1.7%
08	Edible fruit and nuts; peel of citrus fruit or melons	0.82	100.6%	43	1.6%
48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	-0.33	62.6%	42	1.6%
24	Tobacco and manufactured tobacco substitutes	0.19	2.3%	39	1.5%
34	Soap, organic surface-active agents	0.46	182.5%	33	1.2%
41	Raw hides and skins (other than fur skins) and leather	0.96	63.6%	29	1.1%
17	Sugars and sugar confectionery	-0.28	22.0%	29	1.1%
30	Pharmaceutical products	-0.64	85.8%	28	1.0%
76	Aluminum and articles thereof	-0.20	117.8%	25	0.9%
73	Articles of iron or steel	-0.27	58.6%	23	0.9%
64	Footwear, gaiters and the like; parts of such articles	0.46	160.1%	23	0.9%
63	Other made up textile articles; sets; worn clothing and worn textile articl ...	-0.35	22.3%	22	0.8%
87	Vehicles other than railway or tramway rolling stock	-0.92	0.8%	15	0.6%
85	Electrical machinery and equipment and parts thereof; sound recorders	-0.90	-3.2%	15	0.6%
53	Other vegetable textile fibers; paper yarn and woven fabric of paper yarn	0.85	72.4%	14	0.5%
84	Machinery and mechanical appliances; parts thereof	-0.93	-16.3%	14	0.5%
13	Lac; gums, resins and other vegetable saps and extracts	0.86	67.5%	12	0.5%
70	Glass and glassware	-0.25	62.1%	12	0.5%
21	Miscellaneous edible preparations	-0.02	105.2%	12	0.4%
44	Wood and articles of wood; wood charcoal	-0.08	16.4%	11	0.4%
94	Furniture; bedding, mattresses, cushions and similar stuffed furnishing	-0.57	46.1%	10	0.4%
40	Rubber and articles thereof	-0.70	37.3%	10	0.4%
	All Export		38.4%	2,683	100.0%

Source: UN Commodity Trade Statistics Database

Table 9-7 Export Destinations of Soap and Footwear (2004)

Unit: Thousand US$

Soap			Footware		
Tanzania	8,964	(27.0%)	Uganda	5,202	(22.5%)
Uganda	6,843	(20.6%)	Tanzania	4,608	(20.0%)
Mauritius	2,911	(8.8%)	Rwanda	1,473	(6.4%)
Zambia	2,910	(8.8%)	Italy	1,043	(4.5%)
Ethiopia	1,991	(6.0%)	Somalia	1,000	(4.3%)
Rwanda	1,296	(3.9%)	Djibouti	861	(3.7%)
South Africa	694	(2.1%)	Ethiopia	808	(3.5%)
Malawi	551	(1.7%)	Mozambique	717	(3.1%)
Mozambique	503	(1.5%)	Cameroon	268	(1.2%)
Angola	454	(1.4%)	Sudan	229	(1.0%)
Nigeria	319	(1.0%)	Burundi	228	(1.0%)
Somalia	295	(0.9%)	UK	200	(0.9%)
Eritrea	277	(0.8%)	Comoros	193	(0.8%)
Madagascar	248	(0.7%)	South Africa	188	(0.8%)
Ghana	192	(0.6%)	Zimbabwe	185	(0.8%)
Congo	171	(0.5%)	Mauritius	141	(0.6%)
Guinea	161	(0.5%)	Malawi	132	(0.6%)
Burundi	153	(0.5%)	Macao	101	(0.4%)
Others	4,245	(12.8%)	Others	5,503	(23.8%)
Total	33,178	(100.0%)	Total	23,080	(100.0%)

Source: UN Commodity Trade Statistics Database

In addition, export data from EPZs has to be taken into account. Garments worth US$ 222 million were exported from EPZs with real annual growth of 39 % between 2000 and 2005. This makes garments the third largest exported commodity from Kenya. Export contribution of garments is thus recognised as significant.

Table 9-8 Export Performance of EPZ (2004)

Sub-sector	Local Expenditure Rate	Local Workers	Export Amount million US$	Export Share
Garments/Apparels	26%	34,614	221.6	76.5%
Printing	20%	278	23.8	8.2%
Agro Processing	51%	993	11.9	4.1%
Jewellery/Minerals/Metal Road Frames	90%	351	10.2	3.5%
Service	76%	601	9.6	3.3%
Electronics/Electrinicals	15%	223	4.7	1.6%
Chemicals	30%	117	3.5	1.2%
Spinning	31%	344	3.2	1.1%
Pharmeceuticals	30%	121	1.7	0.6%
		All Export	290.2	100%

Source: EPZA (2005) EPZA Annual Report 2004

(4) Results from the statistical analysis

Table 9-9 summarises conclusion of the statistical analysis. The results from the statistical analysis show that "food processing and beverages" and "clothing" sub-sectors possess dominant positions in the manufacturing sector although their productivity is not very competitive. "Petroleum and other chemical" and "electric machinery and equipment" are the second runners, showing positive trends in first and second parts of analysis. Their productivity is higher than average although the volume of production is not as big as food processing and clothing.

Table 9-9 Results from the Statistical Analysis

Value Added, Productivity and Employment	FDI Trend	International Competitiveness
Food processing **Beverages and tobacco** **Petroleum and other chemicals** (petroleum refinery) Non-metallic mineral products Pottery and glass products **Electrical machinery & equipment** Rubber products Non-electrical machinery	**Food processing and beverages** **Petroleum and other chemicals** (pharmacy and ethanol) **Electric machinery & equipment** Metallic products **Clothing**	**Food Processing and beverages** -coffee, tea, mate and spices -salt, sulfur, earths and stone, plastering material -preparation of vegetables, fruit or nuts Leather -raw hides, skins, and leather **Other Chemicals** -soap, organic surface-active agents Footwear
Employment Contribution Textile **Clothing**		Export contribution **Clothing**

Note: Underlined sub-sectors are those which are listed in two or three criteria.

First priority	Second Priority	Third Priority
Food Processing and Beverages Clothing	Petroleum and other chemical Electrical machinery & equipment	Non-metallic mineral products Pottery and glass products Rubber products Non-electrical machinery Textile Metallic products Leather Footwear

Source: The JICA Study Team

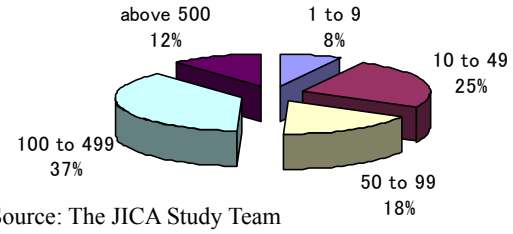
9.3.3 Qualitative Analysis

The main information sources of the analysis in Step 4 are the interviews conducted with 92 sample enterprises between June and September 2006. Questionnaire (Annex 3) was designed to collect data on determinants in the Diamond Model as interpreted in Table 9-1. The samples were selected from KAM members, EPZ directory, and information from DIDOs. 68 % of the respondents were large-scale enterprises since the survey was designed to get data from the leading companies in each sub-sector.[106]

[106] Within the large-scale manufacturing companies, samples represent 8 % of the population. The samples include ICT companies since ICT is a new, coming up, strong sector in Kenya, and it is important to identify the potentials of that sector in relation to the manufacturing sector.

Table 9-10 Area Distribution of the Sample

Nairobi	45
Mombasa	8
Thika	8
Nakuru	8
Kisumu	6
Eldoret	5
Athi River	4
Kikkuyu	3
Limuru	2
Kakamega	2
Webuye	1
	92



Source: The JICA Study Team

Figure 9-7 Employment Size of the Samples

The samples were selected to capture varieties in the industry. The breakdown of the interviewed companies by the sub-sectors is shown in Table 9-11 while Table 9-12 shows classification by the final processing sub-sector. In the latter classification, supporting and related industries are combined with the final processing sub-sector, with which they have forward linkages. The latter classification is rational for application to the diamond model because the supporting and related industries are affected by the same demand conditions, which are the most influential determinant among the four.

Table 9-11 Interviewed enterprises classified by the sub-sector

Sub-sector	Number of Samples
meat and dairy products	0
canned vegetables, fish, oils and fats	5
grain mills products	1
bakery products	0
sugar and confectionery	2
mischallaneous foods	1
beverages	1
tobacco	0
Food, beverages, tobacco total	10
texitiles	6
clothing	5
leather and footware	3
wood and cork products	2
furniture and fixtures	2
paper and paper products	2
printing and publishing	3
basic industrial chemicals	6
petroleum and other chemicals	7
rubber products	2
plastic products	3
clay and glass products	2
non-metallic mineral products	2
metalic products	12
non-electrical machinery	4
electrrical machinery	5
electrical equipment	2
transport equipment	7
total manufacturing	85
ICT	7
Grand Total	92

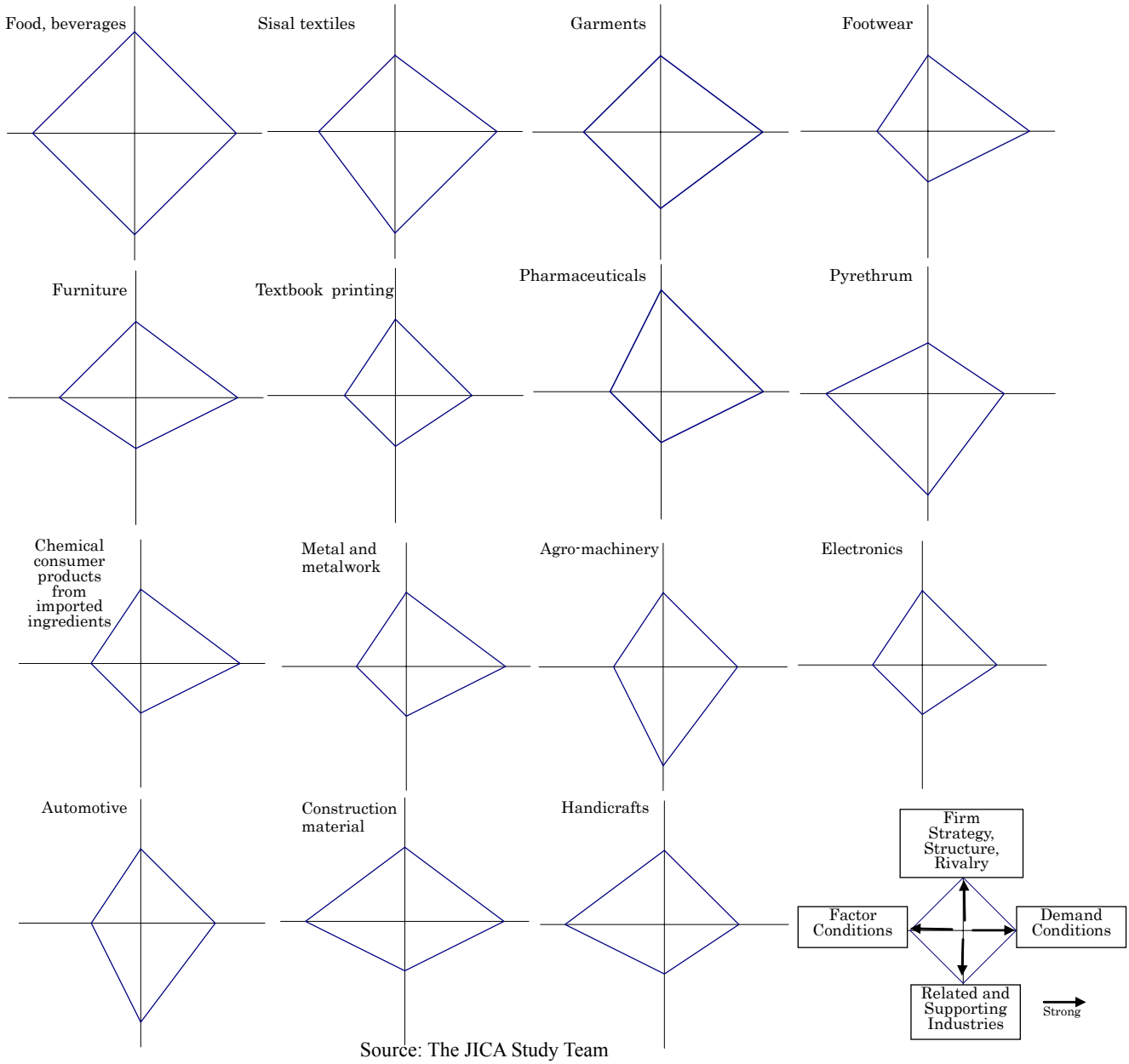
Source: JICA Study Team

Table 9-12 Interviewed enterprises classified by the sub-sector of the final processing

Sub-sector	Number of Samples
food and beverages	15
texile	3
clothes	8
leather, footwear	3
furniture	2
paper, paper products, printing and publishing	5
pharmacy	3
petroleum and other chemical products	8
metal and metalwork	1
machinery and equipment	4
electrical and electronics	7
transport	12
construction material	8
handicraft	5
ICT	8

Source: JICA Study Team

Figure 9-8 shows summary of the cluster analysis by constructing variations of the shapes of diamond model, which illustrates balance in strength of each determinant. Competitiveness of each determinant is evaluated on the scale between 0 and 5 based on the criteria as shown in Table 9-1. Evaluation is based on the qualitative data whose details are presented in Attachment in this chapter.



Source: The JICA Study Team

Figure 9-8 Result of the Diamond Model Analysis

Each sub-sector has an unbalanced diamond shapes except for the food processing and beverage sub-sector. Major reasons for creating variations in diamond shapes are explained in Table 9-13.

Table 9-13 Factors Strengthening or Weakening Competitiveness

	Demand Conditions	Factor Conditions	Related and Supporting Industries	Firm Strategy, Structure and Rivalry
+	Steady growth in African markets (e.g. consumer products) Variations in demand (e.g. food)	Use of local raw materials (e.g. pyrethrum, sisal)	Existence of local subcontractors (e.g. food, automobile) Existence of supporting institutions (e.g. agro-machinery)	Fair competition New investment Aggressive marketing strategies Possibility to produce higher value added products
−	Markets flooded by imported and used products (e.g. sedan cars, leather shoes)	Diminishing raw materials (e.g. forests for timber)	Lack of linkages with R & D sector Absence of effective HRD programmes (e.g. pharmaceuticals)	Lack of awareness for productivity improvement Low value-added production

Source: The JICA Study Team

9.3.4 Evaluation on Growth Potentials

(1) Strategies for upgradation

The diamond analysis (Attachment) shows that each sub-sector is facing challenges and that there is no easy winner in this severe global competition. Because of competition from imported products, continuous efforts for quality upgrade are must for all the sub-sectors. While all sub-sectors have potential of further growth if fundamental conditions improve, each sub-sector has to adopt specific strategies for upgrading as summarised in Table 9-14.

Table 9-14 Strategies for Upgradation (based on the diamond analysis)

Sub-sector	Issues and Strategies
Food and beverages	Although food and beverages sub-sector is supported by steady growth of the markets, competition against imported products is increasing. Strategies for upgrading quality and stabilising supply of the local raw materials are needed to increase their usage. Improving packaging quality is another important issue for export expansion.
Sisal textiles	Among the various usages of sisal, the sisal handbag is one good example of value-added products, which have domestic vertical chain from harvesting, spinning, designing, knitting to sales. Support for replanting sisal and having more varieties in value-addition production are required to maintain the strength of this sub-sector.
Textiles and garments	The vertical chain of garment sub-sector collapsed in late 1990s. The government should facilitate private initiatives in rebuilding this chain especially in the fabrics sub-sector.
Footwear	Footwear sub-sector should have been stronger if the markets were not flooded by imported and used footwear. Micro-small scale enterprises can still find a way to absorb the demand through acquiring skills in custom-made leather shoes.

Furniture	Availability of high quality local timber is dwindling. Drying process of timber needs to be improved in order to produce quality furniture utilising the local woods.
Printing and publishing of text books	Protection by the government to the public printer has widened the quality gap between the foreign printing and the domestic printing. Quality of books produced by public owned printers is low especially in binding. Privatisation should be considered to upgrade the quality of local printing.
Pharmaceuticals	Although Kenya has a high concentration of the pharmaceutical sub-sector, its activities are simple; i.e. weighing raw materials, mixing, packaging, testing, and delivering. Universities have to educate more people in pharmaceuticals in order to send enough labour to the pharmaceutical sub-sector. This would give incentives to the private sector to go into more high value added activities.
Pyrethrum	Although Kenya has comparative advantage in supply of pyrethrum, its manufacturing competitiveness has been low because of inefficient vertical chain created by the monopoly. Privatisation of pyrethrum processing should be considered in order to increase efficiency in production and to improve management, which enables prompt payment to the farmers. Moreover, processing of extracts and powder in Kenya should be promoted.
Chemical consumer products	Competition from imported products is increasing. Yet, strategies to explore regional markets, particularly fast moving consumer goods, would be advantageous for the Kenyan manufactures as located in the regional hub.
Metal and metalwork	Although there are wide operative variations in metal and metalwork, a few enterprises are equipped with sound technology to produce in precision. Strengthening design capabilities and use of CAD/CAM should be promoted. These shall lead to skills development in product development and in precision production. This sub-sector could expand their markets in other sub-sectors such as electric, electronic sub-sector.
Agro-machinery	In spite of potential markets in the African region, the number of manufacturers, which can design and produce agro-processing machineries, is not many due to lack of design capabilities. Improving design capabilities and expansion to the regional markets are the key for further development.
Electrics and electronics	The market size is rapidly expanding because of ICT development; yet, the foundation of electric electronics sub-sector in Kenya is very weak. The policy attention is needed to exploit market opportunities for the development of electric, electronic sub-sector, which is currently undermined by heavy reliance on the imported products.
Automotive	Although the domestic market of the automotive sub-sector has become small due to ceasing of passenger vehicle production, Kenya has competitive edge in production of the commercial vehicles in East and Central Africa region. More vigorous export strategy is needed while upgrading quality of components.
Construction material	Markets for the construction material are steadily growing. Some construction materials are also procurable domestically. Producing more higher value added products (ex. decorated tiles, stained glass, ornamented light fixture) and expansion to the regional markets are the key strategies for upgradation.
Handicraft	The handicraft is one of the sub-sectors which benefit the large number of low-income artisans nationwide. This sub-sector also well utilises local raw materials. The weakness of this sub-sector, however, is weak linkage towards stable markets. While more aggressive marketing strategies targeting exports are needed, upgradation of quality is also sought to match the tastes of the target markets.

Source: The JICA Study Team

(2) Scenarios for creating competitiveness of sub-sectors

Results from competitiveness analysis from Step 1 to Step 4 show the general direction for increasing

competitiveness of each sub-sector (Figure 9-8). It is considered that improving following five conditions is critical in encouraging enterprises to go into higher value added production, to improve productivity, and to expand markets.

1) Creating an enabling environment

As discussed in Chapter 4, creating an enabling environment is the prerequisite for any sub-sector to leap forward including legal, taxation framework, infrastructure building, and fair markets.

2) Targeting the growing demand in the African region

Targeting the growing demand in the African region is likely to bring about faster growth as seen from the examples of export growth in soap and footwear (Figure 9-6). Kenya has comparative advantages in targeting at African markets in a short-run because of better knowledge of market preferences and market channels rather than targeting at markets outside Africa where the global competition is severe. Moreover, its geographical location as a gateway to East and Central Africa would be advantageous for the manufacturers in adopting expansion strategy to the regional markets. This scenario envisages that companies are eventually to move towards the global market after the enterprises acquire technological, marketing, and management capabilities through their operation in the African markets.

3) Increase usage of local materials

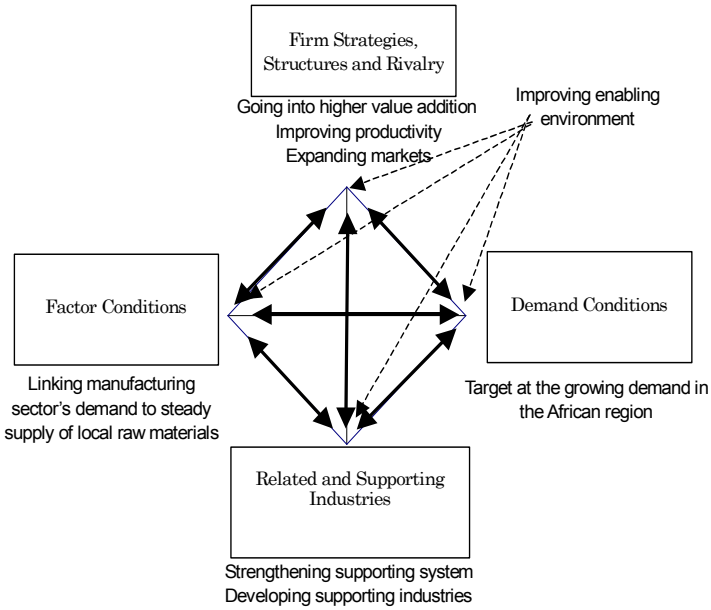
Usage of local materials is likely to improve input productivity as observed in Figure 9-2. Having the suppliers in proximate is also advantageous in collaborating with the suppliers to improve quality of inputs. (See Chapter 5.2) Currently, it is observed that potential demand by the manufacturing sector on local raw materials is not satisfied due to supply shortage (e.g., sisal, wattle) or low quality (e.g. paper, sugar, cotton, timber for furniture). A strategy to link demand of the manufacturing sector to steady supply of local raw materials is urgently required.

4) Strengthening supporting system on the platform

As discussed in Chapter 5, the supporting system facilitating internal innovation of enterprises should be strengthened. Especially, general weakness in technical and vocational education and training system has to be rectified to increase technology capacity of human resource in industry. (Chapter 5.2 and Chapter 5.5)

5) Developing subcontractors

Availability of the local subcontractors shows depth of sub-sectoral development as observed in the case of food processing and automotive sub-sectors. Subcontractors of the food sub-sector include paper and plastic containers, bottle case, glue for paper labelling, ink for packaging, and printing while those of the automotive sub-sector include tyres, harness, frames, seats, exhaust pipes, glasses, batteries, and springs. In spite of availability of such fundamental technologies, subcontracting networks have not been established in other sub-sectors. Strategies to increase sub-contracting need to be reinforced.



Source: The JICA Study Team

Figure 9-9 Strategies for Increasing Competitiveness of Sub-sectors

Among above five conditions, creating an enabling environment (as in number i) and strengthening supporting system on the platform (as in number iv) would have effects more or less similarly on all the sub-sectors. Therefore, sub-sectors which can support strategies of targeting at the growing demand in the African region (as in number ii), increasing usage of the local materials (as in number iii), and developing the local suppliers (as in number v) are considered the best candidates for the target sub-sectors.

Table 9-15 compares competitive sub-sectors selected in the statistical analysis as indicated in Table 9-9 with above selected three criteria.

Table 9-15 Comparison with Development Strategies

	Targeting at the African region	Increasing usage of the local materials	Developing the local subcontractors
First priority from the statistical analysis			
Food processing, beverages	Positive: The market size is growing reflecting increase in income and more regional integration. The demanded products are varied, enabling entry of many manufactures.	Positive: There are various agro-products, which can be exploited as industrial inputs.	Positive: The subcontractors have been developed in various areas including paper, plastics, containers, bottle cases, glue, and ink.
Clothing	Not positive: The markets are flooding by used clothes.	Positive: Restructuring the value chain (backward linkages) is already receiving policy attention.	Not positive: The Government is trying to revive textile makers. Yet, there are some foreseen obstacles.
Second Priority from the statistical analysis			
Petroleum and other chemicals (fast moving consumer products)	Positive: Demand for the fast moving consumer goods (e.g. soap, detergents, etc.) are expected to grow with the income increase in the African region.	Positive: Some material can be locally supplied (e.g. soap, detergents, shampoo, etc.)	Not positive: Variation of suppliers would not be wide compared to other sub-sectors.
Petroleum and other chemicals (pharmacy)	Positive: Kenya has established a position as the regional hub for pharmacy supply.	Positive: In the area of traditional medicine, Kenya has various herbs to be exploited. Not positive. Not positive: In the area of western medicine, ingredients are mostly imported.	Not positive: Variation of suppliers would not be wide compared to other sub-sectors.
Electric equipment and machinery	Positive: With the growing demand for ICT and higher electrification rate, regional market is growing.	Not positive: Most materials are not locally available.	Positive: Kenya already has various metal, plastic, and rubber manufactures which can potentially become suppliers.
Third Priority from the statistical analysis			
Non-metallic, pottery, and glass products	Positive: Demand for construction materials supports the growth of non-metallic and glass products whereas demand for the automotive components supports the growth of the glasses.	Positive: Some materials such as clay and lime stones are locally available.	Not positive: Non-metallic sub-sector doesn't have wide sub-contracting network by its nature.
Rubber products	Positive: As final products, demand for rubber sandals and tires are observed to exist. But that demand is not large enough to stimulate the industry as a whole.	Not positive: The leading enterprises rely on imported rubbers.	Not positive: Rubber sub-sector doesn't have wide sub-contracting network by its nature.
Non-electric machinery	Positive: The regional markets have demand for the agro-machinery.	Not positive: Materials are mostly imported except the scrap metals.	Positive: Metalwork components of the agro-machinery can be supplied by subcontractors.

Textiles (ex. sisal bags)	Not positive: Market size is relatively small, and competition among African countries is predicted.	Positive: Sisal and cotton can be locally procured.	Not positive: Variation of suppliers would not be wide.
Metallic products	Positive: The market size of the metallic products would expand by supplying to growing sub-sectors such as construction material and automotive components.	Not positive: Only scrap metal is locally available.	Not positive: Metallic sub-sector itself can be the supporting industry of other sub-sectors. Scenarios to create 2nd and 3rd tier suppliers within metallic products is not feasible in the near future..
Leather & Footwear	Not positive: Kenya would have difficulty to differentiate her products from those of African origins.	Positive: Leather materials are locally available.	Not positive: Variation of suppliers would not be wide.

Source: The JICA Study Team

Food processing and beverages is the only sub-sector which satisfied all three conditions. The sub-sectors which satisfied the demand conditions and one of the other two are:

i) petroleum and other chemical products (fast moving consumer goods and traditional medicine),

ii) electric equipment and machinery,

iii) non-metallic mineral products (as of construction material and glass), and

iv) non-electric machinery (as of agro-machinery).

