1 INTRODUCTION

1.1 Background of the Study

The Kingdom of Nepal has a territory of 147,181km^2 and a population of 22 million (as of 1998); it is surrounded by the Himalayan Range to its north and the Ganges Plains to its south. Nepal can be divided into three different ecological areas according to climate and topography: the mountains, the hilly area, and the Terai plains. Reflecting these distinctive ecosystems, different agricultural products including horticulture products, livestock and fish are produced; in fact, agriculture sector (as of 1995/96, including forestry and fisheries) accounted for 40% of the GDP, and 80% of the labour force allocation, thus being the most important activity in production.

In 1995, with the cooperation of Asian Development Bank (ADB), Nepal formulated an Agricultural Perspective Plan (APP) for 20 years (1995/96 – 2014/15). With the increase in agricultural products as a central issue, "The Study on the Agricultural Marketing Development Project in the Kingdom of Nepal", has various objectives. Among these, the necessity of developing an agricultural market and strengthening the distribution system to accomplish planned production and diversification of agricultural products, based on the needs of the market, has been raised. However, concrete plans (strategies and courses of action) for the development of agricultural marketing have not yet been devised.

Under these circumstances, based on the necessity of an agricultural marketing development project that followed APP's guidelines, His Majesty's Government of Nepal requested the Government of Japan a development study regarding the planning of an agricultural marketing development project in October, 1998. The Government of Japan, complying with the request, dispatched a Preparatory Study Team (S/W mission) in November, 1999, which resulted in the Scope of Work (S/W), signed on December 7th 1999.

1.2 Objectives of the Study

1) To establish a National Agricultural Marketing Development Master Plan (M/P) of agricultural products (horticulture products, livestock and livestock products, and fish products), including the improvement of post-harvest activities at production areas and strengthening of collection and distribution systems.

2) To establish an Action Plan (A/P) to stimulate agricultural markets, by selecting areas of high developing potential and improving the distribution system and settling the infrastructure, focusing on the preparation of the collection and distribution systems at production areas.

3) To transfer technology and provide guidance to the Nepalese counterparts on marketing methodology and procedure of study techniques and planning throughout the Study.

1.3 Study Area and Types of the Agricultural Product

(1) Study Area

The Study will cover the entire Kingdom of Nepal. However, this will not include studies at areas with security problems (please refer to Fig 1-1 and 1-2 for interview survey sites).

(2) Types of the Agricultural Product

Horticulture products (including main spices), livestock and livestock products, and fish will be the target products of the Study. However, depending on the necessity, cereals will be included in the Study. From this point, "agricultural products" will refer to the products mentioned above.

1.4 Study Approach

(1) Phase approach of the Study

1) Phase I (March – September 2000)

   In Phase I, the contents, current situation, and findings of related projects and studies will be assessed, while collecting and analyzing existing statistical data in order to elaborate an Agricultural Marketing Development Master Plan (M/P) at a national level. Furthermore, the development constraints in the study areas and their development potential will be evaluated, and the target areas for the Action Plan (A/P) will be selected.

2) Phase II (October 2000 – June 2001)

   A supplementary study of the areas selected in Phase I as targets for the Action Plan will be conducted. An Action Plan focused on the strengthening of farmers' collection and distribution systems and governmental support will be formulated.

2 ASSESSMENT OF THE PRESENT CONDITIONS

2.1 General Overview Of Nepal

2.1.1 National Characteristics of Socio-Economy

(1) National Program Framework for the Socio-Economic Policy

Nepal does not have a national program framework document for the socio-economic policy. The Ninth Five Year Plan (1997 to 2002) are the policy document which takes poverty alleviation and employment creation as its sole focus and has specific interventions for alleviating poverty among women and members of disadvantaged groups.

The social sector development policies and programs adopted by HMGN based on national seed as well as the commitments made in the different UN call and conferences including SDA, Health For All (1979), Education For All (1980), Child & Development (1990), ICPD (1994), International Conference on Women (1995) and the others.

The Ninth Plan (1997-2002) has endorsed poverty alleviation and employment promotion as its major policies for overall development. According to the Approach Paper for the plan, the people living below poverty line was 36% in 2034 (1977), 42% in the fiscal year 2041/42 (1984/85) and 45% in the year 2053 (1995/96).

The main components for social development are ①Education, ②Health, Population and Nutrition, ③Social Welfare, ④Drinking Water and Sanitation and ⑤Rural Development.

1) Education, a basic factor in socio-economic development and in sustaining its benefit, the literacy rate in 1981 has increased from 24 percent to 42 percent in 1996. However, Nepal is still lagging behind in technical and management education.

2) Health is of prime concern to every individual as development depends largely on physical and mental health of human resources. The health sector in Nepal has been successful in policy development but delivery of health services has not yet been able to bring positive impact in enhancing the health status of the people.

3) Social Welfare is to enhance the socio-economic status of backward community for social justice, welfare and delivering basic services in terms of severe hardship.

4) Drinking Water and Sanitation is a basic requirement of a civic society for safeguarding human health condition.

5) Rural Development is a strategy designed to improve the economic and social status of the majority of living in rural areas and depend on subsistence agriculture for livelihood.

(2) Socio-Economic Performance

Socio-economic performance in the last few years in Nepal has been reported steady with an environment of political instability. Socio-Economic growth, as shown in Table 4.1.1 over the past two decades have averaged about 4.5 percent per annum with per capita income rising by about 2.0 percent per annum. With a per capita GNP equivalent to US$ 210, Nepal is one of the world's poorest countries. Its Human Development Index of just 0.378 ranks it 151 out of 174 countries, indicating a very high level of socio-economic deprivation. The rural areas are the most heavily affiliated, as demonstrated by the fact that nationally around 45 percent of the population lives below the poverty line, but in the rural areas the figure is 70 percent. The rural population of the hills and mountains – almost half of the countries population – are poorest of all, with per capita income 45 percent below the national average (APP 1995, p. 201).

There has been considerable opening up of the economy during the early nineties, but Nepal has not been able to address its fundamental development challenge – that of reducing poverty. Poverty continues to be widespread; especially in rural areas and recent socio-economic performance have not been sufficient to reduce poverty.

The recent fiscal budget is unlikely to stimulate socio-economic development activity with its weak fiscal management. Financial sector reforms are not adequate to enable the private sector to participate or to play an important role in economic development activities.

Nepal's socio-economic development still remains highly dualistic, with a larger agricultural sector of subsistence level and a smaller urban economy. Almost 90 percent of the Nepali population lives in rural areas depending on agriculture for both employment and income generation. Agriculture, however, has been untouched by recent economic reforms and remains at subsistence levels, with low inputs use and low productivity.