Table 9-16 Short List from Competitive Evaluation (Part 1)

1st priority
i) food and beverages
2nd priority
ii) petroleum and other chemical products (fast moving consumer goods and traditional medicine)
iii) electric equipment and machinery
3rd priority
iv) non-metallic minerals (construction materials and glasses)
v) non-electric machinery (agro-machinery)

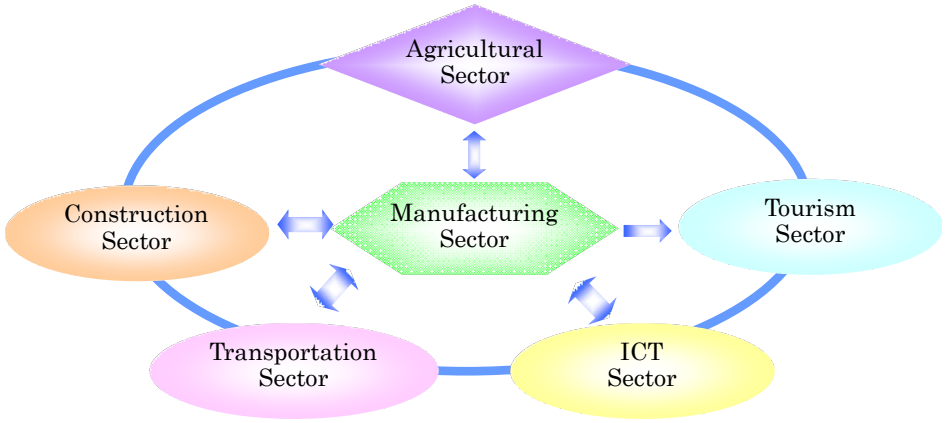
9.4 Part 2: Strategic Evaluation

9.4.1 Strategic Clustering

(1) Strengthening linkages with growing economic sectors

In Part 2, instead of ISIC based sub-sector approach, clustering approach is proposed for classification of sub-sector verification. There are two reasons for adopting clustering approach, which combines sub-sectors through the value chain. Firstly, because only three sub-sectors are to be chosen, adoption of the clustering approach shall widen the beneficiaries from development of the target sub-sector than simply selecting by ISIC classification. Secondly, sub-sector approach is considered to overlook value chain which affects development of the sub-sector. The way to identify strategic clustering is proposed to be considered in conjunction with other important and/or growing

sectors of the Kenyan economy as discussed in development scenario; i.e. agriculture, tourism sector, construction sector, transportation sector and ICT (See Figure 9-10). Each sector has relationship with the manufacturing sector both backward and forward: backward meaning supplier to the manufacturing sector and forward meaning consumers or markets of the manufactured goods. Relationships between the manufacturing sector and other growing economies is summarised in Table 9-17 while Table 9-18 compares with the selected sub-sectors in the first part of analysis.



Source: The JICA Study Team

Figure 9-10 Strengthening Industrial Linkages

Table 9-17 Relationship between the manufacturing sector and other growing sectors

	Relationships
Agricultural Sector	As a supplier to the manufacturing sector (backward linkages): Agricultural products including crops, dairy, livestock, forestry, and fishery supply to various industrial sub-sectors including food & beverages, chemicals, textiles, garments, leather, footwear, furniture, paper, and timber.
	As a consumer of the manufacturing sector (forward linkages): Agricultural sector consumes chemical products particularly fertilisers and pesticides although most of the inorganic fertilisers are imported currently. Both electric and non-electric machinery are other major manufacturing outputs used in the agricultural sector.
Tourism Sector	Tourism sector has essential forward linkage with the manufacturing sector including transport equipment, food & beverages, furniture, and handicrafts, which serve the needs of tourists directly or indirectly. Information from the tourists can be the windows to the market information overseas.
ICT Sector	As a supplier to the manufacturing sector (supporting industries): Use of ICT is crucial for productivity improvement and market expansion in the manufacturing sector.
	As a consumer of manufacturing sector (forward linkages): Electric and electronic sub-sector is the main beneficiary of ICT sector although ICT sector currently much rely on imported electric, electronic equipment.
Transport Sector	As a supplier to the manufacturing sector (supporting industries): Efficient transportation service is important to reduce production costs and to enable just-in-time operations.

	As a consumer of the manufacturing sector (forward linkages): Automotive sub-sector products and petroleum are purchased by the end users while the non-metallic mineral products are used in construction of roads.
Construction Sector	As a supplier to the manufacturing sector (supporting industries): Construction sector supports construction of offices, factories, and warehouses.
	As a consumer of the manufacturing sector (forward linkages): Non-metallic mineral products and wood products are used as the materials while the electric and non-electric machinery are used for construction.

Source: The JICA Study Team

Table 9-18 shows the relationship between the growing economic sectors and sub-sectors selected in the Part 1.

Table 9-18 Strategic Clustering and Selected Sub-sectors Cross in the Competitive Evaluation

Growing economic sectors		1st	2nd		3rd	
		Food & beverages	Petroleum & other chemicals	Electric equipment & machinery	Non-metallic minerals	Non-electric machinery
Agriculture	Backward	○	○			
	Forward		○	○		○
Tourism	Backward					
	Forward	○	○		○	
ICT	Backward	△	△	△	△	△
	Forward			○		
Transport	Backward	△	△	△	△	△
	Forward		○	○	○	○
Construction	Backward	△	△	△	△	△
	Forward		○	○	○	○

Legend: △ indicates supporting whole industry. → indicates sales, and ⇢ indicates technological diffusion.
These arrows intend to indicate potential economic and technological impacts through developing certain sub-sectors. For example, 1) indicates the flow of the products from the agriculture that are processed into food and beverages and are sold to the tourism sector. 2) indicates those that are processed into petroleum and other chemicals and are sold to agricultural sector (such as fertiliser), tourism sector (such as soap, detergent, etc.), and transport sector (such as bio-fuel). On the other hand, 3) indicates that technology developed through providing electric equipment and machinery targeting at the ICT sector can subsequently serve the technology that is necessary to develop the electric equipments and machineries that are sold to agricultural, transport, and construction sectors. Likewise, 4) indicates that technology developed through providing non-electric machinery targeting at the agricultural sector can subsequently serve the technology that is necessary to develop non-electric machinery for the transport and construction sectors as well.
Note: Highlighted sections indicate the coverage of development strategies, which would be affected by the selected target sub-sectors.
Source: The JICA Study Team

(2) Reflecting policy priorities

1) Narrowing the sub-sectors

As it was decided at the beginning of the study the target sub-sectors were narrowed down to three at this stage as explained below. In the context of linkages with growing economic sectors, the backward linkages with the agricultural sector including crops, dairy, livestock, forestry, and fishery received highest priority in the category of the first and second priority in the competitive analysis. Agricultural products are inputs of various industrial sub-sectors including food processing,

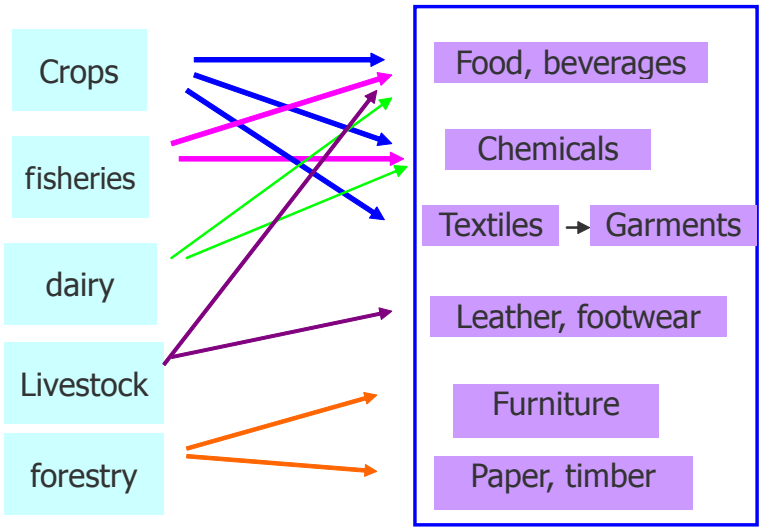
beverages, chemicals, textiles, leather, footwear, furniture, paper, and wooden products. Selection of the backward linkage with agricultural sector is renamed as agro-processing, which covers the two highest priorities sub-sectors in competitive analysis, namely food and beverages and petroleum and other chemicals. (Agro-processing covers area highlighted in green in Table 9-18.)

In selecting agro-processing sub-sector, choice on agro-machinery was made simultaneously since development of agro-machinery is indispensable component to promote agro-processing activities nationwide. Promotion of agro-machinery also supports development of the equipment technology as discussed in Chapter 5.2.1. (Agro-machinery covers area highlighted in orange in Table 9-18.)

The third choice was made with the backward and forward linkage creation with the ICT sub-sector. The selection of electric and electronic sub-sector is not because its current performance surpasses others; rather, it was selected because it is seriously underdeveloped in spite of the rapid expansion of ICT markets and infrastructure. (ICT covers area highlighted in yellow in Table 9-18.)

2) Selection 1: Agro-processing

Promotion of agro-processing agrees with recommendations from NES, which calls for expanding the range of exportable products through agro-processing.[107] Agricultural sector is the largest economic sector in Kenya dominating approximately quarter of GDP and wage employment. A strategy to adding values of agro-products is considered most essential for maximising the benefits of industrialisation for economic development and poverty alleviation.



Source: The JICA Study Team

Figure 9-11 Manufacturing Sector's Sourcing from Local Agricultural Products

3) Selection 2: Agro-machinery

Agro-machinery is one of the most supported sub-sectors from various institutions including JKUAT, KickStart and KIRDI. These institutions provide MSMEs with training on prototype

[107] Republic of Kenya (2003) National Export Strategy 2003-2007, p.14

agro-machineries. However, the number of formal establishments is not large. Most agro-machinery producers are MSMEs found in major cities spread across Kenya. Their customers are nearby agro-processors, but they also find some export opportunities in neighbouring countries. Development of agro-processing sub-sector is expected to be a trigger for capacity improvement in designing and electronic components production as well as creating supplier networks. At the same time, export expansion to East and Central Africa is expected.

4) Selection 3: Electrics, Electronics / ICT sub-sector

Kenya is currently undergoing massive transformation in ICT with the back up from the ICT policy, E-Government Strategy, and rapid expansion on ICT infrastructure. The National ICT Policy commits to the realisation of universal access and, at the same time, stipulates the involvement of local manufactures.[108] It is considered the highest time to conduct an in-depth study on development of electric, electronics sub-sector on potential linkages with the ICT sector.

5) Unselected sub-sectors

Other sub-sectors in the clustering approaches were not selected by following reasons.

Firstly, selection of the construction sector is omitted because manufacturing sector has already established relatively strong forward linkages with the construction sector. Moreover, technological capacity of the construction materials is relatively well developed. Therefore, needs for sectoral support is considered not much as high as for other two approaches.

Secondly, the transport sector was not selected because the forward linkages with the transport sector, as represented in the automotive sub-sector, is also relatively well established. The automotive sub-sector has relatively well established supplier network; yet, the market conditions of the automotive sub-sector is not with bright future due to recent cease of sedan production with the background of used car flooding in the market and export expansion of vehicles from South Africa. On the other hand, the backward linkages with the transportation sector is considered important and is discussed in Chapter 4.2.

Thirdly, the linkages between manufacturing and tourism sectors are considered to receive less priority in the selection because the nature of the problems lying in their relationship are more to do with access to the markets rather than production. Moreover, the main beneficiaries of targeting tourism manufacturing sector are likely to be MSMEs. Therefore, it is considered that improvement in the manufacturing sector in relation to the tourism-sector is recommended to be taken up in the MSME programme.

In spite of limited selections, the coverage of the target sub-sectors shows that the development strategies of the target sub-sectors would have effects on most of the concerned areas except non-metallic mineral products as shown in Table 9-18.

[108] MOIC (2006) National Information & Communications Technology (ICT) Policy, p.5

9.4.2 Cross Checking with Industrial Development Scenarios

In the final step, selection of the above three target sub-sectors is confirmed through cross-checking with industrial development scenarios. With the spirits of ERS, industrial development should contribute to poverty alleviation and employment creation. Therefore, in the final stage of the verification, how the development of the target sub-sectors would support industrial development scenarios is cross checked; namely, ways to benefit across the country's regions, all sizes of enterprises, both skilled and unskilled workers with synergetic effect on other economic sectors. Envisaged scenarios through development of target sub-sectors are summarised in Table 9-19.

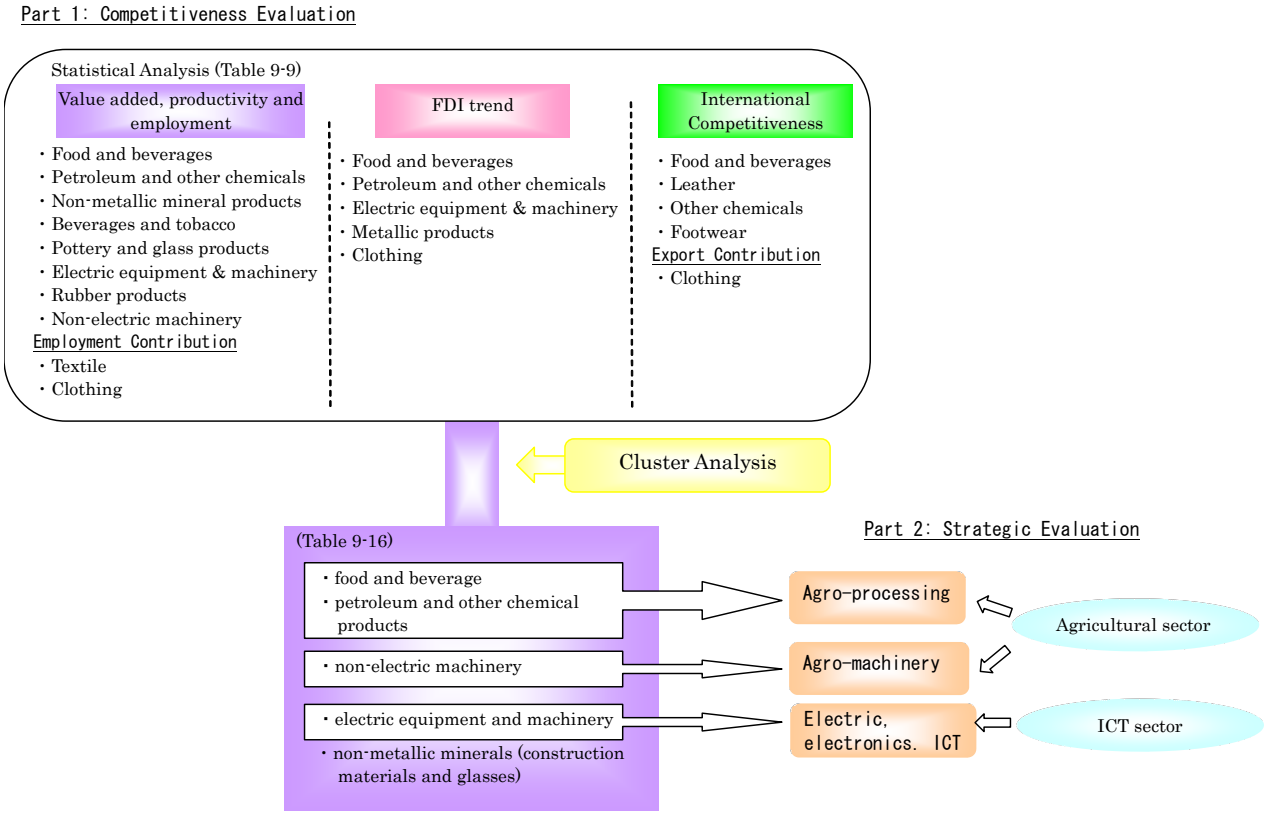
Table 9-19 Cross Checking with Industrial Development Scenarios

	Agro-Processing	Agro-machinery	Electric, Electronics/ICT
Benefiting all country's regions	Development of agro-processing aims at facilitating value-added activities close to the areas where agro products are harvested.	Development of agro-machinery as a supporting industry of agro-processing envisages facilitating production close to areas where agro-processing takes place.	Through establishing universal access of ICT, supporting activities on electric, electronics/ICT shall be required through out the country.
Benefiting all enterprises regardless their sizes	Both MSMEs and large enterprises shall be benefited through acquiring locally available resources for production.	The main players of agro-machinery shall likely be MSMEs in a short run. However, when Kenya will become production centre/hub for Eastern and Central Africa, large enterprises shall join in production that targets regional markets.	Large-scale assemblers are expected to invest in Kenya for production of electric and electronic equipment. At the same time, maintenance and repairing work shall be mainly conducted by the MSMEs. Then as the technological skills are diffused to the local people, MSMEs are also expected to engage in production.
Benefiting both skilled and unskilled workers	Due to the long national value chain and variation of types of products, labour intensive type of production calls for unskilled labours while development and management aspects require skilled workers.	While designing and development of machinery requires high skills, production process involves unskilled and semiskilled workers especially in metalwork such as cutting, stamping, welding and colouring.	Development of electric and electronic products involves high skills, but installation of equipment and assembly of ICT require manual labour.
Synergy effects with other economic sectors	Development of agro-processing envisages synergetic effects with agricultural sector in backward linkages and service sector in forward linkages.	Development of agro-machinery envisages synergetic effects with agricultural sector and service sector through agro-processing.	Development of electric and electronic sub-sector envisages supporting activities not only from ICT but also other economic activities depending on use of products (production equipment, office work equipment, etc.)

Source: The JICA Study Team

It is also noted that during the selection of the target sub-sectors, the Study Team had discussions

with the stakeholders of MAPSKID and collected their comments on the candidates for the sub-sectors through seminars and various meetings. The Team also discussed on the selection of the target sub-sectors with MOTI officers in a series of meetings. These discussions and comments from the stakeholders and MOTI contributed to the result of the selection as well.



Source: The JICA Study Team

Figure 9-12 Result of the Verification Process of the Target Sub-sectors

Reference:
KNBS (2005) Economic Survey 2005
KNBS (2006) Statistical Abstract 2005
EPZA (2005a) EPZA Annual Report, 2004
EPZA (2005b) Wood and Wood Products – Kenya, 2005
EPZA (2005c) Kenya's Pharmaceutical Industry 2005
EPZA (2006) EPZA Annual Report, 2005
KAM (2006) Kenya's Manufacturing Industry: A Survey of the Sector 2005
MOIC (2006) National Information & Communications Technology (ICT) Policy

Chapter 10 Development Plan of Target Sub-sectors

10.1 Development Plan of Agro-processing Sub-sector

10.1.1 Introduction

Agro-industry has two outstanding structural features. One is wider diversity of constituent sub-sectors including food, textile, energy industries and biotechnology sector. The other is its strong linkage with agriculture, especially at the dimension of material, labour and land supply. Locality of agro-industrial activities is the strongest among others, so far, processing materials are highly perishable and transport cost should be dispensed through transformation within producing sites. This feature closely relates to its higher possibility of contribution to pro-poor growth because agro-industry inevitably needs creation of rural employment opportunities to procure cheap labour.

Besides, common features of agro-industry found in manufacturing sectors constitute relatively low requirement of capital investment, easily acquired skills for processing works and lower energy input. These structural features make agro-industry easier to establish in any rural places where agriculture plays major role in the industrial activities. In this context, agro-industrial structures have strong bearing to agricultural structures. Also, readiness of establishing agro-related enterprises inevitably leads to low value addition and harder competition among competitors within a rural area.

10.1.2 Overview of Agro-processing Sub-sector

(1) Sector composition and employment

Earnings from agro-processing in Kenya registered 6 % of GDP in 2006, accounting for 30 % of total exports value in 2006, or 70 % of that to total manufacture. According to the data published by MOTI, agro-processing sub-sector has the largest share in number of enterprises, accounting for 459 (22 %) out of 2,058 formally registered enterprises in total. As regards scale of enterprises, it has relatively larger scale than that of other sectors as observed in sugar mills, while some agro-processing sub-sectors including bakery/ confectionary, tea processing, flour mills, oil extracting mills and dairy firms have smaller scale but larger numbers. As regards the status of Kenya's agro-industry in overall manufacturing sector, it has somewhat dropped its share, but still keeping the top rank among various manufacturing constituents.

Table 10-1 Number of Registered and Listed Agro-Industry Related Enterprises

Agro-processing type	No. of Firms	Share	Composition	Agro-processing type	No. of Firms	Share	Composition
Bakery	107	5.2	23.4 %	Sugar Mill	12	0.6	2.6 %
Tea Factory	78	3.8	17.0 %	Fish Processing	12	0.6	2.6 %
Flour Mill	58	2.8	12.7 %	Sweet Confectionary	12	0.6	2.6 %
Oil Extraction	35	1.7	7.6 %	Coffee processing	11	0.5	2.4 %
Dairy Processing	21	1.0	4.6 %	Soap Maker	10	0.5	2.2 %
Yarn / Spinning	18	0.9	3.9 %	Juice / Sauce	7	0.3	1.4 %
Feed Mill	17	0.8	3.7 %	Spice processing	7	0.3	1.4 %
Package Material	16	0.8	3.5 %	Skin/hide processing	7	0.3	1.4 %
Beverage Bottler	15	0.7	3.3 %	Others	1	0.1	0.3 %
Agro-machinery	15	0.7	3.3 %	Total Agro-related Firms	459	*22.3	100.0 %

Note: * percentage to the total registered manufacturing firms throughout Kenya
Source: Listed in MOTI Firm List 2003

In terms of employments, 20 % of the employees in the formal sector, as well as 15 % of those in the informal sector have engaged in agro-industrial activities. Since most of processing sites are located in rural areas where processing materials are / were produced, agro-industrial enterprises always employ rural population, thereby contributing to the creation of local labour opportunities, positively assisting pro-poor growth. Though their wage levels have been lower in comparison with those of other manufacturing sectors, number of the employed has by far been larger in rural and peri urban areas where about 40 % of the employees have been absorbed in agro-industrial enterprises. In terms of formal sub-sectors, employees in sugar mills are overwhelmingly numerous although the degree of contribution is relatively lower in the light of limited transformation added to the material. Whereas, such sub-sectors as leather, bakery and meat / dairy manufacture have higher contribution to value addition as compared with sugar mills.

Kenya's agro-industry in the formal sector achieved a turnover of Kshs. 232,534 million (equivalent to 70 % of overall turnover of manufacture) by mobilizing 88 thousand formal employees (38 % of those for total manufacture), thus unit turnover per employee comes to Kshs. 623.8 thousand against Kshs. 484.2 thousand for total manufacturing sector (data derived from KNBS and Economic Survey 2006). Nevertheless, import /export ratio of agro-industrial commodities gives 8,903 / 34,290 (on the basis of value at million Kshs.) in contrast to that of all manufactured commodities at 48,285 / 213,413.

Table 10-2 Number of Formal Employees in Agro-Processing Manufacturing Sub-Sector

Manufacturing sector	2000	2001	2002	2003	2004	Mean	Share%
Processing Cooperatives*	6,670	6,744	6,786	6,761	6,965	6,785	7.7 %
Fruit/Vegetable Canning	5,150	5,442	5,817	5,539	5,977	5,585	6.3 %
Dairy Products	4,437	4,458	4,482	4,501	4,051	4,386	4.9 %
Slaughtering & Butcher	4,070	4,031	3,980	3,934	3,912	3,985	4.5 %
Fish Canning /Processing	174	164	153	244	285	204	0.2 %
Sugar Factory / Refinery	16,589	15,902	16,141	16,311	16,524	16,293	18.4 %
Cocoa, Chocolate, Sweets	904	895	883	873	865	884	1.0 %
Vegetable/Animal Oils /Fats	2,107	2,123	2,143	2,160	2,192	2,145	2.4 %
Grain Milling Products	6.198	6,205	6,267	6,318	6,402	5,040	5.7 %
Bakery, Confectionary	2,769	2,749	2,725	2,702	2,707	2,730	3.1 %
Cotton Ginnery	703	662	652	632	625	655	0.7 %
Food Manufacturing n.e.c.	29,766	29,839	30,337	30,769	31,360	30,414	34.3 %
Prepared Animal Feeds	1,205	1,194	1,181	1,169	1,164	1,183	1.3 %
Spirits, Beer, Tobacco	6,382	6,139	5,859	5,621	5,425	5,885	6.6 %
Soft Drinks, Carbonated water	2,511	2,464	2,433	2,401	2,383	2,438	2.8 %
Total Agro-`Processing	83 443	89 011	89 839	89 935	90 837	88 613	99 90 %
% of the entire manufacturing	38.2 %	41.1 %	39.1 %	37.5 %	37.5 %	38.7 %	

Note: * Including tea, coffee cooperatives
Source: Statistcal. Abstract 2005, KNBS

(2) Production performances

1) Trends in production indices

Recent trends of agro-industrial production index reveal that vegetable / fruit processing, oil processing and canning continue to have stable and strong rising trends followed by beverages including soft drinks. These agro-industrial categories surpass the trend of overall manufacturing sector. However, Bakery/ Confectionary and wood and cork manufacturing sub-sectors have shown continuous downward trends mainly because the scale of these enterprises has become smaller and this affects their annual returns and individual profitability. Nonetheless, changes in annual benefit by sub-sector are not necessarily consistent with the trends of production indices. Possible reason is the change in market prices of the processed goods, since declining production quantity may be offset by rising prices resulting in increase of benefits. In fact, even flour milling, bakery and confectionery have shown slight increase in annual benefits.

Table 10-3 Trends in Industrial Production Index

(1996 = 100)

Activity Field / Year	1999	2000	2001	2002	2003	2004	2005	Trend
Vegetables/Fish/Oil/Can	372.9	391.8	423.3	397.0	405.3	466.7	468.7	15.0
Meat / Dairy	84.3	85.9	86.1	85.4	89.8	104.5	123.9	5.7
Beverages	155.2	166.4	157.9	164.9	176.0	200.5	232.4	11.4
Cereals / Flour	200.9	157.6	143.1	174.4	177.7	193.3	221.6	6.0
Sugar Industry	236.6	206.1	195.2	238.6	218.9	250.9	237.5	4.1
Bakery/ Confectionary	345.2	295.5	299.9	290.8	284.3	185.1	202.7	-23.7
General Food Supply	227.8	246.4	262.3	240.2	250.8	269.1	272.1	6.0
Food Manufacturing	204.6	199.4	200.8	210.9	211.1	233.5	236.3	6.2
Wood / Cork	82.3	75.1	71.7	59.7	51.2	40.5	30.8	-8.7
Total Manufactures	285.6	281.4	283.6	286.5	290.6	310.0	327.0	6.7

Source: Economic Survey 2006, KNBS

2) Quality

Keeping and improving manufacturing quality in agro-industrial activities are imperative because

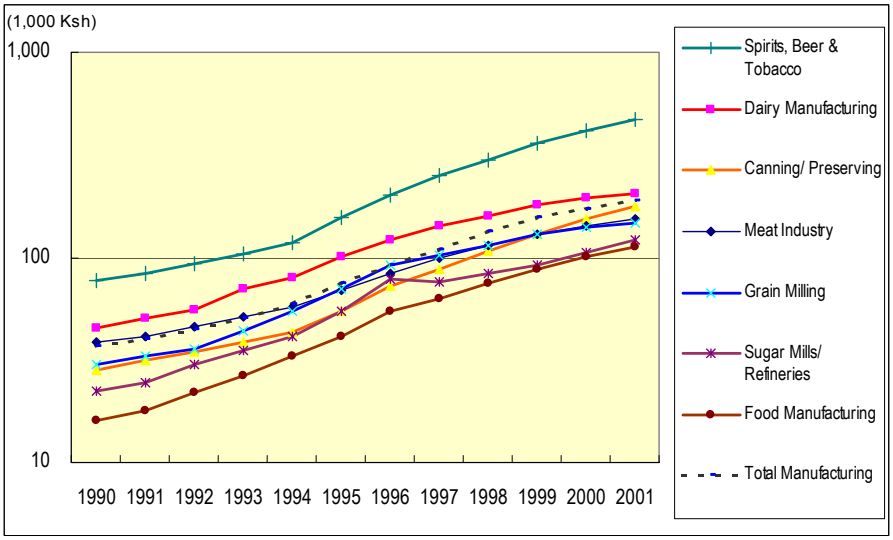
the quality gives direct and immediate influences to consumers' and importers' health and life. Fortunately, KEBS's agro-industrial examination sector has made efforts to deliver necessary services for the supervising and controlling inspection in terms of safety standards of manufactured foods and other commodities. However, domestically marketed agro-industrial commodities are sometimes observed failing to satisfy the legal standard of foodstuff, for example craft-packed milk that coagulates upon heating.

In particular, EurepGAP and other very strict quality standards that EU and other importers have already imposed for their export-oriented commodities should always be met in order to sustain Kenya's agro-industrial exports to these clients. From the standpoint of Kenya's processors, it has increasingly become tight for even large-scale manufacturers to procure necessary amount and quality of their processing materials and observe required industrial processing standards. Failure in collecting fresh and safe materials in food processing may result in higher quality fluctuations that threaten trust of consumers and buyers. To alleviate uncertain material procurement, some categories of agro-industry have made annual purchase contracts with the farmers producing processing materials thus trying to secure material procurement.

3) Productivity

In regards to productivity of agro-industry, it has generally been lower than other industries because of limited scale of production deterring the industry to benefit from economy of scale. Through the comparison of annual earning per employee, only spirits, beer and tobacco manufacturing and dairy processing show higher earning above that of the whole manufacturing sector.

Compared to material production in agriculture, value addition by agro-industry is considerably low, as low as 3 ~ 15 % of that by agriculture in most developing countries, though wide range is observed according to the degree of transformation in the processed commodities. In the countries with agricultural value addition remaining at a low level, agro-industrial value addition is also low.



Source: CBK, Annual Report 2006

Figure 10-1 Outturn by Employee by Agro-Processing Sub-sector

(3) Production costs

1) Composition of production costs

Production costs of agro-industry consists of depreciation cost of production facility/ machinery, material (including packaging materials), energy and labour costs as to processing operations, management cost, taxes including VAT, land rent and miscellaneous cost items. Material costs, particularly those of processing materials are highly variable with conditions of agricultural production (climate, input levels, techniques etc) and trading (marketing and transportation) of material crops or inputs etc.

2) Dynamics of production costs

Agriculture is the mainstay of Kenya accounting for almost 30 % of national GDP where agro-industry can make use of such processing materials as tropical beverages, fruits and vegetables, livestock products including dairy produce and meats as well as various cereals. However, Kenya is increasingly importing agricultural processing materials from abroad, leading to higher procurement cost for agro-processing, thus eventually it would become harder to maintain hitherto created comparative advantage for agro-exports towards neighbouring countries. Likewise, agro-industry has inherent shortcoming of incurring higher transportation cost due to widely scattered distribution of processing locations over wide production areas. On account of this locality factor, some of traditional processing enterprises, vegetable oil extractor/refiners above all, located in Nakuru ~ Eldoret ~ Kisumu obliged to limit their processing activities idling their production capacity.

So-called cost-price squeezing has taken place in part of Kenya's agro-industry since international or domestic market prices of their products are stagnant whereas production and transport cost including requiring / maintenance cost of production facilities, fuel / energy cost and wage level of skilled labour rapidly boosts, resulting in degradation of processing margins. Such decline of industrial return stems mainly from too sluggish development of consumer's purchasing power in both domestic and African importers' markets relative to speed of cost escalation. Other causes of

this decline include general smaller size of agro-industrial enterprises as mentioned above, often leading to failure in benefiting from economy of scale, poor acquisition of new skills / techniques and information due to poor access to training / techno-transferring opportunities. One of the Kenya's undesirable aspects in promoting industries resides in high electricity tariff that may affect its international competitiveness of export commodities.

(4) Technical efficiency of agro-processing

As concern international comparison on technical efficiency of Kenya's agro-industry, the following result has recently been reported from Asian Economic Institute in Japan. As far as food industry is concerned, Kenya has comparable technical efficiency to that of Zimbabwe, though considerably low as compared with Asian / Latin American competitors. Possible cause of lower technical efficiency in African countries may originate from too many producing items or commodities by one line of current facility and also lower utility of currently installed / mounted production lines / facilities. Also, skill of the machine / facility operators / managers may affect the technical efficiency. It implies that absolute shortage of operable machines has been undermining overall production efficiency and productivity, entailing to increasing running costs / failure of on-time delivery of contracted orders / manufacturing works. Likewise, shortage of spare-parts, mosaic assembly of machinery and equipment made in various countries would entail in insufficient pressure or temperature within the system, failure of perfect control, leakage of gas or liquid from the system.

Table 10-4 International Comparison of Technical Efficiency in Selected Manufacturing Sub-Sectors

Countries and the year referred	Ghana, Kenya, Zimbbwe	Ghana, Kenya, Tanzania, Zambia, Zimbabwe	Zimbabwe	Kenya	Malaysia 1989	Indonesia 1981	Colombia 1989
Literature	1995, Briggs *et al*	1992, Mazumdar *et al*	2002, Mlambo	2002 Lundvall Ochoro *et al*	Kalirajan and Tse	Pitt and Jan Lee	Taylor and Lee
Food processing	0.67	0.53 ~ 0.66	0.51	0.54	0.73	0.63	0.64
Textile /clothing	0.46	0.56 ~ 0.69	0.60	0.40	-	-	0.55
Wood processing	0.42	0.54 ~ 0.65	0.42	0.38	-	-	0.98
Metal processing	0.51	0.51 ~ 0.63	0.57	0.49	-	-	0.99
Whole Manufacture	0.33 ~ 0.52	0.53 ~ 0.69	-	0.44	-	-	-

Note: Technical efficiency means the rate between current production performance under the given facility, workers and technically perfect production performances under the same facility.
Source: Takahiro Fukunishi, Asian Economic Institute 2002

(5) International competitiveness of Kenya's agro-industry

1) Vulnerability due to small manufacturing scale

Among African countries, South Africa has by far been the largest exporters of agro-processed products that are often sold in Kenya's and other countries' supermarkets. Except South Africa, all other African countries have rather small-scale agro-processing industries by which economy of scale is not readily realized, and this lead to comparative vulnerability of manufacture among African exporters. In this context, it can be said that petty-sized industries have difficulty in benefiting from economy of scale, can hardly afford to acquire new skills / technologies and have very limited opportunities of receiving training and technical transfer.

Limited scale directly affects capital productivity, however, in most rural areas where production of processing materials is usually dispersed over wide areas. In addition access to processing sites is

generally poor on account of poor roads, so issues of how to timely procuring materials are not easily solved. Unless produce by monoculture or in large estates is readily available, the scale of processing naturally is inevitably limited. Such situation often leads to low utilization of processing facility, or over-capitalizing. Typical size of rural MSE ~ Jua Kali-scaled food processing is given below:

Table 10-5 Typical Examples of Processing Scale in MSE-Jua Kali Processing Units in 2005

Equipment	Capacity	Annual Production	Output	% Utilization
Sunflower – Ram Press	35 litres/day	265 litres	1.0 litres / day	2.9
Mango drier	1 kg/day	70 kg	0.2 kg / day	27.0
Honey centrifuge	200 kg/hour	1,000 kg	0.7 kg / hour	0.4
Mango Juice pulper	100 kg/day	1,100 kg	4.2 kg / day	4.2

Source: MOA, Agro-processing text presentation, 2006

Seasonality of material production also negatively affects productivity of local agro-processing operation and it is necessary for local entrepreneurs of agro-industry to devise measures of enhancing utilization rates of their processing equipment. If vertical integration in processing grade has been organized like in the agro-processing activities among the developed world, local processors of limited scale provide semi-products while finishing processors receive them to further process into end products. Likewise, diversification of products by using many materials procured in different cropping seasons can improve rate of mobilizing existing processing lines.

2) Demands for tropical commodities

It is essential to pay attention to current demand situations for tropical commodities in order to forecast future export and import dynamics. First of all, the strongest demand is found in vegetable oil commodities consisting mainly of tropical seed products. According to "Oilseeds World Market and Trade 2006" by the United States Department of Agriculture, the global production of oilseeds has kept a bullish trend for these years. The rising trend in global oilseed production reflects strong demand / tight supply owing to rising need for bio-diesel processing in oilseed producers / importers. Such bullish trend likely continues, most probably accompanying with increase of world market price of various oilseeds, leading to thinner profit of re-exporters who are only mere processors of imported oilseeds without any domestic supply of raw materials.

Comparative advantage of Kenya's tropical commodities has been eroded as global trends of boosting input prices including agricultural chemicals and fertilizers, agro-machinery and processing equipment etc. develop. The extent of losing advantage is bigger for smaller sized produce without enjoying benefit of scale of economy, for example tea and horticultural crops with large annual output still keeps advantage over other competitors while coffee and cotton with dwindling output have been losing competitiveness. Factors determining comparative advantage of commodities are not confined to natural conditions and extent of local contents or input self-supply but clients' consumption propensity and preference are also influencing factors thereon. Here, it should be stressed that bio-energy stands one of the item that Kenya has comparative advantage owing to remaining untapped resources.

(6) Kenya's markets of agro-processed commodities

1) Trade status

Market supply pattern of Kenya's agro-processed products shows a typical export-oriented nature. As national consumption demand for each commodity is not available except raw meats, self-sufficiency is calculated from domestic supply and imports. Most agro-processed products are self-sufficient, but vegetable oil and feed materials are dependent on imports. In case of fibres, sisal is self-sufficient but cotton relies on imports due to decline of domestic production. Exports and imports are mutually offset in the case of sugar. As for meat, only red meats are self-sufficient.

Table 10-6 Marketing Destinations of Kenya's Major Agro-Products in 2002~2005

(MT, rate as %)

Name of agro-industrial products	Domestic Production (MT)	Exports (MT)	Rate of Exports %	Imports (MT)	Rate of Imports %	Domestic Supply(MT)	Domestic Supply rate	Self-Sufficiency %
Fruit /Vegetable*	108,000	76,000	70.4 %	1,000	1.0 %	32,000	29.6 %	100 %
Dairy produce**	3,300,000	18,000	0.01 %	4,500	0	3,282,000	100.0 %	100 %
Skins /Hides	27,500	18,500	67.3 %	0	0	9,000	32.7 %	100 %
Meat products	488,000	285,000	58.4 %	0	0	285,000	58.4 %	100 %
Fish (Fillet***)	202,600	18,200	9.0 %	13,000	6.5 %	197,400	97.4 %	100 %
Sugar	419,000	80,100	19.0 %	145,000	34.6 %	483,900	98.8 %	84 %
Tea	293,670	273,000	93.0 %	0	0	20,670	7.0 %	100 %
Coffee	55,000	49,500	90.0 %	0	0	6,000	10.0 %	100 %
Cotton /Sisal goods	41,700	21,200	50.8 %	8,400	16.8 %	28,900	69.3 %	70 %
Oilseeds /products	109,400	39,400	36.0 %	225,000	67.3 %	295,000	88.3 %	37 %
Grain flour****	463,000	7,000	1.5 %	8,400	0	464,400	99.7 %	100 %
Animal Feeds	118,000	900	0.8 %	348,000	74.7 %	466,000	25.3 %	25 %
Beverage Liquor	14,300	11,500	80.4 %	500	3 %	3,300	23.1 %	100 %
Soft Beverages	240,000	0	0	5,800	2.4 %	245,800	97.6 %	98 %
Tobacco	13,900	4,000	28.8 %	8,000	55.6 %	17,900	81.7 %	78 %

Note; * processed goods, ** milk equivalent, *** form of exports, **** much imports in the form of raw grains
Source: The JICA Study Team

2) Long-term trends in demand

As regards demands in the developed world, change in life style has altered demand for commodities of agro-processing. As refrigerators and freezers are popularly used in majority of households, consumption of raw foods comes to mainstream while dried and canned foods are not much consumed. This is evident from current prosperity of horticultural exports from Kenya. Actually, nations of EU and Japan nowadays consume less canned vegetables/fish – corned-beef etc. though canned drinks / spirits are becoming popular for cooling. Another recent change is found in diffusion of infrared food heaters that has brought radical change in packaging or wrapping materials, entailing to increase semi-processed and frozen foods. These changes would influence future direction of food processing. However, in the developing world where electrification is yet developed, or power failure often takes place, canned foods or ultra-high-temperature processing milk are still valuable for long storage. This implies that canned and bottled products can still be exported to COMESA market rather than developed market.

(7) Analysed character of agro-processing in Kenya

1) Positive aspects

A) Position within the industry

Agriculture has by far the largest share among Kenya's industry accounting for 28 % of GDP (2006) as compared to transport and communication (12 %), manufacturing (11 %) and wholesale and retail trade (11 %). It has supplied such raw materials for agro-processing as tea, coffee, fruit and vegetables, dairy produce and meat, cereals etc. Agro-processing can add value by linking with it for procuring material supply.

Agro-processing has the largest number of firms / production units throughout Kenya, i.e., 459 enterprises (22 %) out of those of the total manufacture 2,058, though the extent of value addition by agro-processing remains relatively low among manufacturing fields. This is partly because producing areas of raw materials are widely distributed in the country, in comparison with other manufacturing fields that must settle at economically advantageous locations with traffic convenience or better infrastructure. While other industrial sub-sector requires easier access to traffic network and infrastructure, agro-industry has lower requirement on these conditions, thus it enables easier establishment and operation of processing firms in rural media with adverse conditions than those of other sub-sectors.

As a result of increasing demand for processed foods from expanding population in urban areas, agro-processing becomes ever more important to meet ever-rising domestic market demand. Recently, consumptive demand for dairy / meat products and other processed foods in urban areas has remarkably grown.

B) Exports, foreign markets

Agro-processing has the largest share amongst the manufacturing sector with the ample background supply of raw materials mainly of domestic origin and rural labor force. It also contributes most to Kenya's export earnings in such a way that horticulture accounts for 20 % of total annual export earning, followed by tea for 18 %, coffee for 4 %, fish for 2 % against other manufactured goods for totally 30 %. Food, beverages and tobacco manufacture sub-sector has annually achieved a production turnover of Kshs. 232.5 billion or 70 % of that of total manufacture.

Kenya has expanded her market share in COMESA (with the share of 73 %) rather than EU and other European countries. And agro-processing export commodities (except traditional tropical beverages) are increasingly shipped to COMESA (including EAC) countries.

C) Comparative advantages

An outstanding aspect of Kenya's comparative advantage to other East African countries is found in the fact that it remains as the most industrialized country therein. However, the existing superiority of Kenya to other COMESA member countries has been fading away through the progressive comparative industrial growth in the surrounding countries, also on account of retarding, almost stunting rate of economic growth in 1990s, against vigorous growth in 1980s.

D) New source of energy

Agro-processing is developing new commercial activity of producing bio-fuel and bio-diesel that gives rural poor good opportunity of contributing to energy crisis using vast under-utilized ASAL area. At least 4 large private firms started this business in Kenya.

E) Poverty reduction

Agro-processing has overwhelmingly large absorption capacity of idling rural / urban labour force as compare to other manufacturing fields, allowing higher contribution to pro-poor growth. Out of 5,887 ~ 7,734 thousand of economically active population, 1,162 ~ 1,518 thousand are hired in manufacturing sub-sector, out of which agro-processing field employed 37.5 % ~ 41.1 %, or 83.1 thousand in public employment and estimated 340.

2) Negative aspects

A) Agro-industrial environment

Especially in remote rural areas, infrastructure including road, water and energy supply and communication is generally still poor to collect raw materials, to market products and to maintain daily manufacturing operations.

As concern agricultural exports, Kenya, Ivory Coast and other export countries of farm produce have exported more raw materials or low value-added, half-processed goods than final products to the developed world. On the other hand, Netherlands and other European countries have monopolized sales margin of value-added end products produced from raw materials or semi-products of developing world. Such traditional structure is difficult to innovate under the long-established international marketing networks.

B) Firm operations

As to industrial inputs, even large enterprises have difficulty in procuring stable supply of raw materials. Also, they are obliged to use different quality from different producers, reflecting in inconsistent quality of produce. Some enterprises resort to contract farming by producer farmers to procure raw materials but they are not necessarily observe the contract especially when procuring price is lower or not so attractive as compared to prices of other crops.

As most newly established agro-processing enterprises have limited scale and fewer employees, they can hardly afford to absorb or innovate new technology and their unskilled labourers have seldom chance of retraining for processing techniques. As a result, relative export competitiveness of these enterprises tends to decline.

In some non-food agro-industries, they have been heavily dependent on raw material, intermediate and capital good imports, backed up with very weak linkages with local suppliers.

C) Production

Apart from Kenya’s export-oriented traditional processing, most of the new agro-processing enterprises have small production capacity, leading to lower capital or labor productivity and low

degree of value addition. This gives a handicap in scale-merit to attain low production cost.

The general cause for deteriorating private firm profitability, cost-price squeezing is mainly attributable to ever-escalating cost of repairing and maintenance, also energy cost of processing machinery, hiking skilled labor cost and transportation cost for both raw materials and products for marketing as compared to sluggish rise of domestic and export sale price that is mainly caused by staggered purchasing power of domestic and foreign (especially COMESA) consumers.

It happens in Kenya's markets that spoiled foods (in other words sub-standard or value-reduced commodities, for example admixtures found in polished rice, or easily coagulated pasteurised milk) are unconsciously sold at retailers and this would result in losing domestic and foreign consumer's reliance, entailing in a brake of domestic and export sales.

10.1.3 Development Scenarios

(1) Scenarios commonly applied to overall agro-processing sub-sector

1) Processors and material suppliers

Development of agricultural processing must be considered with crop production as its material supplier. In most cases, it is desirable that an industrial complex consisting of material supplying sub-sector ~ processing sub-sector ~ marketing and environmental control sub-sector must be formed in the same area for sustainable industrial activities. From processors point of view, contracts should be sought with as many producers as possible who produce plural kinds / species of crops that can be processed with the same machines / line of processing in order to fully operate currently installed capacity.

Processing firms should timely procure raw materials to be processed by timely paying due price to the producers, or making rigid contracts with them guaranteeing remunerative prices enough to cover production cost, reflecting trends of domestic/ international prices, otherwise raw material suppliers wouldn't supply constantly to the processors as before. Particularly, nationally owned firms must not delay payment of raw material as stipulated in the gazette or official regulations (for instance within a month after the supplier delivers processing materials).

2) Selection of products

Processed products with steady and strong international demand but suffering from inferior quality as compared to the same commodity produced in other countries should have been chosen as items targeted for future exports. On the contrary, products with low international demand but maintaining superior quality (like tea) should be consumed more domestically through consumption campaigns.

3) Promotion of domestic consumer's purchasing power

Purchasing power of the nation should be strengthened through the creation of rural job opportunities, such as promotion of rural processing industries to absorb poor local labour force. It is not until nurturing of rural people's purchasing power that processed commodities can be enough sold domestically.

4) Participation of rural inhabitants

In promoting rural industry, broader local participation in rural industrialization (initially beginning with labor-intensive way) is important rather than maximizing added value at the initial stage, the priority can progressively be shifted into higher value addition at the matured stage for widening base of national industry. Throughout the whole process of processing from raw material to final products, those which allow or require as much hired and un-skilled labor by local workers / material producers as possible are desirable in order to maximize their share (including the process of quality selection, packaging, manual labor intensive course of processing such as manual cutting, drying and mixing).

Produce with relatively low processing degree (low value addition), such as grain flour, pickles, sour milk (maala), dried, smoked or brined foods, crude vegetable oil, fruit juice or bakery / confectionary products readily satisfy these criteria. Easy processing with raw materials available even to poor rural people can be the starting point to attain agro-processing promotion, thereby enabling to foster overall industrialization and pro-poor growth at the same time.

(2) Issues in the agro-processing sub-sector

1) Features of priority sector

Summarizing the results of surveys as well as in consultation with the MOTI, i) Processed Fruits & Vegetables, ii) Tea & Coffee, iii) Dairy Products/ Meats/ Hides & Skins, iv) Fisheries Processing, v) Fermented and Spirit Beverages and vi) Animal/ Vegetable Oils/ Fats were selected as priority fields to study. Salient features of these fields are tabulated below:

Table 10-7 Features of the Priority Fields of Agro-processing

Selected Field	Domestic Demand	Political Importance	Future Aspects
Fruits and Vegetables	Moderately rising	Fortifying Kenya's initiative	More exports
Tea and Coffee	No domestic demand	Need to defend market share	Market revival
Dairy produce, Meats, Hides & Skins	Rapidly expanding	ASAL development, land use	Expanding exports
Fish and Fish Products	Weaker domestic demand than meats	Resource availability	Exploring Pelagic source
Fermented Beverages, Spirits	Demand for spirits is increasing	Keeping higher productivity	Developing bio-fuel
Vegetable/Animal Oils	Heavily imported	Import substitution needed	Bio-diesel

Source: The JICA Study Team

2) Issue of priority sector

The issues of the above cited 6 priority product items are summarized in the table below separating into those for feedstuff and for processing/ management (additional remarks are bracketed).

Table 10-8 Issues Related to Agro-industry Sub-sector

Priority Products	Feedstuff	Processing/ Management
Processed Fruits & Vegetables	Available period of a material is commonly short with wide annual fluctuation	Very costly packaging materials relative to material costs, poor processing skill may erode export competitiveness
Tea	Low quality, low yield of smallholder's raw material opposition to machine-cutting	Majority exported as semi- products, difficulty in establishing Kenyan brand
Coffee	Highly variable quality among producers, Rapid decline of material supply	Majority exported as semi- products, difficulty in manufacturing finished ones
Dairy Products & Meats	Meat-cattle herds are expanding but dairy herds level off. Still epizootic problem continues	Slaughtering and processing are not satisfactory for export quality
Hides and Skins	Low quality due to hurts over the skin surface	Domestic processing is affected by aggressive exports of raw hide
Leather	Enough raw materials but mostly salted and exported	Processing requires dear inputs of foreign origin
Fish (over 90 % of landing is lacustrine)	Resources are depleting by rampant catch without control among 3 countries	Hygiene management cannot clear EUREPGAP*. Untreated wastes heap up
Fermented/Distilled Liquor, Beer etc	Raw materials can be procured domestically, low quality as they are	Processing techniques are existing but inputs & utility are too expensive
Soft Drinks	Enough domestic raw material is available	Processing skills are easily diffusible
Sugarcane (only domestic sale)	Low level of procurement, Reluctance of production due to low purchasing price, Opposition against new reclamation	Under-capacity / over-capitalized, very old machinery, low yield of crystallized sucrose
Edible Oil / Fat	Scattered material availability, difficult to procure large volume of processing material	Period of operation is too short & very limited material to use full capacity, supply of plural material is desired
Cotton (exports decline /imports are growing)	High cultivation cost with cheap buying prices and delayed material payment	Short operation period of ginning with limited material feeding led to under-capacity operations
Sisal	Production base declines	Limited design & utility
Pyrethrum (exports essence & dried flower)	Reluctance of production due to Board's delayed payment & duty for administrative cost, leading to rapid decline of supply	Processing techniques are highest among producing countries
Bixa	Coastal region has ground for cultivating / collecting material	Local Processing has declined but now revitalization proceeds on.
Cereals, Feeds	Domestic materials are procurable but it takes time to collect large amount at a time	Many small millers are competing but processing machines are cheap
Tobacco	Consuming much manure & inputs for cultivation of material	Poor skill of farmyard pre- processing may deteriorate end product quality

Source: The JICA Study Team

(3) Development scenario by priority products

Taking the above tabulated issues (limiting factor for development) into consideration, a phased development scenario by priority products are shown in table below:

Table 10-9 Examples of Stage-wise Improvement/Development of Kenya's Agro-industry

Traditional Export /Primary Product	2007～2010	2011～2015	2016～2020
Processed Fruits & Vegetables etc.	Healthy drinks made of aloe vera, macerated Kenyan kale, marula etc.	Exporting value added ASAL products like acacia honey-wax or pro-polis	Exploiting ASAL products such as aloe vera
Tea	Exploitation of end products matching with global propensity trends & internal demand expansion	Regenerating tea garden with new varieties suitable for changes / diversifying tea utilization	Extraction of ingredients of tealeaf for industrial use for exporting to demanding countries
Coffee	Test exports of instantly soluble coffee powder, global campaign/ exploitation of traceable products	Exploiting fast soluble powder, Exporting ingredient adjusted coffee packs such as caffeine-less	Production adjustment to meet global trends while converting coffee garden to other crops
Dairy Produce and Meats	Installing milk cooling parlour at village to start system-collection	Exploit de-odoring processing of goat / camel meat for export	Processing and exporting dairy produce from camel's milk
Hides and Skins	Introducing livestock husbandry style suitable for skin utilization	Technical transfer to provide quality tanning & leather making	Establishment of Kenyan brand for high quality leather products
Leather	Eliminating hazard for value addition/ impose export-tax on raw hides / skin exports	Restoring tannery and stimulate domestic demands for leather	Supply of better quality leather for acquiring global reputation
Fish	Convert to other species other than Nile perch	Aqua culture of Nile Tilapia etc.	Launching offshore fishery in place of lake fishery
Fermented/Distilled Liquor, Beer etc	Exploiting & exporting natural fermented marula wine etc.	Shifting part of distilleries into bio-ethanol manufacturing	Exploiting nutrition supplement foods prepared from wine yeast
Soft Drinks	Diversifying kinds of soft drinks	Processing diversified drinks by season matching with availability of fruits	Exporting drinks by a brand of fresh fruit drink by season
Sugarcane (only domestic sale)	Installing & starting operation of manufacturing ethanol from molasses headed by sugar mills	Gradual offsetting cumulative debt, improving sucrose yield by seeding core of crystals in tank	Compensation of gain to contract farmer suppliers, thereby shortening period of cane cultivation
Edible Oil / Fat	Local extraction of crude edible oil under contract within farmer's group for oilseed production	Improving edible oil quality through coupling oil-crops with animal-origin fats	Exporting high quality sunflower oil & corn oil to developed world
Cotton	Introducing long lint cotton strains	Producing hygroscopic cloth	Producing other specific cloth
Sisal	Starting exploitation of cellulose / fibre softening technology	Developing mixed weaving with other fibre such as abaca	Pursuing what's suggested in the left column and improving it
Pyrethrum	Complete privatisation of KPB	Devise new usage of pyrethrum/ crop diversification	
Bixa	Exploiting shift of usage of Bixa	Convert into other profitable crops if other usage of Bixa is not found.	

Cereals, Feeds	Develop fast-foods (including ugali/uji) for urban abiders	Exploiting instant cooking α-rice for export	Exporting healthy food containing origin-traceable cereals
Tobacco*	Production control of tobacco crop & exploiting usage other than smoking	Production adjustment in compliance with global trends	The same as the left column

Source: MAPSKID Team

10.1.4 Development Strategies

In addition to the table above, promoting measures of representative agro-processing fields are given as follows. The reasons why the following six agro-processing sectors were selected are: 1) Readiness of feedstuff procurement because of abundant domestic supply, 2) Currently suffering from low level of value addition but much potential room remaining in further domestic value addition and 3) Existing discrepancy between needs or demand and supply or domestic availability.

(1) Processing of fruits/vegetables

1) Future direction

In Kenya, there are abundant foodstuff from juice that are of local specialty fruits and starchy materials. In particular, mango and passion fruits flood the markets during harvesting season in producing areas in Eastern ~ Central provinces and are wasted without being eaten or marketed or rot during the delivery to existing, remote processing firms. The rate of waste amounts to a quarter of the total annual mango production according to a datum by MOA.