(3) Caste & Ethnic Groups

Even in these rural poor areas there are degrees of poverty. The segmentation of Nepalese society along caste and ethnic lines has resulted in a rich cultural heritage, but it has also created a pervasive social hierarchy. Members of lower ethnic and occupational castes are generally poorer than average with low land holdings of marginal nature for the following socio-economic discrimination that has been practiced and manufactured in centuries.

1) Historical unfairness and injustice were and are created for lower caste as well as for women.

2) Domination of specific caste, ethnic, religion, gender linguistic, region and cultural groups in society.

3) Vertical and hierarchical social structure with purity and pollution of caste, women and foods.

4) Lower caste has been traditionally treated as "untouchable" and the practice is continued even now.

5) They are not allowed to fetch water from public water sources. They are not allowed to use the same tape water or same well or even same spring water.

6) They are not allowed to enter the god and goddess temples for worship.

7) They are not allowed to enter houses of higher castes and public places.

8) They are not allowed to go together to schools and hospitals and their literacy rate is very low.

9) They were and are not allowed to improve their illiteracy situation.

10) They are used as bounded labour and their family members are sexually exploited and their children are citizenless without known parents.

11) They are not allowed to be members in many social organizations.

12) Women are also treated as "untouchable" for four to five days during menstruation and for 6 days after child delivery.

13) Women and lower caste/ethnic groups are not allowed to perform certain socio-cultural rituals.

Thus, socio-economic discrimination is widely prevalent from birth to death and the society learns it through the processes of socialization.

The lower caste / ethnic groups were and are generally involved in the following specific works; agriculture labourer, bounded labourer, hunters, fishermen, woodmen, herdsmen and occupational caste workers under patron-client relationships.

1) As agricultural labourers especially as ploughmen soil works & labourer in subsistence oriented food production systems.

2) As bonded labourers throughout their life in subsistence oriented agriculture and household chore works for landlords.

3) As hunters hunting wild animals in traditionally rich forest of Nepal and collecting the non-timber forest products (NTFPs) from forests.

4) As fishermen, fishing in river water lakes and ponds.

5) As axe men, woodmen, harvesting fuel wood and timber from forest for sale.

6) As herdsmen, raising livestock.

7) As occupational caste works groups especially as carpenters, cobblers, tailors, blacksmith, goldsmith, mason workers, butcher, and sweepers and cleaners.

(4) Social Environment

Nepal's human development index (HDI, which indicates the level of living, knowledge and health, is low at 38% of industrial countries, and 61% of developing countries, and only slightly better in comparison with the least developed countries as a whole. Within the South Asia region, all countries except Bhutan and Bangladesh enjoy a higher HDI than Nepal.

Residents of the Hills and Terai enjoy a higher level of human development that residents of Mountain region. HDI of rural residents is only two-thirds of that of the urban residents. The western, eastern and central development regions enjoy a higher level of human development than the Mid-Western and Far-Western regions. The HDI among the Newars, the majority of whom live in urban areas, is twice that of "untouchable" or lowest caste.

Gender disparity, which compares the distribution of life expectancy, education and income among men and women, is highest in the Mountain regions. The intensity of discrimination against women at various organisational levels is high. Women empowerment in Nepal is very low in comparison to global level and except for Pakistan, are less empowered than other South Asian countries.

The average life expectancy is only 55 years. Women have a life span shorter than men by 2 years, contrary to global trend. Infants in the rural areas are more than 1.6 times more at risk of death as compared with those in the urban areas. Incidence of diarrhoea and acute respiratory infection (ARI) among children is very high. High mortality and morbidity could be attributed to the lack of safe drinking water, poor housing and sanitary facilities, poor nutrition, abuse of alcohol and tobacco and insufficient health services coverage.

The average level of income in Nepal is among the lowest in the world. Urban incomes are more than double that of rural incomes, with uneven incomes distribution across sectors, regions and social groups. Income disparity is much wider in the more urbanised central region and the more developed terai region. It is much narrower in the almost rural mid-western region, hill and mountain regions. The low rate of growth of agriculture sector income, skewed income distribution, and deteriorating terms of trade of the agriculture sector compared with other sectors, have aggravated poverty.

The 1991 census indicate more than 60 groups based along caste, sub-caste and ethnic and sub-ethnic groups, and 20 major languages. The caste system is basically rooted in the Hindu religions. Discrimination along caste and ethnicity has been legally abolished by the Public Laws of 1962. Discrimination is slowly declining in the urban areas, but caste and ethnicity still functions as common social and cultural classification.

(5) Women

Within the families there are also disparities in the incidence of poverty, with women tending to suffer greater deprivation than men. Traditionally men eat first and the women eat only what is left over. Traditionally, the ownership of land is transferred to sons not to daughters. Men also receive a disproportionate share of cash income. This reflects both lower wage rate for women and women's involvement in the subsistence side of farming and household chores work. All of this helps to explain the gender – sensitive Development Index for Nepal.

These problems weigh heavily on women not only because of their higher incidence of poverty, but also because they are so heavily engaged in agriculture and natural resource management. In rural areas women are the predominant source of labour for many tasks (Sharma 1995). Recent estimates of women's contribution to aggregate agricultural labour put the figure at between 53 and 58 percent (Jacobson 1992 and Bajracharya 1994). Women, traditionally, played a major role and managed the particular segments of

the farm economy such as livestock raising, kitchen gardening (fruits & vegetables) and the post harvest handling of products. In forestry, women are major users of fuel wood, fodder and other products.

2.1.2 National Characteristics of Agriculture Sector

(1) National Program Framework for the Agricultural Policy

The agricultural sector has a national program framework in the shape of a comprehensive and sectorally interlinked Agricultural Perspective Plan (APP 1994/95 – 2014/15), which HMGN adopted in 1995. The Ninth Plan has adopted the APP in its entirely as its strategy for agricultural development. The primary objective of the APP is economic growth through agricultural commercialization.

The plan strategy is anchored in a prioritized productive package, which is development via the pocket-package approach by the Ministry of Agriculture and Cooperatives (MoAC) for its implementation at the field level. This entails identifying production pockets with high potential and the provision of targeted packages of inputs to these pocket areas.

The APP strategy emphasizes the needs to develop high value agricultural produce, especially livestock and horticultural products. These products offer the opportunity for high income per unit area and the plan emphasizes the development of markets and a market-oriented approach, together with support for the private sector, through policies, institutions and investments.

(2) Agricultural Performance

Agricultural growth in the present decade has averaged only about 2.3 percent per annum, which is less than the rate of population growth. The main reasons reported for the continuing poor performance of agriculture sector are mainly: (i) lack of suitable policies for private sector participation and investments; (ii) inefficient use of public resources; and (iii) inadequate institutional capacity building at the users level.

The budget's stated objectives – to accelerate economic growth and reduce poverty through greater emphasis on agricultural development; social services and rural infrastructure, pursuing liberal market – oriented policies; and promoting participatory development / rural empowerment – are laudable. The budget however does not provide a sustainable fiscal framework within which the objectives can be pursued in a prioritized manner. The budget speech emphasized the importance of agricultural development, but the budget allocations for agriculture are inadequate. The largest increases in funding in the budget are for local development and other social services with continued larger budget for road project. The present fiscal budget is not prioritized in order to support economic growth in agriculture sector. Therefore, main hope for economic growth through agricultural commercialization (fruits, vegetables, livestock, fishery and others) can be implemented by private sector with better environment for their participation and investment.

(3) Private Sector in Agricultural Commercialization

The primary objective of the APP is economic growth through agricultural commercialization. However, to encourage private sector in the economic growth of the agricultural sector, a number of policy issues have to be addressed with more liberal Acts, regulations, rules and attitudes towards private sector participation and investment in agricultural commercialization.

To revitalize agricultural growth, a number of policy issues have to be addressed with more liberal Acts, regulations, rules and attitudes for both institutional reforms at the users level as well as policy reforms for the active participation and investment of the private sector. Thus a new technology and policy package needs to be formulated for institutional reforms and private participation and investment especially in the high value commodities such as fruits, vegetables, livestock fish etc. prioritized by the Ninth Plan.

2.2 Review of the Donors' Projects

There are many projects regarding improvement of horticulture marketing assisted by international donors. Some relate to the provision of physical facility, while others relate to the support for operation and management of the market. Most projects that do not include software component are failed.

2.2.1 UNCDF/FAO

(1) Kalimati Market Project (NEP/89/C01)

Kalimati Wholesale Market has been in operation since 1986, after the land acquisition by the government in 1984. The market was built with the resource of the government at initial stage and some part was assisted by FAO, however the facilities such as drainage, passage, road, toilets were not adequate. As there was growing demand for more and improved facilities, the government requested UNCDF for assistance. The contract of construction of new Kalimati market was signed on November 1990 with UNCDF and HMGN contributed $ 4.6 million of which $ 2.6 million was for physical facilities construction. Due to the delay in land preparation, the construction work had commenced in 1996 and was completed in 1998 in 2.2 ha space with 4,000m2 shed with platform for loading and selling. The facility includes auxiliary facility such as canteens, banking, and ice manufacturing. Water treatment facility is still not completed.

(2) Support to a New Kalimati Market project (NEP/91/035)

The management of Kalimati market was operated by the Marketing Development Div. (MDD) from 1992 to 1994. For effective management, on an independent basis and commercial principles, the government formulated Kalimati Fruit and Vegetable Wholesale Market Development Board by the governmental order in 1995. To assist the board in management and operation, the project "Support to a new Kalimati Market Project" had started since 1996 with funding assistance by UNDP (US$962,000) and implemented by FAO. The objective of project is to prepare rules and regulations necessary for management and operation of wholesale market such as, Market Operation Rules, Staff Service Rules, Financial Administration Rules, Accounts Manual, Vehicle Entry and Exit Management and Rules, Security Management and Rules,

Market Cleaning and Garbage Removal Plan, and Market Information Services Software Package, etc. The project has completed in September 2,000.

(3) Small Marketing Infrastructure Project (NEP/89/C04)

APP and the Ninth Five Year Plan focus on the need for commercialization of agriculture and in provision of assistance relating to marketing to farmers, traders and consumers. The Ministry of Agriculture and Cooperative (MoAC) was seeking assistance from international donors and contracted with UNCDF in 1995 for the project "Small Marketing Infrastructure Project". UNCDF provided $3,645,134 for the project and FAO implemented it. The project has been implemented since 1996. The project activities were concentrated to establish "Agricultural Produce Marketing Center" at 19 locations in Hills and Terai of the Central Region. Only 3 locations were selected from the West Region. The design and construction works were given to local designer and contractors on open tender basis. The staff of MoAC made supervisory visit to each site.

Besides the construction of marketing facilities, the project intends to achieve the following outputs.

- Formation of market users' groups, training in marketing activities, and in market operation/management;
- Development of a market information network; and
- Introduction of improved packaging system.

The project was completed on July 2000.

(4) Support to a New Kalimati Market Project

The project is a UNDP financed and FAO executed technical assistance project complementing the UNCDF capital grant assistance for the construction of a modern wholesale market complex at Kalimati in Kathmandu. The new market was primarily intended for fruit and vegetable but also includes a fish market. The Kalimati fish market is a separate building and the ground floor (sales tables) and 2nd floor (office of traders, laboratory) consist of 351m^2 and 157m^2, respectively. There is also a cold room, a freezer room and an ice plant with capacity of 4.5 mt and 9.0 mt, and 15 mt per day, respectively.

The project was expected to promote direct sales by farmers and fish producers and to establish only one fish wholesale market in Kathmandu, but the linkage with wholesalers who are in Kichiepokhari at present was not considered. Presently, the market does not run fish trading. Fish traders are reluctant to move to Kalimati market, because Kalimati is not an established market like Kichiepokhari market. The project also shows unsatisfactory market design. Conservative fish traders did not accept introduced modern open selling table. This teaches the lesson of importance of stake holder's participation in the market planning.

2.2.2 FAO

HMGN requested FAO to assist in the Development of a Master Plan for Agricultural Marketing in Kathmandu Valley. FAO agreed to provide assistance within the framework of technical cooperation programme. Total budget was $158,000 and duration was one year starting from June 1999. This Master Plan aimed to bring an improvement in marketing of horticultural and other produce in the Kathmandu Valley. It makes efficient channels from production area to urban consumers. Accordingly the channels include collection centers for farmers, local assembly market and urban wholesale market for consumers. The conclusion and recommendation is as follows:

- Wholesale Market: There is a limit of capacity to handle the additional inflow of fresh commodity at existing Kalimati wholesale market. A new site has been identified in Lalitpur Sub-Municipality, south west of the ring road. Existing Kalimati wholesale market shall be converted to Central retail market and Farmers market for the Kathmandu urban area.

- Farmers/Growers Market: Present street market in the city should be moved to the south Banks of the Bagmati River in Lalitpur Sub-Municipality.