It is good enough for district level small firms to extract juice from materials to save perishing loss. In order to minimize post-harvest loss and make use of freshness of harvests, small firms at district level might process perishable materials to semi-processed forms that have longer life than raw materials. Then semi-products are delivered to the contracted larger firms where end products are manufactured. In this case, if larger firms have to cover unprofitable parts of the operation like material collection, their turnover would dwindle, but if the collection work is sub-contracted to local small firms, vertical integration can be developed, thereby nurturing local industry.

Further development is anticipated in fruit and vegetable juice mainly bound to domestic market as domestic demand arises from growing urban population who need fruits but face logistic constraints that limit urban marketing of perishable fresh fruits and vegetables.

Assuming exports, it is conceivable that diversification of fruit juices are also worthwhile to broaden the exportable commodities in the light of diversified preferences of consumers in different importing countries. Here, it is desirable that interested farmers create their own processing units by sharing investment where invested farmers conclude an agreement under which they share production of other fruits than mangoes, such as plum, acerola, as well as collection of natural fruits such as baobab, marula etc., so that their processing equipment can be operated for longer period in a year. Also, as processing equipment for this sub-sector is relatively inexpensive compared to that for other commodities, it will be easier for MSEs to be equipped with fruit and vegetable processing for domestic markets. However, energy cost may become prohibitive depending on commodities (jams,

marmalades etc).

2) Role of ministries

A) Role of MOA

It's advised to MOA to grasp items, producing areas and quantities for seasonal surplus of major fruit and vegetables and to explore tactics concerning who and how to make use of otherwise wasteful surplus quantities to develop methodology and organizations such processing activities to minimize loss thereof, and propose them to MOTI. In MOA, KARI, Industrial Crop Division and Agricultural Extension Division take charge of this strategy.

B) Role of MOTI

It is pertinent to nurture, firmly establish and stabilize local, small-scaled agro-processing activities within main producing areas. In MOTI, KIRDI and Industrial Division are responsible for providing tactics. As to necessary duration, it will take a full year to provide proposals within MOA, another one year for MOTI to formulate measures for nurturing local processing activities, totally 2 years. In order to implement what is proposed at local sites, grants of small-scale credit as currently practiced by NGOs concerned should be applied thereto. It is also desirable to seek for cooperation by research and study institutes for securing outlets of manufactured produce including universities.

(2) Coffee (traditional agro-product) processing

1) Future direction

Concerning coffee, the global tendency has been that older consumers increasingly buy organic, traceable or fair trade commodities but younger ones prefer bottled beverages. The current dynamics of the coffee market differentiation is tabulated as follows:

Table 10-10 Trend of Specialty Coffee Markets by Commodity

Item of sale points	Global trends (annual growth)	Trend in USA (annual growth)
Conventional	1 ~ 2 %	Flat
Gourmet	5 ~10 %	10 % or more
Free Trade	10 % or more	15 ~ 25 %
Organic	10~ 20 %	15 %
Eco-friendliness	10 % or more	A few %

Source: The JICA Study Team

As for organic coffee production in East African countries, Ethiopia shows a big stride through coops (especially in Uafa, Tayain continue to steadily growth), while Uganda indicates increasing organic coffee production, both Arabic and robusta varieties. In Madagascar, the scale of production has been small but growing. In Kenya, the potential is large but up till now organic coffee production has been so limited with a very small market share. In COMESA as a whole, a growing trend can be seen. Amidst such ambient development, Kenya faces an exigent need to strive for organic coffee production.

The Government is considering reform of the coffee sector in a way similar to that in the tea and dairy sectors. Amendments of the Coffee Act will allow growers to sell coffee outside the auction

and establishment of agency to handle processing, marketing and input distribution. This will be effective to recover export sales though quality control is also essential for manufacturing exportable products, however, it's essential for such a promotion to sustain quality control in manufacturing export commodities in parallel with commodity renovation and this should be kept in mind.

2) Role of ministries

A) Role of MOA

Coping with increased emergence of producer countries and flooding exports, it has become acutely necessary to promote coffee beans tagged with origin and methods of cropping. It is therefore advised to augment from now onward the export-oriented marketing quantities of coffee beans produced in excellent producing areas currently not slashed away guaranteed with certificates on cropping origin and method of raising trees by inexpensive domestic certification agency (KEBS under MOTI). To this end, required system should be established and properly run through relevant instruction by KCB. The same Division as mentioned above is responsible for this activity.

B) Role of MOTI

Since coffee beans are processed mostly for exports, it is firstly required for certification by the domestic certification agency (KEBS under MOTI) to acquire an international creditworthiness. To realize this, it is urgently needed to receive technology transfer from developed nations. In addition, it is needed to urge the producers who wish to get certification therefrom to improve their processing techniques that deserve for certification. In order to reverse current grave tendency of annually eroding competitiveness of Kenyan coffee beans, it is also advisable to launch nationally advertising campaign abroad for Kenyan organically raised beans. Relevant authority in the MOTI is external trade division, and it takes the duration of around 5 years to acquire trust as well to improve processing technology.

(3) Processing of dairy produce

1) Future direction

Kenyan export of meat commodities will continuously be handicapped by Foot-and-Mouth Disease (FMD) that has been the cause of shutting out the outlet to the developed importers. FMD is likely never to disappear unless border livestock trade is permanently banned. Accordingly, future international market is also confined to Arab and COMESA where processed meat consumption has religiously been refrained or raw meats are preferred to the processed. Accordingly, it is imperative for the Government to plan to implement a concerted strategy for disease outbreak prevention and control, at the same time to consider the introduction of a single permit system for cattle movement.

As to dairy produce, middle to small-scale enterprises in Rift Valley or Nyanza can provide export-oriented quality because many of them can collect and treat milk quickly after milking. Though these enterprises manage to keep acceptable quality of milk for dairy processing, further improvement in its quality is a prerequisite to make export-oriented dairy produce fully competitive; concrete measures to be employed include eradication of mastitis and other diseases that spoil milk

quality, reinforcement of using vacuum milkers instead of hand milking, facilitating quicker delivery, provision of cooling milk station at the collection points, or treatment under fully sterile ambient conditions, to prevent quality deterioration.

2) Role of ministries

A) Role of MOLF

Growth of domestic demand for dairy produce has been sluggish in Kenya, while issues of eradicating FMD and Rift Valley Fever as well of prevention and treatment of bacterial diseases mastitis etc must be cleared to augment its exports. To radically solve these, over a decade is considered necessary because the complete solution of these issues in Kenya requires that of neighbouring countries (no border can limit the movement of livestock herds). Prior to such radical measures, it may be feasible to establish a protected zone for where disease free livestock can be kept and for which international recognition must be acquired on its quarantine effect though it would take 5 years to realize disease free zone. Livestock Division in MOLF is responsible for these measures. About 2 years may also be required for improving milk quality and processing techniques.

B) Role of MOTI

Dairy activity is practiced in almost all African countries, naturally leading to fierce competition for exports of dairy produce. To maintain export competitiveness of Kenyan dairy produce, it is indispensable to keep fairness and equity free from corruption or favouritism for issuing export permits / licenses to processors and exporters thereof. Hence, it is required to instruct responsible KEBS for transparent licensing decision. MOTI is also advised to mobilize KIRDI, one of its subordinate institutes, to study and review products and processing technology employed by Kenyan competitors so that they can fully be reflected in or applied to self-export promotion and security of competitiveness. One year each will be taken for attaining impartiality and studying competitor's know-how.

(4) Leather Processing

1) Future direction

Kenya has so far exported more hides and skins than leather, and this is attributable to the fact that major supplying areas of hides and skins or slaughterhouses are remote ASAL, and in ASAL industrial water and electricity are hardly accessible, thus making further processing at them into leather awfully difficult. By this reason, leather processors are concentrated around Nairobi ~ Rift Valley. Leather is very often used for decorative purposes but leather made in Africa is often not a-la-mode from quality aspects (flaws are often found on the surface of skins, surface luster glaring is insufficient etc), very often not exactly satisfying requirement of consumer countries.

Hence, it is necessary to grasp consumers' requirements and to acquire manufacturing skills and to install due facilities to produce acceptable quality leather. For example, Ostrich farming with careful feeding provides flaw-free leather.

2) Role of ministries

A) Role of MOLF

Since surviving processing firms in Kenya can afford to produce such low value-added semi-products as wet-blue, it is considered essential to invite overseas leather industrial firms or capital to rehabilitate the receded domestic fur-processing. To this end, MOLF should instruct skin and hide producers or livestock keepers how to improve their quality. The responsible authority is livestock division, requiring around 3 years to improve quality of processed leather.

B) Role of MOTI

KIRDI is now developing basic techniques to be applied to leather processing. Commercialisation after incubating them is desirable around existing major slaughterhouses in terms of improvement of leather quality. To achieve this, it is required to invite foreign enterprises or domestic Multi National Enterprises (MNEs). It will take a few years to consolidate environmental infrastructure and selling transfer of intellectual property held by KIRDI.

(5) Fisheries processing

1) Future direction

Fresh water and marine fisheries would have significant growth potential in improving the livelihood of communities of Western and Coastal regions and they are a source of foreign exchange earnings.

Even though Kenya is bestowed with offshore fishing grounds along the Indian Ocean, fishery operations have been confined to petty coastal operations. First of all to overcome this limitation, it is advised to learn technical and managerial dimensions from specialty fishery countries like Norway and Japan on how to efficiently tap offshore marine resources. Such marine resource utilization techniques as fishing boat operation, fish port and ice producing factories construction, fish swarm detection by fish finders, fishing gear operation and freshness preservative techniques for landed catches. As regards fishery produce preserving techniques, Kenya's fishermen should learn from specialty fishery countries how to produce fish sauces, seasoned sun-dried or smoked fish / crustacean that can readily be practiced at landing shore without any facility or cost preparation. Simultaneously, Lamu fishery port should be used as a base of fishing fleets, where possibility can be examined on the creation of an efficient fishing fleet and exports of frozen or canned products of pelagic resources.

Lacustrine fishery resources have been endangered with depletion as a result of rampant landings, and restoration thereof takes time, but fishermen can develop fish farming of omnivorous and herbivorous fish species like Tilapia, eel, mudfish in place of declining carnivorous Nile perch, black bass and catfish though they are not appropriate for export. In this way, it is considered viable to promote sweet water fish processing coupled with sweet water aquaculture.

2) Role of ministries

A) Role of MOLF

WB's grant is being introduced to Fishery Division of MOLF for promoting offshore fisheries. The said division has an acute need of recovering degrading lake fisheries and simultaneously exploiting ocean fisheries. Since it will take about 5 years at least to give instruction to related fishery population, provision of fishery ports, fishery and aquaculture facilities and grant of loans for constructing fishing vessels, improvement of fishery product processing should follow after these projects. It is anticipated that around a decade is necessary to restore lake fishery resources including concerted actions with other countries holding fishery right in Lake Victoria, so the first priority should be given to resource tapping in Indian Ocean.

B) Role of MOTI

Because major consumers of processed fishery products are developed importers, it is essential to employ manufacturing process in line with the required quality standards. Hence, it is required to strengthen training and capacity building of stakeholders including KEBS staff who are responsible for quality inspection so that processing techniques can be progressed for sustaining competitiveness and relevant production in conformity with demand dynamics can be performed. Also, as promotion of marine, offshore fishery inevitably needs development of such related industries as ice making along the coastal region, it is imperative to consolidate industrial base including infrastructure through collaboration with MOLF. It is considered to take at least 5 years to implement basic improvement including training and education for fishery people as stated above.

(6) Examples of promising projects

Two examples of promising projects are presented in this section. In order to make the essential points clear, the items used in the Project Sheets of Action Plans in Chapter 8 are also applied here. Same as the cases of Action Plans these two examples could be further studied and formulated in detail by the expected main players to secure effective implementation of the projects.

1) Bio-diesel development in ASAL areas

A) Background and issues

While Kenya mainly exports primary agro-products, energy is dependent on imports. This has a negative effect on production costs, thereby contributing to erosion of export competitiveness。 To overcome this issue, it is advisable to utilize untapped ASAL areas for domestic energy supply, replacing current useless semi-arid vegetation with Physic-nut (non-edible oil plant) that can withstand rigorous arid climate. Industrial oil production can provide ASAL inhabitants with job opportunities through the activities of production management, harvest and storage, and trading with oil brokers for bio-diesel material. Use of physic nut has already been commercially exploited in Mali, Thailand, India and many other developing countries. In Kenya, KIRDI has been developing the process of industrial utilization in cooperation with KARI etc. Kenya is now in a position to chase these forerunners to catch up with centuries common target

Thus, MOTI is urged to take initiatives to push bio-fuel production (BFP) forward by mobilizing ASAL people so that bio-fuel supply base can firmly be created amidst so-far untapped ASAL areas. Intervening organs include NPO/NGO (like Vanilla and Jatropha Development Foundation (VJDF)) as facilitating and mobilizing participants and organizing production groups, KIRDI, KARI, ICRAF and Kenya Forestry Research Institute as agents for technical transfer and MOTI headquarters as instructor and project implementer. Inhabitants in ASAL are key-role players up to material production of bio-diesel, while existing oil refiners in Mombasa and Athi are processors of end product (physic nut oil methyl ester).

Physic nut has many advantages for Kenya, such as growing in shrubs (not arable land), without fertilizer, no browsing damage by livestock, highly drought resistant, relatively high oilseed yield, high oil content, fairly immune to insect or fungal damages, already growing in Makweni and various places in Kenya. Besides botanical advantages, it has versatile utility such as torch oil for un-electrified areas, lubricant oil for machinery maintenance, pharmaceutical material for medical ointment, material of soap production etc.

The following points need to be addressed in order to promote bio-diesel exploration: land usufruct right allocation in ASAL accompanying adjustment with pastoralists, coupling with bio-gas utilization for self-providing methanol as one of the materials of manufacturing bio-diesel (methyl ester), securing profit of material oil production within communities in ASAL and protecting inhabitants benefits against aggressive large enterprises. In order to realize these requirements, MOTI is advised to establish a taskforce for facilitating this project. During the first phase, careful land selection should be made with EIA and also close partnership among facilitators, technical assistants and target participants with full understanding the objectives and goals. Final goals aim at livelihood improvement of the participants whose purchasing power can be enhanced to the extent that Kenya’s manufactured goods can be sold even to people living in remote, desolate areas.

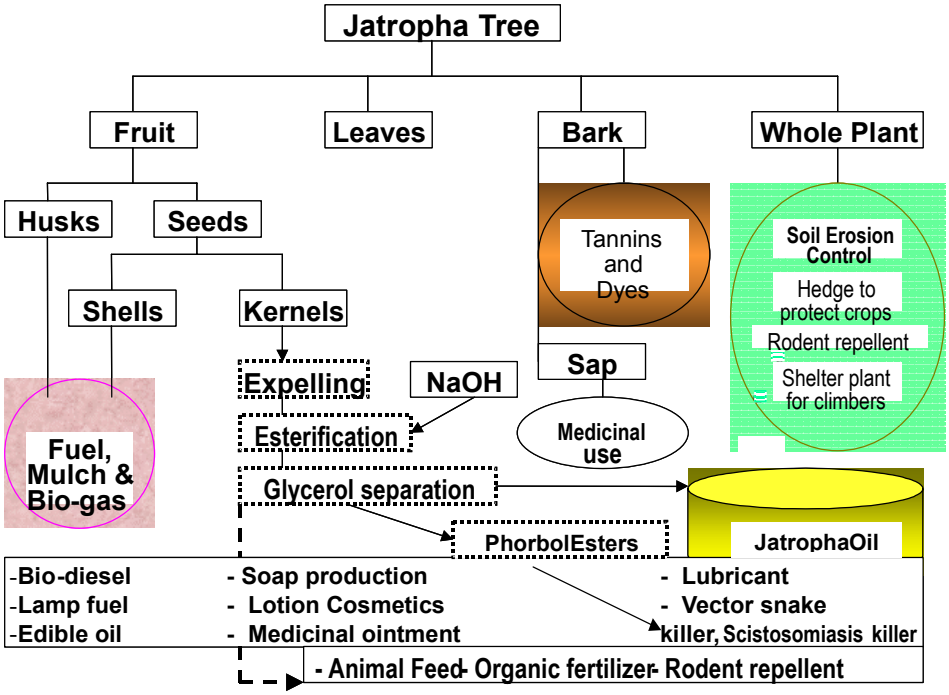


Figure 10-2 Processing Process of Jatropha

B) Purpose

i) To relieve Kenya's chronic shortage of energy by utilizing half-wasted land (ASAL),

ii) To offer new job opportunities for the inhabitants in ASAL and

iii) To make Kenya's export competitiveness robust with lowering production costs using self-supplied fuel

C) Implementing agencies

Secretariat: MOTI (including KIRDI)

Task Force: MOA and MOTI (District office), MOEN

D) Scope of work

Work Items	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 - 2020
1) Training of MOTI staff to nurture assistants, group formation in the selected ASAL areas to create base of oil tree production at the forestry sites (MOA extension div. MOTI, KIRDI)	←	→	
2) (i) Mobilize participants in the groups to promote physic nut production, (ii) Creating oil extraction mills, (DEO and DIDO)	←	→	
3) Materializing the participants product devices into their processing activities (MOTI, DIDO)		←	→

Note: DEO; District Extension Office under MOA

E) Indicators

i) Baseline status of inhabitant's livelihood and income situations,

ii) Basic commodity forms before launching the physic nut bio-diesel promotion,

iii) Process of creating community groups and providing inputs including assisting activities and

iv) Performance of group's production activities including turnout and amortization of seed inputs.

F) Note for taking actions

a) Role of MOTI and MOA

There exist some cases depending on the feedstuff of bio-fuels in which fixed processing techniques have not yet been established, and this is the reason why KIRDI under MOTI started its basic research to respond to such embryonic area. In order to provide a frame of securing inhabitants' benefits as stated above, it is indispensable to take an early initiative so that inhabitants can make use of their resources prior to the progress of MNEs and major enterprises.

Stable provision of the material depends on farmers, and the collaboration of the farmers and the manufacturers is indispensable for this project. Therefore, DEO of MOA and DIDO of MOTI are expected to work together to facilitate the collaboration of those players. The major expected role of MOTI and MOA is assistance for nurturing local and indigenous industries related to bio-fuel manufacturing where local MSME should play a leading role, and promotion of basic technology to be implanted into the target sites of BFP and following industrialization.

b) Role of MOEN

It should be kept in mind that private sector including foreign capitalized FDI has already initiated activities on BFP. MOEN is now behind such tide though it has recently prepared original guideline for controlling and directing BFP. It is evident that single ministry can hardly regulate or cope with this task because it includes utilization or mobilization of untapped domestic resources. It is advisable that the President Office establishes a project task force with a whole spectrum of related ministries and agencies. The largest expected role of MOEN is to provide a frame in which benefits from mobilized resources can be redistributed to the inhabitants who live with such resources. As to establishment and introduction of related systems and institutions, it is considered necessary to take measures within a year taking rapid private sectors movement into account.

2) Development of edible vegetative oil sub-sector

A) Background and issues

Kenya imports most of her vegetable oils mainly from Asia despite her own potential to be self-sufficient. The edible oil import bills currently amount to huge where there is need to bridge it. Restoring domestic oil production will not only save her foreign currency but will also lead to the development of related sub- sectors such as soap/ detergent and feeds manufacturing. This sub-sector has poorly developed due to scattered or remote processing sites against producing areas. This

project envisages coming up with community processing facilities throughout the country to promote contract farming, thus procuring firm supply of material oil-feedstuff and securing market outlets for small-scale farmers through processing network.

First of all, project areas are selected under the instruction of MOA commodity division, where potential participants including both oilseeds producers and simple extracting processors are identified. Extension staffs assist producers with seed distribution and cropping techniques with which they produce various kinds of oilseeds including castor bean, physic nut (jatropha), horseradish (molinga) and sunflower so that annual duration of extracting operation can be maximized. They make contract with processors within the same group on delivery quantities, unit prices and utilization of co-products (seed cakes as feed materials). The government grants capital for processors to purchase manual oil extracting press from KIRDI that is the inventor / manufacturer.

Currently there observed many oil-mills in Nakuru, Eldoret and Kisumu, some of which have ceased mill operation due to high oilseeds and transport costs as well as shortage of oilseed/ crude oils. They can also make contract with these local processors for regular delivery of materials, thereby restoring production activity in paralysed existing oil sub-sectors in these industrial areas.

B) Purpose

i) To promote local value addition by small-holder farmers and local SME enterprises,

ii) To save on the swelling import bills and

iii) To create marketing opportunities for small-scale farmers and local processors

C) Implementing agencies

Secretariat: MOTI (including KIRDI) as facilitators and assisting services for community groups

Task Force: MOA as collaborating with MOTI mobilizing extension wing for diffusing technology

Regionally, “District” concerned as supervising agency on the performance of the introduced activities.

D) Scope of work

Work Items	Phase 1 2007 - 2010	Phase 2 2011 - 2015	Phase 3 2016 - 2020
1) Training of related staff to nurture assistants, group formation (MOA extension div. MOTI, KIRDI)	←		
2) Organize groups, mobilize participants to promote oilseed production & creating oil extractors (DEO)	←	→	
3) Materializing the participants value-adding devices into their processing activities (DEO and DIDO)		←	→
4) Promote contract farming (MOTI, DIDO)		←	→

Note: DEO; District Extension Office under MOA

E) Indicators

i) Baseline status of inhabitant's livelihood and income situations,

ii) Basic commodity forms before launching the project, farm income and SME processors income,

iii) Process of creating community groups and providing inputs including assisting activities and

iv) Performance of group's production activities including turnout and amortization of seed inputs.

F) Note for Taking Actions

MOTI directs DIDOs to set up sub-sectoral task force so that DIDO takes necessary actions. Simultaneously, MOTI collaborates with MOA to make closest liaison to develop industrial cropping so that priority areas for oilseeds development can strategically be sorted out by mobilizing DEO network.

10.2 Development Plan of Agro-machinery Sub-sector

10.2.1 Introduction

Agro- machinery sub-sector consists of (a) metallic products, (b) non-electrical machinery and (c) transport equipment in accordance with KEBS's industrial classification[109]. Contribution of the agro-machinery sub-sector to GDP has declined from around 3 % in 1990s, to 1.2 % in 2000 and further 0.7 % in 2005. Major reasons behind the decline are that the sub-sector failed to follow the higher speed of GDP growth and many manufacturing enterprises stopped their operations shifting themselves to mere import-substituting traders because of the followings. They are (a) difficulty in procuring raw materials at reasonable prices, (b) expensive electricity cost, (c) hike of transportation cost, (d) higher labour cost and (e) insecurity. The fore mentioned factors are beyond the control of

[109] KEBS's industrial classification is different from that of ISIC or International Standard for Industrial Classification. In this study we use KEBS's industrial classification because of available data.

individual enterprises, leading to closure of factories at the rate of roughly 10 % per year. Such a situation can easily cause even the withdrawal of foreign-affiliated enterprises or discourage foreign investment in the sub-sector. Kenya Vision 2030, challenges the target of GDP Kshs. 16,177 billion, manufacturing sector Kshs. 5,532 billion (Kshs. 562 billion in 2006) and agro-machinery sub-sector Kshs. 347 billion (Kshs. 32 billion in 2005). To realize the targets and goals under Kenya Vision 2030, the aggressive participation of main players including private enterprises is strongly anticipated from the very beginning of implementation of MAPSKID.

Table 10-11 Economic Structure of Agro-Machinery Industry in Kenya

Index	Unit	1990	1995	2000	2005	Annual Growth Rate,%(1990~2005)
GDP at market prices	Kshs. Bil	99.4	232.6	967.8	1,445.5	21.1
Contribution to GDP						Total down
Metal Products	%	2.1	1.3	0.4	0.3	-1.8 %
Non-electrical Machine	%	0.1	0.2	0.1	0.1	-
Transport Equipment	%	1.2	1.8	0.7	0.3	-0.9
Total 3 Groups	%	3.4	3.3	1.2	0.7	-2.7
Manufacturing	%	13.3	13.5	10.3	10.3	-3.0
Manufacturing Output						
Metal Products	Kshs. Bil	14.2*	21.8	13.7	15.4	+0.6
Non-electrical Machine	Kshs. Bil	0.5*	2.8	2.0	2.6	+13.5
Transport Equipment	Kshs. Bil	7.7*	30.3	24.3	14.1	+4.8
Total 3 Groups	Kshs. Bil	22.4	54.9	40.0	32.1	+2.8
Manufacturing	Kshs. Bil	88.2	230.7	347.7	499.8	+13.2
Quantum Index				238.1	257.9	
Metal Products	1976=100	150.5	206.8	86.1	87.9	+3.9
Non-electrical Machine	1976=100	108.7	78.1	241.5	975.7	--1.5
Transport Equipment	1976=100	646.4	529.0	281.4	334.1	+2.9
Manufacturing	1976=100	219.8	263.9	134.5	260.4	+3.0
Trade						2000-2005
Export	Kshs. Bil		97.3	134.5	260.4	+18.0
Iron and Steel	Kshs. Bil			2.6	8.9	3.4 times
Metal Scrap	Kshs. Bil			0.2	0.4	+19.0
Machinery & transport	Kshs. Bil			0.6	3.6	+6.0 times
Import	Kshs. Bil		155.2	247.8	443.1	+15.7
Iron & steel	Kshs. Bil			8.6	21.1	2.5 times
Motor vehicle tyres	‘000			2,518	1,580	-11.0
Bicycle tyres	‘000			859	1,337	+11.7
Hand & machine tools	Kshs. Bil			0.8	0.8	-
Industrial machinery	Kshs. Bil			39.4	48.9	+5.6
Agricultural machinery	Kshs. Bil			1.0	2.3	2.3 times
Metal working machinery	Kshs. Bil			0.1	0.2	2 times
Food processing machinery	Kshs. Bil			0.8	2.0	2.5 times
Road motor vehicle	Kshs. Bil			9.7	25.3	2.6 times
Trade Balance	Kshs. Bil		-57.9	-113.3	-182.7	+12.7

Note: * = 1991, Contribution to GDP of 3 groups estimated by the study team
Source: Economic Survey 1984~2007 and Statistical Abstract 1994~2006, KNBS

10.2.2 Overview of Agro-machinery Sub-sector

(1) Scale of manufacturers in agro-machinery sub-sector

According to the statistics by KNBS and Ministry of Planning and National Development, the manufacturing industry contributes 10.2 % to the GDP in 2006 and the number of formal enterprises

is 3,312 in manufacturing industry. On the other hand, KAM reports the number of formal members is only 525, which covers 22.7 % of that of KNBS's. From 2,087 factories registered in the list of MOTI, 183 factories have already closed down, while 146 factories are either branches or umbrella factories under the same firms. The net number of registered firms is 1,794. Moreover, over 50 % of the registered firms are remarked as "No Returns" against requesting letter, which means that there was no submission of inquired information to MOTI since registration date in 1990's or over 5 years after registration date.