- Collection Centers: 15 potential collection centers have been identified in each District in the Valley. (Kathmandu, Lalitpur and Bhaktapur district: 5 centers in each of the 3 Districts) All locations are within 30 km from Kathmandu.

- Livestock Marketing: Proposal formulated along with the proposal of ADB financed Third Livestock Development Project.

- Local Retail Market Centers: A programme is recommended to cope with the rapid population increase in the outskirts of Kathmandu urban area. This is called as new local and neighbourhood centers.

The project completed on June 2000.

2.2.3 ADB

(1) Secondary Crops Development Project

The project component was to establish two collection centers at Dang and Banke districts, and DADO office at Ghorahi, the Municipality of Dang and Agricultural Service Center at Gadowa. Collection Centers were constructed at Lamahi, Dang and Kohalpur, Banke in 1997/98 along the East-West Highway. Both centers are entirely not utilized at present because of the inconvenience access to the center. Farmers in Gorahi do not need to bring their commodities to Lamahi because traders come to Ghorahi for purchasing. Similarly, traders in Nepalgunj never go to Kohalpur to buy commodities because of long distance. They prefer to go India to buy cheaper commodities. The horticultural production in the area is still subsistence oriented and most farmers are familiar with door-to-door sales system and commodity exchange trade. Another reason of failure is that there is a little on software part in the project.

(2) Crop Diversification Project

The Crop Diversification Project will succeed the Secondary Crops Development Project. The final document has been prepared and submitted for approval. The project is to be carried out in the Mid- and Far-Western Development Regions in about 12 to 14 Districts. Its components are: encourage farmers to grow secondary/cash crops for domestic sale and export; research and extension; and financial services and better marketing.

(3) Hill Fruit Development Project

Agricultural Produce Marketing Center, Dharan, Sunsari was established in 1996/97 with funding assistance of ADB. There is a citrus production pocket in Hill area of the East Region. The center was aimed to collect not only for citrus fruits but also for vegetable and livestocks. Due to the inconvenience of access road, it is only utilized in peak season of citrus, that is from November to January. There is enough space owned by MoAC.

(4) Third Livestock Development Project (TLDP)

1) Donor Country and Agency: ADB

2) Period of the Project: 1997/98 to 2002/2003

3) General outline of the TLDP

TLDP began in 1997 and will be implemented in three phases over six years with US$ 27.9 million. TLDP focuses on people's participation in development of farmer's organizations (group and association etc) in livestock sector. Another feature of TLDP is the intention to develop processing and market outlets for livestock products as well as improvement of livestock productivity and income and food security for farmers.

4) Objective

The overall objective of the project is to improve nutrition, income and employment opportunities for the farmers and provide resources to poor rural people in the project area through improved products, mainly meat, milk and eggs. TLDP covers nine districts of Western Development Region and 10 districts of Far-Western Development Region.

5) Current Status of the Project

TLDP has published reports on livestock and meat marketing system, which are the first publication on livestock marketing sector in Nepal. Regarding livestock marketing, TLDP focuses on development in Pokhara and Kathmandu.

This project was planned to establish 2 slaughterhouses in Pokhara 2 and 4 in Kathmandu from 1993/98 to 2002/3 financed by ADB. Private sector firms will be financed for its construction by this loan under the conditions of soft loan with annual interest 16% per year. But an offer from private sector has not yet realized. This situation will have been occurred that users don't recognize their profitability and there is no sign for the implementation of law and institution on meat and meat product quality assurance.

(5) Livestock Master Plan (LMP)

1 Donor Country and Agency: ADB

2) Period of the Project: 1989 to 1993 (?)

3) General of the LMP

LMP is the output of the Livestock Sector Investment Study, which took place in 1980/90. The LMP covers a period of 20 years from 1990 to 2010. And has integrated five programs to enable the realization of the livestock development activities. The programs involve livestock sector management, human resource development, agro-industries and market development, land use management, environmental rehabilitation and livestock improvement.

4) Objective

The LMP seeks to achieve the national objective to provide a minimum living standard for all. The LMP aims at;

a) Provide a basis for increasing income and employment for livestock farmers through increased production and productivity in the sector over the period of 20 years from 1991 to 2010.

b) Improve livestock production in Nepal and formulate a national strategy for livestock development.

c) Provide guidance to government and other institutions and individuals concerned with livestock development.

d) Identify programs and projects suitable for implementation during the plan period.

e) Estimate the resources required to implement the strategy over a 20 years period.

5) Current Status of the Project

In the LMP, reports composed of three volumes were finally prepared, that is, Volume-: A Strategy for Livestock Development, Volume II: The Plan, Volume III: The Livestock Sector. Since LMP's strategy covers a period of 1991 to 2010, its concepts are still effective.

(6) Aquaculture Development Project

During 1981-94, ADB, IFAD and UNDP granted a loan of US$25 million for this Aquaculture Development Project. The project targeted an expansion and development of pond cultured fish production in 16 Terai districts of the Eastern, Central and Western Development Regions. Aquaculture production was estimated to be about 750 mt in 1981 when the project started. During five years of phase I period, this increased to 4,939 mt in 1986, by 658% and to 8,829 mt in 1993. The Bank's assessment also reported satisfactory improvements in fish seed supply from both public and private sources.

The lessons from this project included:

1) Effective coordinating mechanism among the fisheries institutions and ADB/N is required. Incompetence of fisheries extension staff to meet the needs of farmers and their inability in loan appraisal and supervision were serious problems.

2) About 86% of farmers lacked technical knowledge and needed effective extension service as first priority. Building construction and physical infrastructure development should not be emphasized.

3) Nonfeasible ponds constructed during project collapsed by early 1990's.

4) Integrated farming (pig, duck) did not fit into local socio-cultural setting or marketing problem.

5) Significant impact on protein intake of fishpond operator was observed (8kg/capita/year).

6) Bardiya District has strong potential and farmers are above average in management practice.

2.2.4 USAID

Market Access for Rural Development (MARD) is supported by USAID. This project in 8 districts of the Mid-Western Region was based on the successful Rapti Development Project, which promoted the commercialization of hill agriculture in geographically defined pockets, through its emphasis on production and marketing of high value low volume cash crops (vegetables, fruits, seeds). This MARD project started in 1997 and will end in 2002.

This is a financial assistance to DADO program (35% by USAID, 65% by HMGN). It covers 7 hill districts area and Dang in the Mid-Western Region. Due to the attack by Maoist, their office in Tulsipur has moved to Butwal, and the project sites was relocated from the Mid-Western Region to 6 districts in the Western Region The implementation of the MARD project will be provide valuable experience and close linkage with this Project.