Table 10-12 Firms Working in Agro and Supporting Industry in Kenya

Sub-sector	(A) No. of Firms listed by the Study Team	(B) Of which registered in MOTI	(B)/(A)%
1. Steel Mills & Suppliers	57	13	22.8
2. Stainless Steel	4	1	25.0
3. Aluminium	13	8	61.5
4. Brass & Copper	2	1	50.0
5. Steel Fabricators & Products	64	29	45.3
6. Foundry	11	1	9.1
7. Bicycles Dealers & Repairs	49	1	2.0
8. Forklift	10	0	0
9. Motorcycles & Motor Scooters	27	0	0
10. Automobile	1,132	70	6.2
11. Agricultural Machinery	185	32	17.3
12. Packaging Machinery Materials	148	51	34.5
13. Air Conditioning Equipment	76	1	1.3
14. Glass Bottles & Manufacturing	17	0	0
15. Diesel Engines.	26	0	0
16. Chains, Cables & Wires	16	6	37.5
17. Boiler	8	0	0
18. Water Treatment	2	1	50.0
19. Gas-Bottled & Bulk	3	0	0
20. Conveyor & Conveying Equipment	4	0	0
21. Veterinary Equipment & Supplies	53	0	0
22.Welding Equipment Supply & Service	25	4	16.0
23 Weighing Machines	21	1	4.8
24 General Machinery	95	58	61.1
25 Butcheries	46	0	0
26 Meat Processors	47	3	6.4
27 Dairy Farm & Products	84	16	19.0
28 Poultry Farm & Products	30	0	0
29 Hide & Skins	43	26	60.5
30 Feed Dealers & Processors	85	14	16.5
31 Tea Exporters & Processors	105	20	19.0
32 Coffee Exporters & Processors	49	7	14.3
33 Beer & Ale	15	0	0
34 Wines & Spirits	109	0	0
35 Cooking Oil	45	35	77.8
36 Food & beverages	173	28	16.2
37 Horticulture	132	1	0.8

38 Fish Merchants & Processors	47	0	21.3
39 Fishing Tackle	21	3	14.3
Total	3,079	437	14.2

Source: List of Registered Firms/MOTI and The JICA Study Team

The registration of factories in Kenya is mandatory under the Industrial Registration Act of 1987. Number of enterprises officially registered in agro-machinery sub-sector is 437 and it is 15 % less than the existing firms as summarized in the above Table. It is necessary to strengthen information and communication system between the MOTI and manufacturers in the private sector to enable real time administration of policy and for executing medium and long term strategies for development of the manufacturing industry in Kenya.

(2) Transportation industry

Transportation is an important sector in agro-machinery because it supports agriculture and the agro-processing industry in Kenya. “Agriculture” is sometimes referred to as “transportation business”. Therefore, transportation issues have been dealt with in this study. Other essential supports include forklifts for loading and unloading raw materials and finished goods, and the most popular item is the bicycle for small-scale farmers as transportation means both of farm input and produce in rural areas.

(3) Import duties on agro-machinery in Kenya

Import duties levied on agro-machinery and selected equipment comprises the following taxes, shown in Table 10-13. During 1986-1988, government increased tariff for protecting local industry reflecting the request from the manufacturers. However it was dissolved soon later since manufactures tended to ignore product quality with little investment in quality control facilities, R & D while productivity and efficiency remained low.

While the fact that import duties decrease Kenyan manufacturers competitiveness outside of Kenyan markets, the government has to face the recent direction to ease import duties as EAC and COMESA policies to introduce common market. Therefore, the manufacturers in agro-machinery sub-sector are urged to increase their ability to compete with imported products in order to survive in expanding market.

Table 10-13 Import Tax Tariff in Kenya

Unit: %

Commodity	Duty	VAT	Excise
Metal fabricated products	35	16	-
Tools (spade, shovel, fork etc.)	15	16	-
Plough	15	-	-
Harrow, Cultivator, Seeder, Planter, Soil preparation	-	-	-
Parts of plough	15	16	-
Other parts of machinery	5	16	-
Mower for tractor	-	-	-
Farm machinery	-	-	-
Food processing machinery	-	16	-
Goods for industrial machinery	-	16	-
Electric motors	5	16	-
Vehicles, unassembled	-	16	-
Assembled vehicle	25	16	20
Waste and scrap	-	16	-
Fish	15	-	-
Dairy	60 % or Kshs. 83/kg	-	-

Note: (a) Duty = CIF price x US$, (b) Excise = (CIF price + import duty) x %, (c) VAT = (CIF + import duty + excise) x %
Source: List of Import Duty Tariff in Kenya, KRA

(4) International trade of machinery

1) Export of machinery

Amount of export commodities related to manufacturing industry including agro-machinery, basic parts and raw materials is Kshs. 60,749 million, which contributed 31.4 % of the total export amount in 2005.

Table 10-14 Domestic Exports of Selected Commodity

Unit: Kshs. million

Commodity	1996	2005	Annual Growth (%)
Iron and steel	5,257	8,852	6.0
Metal containers	156	200	2.8
Wire products, nails, screws, nuts	241	381	5.2
Manufactured goods	11,385	51,316	18.2
Machinery Sector	17,039	60,749	15.2
Grand Total of Export	113,926	193,692	6.1

Source: Annual Trade Report, Customs and Excise Department, Statistical Abstract 2001~2006, KNBS

2) Import of machinery

Import in the related machinery sector consisting of agro machinery, basic parts and raw materials is Kshs. 213,615 million, which is 49.9 % of total import amount in 2005. The agricultural hand tools are still imported, such as hoes, pangas, mattocks, slashers, picks, forks, jembes, fork hoes, ox-drawn ploughs, ox-drawn planters, wheelbarrows, shovels, sugarcane knives, coffee pruners, chaff cutters, etc. All of these tool items can be manufactured locally through proper technology. Import trend is shown in the following table.

Table 10-15 Imports of Selected Commodity

Commodity	Unit	1996	2005	Annual Growth (%)
Motor vehicle tyres and tubes	'000	163	1,580	25.5
Bicycle tyres	'000	784	1,337	5.5
Glassware	Ton	12,570	18,982	4.2
Iron and steel	Ton	347,582	436,494	2.3
Wire	Ton	825	6,982	23.8
Tubes, pipes and fittings	Ton	3,248	5,958	6.2
Non-ferrous metals	Ton	23,808	40,948	5.6
Nails, nuts, rivets, screw etc.	Ton	3,083	6,238	7.3
Agricultural hand tools	'000	2,775	3,427	2.0
	Kshs. '000	796,320	216,435	-32.2
Steam generating boilers	Pcs	42 ton	502,255	-
Tractors	Pcs	960	71,723	-
	Kshs. '000	997,100	1,493,241	4.1
Agricultural implements	Kshs. '000	781,140	779,700	0.1
Metal working machinery	Pcs	320 ton	645,553	-
Pumps for liquid	Pcs	211 ton	500,597	-
Passenger motor cars	No	12,927	49,034	14.3
	Kshs. '000	4,377,080	11,987,015	10.6
Buses, trucks and lorries etc	No	11,327	6,774	-5.0
	Kshs. '000	1,770,840	5,511,193	12.0
Chassis with engines	No	1,364	23	-
Bicycles, not motorized	No	12,167	299,688	-
	Kshs. '000	306,620	312,818	0.2
Machinery Sector	Kshs. '000	88,179,860	213,615,027	9.3
Grand Total of Import	Kshs. '000	168,486,162	428,307,121	9.8

Source: Annual Trade Report, Customs and Excise Department, Statistical Abstract 2001~2006, KNBS

3) Trade balance of machinery

The export value of machinery in 2005 was Kshs. 60,749 million, while the import value thereof stood at Kshs. 213,615 million, resulting in an excess of imports amounting to Kshs. 152,866 million.

4) Agro-machinery trade with COMESA market

A) Export

Kenyan agro-machinery products were exported to 67 countries in 2004, out of which the export to COMESA countries amounted to approx. US$ 23 million, equivalent to 74 % of the total agro-machinery exports. Commodities included in the statistics are (A) hand tools (tools, cutlery, spoons, forks, implement, etc), (B) Machinery (machinery and mechanical appliances and parts of them) and (C) Vehicles (vehicles other than railway or tramway rolling stock).

Table 10-16 Machinery Export to COMESA (2004)

Unit: '000 US$

Partner	(A) Hand tools		(B) Machinery		(C) Vehicles		Total (A)+(B)+(C)	
	Amount	%	Amount	%	Amount	%	Amount	%
Angola	0	0	0.0	0.0	1	0.0	1	0.0
Burundi	53	1.8	616	4.5	97	0.7	765	2.4
Comoros	172	5.9	13	0.1	231	1.6	416	1.3
Djibouti	10	0.3	73	0.5	109	0.7	191	0.6
Egypt	0	0	0	0	0	0	0	0.0
Eritrea	5	0.2	20	0.1	56	0.4	81	0.3
Ethiopia	18	0.6	167	1.2	0	0	185	0.6
Madagascar	0	0	6	0.1	0	0	6	0.1
Malawi	14	0.5	326	2.4	0	0	339	1.1
Mauritius	0	0	15	0.1	0	0	15	0.1
Rwanda	8	0.3	705	5.1	489	3.3	1,202	3.8
Seychelles	4	0.1	18	0.1	123	0.8	144	0.5
Sudan	579	20.0	1,327	9.6	2,347	15.9	4,253	13.5
Swaziland	0	0	0	0	0	0	0	0.0
Tanzania	400	13.8	2,988	21.7	3,393	22.9	6,781	21.5
Uganda	140	4.8	2,560	18.6	4,672	31.6	7,372	23.4
Zambia	3	0.1	235	1.7	550	3.7	788	2.5
Zimbabwe	0	0	65	0.5	755	5.1	820	2.6
COMESA Total	1,404	48.5	9,132	66.2	12,824	86.6	23,360	74.2
Other Countries	1,489	51.6	4,662	33.8	1,975	13.4	8,126	25.8
Export Total	2,893	100.0	13,794	100.0	14,799	100.0	31,486	100.0

Source: UN Commodity Trade Statistics Database

B) Import

Agro-machinery products were imported from 121 countries in 2004, out of which the import from COMESA countries amounted to approx. US$ 6.4 million and 0.9 % of the total agro-machinery imports. Import amount from COMESA countries is very small, and import amount from the top nine countries (1st Japan, 2nd UK, 3rd Germany, 4th India, 5th South Africa, 6th UAE, 7th China, 8th France, and 9th Belgium) amounted to approx. 79 % of the total imports.

Table 10-17 Agro-Machinery Import from COMESA (2004)

Unit: '000 US$

Partner	(A) Hand tools		(B) Machinery		(C) Vehicles		Total (A)+(B)+(C)	
	Amount	%	Amount	%	Amount	%	Amount	%
Angola	0	0	0	0	0	0	0	0
Burundi	0	0	0	0	0	0	0	0
Comoros	0	0	0	0	0	0	0	0
Djibouti	0	0	0	0	0	0	0	0
Egypt	67	0.6	2,094	0.6	309	0.1	2,470	0.3
Eritrea	0	0	0	0	9	0.0	9	0.0
Ethiopia	1		8	0.0	17	0.0	26	0.0
Madagascar	0	0	0	0	0	0	0	0
Malawi	0	0	0	0	0	0	0	0
Mauritius	1	0.0	114	0.0	969	0.3	1,084	0.1
Rwanda	0	0	0	0	13	0.0	13	0.0
Seychelles	0	0	1	0.0	0	0.0	1	0.0
Sudan	2	0.0	38	0.0	1	0.0	41	0.0
Swaziland	0	0	0	0	13	0.0	13	0.0
Tanzania	11	0.1	806	0.2	854	0.2	1,671	0.2
Uganda	0	0	524	0.1	380	0.1	904	0.1
Zambia	0	0	1	0.0	5	0.0	16	0.0
Zimbabwe	0	0	103	0.0	22	0.0	125	0.0
COMESA Total	81	0.7	3,730	1.0	2,594	0.7	6,405	0.9
Other Countries	11,434	99.3	354,467	99.0	350,542	99.3	716,443	99.1
Import Total	11,515	100.0	358,197	100.0	353,136	100.0	722,848	100.0

Source: UN Commodity Trade Statistics Database

C) Trade balance of agro-machinery with COMESA

Viewing the export and import balance of agro-machinery with COMESA countries, the export exceeded the import making the foreign currency earnings to approx. US$ 17 million in 2004. COMESA countries are the important market for Kenyan agro-machinery industry.

Table 10-18 Trade Balance/Amount with COMESA Market

Unit: US$ '000

Partner	Balance (Export – Import)	Trade Amount (Export + Import)		Ranking Within COMESA
		Amount	%	
Angola	1	1	0.00	18
Burundi	765	765	0.1	9
Comoros	416	416	0.1	10
Djibouti	191	191	0.0	13
Egypt	-2,470	2,470	0.3	4
Eritrea	72	90	0.0	15
Ethiopia	159	345	0.0	11
Madagascar	6	6	0.0	17
Malawi	339	339	0.0	12
Mauritius	-1,060	1,099	0.1	6
Rwanda	1,189	1,215	0.2	5
Seychelles	144	145	0.0	14
Sudan	4,213	4,294	0.6	3
Swaziland	-47	47	0.0	16
Tanzania	5,104	8,458	1.1	1
Uganda	6,468	8,275	1.1	2
Zambia	773	804	0.1	8
Zimbabwe	696	945	0.1	7
COMESA Total	16,954	29,766	3.9	-
Other Countries	-674,407	724,569	96.1	-
Balance Total	-691,361	754,335	100.0	-

Source: UN Commodity Trade Statistics Database

(5) Raw materials used in the agro-machinery industry

1) Raw materials constituents

A) Current situation

Steel manufacturers in Kenya are secondary steel producers. Raw materials used in the sector are currently imported composing of steel billets, hot rolled coils, stainless steel, tin plate, and alloyed raw materials. Ferro-alloys and other foundry chemicals are not locally available. These materials are used in nearly all steel plants as strengthening additives or as ingredients for the control of mechanical and physical properties of the final products. With regard to availability of imported raw materials, the sub-sector used to be faced with lengthy and bureaucratic import licensing procedures and also shortage of foreign currency, but since the liberalization of the economy in 1993, raw materials have more readily been imported than before. Raw materials are imported from Japan, Korea, Europe, South Africa, Brazil, Argentina and other countries that have integrated steel plants. Carbon steel is imported from Zimbabwe, Poland and Ukraine but distribution is highly monopolized by few traders, which causes shortage of raw materials. High carbon steel is imported in the form of flat bars from Zimbabwe. Many manufacturers have to make hand tools from mild steel sheet direct from mills, which results in poor quality of goods especially made by Jua Kali who have difficulty accessing raw materials. Because of these, many manufacturers have been forced to stop their production lines and to shift their businesses from manufacturing to importing of completed tools.

B) Manufacturing process of iron and steel

The manufacturing process of iron and steel can be explained in the simplified manner as shown in the following Table. The most critical point is that there is no establishment of draft furnace in Kenya. However, the introduction of new blast furnace requires a large amount of money and a lot of time to construct. Therefore the introduction of new blast furnace is not realistic in Kenya. Furthermore, even if new furnace is introduced and starts to operate, it would not be easy to compete with other established suppliers in the world because the supply system of iron and steel is already established in the world market. Therefore, it is necessary for the manufacturers who import iron/steel to take necessary measures so that they could negotiate and purchase iron/steel with better conditions in the current trade framework. This issue will be further discussed later.

Table 10-19 Manufacturing Process of Iron and Steel

Iron ore (iron ore, lime, coal, coke)	
Blast furnace	Taking out pig iron from iron ore
Pig iron pre-treatment	Oxidize sulphur and contaminants
Basic oxygen furnace	Eliminating contaminants and producing iron steel. Basic oxygen furnace⇨Pig iron and scrap Electric furnace⇨Iron scrap
Secondary refining	Minor adjusting contents
Continuous forging	Manufacturing semi-finished products
Roll mill (+ Forging or Heat Treatment)	Processing semi-finished products and producing standard type iron and steel products
Delivery	

Source: Re-arranged Nippon Steel Corporation and JFE information by The JICA Study Team

C) World iron and steel production

World pig iron production was 838 million tons in 2005, of which 2.05 % was from Africa, including Algeria, Egypt, Libya, Morocco, South Africa, Tunisia and Zimbabwe. In general, iron and steel industry is in the move to be to a smaller number by means of M & A but Table 10-20 shows it is still possible to find iron and steel manufacturers available to supply raw materials under long-term contract with reasonable price to Kenya machinery manufacturers. Transportation cost of iron and steel products is very high and therefore the suppliers in Africa are preferred first for access.

Table 10-20 World Iron Steel Production

Country	Raw Steel ('000 metric ton)		Pig Iron & Direct-Reduced Iron (metric ton)		
	2001	2005	2001	2005	% (2005)
China	151,630	349,360	155,540,000	330,410,000	39.43
Japan	102,866	112,471	78,835,836	83,058,130	9.91
Russia	59,030	66,186	47,490,000	51,759,000	6.18
USA	90,100	93,300	42,245,000	37,434,000	4.47
Brazil	26,718	31,631	28,023,000	34,793,000	4.15
Africa	14,797	16,787	13,849,000	17,185,000	2.05
Algeria	850	1,007	1,250,000	950,000	0.11
Egypt	3,800	4,760	3,770,000	4,300,000	0.51
Ghana (Scrap)	75	75	-	-	-
Libya	846	1,300	1,090,000	1,650,000	0.20
Mauritania	5	6	-	-	-
Morocco	5	5	15,000	15,000	0.00
South Africa	8,821	9,492	7,376,000	7,760,000	0.93
Tunisia	239	60	192,000	2,340,000	0.27
Uganda	7	7	-	-	-
Zimbabwe	149	150	156,000	170,000-	0.02
Others	407,859	450,190	258,103,071	293,287,090	33.83
Total	853,000	1,120,000	624,085,907	837,926,220	0100.00

Note: Direct-reduced iron is obtained from ore by reduction of oxides to metal without melting.
Source: U.S. Geological Survey Minerals Yearbook 2005

2) Scrap metal

Scrap metal is categorized under ferrous and non ferrous, as (a) home scrap: generated by steel making process and the associated primary processes. (b) Prompt scrap: generated in the initial stage of steel consumption by the main manufacturing companies-industries with rolling mills, and (c) obsolete scrap: recovered from used and/or dismantled products, which are locally available in increasing quantities but the quality of such scrap progressively worsens unless clearing treatment is used. The rate of scrap metal generation is proportional to per capita steel consumption, which in a developing country like Kenya is very low. A large amount of what is available is also exported. Scrap metal can also be supplied from scrapped old ships, a process popularly known as ship breaking. Though scrapping business depends on the trend of demand and supply, dealers have exercised their activities in compliance with Scrap Metal Act 503, free from the influence of any interested entrepreneurs. Scrap business in Kenya consists of importation from Eastern European countries, domestic collection and supply, and exportation to neighbouring countries. However, foreign steel products are necessary for guaranteeing quality of finished tools and machines and sustainable supply with reasonable price.

(6) Complete unit post-harvest machinery

Major post-harvest machinery used in Kenya are (i) Roots and tubers: Peelers, chippers, graters, (ii) Cereals and legumes: Threshers and shellers, Cleaners and winnowers, De-hullers and grinders/millers, (iii) Oil crops and nuts: Nut shellers/crackers, Oil extractors (screw and ram), Filter and (iv) Fruits and vegetables: Pulpers, blenders, juice extractors, Sealers- cup, impulse. However, equipment utilization is very low as reported by MOA.

Table 10-21 Operation Efficiency of Selected Post-Harvest Machinery

Equipment	Capacity	Production	Output	% Utilization
Sunflower-Ram Press	35 lit/day	265 lit	1.01 lit/day	2.9
Mango Drier	1 kg/day	70 kg	0.27 kg/day	27
Honey Centrifuge	200 kg/hr	1,000 kg	0.77 kg/hr	0.4
Mango Juice Pulper	1,000 kg/day	1,100 kg	4.23 kg/day	4.2

Source: Industrial Survey on Local Supply of Agricultural Machinery, Implements and Tools Final Report, Nov. 1994 MOA

(7) Bicycle, bodaboda (bicycle taxis), motorbikes and tuku tukus (tricycles)

Original models of motorbikes and tuku tukus (tricycle) are imported but not so popular in Kenyan market. On the other hand, bicycles are welcomed to transport agricultural input and produce in rural areas. More than half of the annual demand for bicycles is imported from China, India, Taiwan and Japan (high grade mountain bikes). Bicycles have very high potential for local manufacturing.

Table 10-22 Import of Bicycles and Tyre

Equipment		2000	2002	2004	2006
1 Bicycles, assembled and partly assembled	Amount (Kshs. Million)	318	572	651	456
	No	135,221	386,503	722,418	240,000
	Kshs./No	2,352	1,480	901	1,901
2. Bicycle tyre	No	859,000	3,849,000	2,780,000	NA

Source: Trade Report, Customs and Excise Department, KRA, Statistical Abstract 2001-2006, KNBS

(8) Motor vehicle and accessories industry

Motor vehicle industry should be the engine to drive the manufacturing industry but it is still weak. Average annual selling amount is 3,000 units of commercial trucks and buses, and 6,000 units of passenger cars and the total 9,000 units, and the local contents are less than ten percent.

The motor vehicle industry can be categorized into 2 main industries, namely (i) assembly manufacturers for manufacture, assembly, re-building and major alteration of complete motor vehicles such as passenger automobiles, commercial cars and buses, lorries and truck trailers, and (ii) accessories manufacturers for manufacture of various parts used during vehicle assembly and also for spare parts market.

According to data from 3 motor vehicle assemblers, the number of locally assembled vehicles stood at 6,621 in 2004. However, the actual volume sold both in the domestic and export markets stood at 6,548 vehicles in the same year. The installed capacity stood at 28,700 vehicles in 2004, meaning that capacity utilization stood at 23.1 %.

Some of the critical issues for the future development of the sector include stiff competition from second hand vehicles, which started with liberalization of the economy. Massive importation of these vehicles has reduced the capacity utilization in vehicle assembly plants drastically.

The leading tyre company pulled out of Kenyan manufacturing due to (a) expensive electricity cost, (b) hike of transportation cost, (c) higher labour cost, (d) no increase of domestic demand, (e) insecurity and (f) change of marketing strategy in Africa. As such, it is necessary to improve the manufacturing environment.

(9) Major Agro-machinery for supporting agro-processing industry

Most agro- processing machines and facilities are of imported origin and most of them are timeworn. There are several advanced enterprises for local-manufacturing tea and coffee processing machines. However, it is still hard to enjoy reasonable profit. It takes a longer time to manufacture them locally instead of importing from the view point of the capability of getting competitive price, performance and quality against import machinery. The most important activity is to increase local manufacturing contents including belt conveyors, bucket elevators, silos and tanks, catwalks etc. Import value of food processing machinery shares around 0.5 % of the total import value as shown in Table10-24. At present, local contents of agro-processing machinery and facilities are estimated less than 5 %.

Table 10-23 Major Component Machinery and Supply Source for Agro-processing Industry

Commodity	Component machinery in Production Line	Supply Source
Maize	Weigher, Pre-cleaner, De-husker, Dryer, Flour mil, Weighing/Packer, Germ separator, Germ washer, Fibre washer, Chemical processing Equipment,	Full imports, small parts of tank, stand, catwalk are local made
Coffee	Pre-cleaner, De-stoner, Magnet Remover, Huller, huller Polisher, Colour sorter, Grader, Gravity separator, Weighing/Bagging/Packing/Sewing machine, Conveying equipment	Full imports except some Conveying equipment
Tea	Weigher, Steam boiler, Dryer, Winnower, Crusher, Fermenting machine, Grader, Sifter, Weighing/Packing machine,	Full imports, some local made of grader and conveying equipment
Cotton	Pre-cleaner, Ginning machine, Weigher/Bagger/Binder	Full imports
Edible oil	Grader, Crusher, Steamer, Press, Filter, Steam boiler, Dryer, Oil extractor, Distiller, Chemical processing Equipment	Full imports, some local made tank
Beverage	Material inspector, Water sprayer, Cutter, Pulper, Juice extractor, Filler, Flash pasteuriser, Seamer, Cooking tank, Labeler/Caser	Full imports
Wine & spirits	Mill, Washer, Metal remover, Steam boiler, Separator, Fermentation tank, Distilling tank, Filter, Weigher/Bottler	Full imports
Meat	Slaughter, Inspector, Dissector, Freezer, Cold storage, Weigher/Packer	Full imports
Dairy	Weigh tank, Cooler, Refrigerator, Heater, Homogenizer, Pasteurizer/Cooler, Clarifier, Paper bottle former/filler, Dryer, Cottage cheese vat	Full imports
Hide & skins	Liming mixer, Fleshing machine, De-limer, Pickling equipment, Drum & barrel	Full imports, some drum & barrel local made
Fishery	Sorter, Filleting table, Skinning machine, Inspector, Freezer, Cold storage, Brine dip, Pre-cooker, Scale/Packaging	Full imports

Source: The JICA Study Team

Table 10-24 Import of Food Processing Machines and Facilities (2000-2005)

Unit: Kshs. million

Item	2000	2001	2002	2003	2004	2005
(1) Food Process Machines	796	1,332	793	1,022	1,874	1,950
(2) Total Import Amount	247,804	290,108	257,710	281,844	364,205	443,093
(1)/(2) (%)	0.32	0.46	0.30	0.16	0.51	0.44

Source: The JICA Study Team

(10) Farm machinery

Local utilization of tractors and implements is very low, and local assembling of tractors is not active and the level of local contents for local assembling which may be locally manufactured, is also very low. FAO reports that number of agricultural tractors in use in Kenya is as follows: Apart from the number of tractors and farm machinery in use, annual introduction of tractors is estimated as average of 500-700 units. It is difficult to identify the number of tractors in use in Kenya. Agricultural

mechanization development programme is required to encourage foreign-affiliated and local manufacturers to manufacture agricultural machinery locally.

Table 10-25 Number of Tractors in Use in Kenya

Unit: Units

Equipment	1999	2000	2001	2002	2003	2004
Agric tractor	12,000	12,200	12,568	12,844	12,844	-

Source: FAOSTAT, FAO statistic Division 2007, 03 June 2007/06/20

Table 10-26 Import and Export of Farm Tractors

Unit: US$

Tractor	2002		2003		2004	
	Amount	No.	Amount	No.	Amount	No.
Import						
Farm Tractors	16,859,764	207 units	19,296,772	131,010 pcs	32,699,594	1,932units
Power Tillers	98,674	232 pcs	278,388	74 units	418,012	48 units
Export						
Farm Tractors	1,704,871	146 units	691,952	3,117 pcs	355,766	99 pcs
Power Tillers	2,723	25,000 pcs				

Source: UN Commodity Trade Statistics Database

Table 10-27 Imports of Agricultural Machinery and Tractors

Unit: Kshs. million

Equipment	1981	1988	1997	2000	2003	2005
Agric. Hand Tools	-	-	123	166	186	216
Quantity (‘000 pieces)	-	-	1,783	10,057	3,509	3,427
Unit Price/Piece (Kshs.)	-	-	69.1	16.5	53.0	63.0
Farm Tractors	142	404	909	641	843	1,493
Quantity (No.)	1,242	1,486	1,065	575	2,003(*	71,723(*
Unit Price (‘000 Kshs.)	114	272	854	1,115	41(*	21(*
Farm Implements	46	89	597	325	683	780
Total	188	493	1,629	1,132	1,712	2,489

Source: 1981 & 1988; Industrial Survey on Local Supply of Agricultural Machinery and Tools, MOA (GOK/UNDP-OPS AGROTEC PROJECT), 1997-2005; Statistical Abstract 1997-2006, KNBS

(11) Constraints facing manufacturers

Constraints facing manufacturers are summarised as follows, on the basis of foregoing discussions.

1) Poor access to agricultural market and marketing information

For manufacturers in the agro-machinery sub-sector, farmers are users/consumers of their products and also suppliers of material, which means that farmers are important actor for the manufacturers, and they have hints of business on the sub-sector. However, the linkage between manufacturers and farmers is still weak though some institutes and NGOs have started R & D in agricultural field.

2) Low scale of agro-processing and/or value addition

Production scale in this field is basically small and the production process is simple in comparison with other manufacturing sub-sectors; therefore, the advantage of large-scale does not apply here and

the value addition is limited to low level.

3) Old technology and insufficient use of equipment

Introduction of new input of technology and equipment is delayed by the low profitability of manufacturers, and the vicious circle of worsening factor conditions and decreasing profitability continues. It is indispensable to identify the bottlenecks in manufacturing process.

4) Shortage of raw steel materials and stocks

High cost of steel is one of the crucial problems for agro-machinery sub-sector as well as other machinery sub-sectors, though the other costs for manufacturing are also high in Kenya. It is recommended to take necessary measures for purchasing raw steel in order to procure with less expensive price.

10.2.3 Development Scenarios

(1) Promotion of farming mechanisation

Most manufacturers, especially foreign-affiliated enterprises of agricultural machinery have cautious attitudes toward investing in and promoting local manufacturing industry in Kenya. An agricultural mechanization development programme is necessary to be provided and put into practice through a review of The National Agricultural Mechanization Strategy (draft) formulated by MOA in 1995 so that the programme can more realistically be realized matching with current status. In formulating this programme, smooth coordination and efficient linkage should be exercised among the related ministries and agencies including MOA, MOTI, MOLF, MLHRD, KEBS, JKUAT, Moi University and Egerton University, Jua Kali Association (JKA) on behalf of micro enterprises, KAM on behalf of agro-machinery manufacturers, etc.

Reviewing the results, performed in the development projects on farm mechanisation and MSMEs so far, the following lines are recommended for the farming mechanisation.

Table 10-28 Overall Agricultural Mechanization Development Programme

Item of Implementation	2007-2010	2011-2015	2016-2020
(1) Practical substantiation of agricultural mechanization required by farmers (MOA, MOTI)	✔		
(2) Develop Jua Kali sector by recruiting and training artisans at local level (MOA, MOTI, MLHRD, JKA)	✔	✔	✔
(3) Introduction and extension of small scale agricultural mechanisation including animal drawn machines (MOA, MOTI, MOLF, KEBS, JKUAT, Moi Univ., Egerton Univ.)		✔	
(4) Strengthen small-scale manufacturing/repairing shops for after-sale servicing in local areas (MOA, MOTI, JKA)		✔	✔

Note: Agencies and institutions on duty of each item are shown in parentheses.

(2) Promotion of agro-machinery exports

The most critical issue facing the manufacturers and importers is the low level of demand, which hinders efforts to decrease production cost, to produce acceptable cheaper products and to increase productivity, bringing poor cycle between manufacturers and farmers. For example, the best seller

posho-mill (maize sheller/milling machine) is assembled only 3 sets in 4 days, thus effective demand must be expanded to reduce production cost. To alleviate this issue, it is necessary to plan both domestic and COMESA market from the beginning. Coupled with the above-mentioned agricultural mechanization development programme, a strategy of agro-machinery export is necessary to be provided and implemented particularly targeting the COMESA market. Now and even in future, COMESA is the promised market for agricultural machines and equipment manufactured in Kenya. In formulating the strategy, a survey on demand/outlets of agro-machinery in COMESA market shall be carried out to explicitly determine the concrete targets. In formulating this programme, smooth coordination and efficient linkage should be exercised among the related ministries and agencies including MOTI, EPC, JKUAT, JKA, KAM and etc.

The following lines are recommended for the agro-machinery exports.

Table 10-29 Overall Agricultural Machinery Export Programme

Item of Implementation	2007-2010	20101-2015	2016-2020
(1) Constitute task forces to promote agricultural machinery export (MOTI, EPC)	✔		
(2) Make the feasibility study (MOTI, EPC, JKUAT, JKA, KAM)	✔		
(3) Research the market at least three COMESA countries with high priority (MOTI, EPC, JKUAT, JKA, KAM)	✔		
(4) Open trade fairs at selected COMESA countries (MOTI, EPC, JKUAT, JKA, KAM)	✔		
(5) Expand export to the 1st ranking COMESA country (MOTI, JKA, KAM)	✔		
(6) Expand export to the 2nd ranking COMESA country (MOTI, JKA, KAM)		✔	
(7) Expand export to the 3rd ranking COMESA country (MOTI, JKA, KAM)			✔

Note: Agencies and institutions on duty of each item are shown in parentheses.

10.2.4 Development Strategy

As to what have been recognized as individual issues, they require to implement concrete countermeasures within the short-term framework. The government of Kenya has repeatedly addressed most of the following tasks through its efforts in terms of programming and partial implementation since its independence, but such efforts have not necessarily resulted in effective realization due to incomplete budget allocation and insufficient participation of farmers and manufacturers when formulating programmes. Hence, it will be necessary to formulate secure/efficient and concrete implementation programmes in accordance with the development scenarios, and to put them into practices towards 2020.

(1) Agricultural mechanisation service stations

1) Future direction

Mechanisation services are highly required by small-scale farmers, who have difficulties to have their own machines and equipment. Public agro-machinery hiring service with operators, called as

Plant Hire Service, used to be functioned though the system is currently dormant with very few users. Before implementing the programme, it is necessary to review the background of the present situation. Government tractor hire services started in 1966 with the assistance of WB, with 50 tractors. Main objectives including i) to open new areas for agricultural production, ii) to introduce modern agricultural techniques to farmers and to stimulate private ownership of farm machinery, iii) to supplement land preparation where private contractors are not sufficiently operative and iv) to increase agricultural productivity, especially cash crops, which are important to the Kenyan economy. The programme expanded its scale with197 tractors in 17 stations in 1981, and 20 tractors were added in 1990. However, it failed finally and discontinued services due to shortage of the budget for operation and the poor management.

With the above background, it is considered necessary to privatise the service station to improve the management efficiency. The hiring machinery is not necessarily confined to farm tractors but can also be used as harvesting and post-harvest machinery, and animal drawn power complete with attachments for ploughing, harrowing, ridging, planting, weeding and transport. Thereby it enables to meet labour shortage and to improve productivity of farms owned by smallholders and works to economize production costs. In implementing the proposed measures, it would be worth referring to successful examples of similar projects in other countries such as on-going Agricultural Mechanization Centre Project in Egypt in cooperation with JICA.

2) Role of ministries (MOTI and MOA)

In order to provide a practical framework of the agro-machinery hiring system, it is indispensable to review the past programme of the tractor hiring and to grasp actual needs of users, which is the role of MOA. And the services provided by the stations have to be conformed to the needs in collaboration with the related manufacturers. The main role of MOTI is to facilitate the participation of the manufacturers to the project, and harmonise their business with the progress of agricultural mechanisation.

(2) Strengthening the system of mutual cooperation among stakeholders

1) Future direction

In order to promote extension of agro-machinery, it is necessary to harness mutual cooperation/ coordination among three types of stakeholders, namely agro-machinery manufacturers, marketing/sales-related dealers and machinery engineers. With a view to realizing the promotion and strengthening of the aimed cooperation and coordination, various provision of opportunities as well as supporting assistance are considered necessary through the collaboration with MOA and MOTI. It is considered necessary to include provision of mechanisation fora/seminars and extension programmes and support on the provision of the budget for implementing these activities.

2) Role of ministries (MOTI and MOA)

There are lot of agencies, institutes and associations, which are indispensable for the extension of agro-machinery. Hence, MOTI is required to oversee those organisations and to assign them necessary tasks. The main role of MOA is to find out proper usage of agro-machinery for the

extension in collaboration with MOTI.

(3) Establishment of manufacturers' associations in agro-machinery sub-sector

1) Future direction

It is suggested to establish manufacturers' associations, which would collect and disseminate the information on market, technology, products, and manufacturers data as well as having the function to link with public sector. Such manufacturers' associations are expected to contribute to the local contents for agro-processing products, that is currently estimated at 10 % or less and to enhance manufacturing technology. For instance, in employing a bucket elevator as a part of production line, it is currently very difficult to obtain information as to by whom, where and with what quality it is produced. Moreover, it is necessary to establish those associations in order to develop understanding of "competition and cooperation", that is indispensable for manufacturing promotion, and also for promotion of eradicating various constraints in the business circumstances.

2) Role of ministries (MOTI)

Main role of MOTI is to constitute the taskforce and explore with the members of the taskforce on which manufacturer sub-sectors need associations and what types of function should be provided to such associations. Based on the result of the study, MOTI would encourage related enterprises to establish the manufacturers' associations by providing them with convincing explanation.

(4) Grouping for procuring raw material

1) Future direction

Manufacturers have to resort mainly to import to procure prerequisite raw material to manufacture agro-machinery due to lack of blast furnace in Kenya, and recent global price hikes of iron ores and outstanding progress of monopoly in iron industry make Kenyan manufacturing industries progressively disadvantageous. Therefore, imports by individual import traders and manufacturers would lead to higher procurement costs because of small quantity order and sometimes exporters' strong cartels.

To cope with this issue, it is envisaged necessary to secure procurement of raw material at reasonable prices by grouping the enterprises, which purchase hard steel from foreign countries. Those syndicates can nurture bargaining power against foreign steel supplier firms, thereby, procurement of raw material at reasonable price levels will be secured.

2) Role of ministries (MOTI)

Main role of MOTI is to constitute the taskforce and support the arrangement of making company groups, which will carry out a cooperative purchase method of raw material from foreign countries. The taskforce discusses the strategy of the cooperative purchase method with the company groups, and intermediate the bargaining between the groups and foreign countries/enterprises. In the bargaining with steel producing countries/producer enterprises, the government would be expected to provide support to Kenyan enterprises as much as possible.

(5) Pilot project for development of Bio Diesel Fuel (BDF) production plant

The project goal is to develop a small-scale plant to extract from jatropha nuts material of bio-diesel fuel, as part of the development of agro-processing sub-sector. Local equipment and technology should be fully utilized for developing the plant. While implementing the project, all information on the progress of plant and facilities are expected to be publicly available. Such information includes its capacity, performance manufacturing system and manufacturing cost reduction know-how. The information should be disseminated through various leaflets, media, event demonstration, training seminar, etc. and it will contribute to the development of new manufacturing industry.

It should be noted that the prototypes developed by the governmental institutions or university in the past failed to commercialise because the R & D was not well-coordinated and linked to commercial manufacturers. In formulating the project, smooth coordination and efficient linkage should be exercised among BDF material production project implementing agencies including MOTI, other government organisations, JKUAT and manufacturers in private sector. Development of component machines for small-scale plants is required as follows:

i) Oil extraction unit: Improved unit from motor driven proto type developed by KIRDI and JKUAT. B-30 extracted is already used for farm tractors inside university without any problem.

ii) Oil refining stabilization unit: An anti-oxidation unit already developed by KIRDI could be modified.

iii) Bottling/Canning facilities: simple and handy bottles/cans of extracted BDF

iv) Storage facilities: Tank for safe storage of extracted BDF

For further details and concrete items of implementation with agencies and institutions on duty please refer the forward section in Chapter 10.1.4-(6)-1).

10.3 Development of Electrics, Electronics / ICT Sub-sector

10.3.1 Introduction

Electrics, electronics / ICT sub-sector was selected as one of the target sub-sectors not because of its current strength but because of its market opportunities. The investment climate in ICT has been rapidly expanding because of the optical fibre backbones, which are expected to be introduced to Kenya within a year. The Kenya Communications (Amendment) Bill has been submitted to the Attorney General's Office, and is awaiting discussion in Parliament. The draft Bill envisages setting up a Universal Service Fund, which provides access to the Internet throughout the country. This means that electrification shall be rapidly promoted, and the size of local demand for electronic equipments shall be expanded. Yet, potential of expansion of the manufacturing sector in relation to the growth of ICT has not been highlighted.

ICT is very important for social and economic growth in Kenya. ICT has great potential for generating domestic production. One model is observed in India, which has grown to be the big ICT

power globally. In India, the service sector contributed to 54 % of the GDP in 2005.[110] ICT sector has become a very attractive source of employment for educated people in India; yet, many of the uneducated people are still left out in poverty[111]. Kenya can learn from the model case of India because Kenya has similarities with India; i.e. having a good pool of well educated, English speaking people and the time difference from USA. By strengthening the ICT infrastructure and sound policy support, Kenya does indeed have the potential to become the ICT hub in Central and East Africa. Yet, it is important to develop strategies for the manufacturing sector in order to take advantage of ICT development because ICT alone cannot absorb the needs for employment. This is why the study on the electrics, electronics / ICT sub-sector is vital at this time.

The relationship between the manufacturing sector and ICT comes in two ways. The manufacturing sector can supply products for the expansion of ICT; i.e. electrics, electronics products. On the other hand, ICT can support the development of the manufacturing sector through e-commerce, supply chain management, point of sales (POS) system, etc. Chapter 10.3.2 and Chapter 10.3.3 review and discuss the strategy for strengthening forward linkages, in which the manufacturers serve as suppliers to ICT, while Chapter 10.3.4 discusses strengthening backward linkages, in which ICT serves as the supporting industry to the manufacturing sector.

10.3.2 Overview of Electrics, Electronics / ICT Sub-sector

(1) Trends of the electrics, electronics sub-sector

1) Global trends

Electrics, electronics sub-sector has one of the most competitive markets in the world. Based on the survey of 51 leading countries, the world total production of the electrics, electronics sub-sector was US$ 1,416 billion with the annual growth rate of 7.2 % while the size of global market of the sub-sector was US$ 1,390 billion with the growth rate of 5.5 % in 2005.[112]

Over 70 % of both production and the market are occupied by 10 top countries out of surveyed 51 countries (Table 10-30). For both production and market, USA is the biggest player, followed by China and Japan. A common characteristic in East and South East Asian countries such as China, South Korea, Malaysia, Singapore, and Taiwan is that they produce more electronic products than their own market. Especially, the production volume in South Korea, Malaysia, and Singapore are more than twice the market.

[110] WB 2007, World Development Indicators, p.195
[111] The major employment source in India is still the agriculture sector. The agriculture sector provided 60 % of the total employment in India while the service sector provided 28 % in 2003. [CIA, *The World Fact Book* <https://www.cia.gov/cia/publications/factbook/geos/in.html>]
[112] Reed Electronic Research (2006) *Yearbook of World Electronics Data 2006/2007,* Volume III, pp.14,18

Table 10-30 World Production Centres and Markets of the Electronic Equipment in 2005

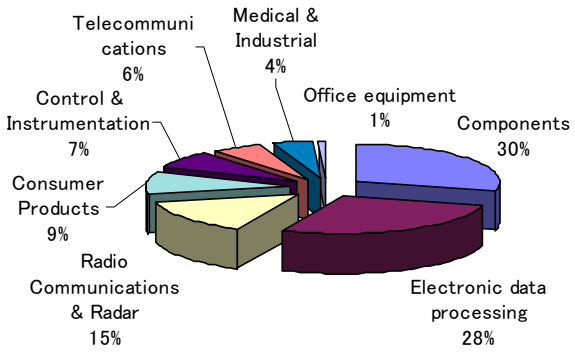
Unit: Million US$

Market			Production			Production/Market
Country	Amount		Country	Amount		
1 USA	386,046	28%	1 USA	282,697	20%	73%
2 China	182,931	13%	2 China	260,161	18%	142%
3 Japan	150,451	11%	3 Japan	192,878	14%	128%
4 Germany	74,116	5%	4 South Korea	106,561	8%	268%
5 UK	55,073	4%	5 Germany	67,599	5%	91%
6 France	41,258	3%	6 Malaysia	48,968	3%	245%
7 South Korea	39,814	3%	7 Singapore	48,373	3%	202%
8 Italy	32,942	2%	8 Taiwan	41,331	3%	178%
9 Mexico	31,620	2%	9 UK	36,286	3%	66%
10 Brazil	30,743	2%	10 Mexico	35,590	3%	113%
Top 10	1,024,994	74%	Top 10	1,120,444	79%	151%
11 Canada	29,996	2%	11 France	32,685	2%	79%
12 Singapore	23,997	2%	12 Thailand	23,349	2%	163%
13 Taiwan	23,192	2%	13 Brazil	22,283	2%	72%
14 Malaysia	20,025	1%	14 Ireland	19,180	1%	195%
15 Spain	18,964	1%	15 Italy	16,818	1%	51%
Top 15	1,141,168	82%	Top 15	1,234,759	87%	138%
31 South Africa	7057	0.5%	40 South Africa	1,629	0.1%	23%
50 Egypt	1059	0.1%	49 Egypt	312	0.0%	29%

Note: The percentage shows the share to the total production or markets of surveyed 51 countries.
Source: Reed Electronics Research (2006) Yearbook of World Electronics Data 2006/2007. Volume 3

Overall, African markets for electrics, electronics sub-sector have not fully developed because of the purchasing power of the people and the low electrification rate. South Africa and Egypt are the only African countries among those surveyed, but their shares in the global markets are small in terms of both production and markets. In production, South Africa ranks in 40th and Egypt in 49th. In the market, South Africa ranks higher at 31st, but Egypt at 50th.

The product breakdown for the global markets of the same data is shown in Figure 10-3. Electronic data processing including PC and radio communications & radar including mobile phones have the second and the third largest shares respectively after the components, which account for 30 % of the total electrics, electronics market. The radio communication & radar market is the fastest growing product category with growth rates of 16.4 % and 6.7 % in 2004 and 2005 respectively. Among three top product categories, USA, China, and Japan occupy approximately half of the global share both in terms of production and markets while South Korea is another major player in production (Table 10-31).



Note: Components: TV tubes, X-ray tubes, diodes, transistors, photocells, IC, capacitors, resistors, switches, printed circuits boards, microphones, loudspeakers, amplifiers, unrecorded media, cabinets, accessories, etc.
Electronic data processing: Computers, printers, modems, disks, etc.
Radio Communications & Radar: Mobile radio telephones, radar, navigation aids, transceivers, broadcasting, etc.
Consumer equipment: TV, video, DVD, camera, audio, watch, etc.
Control & instrumentation: Process control instruments, oscilloscopes, analytical instruments, measurement, etc.
Telecommunications: telephone, facsimile, telephone lines, etc.
Medical & Industrial: X-ray & medical equipment, railway & traffic signalling, security fire alarms, etc.
Office equipment: typewriters, calculators, cash registers, dictation equipment, photocopies, etc.
Source: Reed Electronics Research (2006) Yearbook of World Electronics Data 2006/2007. Volume 3

Figure 10-3 Global Market Share by Product Categories in 2005

Table 10-31 Top 5 Countries for Production and Markets of the Electronic Equipment in 2005

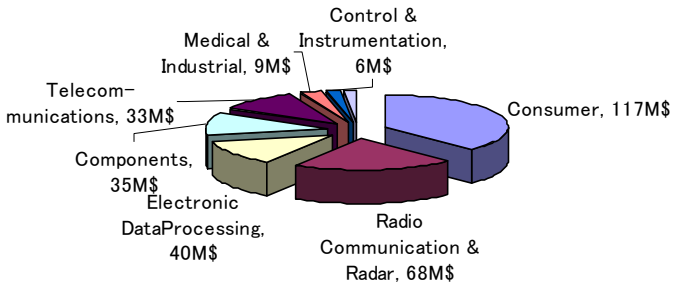
Components			
Market		Production	
Country	Share (%)	Country	Share (%)
China	20.2	Japan	22.1
USA	16.2	USA	16.1
Japan	15.5	S.Korea	11.3
S.Korea	5.3	China	9.6
Germany	4.6	Malaysia	6.0
Electronic Data Processing			
Market		Production	
Country	Share (%)	Country	Share (%)
USA	27.4	China	32.4
China	13.7	USA	15.8
Japan	9.5	Japan	8.7
Germany	6.2	S.Korea	5.6
UK	4.6	Singapore	5.4
Radio communications & Radar			
Market		Production	
Country	Share (%)	Country	Share (%)
USA	42.3	USA	27.1
Japan	10.7	China	14.7
China	6.9	S.Korea	13.1
UK	4.8	Japan	11.9
France	3.2	France	4.8

Source: Reed Electronics Research (2006) Yearbook of World Electronics Data 2006/2007. Volume 3

2) Case study of electrics, electronics sub-sector in Egypt

In 2002, electrics, electronics sub-sector in Egypt created value addition of US$ 370 million, which is 12 times as much as contribution of the same sub-sector in Kenya.[113] Reaching the size of Egypt by 2020 requires an annual growth rate of 15 % for Kenya. This is an ambitious target growth rate, but having an ambitious target rate with an actual case in the region is a good reference for Kenya in setting up her strategies.

Production of electronic products in Egypt has grown by 7.4 % per annum between 1997 and 2004 compared to average growth of the industrial production at 2.6 % between 2001 and 2004. The largest earner is the consumer products, particularly video equipment, but the growth of consumer products has stagnated since 2001. The second largest is the radio communications and radar, specifically mobile phones, which contributed 50 % of the electronics export from Egypt in 2004. The third largest segment is electronic data processing with 20 PC assemblers.[114]



Note: Consumer equipment: TV, video, DVD, camera, audio, watch, etc.
Radio Communications & Radar: Mobile radio telephones, radar, navigation aids, transceivers, broadcasting, etc.
Electronic data processing: Computers, printers, modems, disks, etc.
Components: TV tubes, X-ray tubes, diodes, transistors, photocells, IC, capacitors, resistors, switches, printed circuits boards, microphones, loudspeakers, amplifiers, unrecorded media, cabinets, accessories, etc.
Telecommunications: telephone, facsimile, telephone lines, etc.
Medical & Industrial: X-ray & medical equipment, railway & traffic signalling, security fire alarms, etc.
Control & instrumentation: Process control instruments, oscilloscopes, analytical instruments, measurement, etc.
Source: Reed Electronics Research (2006) Yearbook of World Electronics Data 2006/2007. Volume 3

Figure 10-4 Electronics Production in Egypt in 2005

Although the electrics, electronics sub-sector is fast growing, it still shows structural weakness. Table 10-32 shows that the importation of electronic products is 23 times larger than that of exports. Egypt relies on imports of electronic products from developed countries while exporting to the Middle East and African countries. Estimated Revealed International Competitiveness (RIC)[115] was at minus 2.39 in 2004. Expansion of electronic markets in the Middle East and Africa is the key to improve international competitiveness of the electrics, electronics sub-sector in Egypt.

[113] On line data of UNIDO <http://www.unido.org/>
[114] Reed Electronics Research (2006) Yearbook of World Electronics Data 2006/2007. Volume 3
[115] RIC: (Export *i* - import *i*) / Production *i*

Table 10-32 Egyptian Major Trading Partners for Electronic Products in 2004

Import Origin	Value (US000$)		Export Destination	Value (US000$)	
China	128,130	19%	Iraq	8,625	29%
Germany	108,546	16%	Algeria	4,785	16%
USA	63,252	9%	Sudan	2,550	8%
France	55,384	8%	Ethiopia	1,990	7%
Italy	45,279	7%	Saudi Arabia	1,704	6%
Rep. of Korea	40,237	6%	Pakistan	1,572	5%
Japan	34,861	5%	Libya	1,095	4%
Sweden	21,209	3%	United Arab Emirates	893	3%
Finland	20,930	3%	Afghanistan	855	3%
United Kingdom	20,560	3%	Kenya	781	3%
Netherlands	10,484	2%	Kuwait	615	2%
Switzerland	9,699	1%	Jordan	482	2%
Subtotal	558,570	81%	Subtotal	25,947	86%
Others	132,459	19%	Others	4,108	14%
Total	691,029	100%	Total	30,055	100%

Source: HS1992 code 85; UN Commodity Trade Statistics Database

Egypt takes vigorous measures to attract FDI into the electrics, electronics sub-sector. One of the measures is establishment of a high-tech park, Smart Village, on the outskirts of Cairo. The Smart Village project takes Public-Private Partnership scheme, in which the Ministry of Communications and Information Technology invested 20 % in the form of 300 acres of land. The other 80 % was investments from 48 private organisations. Upon completion of the project, the Smart Village plans to have 67 office plots in 450 acres where 90 % of the land will be dedicated to green areas, ponds, lakes, fountains, and water streams.[116] Targeting at a higher growth of electrics, electronics sub-sector, Kenya has to consider seriously such initiatives already taken by her competitors.

(2) Current status of the electrics, electronic sub-sector in Kenya

1) Sub-sectoral performance

Although the Kenyan industry has variety in its sub-sectoral activities, electrics, electronics sub-sector is one of the sub-sectors whose activities are at an infant stage. Registered electrical machinery and appliance manufacturers were only 69 companies with Kshs. 3,021 million value addition and 3,039 employees in 2005.[117] 55 % of the formal companies in this sub-sector are large-scale. Due to the small number of players, the contribution of this sector to the total value addition of the manufacturing sector was only 2 % in 2005. (See Table 9-2 in Chapter 9.3.2)

Among the members of KAM, 16 companies in Table 10-33 were identified as electrics, electronics manufacturers. Many of them produce power and telecommunication supply equipment. Some foreign-origin companies, such as Sanyo and Sollatek, stopped production in Kenya and are now undertaking maintenance and repair on their imported products. The main reason for ceasing production is the high production cost in Kenya, making it uncompetitive to produce locally against

[116] Home page of Smart Village <http://www.smart-villages.com/>
[117] Data obtained from KNBS

the imported products.