2.2.5 UNDP

UNDP has started Rural-Urban Partnership Programme (RUPP) from 1997 as 5 years project. The programme covers 12 Municipalities and 28 VDC to enhance the management capabilities for institutionalizing socio-economic linkages among urban centers, rural market centers and villages. It is financed by UNDP and implemented by UNCHS. In order to execute the programme, the Steering Committee has been formed with National Planning Committee, Ministry of Local Development and Ministry of Physical Planning and Works. Under the Steering Committee, RUPP and Municipality have Partnership Development Committee (PDC). The Committee handles PDC Fund.

In the Eastern Region, RUPP focuses on Biratnagar and Dhankuta to mobilize Municipality, Community and Private Sector. The flow is Production center - Rural market center - Market zone - Market region. The project has based on Community Based Organization called as Tol/Lane that is under Ward of Municipality or VDC.

RUPP provide a seed money from PDC Fund as starting fund such as investment for bridge, market and agricultural road. But this is partial funding (averaging about 30%) of total budget. The balance should be sought from other sources including Line agencies, donors' project, NGO and local Municipality. PDC Fund is provided as credit to Tole Development Programme that is more than 80% of household are involved. PDC Fund is also provided as credit to Entrepreneur Development Programme that is more than 5 persons group. Repayment begins after 1 year with 18% interest per annum. This is deposited to Market Development Fund as revolving fund. Thus RUPP become sustainable. The rate of repayment is 98% to 100%.

Training is also big component of PDC Fund that is allocated such as Trading, Processing, Packaging, Urban services, Agro-input, High value crops and Skill development. Resource persons are mostly recruited from locally to avoid miss-match of the requirement of both sides.

In Biratnagar RUPP, 15 members are working. Except Marketing Advisor, their salary is given from Municipality. The office rental fee is also provided from Municipality.

The budget for Biratnagar RUPP project for the year 2000 is as follows:

Rural project Rs. 1,092,592.85: Urban project Rs. 2,426,764.44

Total Rs. 3,519,357.29

About 30% budget is allocated to credit and 20% is allocated as seed grant. The balance is mostly used for training.

2.2.6 GTZ (Livestock)

(1) Promotion of Livestock Breeding Project (PLBP)

1) Donor Country and Agency: GTZ, Germany

2) Period of the Project: 1995 to 1997

3) General background of the PLBP

PLBP is initiated in 1988 to develop a decentralized planning, monitoring and evaluation (PME) system for the livestock sector. PLBP was extended to the total agriculture sector in 1992.

4) Objective

To develop and implement a decentralized PME system by incorporating the needs and aspiration of the farmers for increased agricultural production by enhancing the farmer's income. The decentralized PME system is composed:

a) Establishment of database assessment and verification of farmers needs

b) Development of market oriented agriculture programs/projects

c) Proper monitoring and evaluation of agricultural programs/projects

d) Agriculture policy development support.

5) Other Activities:

a) Established depreciation fund at the livestock development farm, Lampatan, Pokhara

b) Developed monitoring and evaluation system to strengthen artificial insemination services

c) Established computerized documentation center at Department of Agriculture Development

6) Current Status of the Project

The PLBP was ended in 1997. The project has basically aimed at strengthening "soft aspects" but the Department of Agriculture asked GTZ to implement livestock markets in the selected districts. Three livestock markets were planned and two of which were implemented at Damak and Nepalganj but one planned at Kathmandu was not implemented. Livestock market constructed at Nepalganj is not in service now, which is used as the office of other department. DLSO officer considers the reasons for not in service are that close to Indian border and inaccessibility from highway. The lesson of this livestock market is in importance of site selection and necessity of close cooperation in planning with DLSO, local authorities and farmers themselves.

(2) Bhaktapur Slaughterhouse

Slaughterhouse was established by the assistance of GTZ in 1991in Bhaktapur for the purpose of making full use of by products like hides and skins (by selling them to the tanning industry). This slaughterhouse never functioned and is now used for the other purposes.

2.2.7 EU: Strengthening Veterinary Services for Livestock Disease Control (SVSLDC) Project

1) Donor Country and Agency: EU

2) Period of the Project: 6 ears

3) Goals of the SVSLDC

The SVSLDC focuses on the sustainable eradication of Rinderpest disease and the reduction in the occurrence of economically important disease of livestock with grant assistance.

4) Objective

The wider objective of the project is sustainable eradication of Rinderpest and other livestock diseases. Specific objective is to provide a permanent upgrading of the veterinary services to ensure that the result are maintained and livestock productivity is increased by reducing losses to animal and poultry diseases. The major activities are;

a) Legislative program

b) Rinderpest eradication campaign

c) Strengthening of veterinary field services

d) Disease surveillance system

e) Manpower development and training

f) Vaccine production and supply

g) Awareness of animal health

h) Information and communication

5) Current Status of the Project

The project is now on-going covering not only head office at Kathmandu but also local level. Since livestock sector is important in rural areas where subsistence agriculture/livestock farming has been prevailing. The efforts of the project aiming at reducing animal diseases will give important support to the government and farmers.

2.2.8 World Bank Projects

(1) Road Maintenance and Development Project

World Bank is funding new road development and maintenance for the Far Western and Mid Western Region. The credit was signed in Feb 2000 and the project will last 5 years. Consultant has been hired, maintenance contract procured, while bid evaluation is on-going for new road construction contracts.

Project main components are:

1) Policy reform including support to setup a Roads Board, amend regulatory framework and develop the Road Fund.

2) Dry-weather feeder road construction (197 km), and upgrading to gravel standard (253 km)

3) Rehabilitation of 160 km of strategic highway and feeder road network

4) Periodic maintenance of strategic roads (470 km)

5) Institutional strengthening and training

The strategy for the Department of Roads is primarily based on the Priority Investment Plan (PIP, completed Feb 1997) for the road sector which identified strategic and rural road network for the period 1997-2006 (10 years). The PIP which advocates lost cost, quantity, and access to virgin areas (gravel road, length of road, new roads) as opposed to the strategy of APP that advocates all weather roads with emphasis to agriculture areas to facilitate marketing.

The Road Fund will be used for the maintenance of the road. The income for this fund will come from fuel levies, road tax, vehicle registration, axle load penalty, etc. The fund will be allocated to: 50% for strategic roads, 20% for municipalities, 30% of DDC/ DOLIDAR.

(2) Multimodel Transit and Trade Facilitation Project

The project objectives are to reduce transport costs associated with Nepal's import and export with India, to streamline trade and transit procedures, and to improve the

efficiency and organization of transit trade documentation and data exchange. The Government of India in parallel with the project, plans to construct a 5km rail link to the current rail terminus at Raxaul with the Sirsiya (Birganj) Inland Container Depot (ICD). Construction of the road ICD at Biratnagar and Bhairahwa are completed.

Project main components are:

1) Construction of Inland Container Depot (ICD) at Sirsiya (Birganj)

2) Improvements to road ICD at Biratnagar

3) Improvements to road ICD at Bhairahwa

4) Equipment for ICD

5) Installation of Automated Systems for Customs Data (ASYCUDA)

6) Installation of Advanced Cargo Information System (ACIS)

The operation of the Biratnagar and Bhairahwa road ICDs is by Nepal Inter Transit Development Board (NITDB), a private sector body, authorised to operate by a lease agreement.

Other donors involved in the road sector are; ADB, DFAID, JICA, SDC, UNDP, and Indian Government.

(3) Agricultural Research and Extension Project (AREP)

1) Donor : World Bank (IDA)

2) Executing Agency : Department of Agriculture, HMGN/MoAC

3) Project Period : 25th November, 1997 - 30th September, 2002

4) Project Cost :

IDA Loan	US$ 24.3 million
HMGN	US$ 6.2
Total	US$ 30.5

5) Background

To support achieving the APP vision, Agricultural Research and Extension Project (AREP) is determined to develop location specific agricultural technology on the basis of close consultation with farmers and to improve the technology delivery system with collaborative, well coordinated and efficient agricultural research and extension system responsive to farmers' needs.

6) Objective

The objective of the project is to improve the management and capacity of agricultural research and extension services by (a) developing a client oriented location specific adaptive agricultural technology; and (b) improving the technology delivery system.

7) Project Components

The project consists of an agricultural research component and an extension service component. Nepal Agricultural Research Council (NARC) is fully responsible for

implementing agricultural research component while Department of Agriculture is responsible for implementing extension service component.

a) Agricultural Research Component (US$16.2 million)

The project would (i) strengthen the agricultural research institutions by improving the management information system, priority setting of research programs, and monitoring implementation and evaluating impact, (ii) support human resource development by training research scientists and introduce a result and performance based reward system, (iii) expand on-farm adaptive research which is responsive to farmers' needs, and (iv) provide facilities, infrastructure and working capital to enable the research institutions to accomplish their tasks.

b) Extension Service Component (US$14.3 million)

The project would (i) strengthen the extension service by intensifying its decentralization to the grassroots level and strengthening farmer self-help groups, (ii) develop the human capacity by training extension staff, and implement a reward system based on results and performance, and (iii) provide facilities, infrastructure and working capital to enable individual participants to accomplish their tasks.

8) Area Coverage

The project covers both agricultural and research and extension service components. Under agriculture research component, the project covers NARC Central Office. 8 divisions (Agronomy, Soil, Pathology, Entomology, Post Harvest, Agro Engineering, Animal Nutrition and Animal Health), 4 Regional Agricultural Research Stations (Tarahara, Parwanipur, Bhairahawa and Nepalgunj), 4 Commodity Research Programes (Maize - Rampur, Green Legume – Rampur, Potato – Khumaltar and Horticulture – Khumaltar) and 4 Agricultural Research Stations (Dhankuta, Janakpur, Rampur and Bandpur).

Under extension service component the project covers 23 districts (19 Terai & 4 hill districts viz. Jhapa, Morang, Sunsari, Siraha, Saptari, Mahottari, Sarlahi, Dhanusha, Rautahat, Bara, Parsa, Chitawan, Nawalparasi, Rupandehi, Kapivastu, Banke, Bardia, Kailali, Kanchanpur, Bhaktapur, Kavrepalanchowk, Grokha and Tanahun). After mid-term review in the 3rd year of the project implementation additional 8 mid hill districts will be included.

This project also supports Women Farmer Development Division of MoAC., Central Agricultural Training Center, Agricultural Communication Division, 5 Regional Agriculture Directorates, 5 Regional Agricultural Training Centers, 5 Regional Agricultural Communication Units attached to 5 Regional Agriculture Directorates & 3 Regional Seed Laboratories (Jhumka, Bhairahawa and Nepalgunji) directly through Project Co-ordination Unit (PCU).

2.2.9 DANIDA (Danish International Development Agency)

DANIDA in 1976 established "abattoir" for small meat processor in the Hetauda industrial zone, very near to DDC milk plant by DANIDA assistance. But that meat

processing facility was used at only 3% of storage capacity and subsequently closed. It was transferred to the private sector's management in 1999 but again closed down in 2000.

2.2.10 JICA Projects

(1) Horticulture Development Project

Under financial and technical support from Government of Japan, started in 1985 and terminated in 1997 with positive impact.

1) Overall progress:

1982: HMGN requested to Japanese Government for implementation
Oct. 14, 1985 to Oct. 13, 1990 Phase I
Nov. 11, 1985 to Jan. 1, 1986 dispatched model Infra design team
Mar., 1997 : Construction completion of center under grant aid
Nov. 12,1992 to Nov. 11, 1997 Phase II
Nov. 12, 1997 to Nov. 11, 1999 Follow-up programme

2) Objectives:

a) Phase I: To corporate in the development of growing techniques of citrus fruit (Junar), grapes and chestnut and in the training through giving technical guidance and advice.

b) Phase II: To Increase fruit production in hill areas through technological development, training and extension, thus contributing to the promotion of horticulture development in Nepal.

c) Follow-up program: To establish suitable techniques for fruit production especially Japanese pear and persimmon as well as continue in achieving the set objective of Phase II.

3) Budget allocation: HMGN Rs 58,481,000 and Japanese grant aid Yen 329,305,000

4) Target fruits: Junar (sweet orange, local variety), suntala (mandarine, local variety), Japanese pear, persimmon, orange and chestnut

5) Project sites: Kirtipur main center and 8 districts/2 areas, sub center Nepalgunj (grape) and Sindhuli (junar), commercial orchard citrus 220ha – 5,000MT/year and temperate fruits 30ha, Demo farm at 8 districts/2 areas of Sindhuli-1 (extension/selling house junar), Ramechahap-1 (junar), Kathmandu-1 (chestnut, chaimale 0.6ha and Thankot 0. 3ha/pear, and persimmon), Banke-1 (grape), Lalitpur-1 (Basdhikel 0.4ha and 1. 0.2ha/grape and pear), Vhaktapur-1 (Dadhikot 0.3ha/grape and pear), Kavre-1 (Banepa 0.9ha/pear, persimmon, chestnut and Kergali 0.4ha and Subagaon 3ha/Suntala, Khawa 0.4ha mix), Sindhuli-2 (Tnkanya 5ha/Suntala and junar), Ramechhap-2 (Pakhabas 0.3ha/junar and mix fruits)

6) Main facilities (Japanese grant aid): main center at Kirtipur, sub center and demo farm. It is reported that in 1998, 65 participants farmers produced 5.6MT and sold 3.7MT in total, sale rate 67.4%.