Table 10-33 Electrics, Electronics Manufacturers of Kenyan Association of Manufacturers

Company Name	Products	City
Kenya Power & Lighting Co. Ltd.	Electricity (Transmission and Distribution)	Nairobi
Associated Battery Manufacturers (E.A.) Ltd.	Lead Acid Starter Batteries and Solar Batteries	Nairobi
Eveready Batteries Kenya Ltd.	Dry Cell Batteries, Flashlights & Shick Razors	Nairobi
International Energy Technik Ltd.	Motor, Inveters, Transformers, Automatic equipment, Electronic Apparatus-Low,/High Voltage, Boards, Panes.	Nairobi
Metlex Industries Ltd.	Compare Demag Air Compressors and Driers, Domnick Hunters Filtration for Gas and Air, Ingersoll-Rand Tool, Saer Pumps, Roto Pumps	Nairobi
Power Engineering International Ltd.	Electrical installation, Networking Cabinets, Metering Panels, Switchboards, Trunking, Street Lighting Columns, Cable Managers and a wide range of Lighting Fittings.	Nairobi
Power Technics Ltd.	Electrical Switch Board, Motor Control Centre, Power Correction equipment systems	Nairobi
Reliable Electricals Engineers (Nrb) Ltd.	Control Panels, Switchboards, Lighting Fittings, Cable Trays, Trunking, Networking	Nairobi
East African Cables Ltd.	Copper/Aluminum Cables & Conductors	
Metsec Ltd.	Electrical and Telecommunication Cables	Nairobi
Kenwestfal Works Ltd.	Low Voltage Power Cables, Wiring Cables	Nairobi
Business Forms & Systems Ltd.	Printers and Stationers	Nairobi
Frigorex East Africa Ltd	Commercial Regrigerators	Nairobi
Sanyo Armco (Kenya) Ltd	Electronic equipments	Nairobi
Mecer East Africa Ltd.	Computer Assembly	Nairobi
Sollatek Electronics (Kenya) Ltd.	Stablisers, Solar Power Equipments	Coast

Source: KAM (2006) Kenya Association of Manufacturers Directory 2005/2006

However, a recent trend shows an emergence of new investors such as Mecer East Africa Ltd. (computer) and Aucma Digital Technology Ltd. (TV). Between 2001 and 2005, the electrics, electronics sub-sector received Kshs. 634 million in foreign investments, which were the third largest in the manufacturing sector. Foreseen market expansion has brought in new investment to Kenya. Mecer sees Kenya as a destination centre to East and Central Africa. Mecer chose Kenya because of her strategic location with the Jomo Kenyatta International Airport and the Mombasa Port. On the other hand, Aucma captures the market demand by producing affordable priced TVs. The government has to make the best of this investment trend by providing enhanced infrastructure and efficient public services in order to support the increase in their productivity. If the government disappoints the investors, it will be very difficult to catch the next trend because of severe global competition in the electrics, electronics sub-sector.

Table 10-34 New Investors in Electrics, Electronics Sub-sector (2000-2005)

Company	Activities	Country	Year
Mahima Impex Kenya Ltd	Assembly of electronic equipment	Hong Kong	2000
Laibao (K) import&Exports Dev. Ltd	Spare parts VCD & radio assembly	China	2001
Hualong Kenya Commercial & Trading Co.	Assembly of electronic equipment	China	2002
Mecer East Africa Ltd.	Assembly of computers	South Africa	2003
Changhong Electronics (E.A) Ltd	Assembly of electronic goods	China	2003
Rajpal International Ltd	Assembly of electronics	India	2003
Aucma Digital Technology Ltd	Manufacture of TV, DVD, VCD	China	2004
IT Recycle Kenya Limited	Computer assembling	Germany	2004
MIDA Limited	Assembly of electronic machines	Slovakia	2004
Newline Ltd	Assembly of computers	Turkey	2004
Kenya AA Electric Crane Company	Manufacture of electric machines and construction	China	2005

Source: Data obtained from KRA

The current underdeveloped nature of the electrics, electronics sub-sector is explained by the market situation in Kenya. Firstly, the electrification rate is still low in Kenya. The last census done in 1999 showed that only about 13.5 % of households were electrified. When retired people from the city go back to their rural villages, they give away their electronic equipment to their relatives and neighbours. Therefore, the newly generated demand for electronic equipment by households is limited. Furthermore, most of the existing electronic manufacturers target institutions rather than households. In planning for the development of electrics, electronics sub-sector, it is important to consider a strategy for electrification simultaneously. Secondly, the electronic goods market is flooded with imported goods. Even simple equipment like radios and electronic motors are imported. In 2004, Kenya imported US$ 282 million electric machinery and equipment compared to US$15 million export and US$ 95 million domestic production.[118] This makes RIC at minus 2.79, which shows heavy reliance on importation of the electronic commodities. Kenya imported from 99 countries, but exported only to 38 countries. Exports to Tanzania, Uganda, Rwanda, and Sudan accounted for 75 % of the total exports.

[118] Export and import data are obtained from COMTRADE (Code No. 85 of HS2002) while the domestic production data are obtained from KNBS on the category of the electrical machinery. Local currency was converted by the annual mean exchange rate (79.28 Kshs./US$).

Table 10-35 Major Trading Partners for Electronic Commodities (2004)

Unit: US$ 000

Import			Export		
Partner	Amoount		Partner	Amount	
France	42,869	15%	Tanzania	4,865	33%
Belgium	41,458	15%	Uganda	3,449	23%
UK	37,717	13%	Rwanda	1,596	11%
Italy	18,305	6%	Sudan	1,190	8%
USA	17,295	6%	USA	989	7%
China	16,214	6%	Somalia	666	5%
UAE	12,544	4%	South Africa	227	2%
South Africa	11,022	4%	Burundi	198	1%
Germany	9,821	3%	Ethiopia	174	1%
India	8,644	3%	France	132	1%
Japan	6,878	2%	Zambia	123	1%
Netherlands	6,868	2%	UAE	122	1%
Finland	6,785	2%	Switzerland	95	1%
Egypt	6,333	2%	Israel	76	1%
others	39,538	14%	others	884	6%
Total	282,291	100%	Total	14,787	100%

Source: UN Commodity Trade Statistics Database

Table 10-36 Major Imported Electronic Commodities (2004)

Unit: million US$

HS2002	Description	Amount
8517	Electrical apparatus for line telephony or line telegraphy	71
8525	Transmission apparatus for radio-telephony, radio-broadcasting	35
8504	Electrical transformers, static converters (for example, rectifiers)	18
8529	Parts suitable for use with the apparatus of headings 85.25 to 85.28	15
8524	Records, tapes and other recorded media for sound	15
8536	Electrical apparatus for switching or protecting electrical circuits	14
8526	Radar apparatus, radio navigational aid apparatus and radio remote control	13
8502	Electric generating sets and rotary converters	12
8528	Reception apparatus for television	7
8516	Electric instantaneous or storage water heaters and immersion heaters	6
8501	Electric motors and generators (excluding generating sets)	5
8539	Electric filament or discharge lamps, including sealed beam lamp units	4
8507	Electric accumulators, including separators therefor	4
	Others	62
	Total	282

Source: UN Commodity Trade Statistics Database

2) Product-specific performance

In this section, current status of electrics, electronics sub-sector is explained more in details with accounts of product-specific activities.

A) Industrial equipment（power switchboard, etc.）

Among all the activities in the electrics, electronics sub-sector, Kenya shows strength in power supply facilities; particularly, power switchboard. Kenya's unique conditions in power failure and voltage change call for customised production for the large and medium scale enterprises. It is

assessed that Kenya already has sound technology in production of switchboard. An issue for improvement is seen more on production management side, and lack of standardisation of modules is causing it to have wider variations of inventories. Enhancement of the production management and standardisation would help to reduce the inventory and stabilise the monthly production volume; thus reducing operating capital.

B) Power generators

Due to the shortage in energy supply, power generators have a big market in Kenya; yet most components of the power generators are imported. There are varieties of power generators available in the markets; i.e. diesel generators, solar panel, wind power, and hydro power. Diesel generators are less in initial cost, but others are cheaper in running cost. It has been assessed that there are enough skills and know-how to offer support in installation and maintenance of any type of generators in Nairobi. However, the engineers in rural areas still lack installation and maintenance knowledge of non-diesel generators. Moreover, the system design in combining modules is still insufficient although customer-order installation of generators can create high value. There is a need to strengthen education and training on system design.

C) PC assembly

PCs are one of the major electronic equipments in offices. This is a fast growing market, but there is currently only one local assembler, Mecer East Africa. Ltd. Mecer originates from South Africa. All module parts are imported, and only assembling is being conducted in the factory. The local supply is only for the packaging materials while the design of the packaging is ordered from South Africa. Mecer has a strategy to expand its markets to the Central and East Africa, taking Kenya as a hub country. It has recently established a new factory in Parklands, Nairobi, to increase its production volume.

MOIC has taken the initiative to increase the local supply of PCs. The purpose of the local supply is to benefit rural and poor communities with cheaper PCs.[119] This is called Madaraka PC Project. Kenya College of Communications Technology is the coordinating agency for this project. Three private companies are supplying imported products, and assembling is being done at JKUAT, UON, and Strathmore University. Assembled PCs are called e-Mado. The project plans to outsource assembling work to the youth for job creation. In order to increase the local content, JKUAT and UON are developing power supply and mother board respectively.

D) Consumer equipment（refrigerator, TV, radio, etc.）

Because of the low electrification rate, the market for consumer products is not growing as fast as office equipment. Major multinationals which operated in 70's and 80's stopped assembling in Kenya because of the combination of high production cost, reduced tariff on final products, and the small market. This resulted in importation of the final products being more profitable than local

[119] The first model of E-Mado shall be priced at Ksh 40,000 (256MM DDR Ram, 80GB Hard Desk, Pentium 4).

manufacturing.

However, new assembly makers are coming into Kenya as listed in Table 10-34. With the influence of ICT, which fastens the electrification rate of households, the market for the consumer products is also expected to grow; albeit slower than that of the office equipment.

E) Supporting industries

Development of the electrics, electronics sub-sector requires support from the metalwork and plastics sub-sectors. It is generally observed that Kenya already has a few, but very good metalwork and plastic makers. Particularly, existence of good mould and die makers can provide significant contribution to the development of the Kenyan industry; not only electric, electronic sub-sector but also metalwork, plastics, machinery, and automotive sub-sectors.

The problem is, however, such capabilities are not shared within the industry as well as with the Government. The manufacturers still rely on imported moulds and dies and continue undertaking low-value added production activities. It is recommended that the Government be aware of such technological capabilities and start matching businesses with new investors in Kenya. The following explains the status of major supporting industries for the electrics, electronics sub-sector.

a) Mould and die makers

Kenya already has some good mould and die makers including injection mould and blow mould using CAD, CAM, CNC, and electro-erosion machines. A few companies can even produce deep-drawing mould, which requires high skills. Although the companies are themselves equipped with sound technology, such high skills are usually concentrated in a few engineers within the company. There is a need to upgrade the overall skills of the employees.

b) Plastic injection moulding

There are many plastic injection mould companies, but value addition of plastic injection itself is small. A majority of companies rely on imported injection machines and imported dies, and the linkage with the local mould and die makers is weak.

c) Metal plate pressing

There are also many metal plate pressing companies. Like the plastic injection moulding, value addition of metal plate pressing itself is small. A majority of companies rely on imported injection machines and imported dies, and the linkage with the local mould and die makers is weak.

d) Other service providers

While Kenya already has sound manufacturing capabilities in plastics and metalwork, her capability in production of electric components are very small. However, there is one company, which can provide maintenance and training services of the motherboard. The owner of the company is the Chairman of Institute of Electric Electronic Engineers (IEEE). IEEE is an international body of professionals for electric, electronic engineers. IEEE Kenya, section of IEEE Region 8, has about 50 members. It holds annual exhibitions for students and provides awards to the most innovative

demonstration. IEEE connects Kenya to the most advanced technological information on electrics, electronics in the world. It is important to be aware that such skills already exist in the Kenyan private sector although the number of players is still very small.

F) Packaged software sub-sector

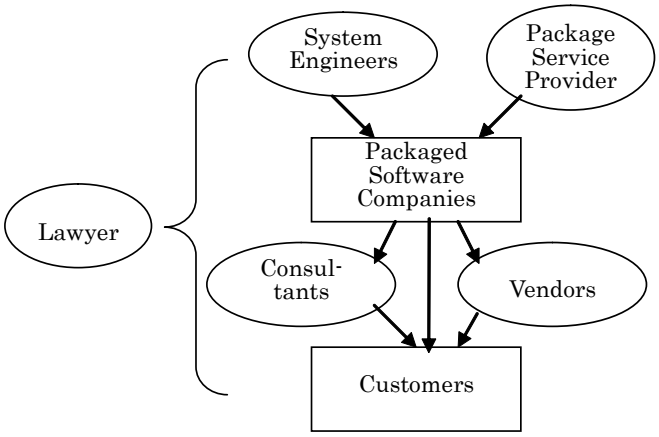
Packaged software, categorised under "publishing, printing, and reproduction of recorded media" in ISIC Rev. 3, is a newly emerging business in Kenya. Software development is a popular business among the start-up companies because of low-investment compared to other manufacturing activities. However, most of the software companies deal with customised software solution, and development of the packaged software sub-sector is still very limited. Synergy-pro is one of the few identified companies and is probably the first comer in production of the packaged software solution. There are several other packaged software companies targeting institutional customers. They are now organising themselves to form a group so that they can share an outsource network and also advocate to the Government. Because the Government does not realise the existence of the local packaged software companies, it keeps purchasing imported software. It is necessary that the software companies be grouped into one and appeal to the Government for support. The local packaged software companies have comparative advantages than imported products because they can support locally and version up in response to the needs of the local customers.

Box 10-1: Synergy-pro

Synergy-pro produces packaged application for customer service (trouble-record keeping). It sells its product in Kenya, Uganda, and Rwanda. Targeting institutional customers, the company does direct sales and support to the customers. It started business in 2001. The owner of the company tells us there were many obstacles the company faced until it reached a stable stage. Packaging was one of the big problems. Because the software solution makes many versions with gradual upgrade, each version requires only a small number of packaging; starting from five. Synergy pro had difficulty in identifying the outside agents who could supply a small number of packaging. The owner says, "Thinking of many difficulties this company faced to come to this size, I understand that there aren't many packaged software companies developed in Kenya so far."

Source: Interview with Synergy-Pro in February 2007

Business models of the packaged software companies differ from each other; i.e. some may undertake in-house development while others may outsource software development. The latter case particularly demonstrates the dynamism of the packaged software business through the width of its service network. Most of packaged software companies are micro-scale, and they outsource services in order to minimise their operation cost. Majority of the players are also micro-scale in this value chain where each player can generate income with low investment. Therefore, the economic and employment impact of the software companies is larger than packaged software companies itself.



System Engineers: Some package software companies outsource development work because having the system engineers internally increases the fixed cost.
Package service providers: There are only a few agents who can make software packages in small quantity.
Vendors: Because there are no particular retail shops specialising in the sales of packaged software, packaged software companies make sales through vendors or consultants. Some vendors also undertake installation and support services.
Consultants: Because the packaged software companies in Kenya are currently focusing on computerisation of operation processes in institutions, management consultants are a good source of information in finding new customers. The consultants can receive commission when sales are made.
Lawyer: Because packaged software involves many players, the packaged software company makes a contract with a lawyer to protect its legal right.
Source: The JICA Study Team

Figure 10-5 Business Linkages of the Packaged Software Companies

One player that is supposed to be important, but hardly appears in this value chain, is the financial institutions. A majority of the packaged software companies experience difficulties in obtaining a loan from the financial institutions because of lack of collateral. They have to wait to be stabilised until they find a big order; often not with the sales of packaged software but with sales of customised software.

10.3.3 Development Scenarios of the electrics, electronics sub-sector

(1) Development pattern

The development pattern of the sub-sector, in general, is explained with hypothetical 5 stages of development based on changing pattern of competitiveness. At the first stage, domestic demands for both intermediate and final products of the sub-sector are supplied mostly by imports as the sub-sector does not have competitiveness in domestic production due to low capacity and capability. Only some final goods are produced to supply to the domestic market. At the second stage, the sub-sector, by taking advantage of low labour costs and introduction of technology, begins to export final goods, assembling imported parts and components. Next at the third stage, the sub-sector gains advantages in production of intermediate goods, such as key parts and components, in addition to final goods by improving its technology, with which the sub-sector grows as overall production type with international competitiveness both intermediate and final goods. At the fourth stage, after the sub-sector reaches its maturity, it begins to lose its international competitiveness in assembly with increasing labour costs, at which point it has to specialize in intermediate goods which are capital-intensive. Thus the country imports final goods and exports parts and components. Finally at

the fifth stage, the sub-sector loses competitiveness both in intermediate and final goods as a whole. The imports of both goods exceed export of them. However, it does not necessarily mean that the sub-sector totally loses competitiveness. It is possible for the sub-sector to hold competitiveness in specific products which require high quality and high functions utilizing established brand names and highly advanced technology. This hypothetical development pattern of sub-sector is summarized in Table 10-37.[120]

Table 10-37 Development Pattern of the Electrics, Electronics Sub-sector

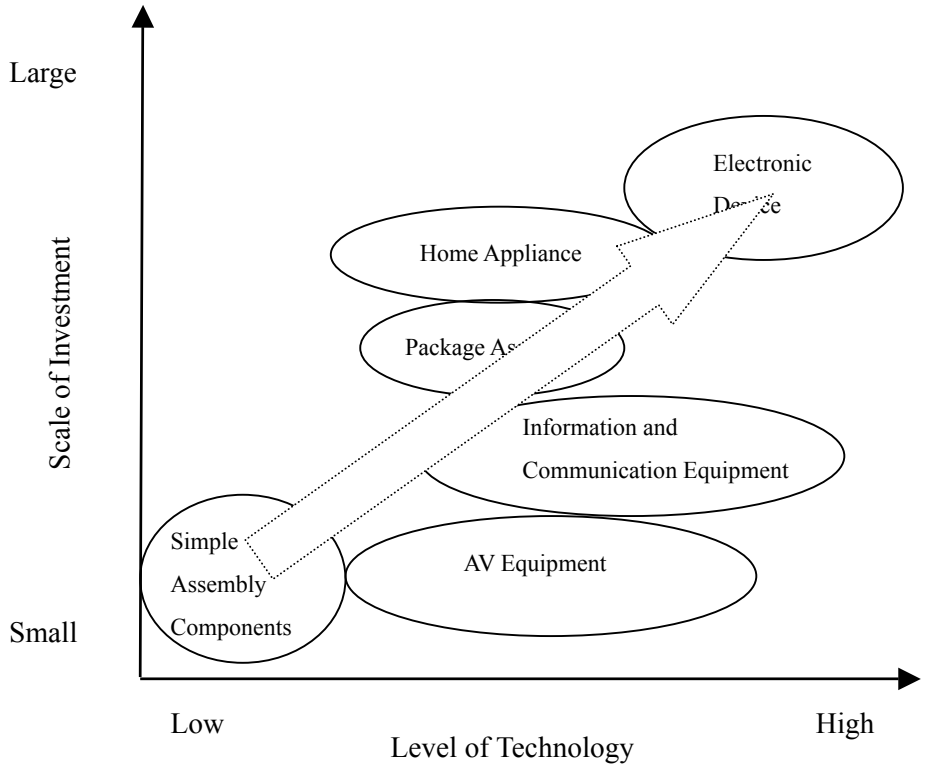
Type of Industrial Pattern	Level of Technology, Wage, Added Value	Development Stage of the Sub-sector
Domestic Market Production Type	LOW	1. Domestic demands for both intermediate and final goods exceed domestic productions. The sub-sector has weak international competitiveness.
Assembly Production Type		2. Development of capital accumulation and introduction of foreign technology makes the assembly process in the sub-sector stronger in international competitiveness. The sub-sector, not having production technology of key parts and components, imports intermediate goods.
Overall Production Type		3. In the course of assembly production, the sub-sector advances technology and then starts to produce key parts and components. The sub-sector, acquiring international competitiveness in both intermediate and final goods, comes to the ripening period.
Intermediate Goods – Specialized Production Type		4. Due to the constraints like labour cost, the sub-sector loses international competitiveness in the assembly process, hence final goods. Focusing on key parts and components with advanced technologies, the sub-sector retains international competitiveness in intermediate goods.
Different Goods Production Type	HIGH	5.The sub-sector loses international competitiveness in intermediate goods. However, the sub-sector competes in domestic and the world markets by specialising the differential products with high quality and functions, utilising advanced technologies as well as the established brand names.

Source: METI (2005) White Paper on International Economy and Trade 2005; Modified by The JICA Study Team

More specifically, Figure 10-6 shows changes in production items with the level of production

[120] This hypothesis is developed based on the Ministry of Economy, Trade and Industry (2005), White Paper on International Economy and Trade 2005, Government of Japan.
< http://www.meti.go.jp/english/report/index.html >

technology in the horizontal axis and the scale of investment in the vertical axis. The electrics, electronics sub-sector is expected to create its competitiveness and to diverge in its production items in accordance with its level of production factors such as production technology, production management skill, development of supporting industries, and labour costs. Production of some products requires large amount of investment, hence domestic capital accumulation or inflow of FDI is a precondition for those goods. Generally, a country with low technology and low labour costs starts production of labour-intensive goods, typically simple assembly of electric parts and equipments, which are located south-west area of the Figure. On the other hand, shown in north-east area of the Figure are capital-intensive and technology-intensive goods such as LCD and semiconductors, in which highly industrialised countries have competitiveness.



Source: The JICA Study Team

Figure 10-6 Development Pattern Electrics, Electronics Products

(2) Development scenario

Taking into consideration the theories mentioned above and current conditions of Kenya, as well as national development plans and policies described in Chapter 2, the target figures in 2020 for the electrics, electronics sub-sector in Kenya and target products are set as follows.

Table 10-38 Target Figures for Electrics, Electronics Sub-sector

	2005 (actual)	2020 (target)
Turnover (Kshs. million)	8,392	32,982
Value Added (Kshs. million)	3,021	13,193
Export (Kshs. million)	1,444	8,245
Employment (person)	3,039	11,993

Source: The JICA Study Team

The development scenario of the sub-sector up until 2020 is envisaged by three phases, as below.

1) Phase 1 (2007~2010): Starting assembly production

With improved business environment, such as infrastructure, labour productivity, and security situation, as well as several policy measures to attract FDI, an increasing number of foreign investors will have an interest in Kenya in the area of electrics, electronics equipment assembling, aimed at domestic market and growing EAC and COMESA markets.[121] It is expected that some of them will start production in Kenya. Although most parts and components are imported, existing supporting industries, especially metalworking and plastic sectors, will supply their products to electrics, electronics equipment assemblers. Average annual growth rate during the period will be 9 per cent or higher.

2) Phase 2 (2011~2015): Advantage in assembly production and starting overall production

Market conditions will be favourable for the sub-sector due to progress of rural electrification and a rise in income level of households in Kenya and East and Central African countries, which will increase the demand for home appliances. Rapid development of ICT will also require expansion of the electrics, electronics sub-sector. On the other hand, improved investment environment, especially reformed EPZ facility, will attract more FDI in the sub-sector. By gradually gaining international competitiveness in assembled final goods, the sub-sector's export will grow at higher pace than before. Introduction of foreign technology and human resource development will enable the start of production of some parts and components.

3) Phase 3 (2016~2020): Advantage in overall production

As the market expands to other areas than only African region, production of the sub-sector will increase accordingly. Further improvement in infrastructure, especially power supply and road network, and development of Kenyan human resources and R & D facility, as well as advancement of technology will make it possible for the sub-sector to acquire more competitiveness in parts and components.

[121] Rwanda and Burundi formally joined the EAC as full members in June 2007, forming the trading bloc with population of 120 million, while the COMESA plans its own customs union in December 2008.

Table 10-39 Development Scenario of Electrics/Electronics Sub-sector in Kenya

	Market	Technology	Investment Environment	International Competitiveness
Phase 1 (2007-10), 9 % plus growth	Kenya, EAC, COMESA	Existing SI to supply products to assemblers	Some improvement in infrastructure, labour productivity	Final goods (assembly): Low to Middle Intermediate goods: Low
Phase 2 (2011-15), 10 % plus growth	Expansion of regional market with increasing income level	Technology introduced by FDI to produce some parts and components	Reform of EPZ attracting FDI	Final goods (assembly): Middle to High Intermediate goods: Low to Middle
Phase 3 (2016-20) 12 % plus growth	Expansion and diversification of markets	Technology upgraded with FDI and improved domestic R & D base	Improvement in power and transport	Final goods (assembly): High Intermediate goods: Middle

Source: The JICA Study Team

(3) Product specific development scenarios

Furthermore, product specific development scenarios are discussed below.

1) Industrial equipment（Power switchboard, etc.）

A) Target products

On-order products and general products should be developed in parallel. Standardisation of the modules is required to reduce inventory cost. Moreover, product development can be sought not only for the institutional users but also for the home users.

B) Target market

The target markets can be both East and Central Africa.

C) Development scenario

i) Development of general purpose products, module design, modules, and standard design.

ii) New market exploration

iii) Improvement in production management that enables project production

2) Power generators（solar panel, wind generator, etc.）

A) Target products

As for the solar and wind power generators, parts that can be readily produced in Kenya are identified as sheet metals, injection moulding, and batteries. Most of the solar and wind power generators are now imported mainly from Europe and Japan. Because of the high price, the imported products cannot easily infiltrate the local market.[122] If the generators are locally assembled, the price is

[122] For example, the 12V65W Kyocera panel costs Kshs. 39,000.

expected to go down. It is worthwhile to encourage local production of generators not only for the manufacturers but also for the consumers.

B) Target market

With the current prices, it is hard to infiltrate the market. It is therefore necessary to compare product prices and maintenance costs to be able to compete effectively in the market. Following the practices taken by the Japanese automotive and electronic manufacturers, the cost allocation method shall be adopted based on the target price.

C) Development scenario

i) Set the target price, which can penetrate into the markets.

ii) Tear-down exercises to identify the components that can be supplied locally and the cost allocation of those components

iii) Development of necessary technologies (cost planning, value engineering,[123] etc.) and development of the supporting industries

iv) Local assembling with local supply

3) Office equipment (PC, etc.)

A) Target products

Development of PC production should envisage following specs.

i) Hardware specs which correspond to the broadband; ex. operating frequency, HDD capacity, and high-speed wireless LAN adapter

ii) User-friendly specks for the rural users; ex. Swahili interface

iii) Designs fitting to the tastes of African markets

iv) Increasing the local contents by having the local suppliers including die, mould makers, plastic, and metal suppliers

B) Target market

Firstly, the institutional users, particularly the Government and the academia, are the main targets. Then the next step goes to the individual users. Expansion of wireless broadband services is expected to increase the number of individual users.

C) Development scenario

i) Marketing research in East Africa and in Central Africa

[123] Value Engineering is a systematic method to improve the "value" of goods and services in relation to the function and cost. Value defined as the ratio of function to cost can be increased either by improving the function or by reducing the cost.

ii) Development of mould, die, metal press, plastic injection moulding suppliers which are capable of adjusting to the new design

iii) Establishment of an after service system to differentiate from the imported products

iv) Mass assembling in Kenya

v) Supplying the components to assemblers in East and Central Africa

4) Consumer equipment（refrigerator, microwave oven, etc）

A) Target products

The top most priority is to identify target products that can be distinguished from the cheap imported products from China. It is necessary to first do a research on both the market trends and prospective suppliers. Availability of local supply is important for increasing value addition. A study on local content ratio through the tear-down process is also important.

B) Target market

Because the large market size is necessary to decrease the unit cost, it is advisable that the target market is aimed at Central and East Africa as a whole.

C) Development scenario

i) Setting the target products through marketing research and tear-down study

ii) Development of technologies and the suppliers necessary for the target products

iii) Calling in assemblers from abroad

iv) Technology transfer from the foreign-owned assemblers to the local enterprises

10.3.4 Development Strategies

(1) Promoting new investment

Since existing electrics, electronics manufacturers are small in number, the source of expansion has to be found in calling in FDI. EPZA is consulting with MOTI about expanding its activities and transforming the Economic Promotion Zone (EPZ) into SEZ. Strengthening ICT infrastructure and relaxing the restrictions on the sales to the domestic markets are among the topics under discussion. Moreover, transformation of EPZ is recommended to envisage an idea of integrating living conditions of the investors as is the model shown in Smart Village in Egypt. The most successful industrial areas are often developed under the public-private partnership because the private sector makes best efforts to ensure that they can get return from selling the factory plots. Kenya as a popular holiday destination is endowed with favourable natural conditions and full of entertainment. Integration of production centres and the social places shall enhance attractiveness of investment into transformed EPZ.

In concrete, as discussed in Chapter 5.5 and 5.8, two actions are recommended. Firstly, establishment of Integrated Economic Zones, which are envisaged to become major investment destination for the

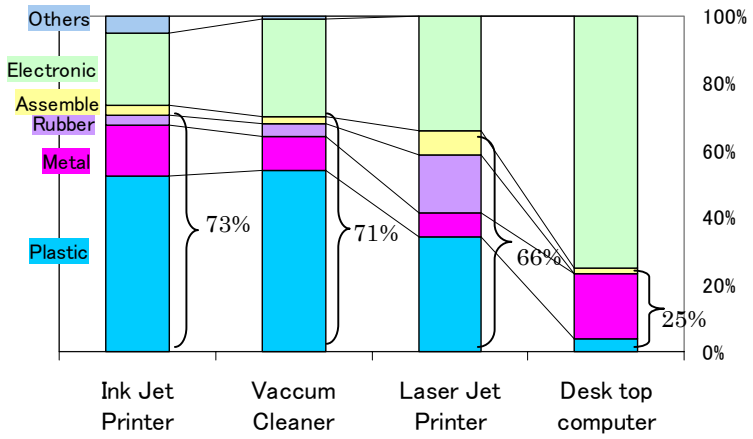
manufacturing sector, is recommended. This idea is also supported by PSDS under Goal 4 (PSDS-PIP 4.3.1). As outlined in Action Plan 3.8.3, the first model is recommended to be established in Athi River as an activity under the Nairobi Metropolitan Region Development Board, which is planned to be established with the initiative of Vision 2030. Since multiple players are involved in establishing the Integrated Economic Zone, the involvement of NESC and the Ministry of Planning and National Development (MOPND) is expected while MOTI takes the lead in discussion. Secondly, as outlined in Action Plan 3.5.3, the transformation of EPZ into SEZ is recommended. While EPZA is the agency, which is currently leading the discussion, MOTI needs to take over the leadership since this cannot happen without close consultation with MOF. These two actions are expected to improve conditions to call in the leading manufactures operating in the electrics, electronics sub-sector.

Then EPZA and KenInvest are expected to be the key players to undertake marketing activities to call in FDI. This needs to be carried out under cooperation with KAM, the commercial attaches overseas, and foreign trade and investment missions to Kenya such as the Japan External Trade Organization (JETRO)[124] and embassies. As discussed in Chapter 3.2, it is also important that MOTI strengthens foreign missions overseas with strategic deployment plan of the commercial attaches for effective marketing activities.

(2) Developing the local suppliers

Although Kenya does not have a foundation of electronic components manufacturers, she has a number of good plastic, metal, and rubber product manufacturers. It should be recognised that the price composition of plastics, metal, and rubber components are relatively large in the electronic equipment (See Figure 10-7). The Government can assist by linking the plastic, metal, and rubber product manufacturers to the electronic equipment assemblers.

[124] JETRO is an independent administrative institution under the Ministry of Economy, Trade and Industry of Japan. JETRO works to promote mutual trade and investment between Japan and the rest of the world. Its office in Nairobi can provide information on trade and investment with Japan.



Note: Above figures are estimates for exemplification.
Source: The JICA Study Team

Figure 10-7 Cost Composition of Electronic Equipments

Tear-down Study Forum

The tear-down exercise is one methodology to encourage the suppliers to start producing new products. The tear-down forum can be either held by assemblers, by the public sector, or by associations. The tear-down forum is a good opportunity to create a horizontal network since the forum calls in multiple suppliers who can jointly supply electronic equipment. The forum also provides opportunities for the Government to learn the technological capabilities of the suppliers. Learning about the suppliers' capabilities would help the Government to appeal to the assemblers to invest in Kenya because suppliers' availability is one key factor for choosing the production location for the assemblers.

As discussed in Chapter 5.2.2 and outlined in Action Plan 3.2.2, KIRDI is recommended to be the key agency to carry out the regular forums, in which MOTI, KenInvest, and EPZA officers learn about the technological capabilities of the local suppliers and utilise the information for the marketing activities outside of Kenya. Then in the second stage, the forums are expected to carry out with full participation of assemblers, expecting to be linked to actual subcontracting activities. MOTI is expected to oversee the progress of tear-down practices.

(3) Expansion of the markets

Because the electronic equipment is produced in mass, its price competition is severe. The expansion of demand in East and Central Africa is a necessary condition for the electrics, electronics sub-sector to grow. In the near future, the demand from institutional users is expected to grow faster than that from the households. In the early phase of development, Government purchasing would help to reduce the risk of manufacturers shifting their production to supplying electronic equipment. There are three specific recommendations for market expansion.

1) ICT projects

MOIC has set up a policy towards universal access. It established the Madaraka PC project, which supplies locally assembled computers. The project is in the process of increasing local content. If the local manufacturers can receive orders to supply plastic and metal components to the Madaraka PC project, this would help them make the first step towards supplying into electronic equipments. Moreover, the MOIC has a plan for setting up Digital Villages, which is an Internet access centre in the rural areas. The Digital Village requires not only the computers but also generators and stabilisers. MOTI is recommended to take more proactive role in these ICT projects to create an implementation framework in which the local manufacturers with sound technology and production capabilities can receive orders.[125] In the process, not only quality assurance but also productivity improvement needs to be taken into account so that the technological capability nurtured in the projects would be strong enough to compete in the commercial markets in Central and East Africa.

2) Counterfeit goods issue

Counterfeit goods, which infringe upon protected intellectual property goods, are causing huge losses to genuine manufacturers and distributors of those products. Among all industrial products sold in the Kenyan market, electronic products are one of the worst hit by the counterfeits. Infringement of copyright of computer software is also one of the most serious issues in terms of protection of IPR in Kenya. In the Kenyan computer software market, a number of piracy products, ranging from operating system software to business applications, to amusement software, are found everywhere. According to a report by IIPA,[126] 83 % of business software is piracy products. Although the protection of copyrights is stipulated in the Copyright Act of 2001, the enforcement of the law has not been effective.

The Anti-Counterfeit Bill has been submitted to the Parliament and is now waiting for the resolution. Protection of IPR is expected to be strengthened with the enactment of the Bill. While the Bill will authorise establishment of the Anti-Counterfeit Agency under MOTI, effective enforcement of the IPR protection calls for capacity building of the officers. Accordingly, Action Plan 2.1.5 calls for international cooperation in trainings of officers who are from the related agencies including Anti-Counterfeit Agency, KIPI, MOTI, MOF, KRA, KEBS, and Copy Right Board. (See Chapter 4.1.3)

3) Taxes

For the purpose of promoting usage of computers and growing ICT sector, the VAT for computers became zero rated in 2006. As for import duty on computers (finished goods), the rate is also zero. Yet, import duties on electrics components such as integrated circuits are still rated at 15 %, discouraging assembling of computers in Kenya. MOTI should appoint an officer who studies in

[125] Although MOIC has made consultation with MOTI in the early phase of the planning, involvement of MOTI was not strong enough to create an implementation framework in which the local manufactures would receive the direct benefits in the projects.
[126] A business advocacy group based in the United States

collaboration with KAM and KRA and finds out a rational tax rate, which would encourage local assembling of electronic equipment. Since Kenya is a member of EAC Customs Union, and COMESA Customs Union is scheduled to become effective in December 2008, consultation with other member countries will be required after deliberate examination on the issue.

(4) Technological education and training

As discussed in Chapter 5.7.2, increasing competitiveness of the industry requires that technical education and training cover both production and management technologies. The present technical curriculum is focused on production technology, and it almost neglects the management technology, which is a key for increased productivity. The Directorate of Technical Education of MOST, which is formulating the National Science and Technology Skills Training Strategy, is recommended to take an initiative in reviewing the curriculum to capture all the components that bring up the industry as a whole.

In the area of production technology, four issues need to be stressed. Firstly, the curriculum for electric, electronic engineering has to be shifted from analogue to digital. Although basic technology in electrical engineering and mechanical engineering is available in local technical colleges and the universities, there is the need to improve on the current situation. The exercises are still conducted on analogue TVs, and there is not enough ICT equipment available for studying digital circuits. Secondly, the development scenario in electrics, electronics sub-sector takes importance on the development of the plastic and material suppliers; thus it is considered necessary to strengthen the mechanical techniques especially manufacturing techniques with precision. Thirdly, design skills training needs to be strengthened. The availability of CAD software for the exercise is very limited.[127] Inefficiency in design training is the reason that African-Kenyan owned mould and die makers with high technological capabilities is very rare to find in Kenya. Fourthly, more advanced design skills such as standardisation, module design, and value engineering design should be taught since these techniques are a source of increased value addition. Recognising the complicated administrative structure of TIVET, Action Plan 3.7.1 proposes to establish the best practices at the National Polytechnics first. In addition, Action Plan 3.7.2 proposes to set up life-time vocational skills evaluation system. Currently, DIT in MLHRD is in charge of the trade tests for the artisanship. Yet, this proposed evaluation system targets not only the artisans but all through the skill levels. Therefore, the implementation framework is proposed to be discussed in the TIVET Authority, which is in the process of establishment. (See Chapter 5.7.2)

The best model of education and training can be sought through public, private, academic partnership. Because the needs for education and training change rapidly, it is necessary to have the involvement of the private sector in curriculum development and dispatching the trainers. The Technology Development Centre in Athi River under DIT, MLHRD, was established under a plan to have a close linkage with EPZ companies in Athi River. Although the Centre is relatively well equipped in

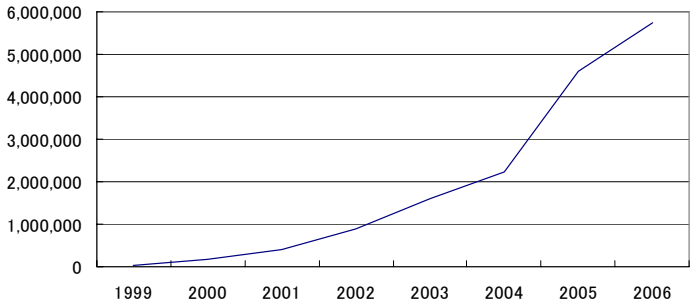
[127] Training institutions in India are equipped with various 3D CAD software which are popularly used among electronic manufacturers including Unigraphics, Pro/E, Solidworks, and I-DEAS.

electrics, electronics engineering equipment for training, training activities are not as lively as it was supposed to be because of lack of dynamic linkages with the private sector. Alongside the scenario to call in more electronics assemblers to Kenya, a strategy to create "win-win" scenario between the TIVET institutions and the electrics, electronics manufacturers needs to be sought. The proposal on Integrated Economic Zone in Athi River envisages that such scenario is sought between the Technology Development Centre and the manufacturers in the Zone. (See Chapter 5.7.2, 5.8.2; Action Plan 3.8.3)

10.3.5 ICT

(1) Development of ICT in Kenya

The ICT sector is the most dynamic sector in the Kenyan economy nowadays. Most obvious statistics that shows development of ICT is the increase of the mobile phone subscribers by 70 % per annum between 2001 and 2006 (See Figure 10-8).

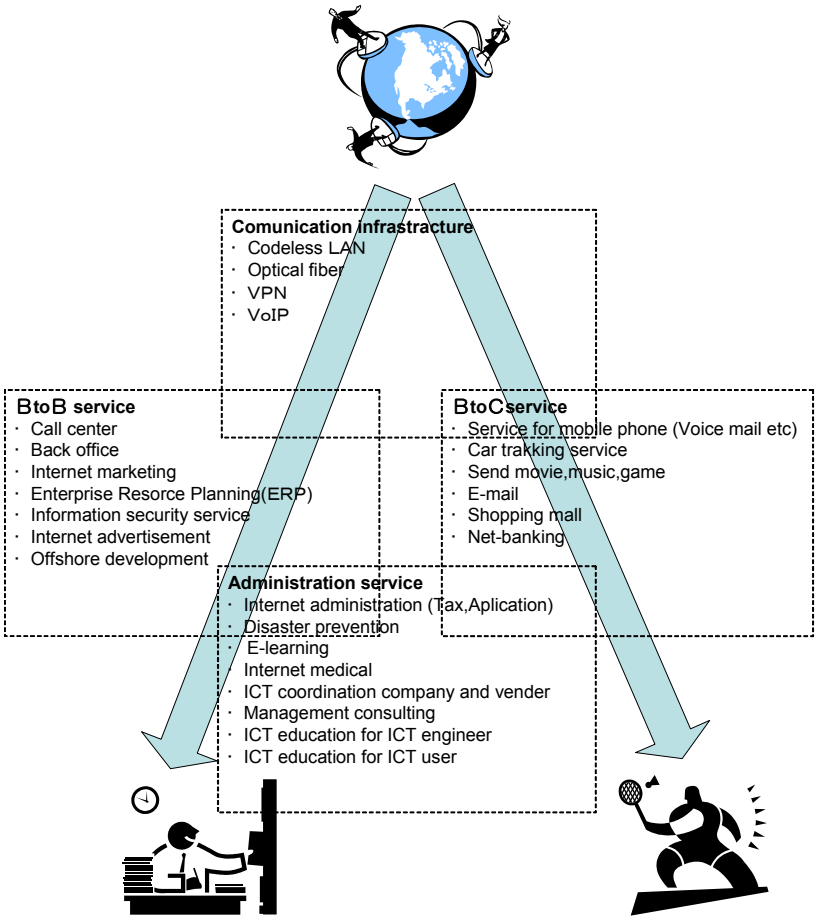


Source: Communications Commission of Kenya http://www.cck.go.ke/statistics/

Figure 10-8 Mobile Phone Subscribers

Another event that heats up the public and private attention is international optical fibre backbone, which is expected to be opened up within a year. Connection of the international optical fibre network is expected to reduce usage cost of ICT tremendously and also provide much faster access.

Range of service provided by the ICT sector is wide and is also evolving (See Figure 10-9).



Source: The JICA Study Team

Figure 10-9 Range of ICT Services

ICT is indeed a hot topic in Kenya now, involving all the economic and social entities across public, private, and academic sectors. Multiple ministries are involved in development of ICT (See Table 10-40).

Table 10-40 Main Ministries for ICT Development

Ministry	Strategy Paper	Mission
MOIC	Kenya ICT Strategy	Expand Kenya's competitiveness through usage of ICT Expand ICT access nationwide
- Communications Commission of Kenya		Regulatory body of ICT providers Management of Universal Access Fund
- National Communications Secretariat		Advisory body of the Ministry Drafting the bills
Office of the President - De-G	e-Government Strategy	Increase efficiency of public services through the usage of ICT
MOF - Information Technology Services		Standardisation and procurement of ICT infrastructure within the Government
MOED	National ICT Strategy for Education and Training	Development of ICT education and training

Source: The JICA Study Team

MOED has developed the National ICT Strategy for Education and Training in 2006. The Ministry has set up the Ministerial ICT Committee to coordinate and monitor the implementation of various innovative solutions for ICT education and training. It has also set up the Kenya ICT Trust Fund to equip secondary schools with ICT infrastructure for training. Moreover, the Ministry established the ICT Technical Team with participants from the public, private, and academic sectors. Target beneficiaries of the National ICT Strategy for Education and Training are schools, training institutions, and community centres.

MOIC is also a leading actor in implementing ICT education. The draft Kenya Communications (Amendment) Bill would empower setting up the Universal Access Fund, which is to provide ICT access nationwide. Moreover, Kenya College of Communications Technology under the Ministry is a leading public college in ICT training.

The private sector also has various associations in support of ICT development (See Table 10-41).

Table 10-41 ICT Associations in Kenya

Association	Main Activities and Characteristics
Computer Society of Kenya	Established in 1996. The oldest association within the ICT sector. It has 4000 individual members and 300 institutional members. It used to be active in advocacy, but it is now focused on training.
KICTAnet	Established in 2004. It has 147 members from the public, private, and academic sectors. Its main focus is establishment of enabling regulatory framework for ICT sector.
Kenya ICT Federation	Subordinate organisation of KEPSA with the membership from the private sector. It is also a member of KICTAnet. Its focus is on establishment of regulatory framework for ICT sector.
ICT Village	A newly established association with 12 institutional members and 300 institutional members. Its focus is development of value added services from the ICT providers.

Source: The JICA Study Team based on interviews in February 2007

It is Government policy to ensure that the ICT sector is developed through sound PPP framework. As a recent development, the Kenya ICT Board (KICTB) was established as a state corporation under the State Corporations Act Cap 446 on 19th February 2007. The board members are drawn from the prominent actors related to ICT development in the private sector. The mandate of KICTB includes:

i) Advising government on development, co-ordination, and promotion of ICT sector in Kenya;

ii) Promoting locally and internationally the opportunities for investment in ICT; and

iii) Facilitating and managing ICT incubation and technology parks and associated facilities.

KICTB is appointed to implement the Transparency and Communications Infrastructure Project (TCIP) with funding of US$ 114.4 millions by WB. TCIP involves four components, namely;

i) Establishing enabling environment (technical assistance to the Government);

ii) Strengthening connectivity nationwide;

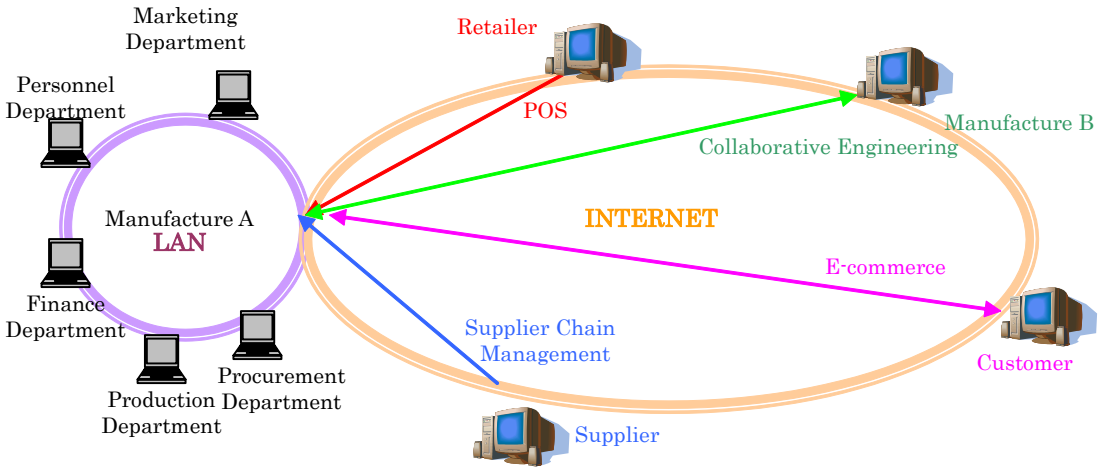
iii) Facilitating e-Government; and

iv) Project management.

(2) Developing Use of ICT by the manufacturing sector

1) Variation in ICT Tools

There are many ways in which the manufacturing sector can benefit from the use of ICT. ICT not only increases productivity but also expands markets and creates stronger foundation for R & D. Ignorance in usage of ICT would worsen the global position of the Kenyan manufacturers since the manufacturers in the developed economies are creating their competitiveness by fully adopting ICT. MOTI needs to be aware of the range of available technologies that the manufacturers can use over the Internet so that proper guidance is to be given to the manufacturers. The following introduces some of frequently used tools.



Source: The JICA Study Team

Figure 10-10 ICT Utilisation by the Manufacturing Sector

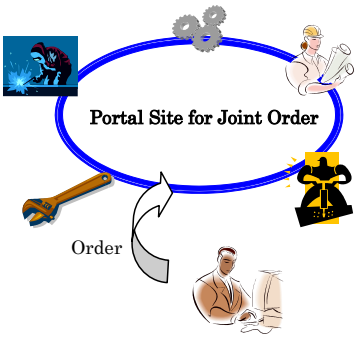
A) E-commerce

Among all the tools ICT can avail to the manufacturing sector, one that needs urgent support from the Government is B2C e-commerce because it deals with the masses who require legal protection. Usage of e-commerce opens up the market regardless of the location of enterprises. The Strategic Plan by MOTI (2006-2011; Strategy 6.5) also notes the importance of development of e-commerce. Setting the legal framework is the prerequisite for the manufacturers and their dealers to start venturing into e-commerce. As discussed in Chapter 5.3.1 and outlined in Action Plan 3.3.4, MOTI is expected to take an initiative in developing the legal framework for B2C e-commerce with the support from the Directorate of e-Government (De-G) of the Office of the President. Development of B2C e-commerce requires involvement of ICT sector, financial sector, and distribution sector. De-G has been organising seminars to initiate the discussion including many other issues which are advocated in the e-Government Strategy. Now, MOTI is expected to take over the initiative so that formation of the stakeholders and the legalisation process are speeded up.

In addition, B2G e-commerce, i.e. e-procurement by the Government is very effective in

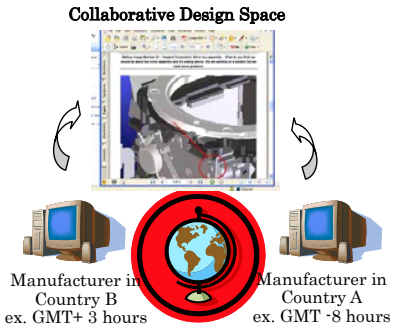
development of the markets for the manufacturers. Development of B2G e-commerce is also one of activities under e-Government, but the initiative has been taken by MOF since the process involves amendment of the Public Procurement and Disposal Act (Act No.3 of 2005). (See Action Plan 3.3.5)

B) Joint order



Joint order is another area, which the Government can effectively support. Because marketing skills of SMEs are limited, it is getting popular, for example in Japan, to set up a portal site where the SMEs jointly receive a purchase order. The listed enterprises are comprised of capable manufacturers with different elements of technology (e.g. metalworker specialised in moulding, pressing, welding, polishing, etc.) so that the portal site becomes similar to a department of the manufacturing services. Setting up portal site also helps to create horizontal linkages among SMEs. The OSS information centre, which is proposed to be established under KIDEP, is recommended to create such portal sites as one of its activities while the orders are taken and managed directly by the private sector. (See Chapter 5.1.2 and Action Plan 3.1.1)

C) Collaborative engineering



Use of Internet also enables collaborate production between manufacturers in distant locations. This methodology is often used by large-scale manufacturers to collaborate with their branches and 1st-tier suppliers. This tool is found particularly useful to reduce the production time, utilising global time difference of the partner company. While the basic method involves exchanging designs through file transfer over the Internet, the most advanced technology enables simultaneous designing on 3D CAD in the design space created over the Internet. Therefore, this tool provides a capable manufacturer with opportunities to join in the global production chain as long it has high designing and manufacturing skills regardless of its location. The collaborative engineering would be feasible with the manufactures, which can design over certain CAD software. Therefore, strengthening design capacity as argued in 10.3.4 is the first step to expand such business opportunities. MOTI needs to emphasise the needs for strengthening curriculum in designing in the TIVET Authority.

D) Supplier Chain Management (SCM)

Establishment of SCM network is usually driven by large-scale manufacturers, which construct the common database to which the suppliers can access via secured network. SCM system is expected to be developed alongside the linkage creation between the assemblers and the suppliers. Since SCM deals with B2B transaction and does not require additional legal framework for implementation, it has already moved to implementation stage in Kenya. It is expected that the introduction of the broadband network would induce higher usages of SCM. MOTI is recommended to raise awareness

of the manufactures to utilise existing SCM solutions since this is one of effective methodologies to improve productivity. (See Chapter 5.3.1)

E) POS

Establishment of POS system would help to decrease the inventory. It is mainly a tool for retailers connecting to the order system to their suppliers. Establishment of POS is usually driven by the retailers. This would be much needed solution for leading Supermarkets as Uchumi since they needs to improve the inventory system.

Table 10-42 Major ICT Solutions for the Manufactures and Actions by the Government

ICT Solutions	Leading Agency to Drive the Development Process in the First Phase	Elements in the First Phase
B2C e-commerce	MOTI	i) Establishing a committee for the stakeholders ii) Establishing legal framework for the secure and trustable B2C e-commerce markets
B2G e-commerce	MOF	iii) Reviewing the Government procurement process and making necessary amendments on the Act iv) Setting up ICT applications and database v) Dissemination
Joint Order	OSS under KIDEP/ Private Sector	vi) Establishing and maintaining the portal sites
Collaborative engineering	leading manufactures	vii) In the first step, strengthening curriculum in designing to expand opportunities
SCM	Leading manufacturers	viii) Raising awareness of the manufacturers
POS	leading retailers	ix) Guiding leading retailers to launch POS system

Source: The JICA Study Team

2) Developing Access Points

According to the recent statistics, 0.9 % population possessed personal computers while 3.2 % had access to Internet in 2005.[128] It is ideal that each manufacturer is equipped with PCs, which have connection to the Internet. Yet, in reality, access points need to be developed gradually. The main access points in the countryside will be the Digital Village, which is included in the second component of TCIP, financed by WB. Three types of Digital Villages are being identified; namely,

i) Digital Schools: educational ICT facility with 5 to 10 PCs;

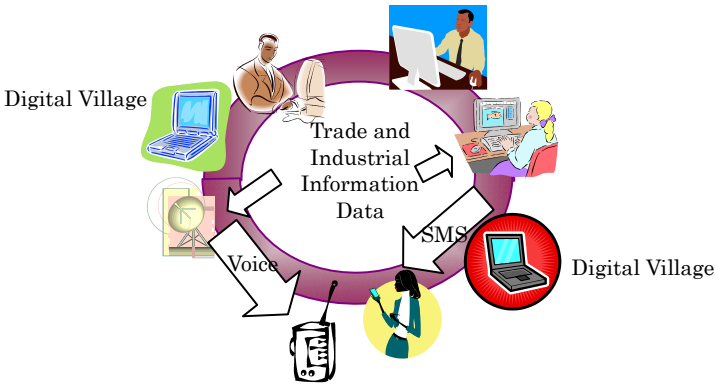
ii) Digital Kiosks: commercial ICT facility with 1 to 5 PCs; and

iii) Digital Centres: development hub with 10 to 20 PCs.

The registered Digital Villages shall receive assistance from KICTB in establishing secure and stable networks as well as provision of loans. MOIC plans to set up at least 300 Digital Villages countrywide within 3 years.

[128] WB, ICT at a Glance <http://devdata.worldbank.org/ict/ken_ict.pdf>

There are also many NGOs which have initiated services to transfer data from the computer text to SMS text messages or to voice data over the radios. These initiatives are rational since 13.5 % of the population were estimated mobile subscribers, and radios are even more popular tools in the country side. Most established service is SMS information for farmers on daily agricultural commodity prices, extension service messages, and bid and sales information. Assistance towards these initiatives is also included in the second component of TCIP. Yet, contents targeted towards the manufacturers have not been developed. It is recommended that MOTI appoints an officer to support to develop contents to be availed to the manufacturers utilising such various ICT terminals; starting from the service information provided by the Government such as training, exhibitions, subsidies, and loans. Then the appointed officer coordinates with De-G and KICTB to start delivering contents through the Digital Villages. The task of content development is envisaged to be transferred to OSS information centre under KIDEP once it is established.



Source: The JICA Study Team

Figure 10-11 Disseminating Trade and Information Data over the ICT Facilities