(2) Livestock

For the period of March 1998 to March 2001, one Japanese expert who was responsible for technical guidance on diagnosis of chicken diseases and other livestock diseases, was dispatched to the Animal Health Research Division of NARC. Handbook on chicken diseases so far observed was prepared in English and Nepali. Some indistinct diseases of goat were explicated and report on pig tetanus, sterility of cattle and buffalo were submitted to NARC. Over these two years, laboratory equipment such as microscope, sterilizer, homogenizer etc. were provided to Nepalese government. The expert also advised to NARC about the construction of new building for Animal Health Division, which is now under construction.

(3) Fisheries

1) Japanese Technical Cooperation Project on Natural Water Fisheries Development (JICA)

The project aimed at the technology development of carp species in order to increase the production in the Hill areas. During 1991-1996, 7 long term experts, 13 short term experts were dispatched and 9 Nepalese counter parts had training in Japan. .

Aquaculture research may be the major activity of the project, but it compares unfavorably with “Aquaculture Development Project” by ADB, especially in terms of investment cost efficiency. Fish production in Hill areas still contributes only 0.9% to total aquaculture production (1998). Inadequate linkages between research and extension and coordination with the projects previously started, such as ADB project was quite weak and not many lessons were learned from them. In addition, requirements of rural fishermen/farmers are unlikely to be covered in this projects, in spite of this center being the only institution in the district. Although the role of the project in development of aquaculture technologies should be acknowledged, but there is also need for tighter coordination between these research works and field level extensions in order to realize the aquaculture production growth. The research project in Nepal should give priority on farmer’s participatory research and on-farm verification of technology.

2) Aquaculture of Rainbow Trout (JOCV)

Since 1971, some JOCVs have been involved in the fisheries development in Nepal. Aquaculture of rainbow trout has been practiced in two government stations Trishuli and Godawari. In spite of about 30 years effort, rainbow trout culture in Nepal is still in experimental stage and at present does not contribute to commercial production. Present production is modest at some 10 mt per year. This was mainly owing to the relatively high cost of initial investment and unclear demands for this high value fish in the domestic market.

2.3 Present Conditions of the Agriculture Products Marketing in Nepal

2.3.1 Horticulture Products Production and Post-Harvest Processing

(1) Governmental Sectoral Development Policy

1) Agricultural Perspective Plan (AAP)**:**

APP is a 20 years' agricultural development plan being implemented from 1995. It is designed to accelerate agricultural growth rate from 3% to 5% per annum combined with a decline in the population growth rate from 2.5% to 2.0%, which represents a sixfold increase in the growth of agricultural output per capita. The APP states the conditions not only of accelerated growth in agriculture but also of employment growth. The following are the Objectives and strategies of the APP:-

Objectives:

- To accelerate the growth rate in agriculture through increased factor productivity.
- To alleviate poverty and achieve significant improvement in the standard of living through accelerated growth and expand employment opportunities
- To transform the subsistence-based agriculture into a commercial one through diversification and widespread realization of comparative advantage
- To expand opportunities for all an overall economic transformation by fulfilling the precondition of agricultural development
- To identify immediate, short-term and long-term strategies for implementation, and to provide clear guidelines for preparing periodic plans and programs in future

Strategy:

- A technology-based green revolution in agriculture becomes the initial engine of accelerated growth
- Accelerated agricultural growth creates a demand pull for the production of high value commodities in agriculture , as well as for nonagricultural commodities, with consequent large multiplier effects on other sectors of the economy
- Broadly based high employment growth then becomes the mechanism for achieving societal objectives
- Public policy and investment focus on a small member of priorities, building on past investment in human capital and physical and institutional infrastructure
- A package approach to development is introduced, which in Nepal's case would be differentiated for the terai, hills and mountains, and would recognize the powerful complementarily between public and private investment and priorities, and would ensure their coordination

- To achieve broad participation, the strategy is regionally balanced and explicitly ensures the participation of women
- To accelerate agricultural growth
- To concentrate on 4 input investment priorities; shallow tubewell irrigation in the Terai, agricultural roads and power, fertilizer, and the technology system of research and extension)
- A small number of high-value commodity priorities to facilitate intensification of agriculture especially in the hills (citrus, vegetables and vegetable seeds, apples, apiculture and sericulture).
- Strong multipliers from increased farm incomes to growth of output and employment in the rural non-farm sector, as the principal means of solving the problems of employment, poverty, environment, and dispersal of urbanization
- Implementation mechanism that operates at the district and national levels, and is complemented with an analytical body to facilitate reinforcement and adjustment of the plan over time.

The strategy requires packaging the component parts at the district, village, and farm levels. It is described as a Prioritised Productive Package. The details of the strategy are quite different for the Terai and the Hills and Mountains.

2) 9^{th} Five Year Development Plan

Under the APP, the emphasis is on following high value crops;

- off-season vegetable in the Hills as well as Terai
- vegetable seed in the hills and mountains.

Vegetables are an obvious priority because they are less risky to grow since they are an annual crops.

Under the collaboration among VDD, FDD and AIC, 9^{th} 5 Year Development Plan (1996/97 to 2001/02) was initiated for the purpose of increasing mainly the productivity of horticultural crops through increasing supply of improved seeds and fertilizer.

(2) Agricultural Crops Production

The length of the country from the river Mechi in the east to the Mahakali river in the west is about 885km. The north-south mean breadth is about 193km on the average. The breadth is broader (241km) in the west and narrower (145km) in the middle linking 2 countries – China in the north and India in the south. Geographically, Nepal is bounded by the snowy and loftiest desert land in the north and alluvial fertile field in the south. Nepal in general is situated between the arid Tibet autonomous region of China and tropical India. Being bounded by land on all sides Nepal has no access to the sea. However, her rivers like Gabdaki, the Kosiand the Karnali, whichh ultimately join to the Ganga river in India provide some good prospects for the future. Bay of Bengal of the Indian Ocean in the south is 1,127km from the nearest part of Nepal. Bangladesh lies

27km from Nepal crossing Radhikapur of India by land. Bhutan is 32km across Sikkim. In general, Nepal is divided into 4 agro-ecological zones:-

Cool temperature zone: 2,000 to 3,000m and the mean annual temperature is 10-15˚C.

Warm temperature zone: 1,500 to 2,000m and the mean annual temperature ranges from 15˚C to 17˚C.

Sub tropical zone: 1,000 to 1,500m and the mean annual temperature ranges from 17˚C to 20˚C.

Tropical zone: 60 to 1,000m extending from east to west along the southern part of Nepal.

Total annual rainfall ranges from less than 200mm to over 5,000mm. Over 80% of rainfall in Nepal is associated with east monsoon which occurs between June to September.

Under the project study, Nepal is divided into 3 agro-ecological zones as follows:-

Mountain zone: Consists of high Himalaya and high Mountain and covers 43~45% of the total land area of Nepal.

Hill zone: The mid mountains or hills cover 29.66% of total land area of Nepal and includes-Siwalik, which is an unbroken chain of relatively unconsolidated sedimentary ridges extending along the Himalayas. The hills are extremely rugged but the distance from the valley bottom to ridge top is usually less than 700m. It covers 12.4% of the territory of Nepal. The cultivated land lies in the valleys which are in the tropical agro-ecological zone.

Terai zone: The Terai region covers 14.48% of the total land area of Nepal. The Terai is an alluvial plain region immediately adjacent to the foot hills of Siwaliks and it is very hot. Elevation ranges from 60 to 300m in tropical agro-ecological zones. The rainfall is about 1,500 – 2,000mm in the eastern Terai while it is only 1,000 – 1,500mm in the western Terai.

Under such agro ecological conditions, agricultural crops, production growth during 5 years (1993/94 – 1998/99), horticultural crops recorded higher growth than staple and cash crops, which consist of cereals (paddy, maize, millet, wheat and barley), pulses (lentil, chick pea, pigeon pea, blackgram, grass pea, horse gram, soyabean and others) and cash crops as shown in Table 2-1

Horticultural crops cover about 25% of total crop production by use only of 7.4% harvested land.

(3) Horticultural Crops Production

1) General

Horticulture crops under this study consist of 4 large groups i.e. potato, spices, fruits and Vegetables. Commodities of spices are cardamom, chilli, ginger, garlic and turmeric. Fruits consist of 3 major groups of citrus, deciduous or winter fruits and tropical or summer fruits. Major commodities of citrus are orange (tangerin), junar

(sweet orange), lime and lemon. Deciduous fruits are apple, pear, walnut, peach, plum, apricot, persimmon, pomegranate and almond. Tropical/summer fruits consist of mango, banana, guava, papaya, jackfruit, pineapple, litchi, arecanut and coconut. On the other hand, vegetables are divided into 2 groups depending on planting season, namely winter and summer vegetables. Winter vegetables consist mainly of cauliflower, cabbage, tomato, radish and rayo, and brinjal, gourd, okra and pumpkin belong to summer vegetables. Horticultural crops cover about 25% of total crop production by use only of 7.4% harvested land.

In Nepal, horticultural crops comprise 7.9% of total cropped area and contribute about 14% of total Agricultural Gross Domestic Products (AGDP). In 1998/99, production share of horticultural crops in order of vegetables, potato, fruits and spices is shown in Table 2-2.

More than 50 farmers' groups and cooperatives have been formed in the production pocket areas of nearly 25 districts (MDD, 1996)

2) Potato production

Production growth of potato achieved 5.8%, 6.9% and 1.2% per annum respective in area., volume and yield during 5 years from 1993/94 to 1998/99. Production reached 1,091,218 MT in 1998/99. Productivity of potato is 9.24 MT/ha in 1998/99 and has still the potential of increase as compared with the level of neighbouring countries.

3) Fruits production

The varied climatic conditions make possible to grow almost all types of fruits. Fruits trees can be planted in marginal lands of hills and provide a good source of income to farmers of hills. Fruit trees are not only used for firewood and timber but also fallen leaves for compost and conserve the soil and protect the environment as well. Due to the rapid urbanisation and increased awareness of the public about nutrition and health, the demand for horticultural crops is increasing. Therefore, HMGN is increasing it's attention on horticulture development. The HMGN has so far, established 23 farms and stations for fruits research and development. Hills are found having largest fruit area (%) and production (%) in comparison to Terai and Mountains. In hills, the major fruits grown are citrus, peas, plums and peaches. In 1998/99, the total area under fruits was 45,147 ha with a total production of 456,013 MT.

Major fruits production are mango 111,400MT, orange 66,654MT, banana 47,415, guava 36,068, apple 30,464, papaya 28,654, pear 28,437, sweet orange 23,817, jackfruit 15,867 and peach 12,638. As early as 1960, fruit preservation activity was in operation at Kirtipul Horticulture Research Station. Later, the same activity was put together with the Central Food Research Laboratory, and continued to deal with the fruit and vegetable preservation research.

4) Vegetable production

The geographical and climatic diversity of Nepal provides ample opportunity for the production of seasonal vegetables, The population growth, the growing concern for nutritious food, the increase in the foreign tourists and the growing urbanization have necessitated an area increase in the production of vegetables in order to meet the

increasing demand. As vegetables can contribute to increase income generation for rural farmers and have the potential for providing immediate cash returns. Vegetables can assist in transforming the traditional food crops oriented farming system to a system of high income generation agricultural activities and also concentrates to control erosion and environmental protection in the hill. In view of such situation, vegetable development program has been formulated in the 5-year plan, in order to gradually substitute for import, to promote export and to increase the income and employment opportunities to farmers..

Major commodities of vegetables production in 1999/2000 are projected to be: cauliflower 228,000MT (15.4%), cabbage 192,000MT (12.9%), tomato 144,000MT (9.7%), onion 135,000MT (9.1%) and radish 108,000MT (7.3%).

5) Spice production

The national level program is implemented through ginger and spices development section under VDD. The crops have been prioritised in APP as high value and export oriented commodity. Cardamom, dry ginger and dry chillies are the major items of export. The area under cardamom specially, is rapidly expanding . Importance of this crop has been realized by farmers of marginal land with perennial source of irrigation in the hills.

6) High-value crops

High-value crops: fruits, citrus, vegetables, vegetable seed, potato seed, sericulture, honey, ginger, spices, cardamom and tea. The APP indicates the high-value crops and areas: (i) citrus, throughout the mid-hills, (ii) apple, in the inner Himalayan zone, (iii) off- season vegetables in the Hills as well as the Terai, (iv) vegetable and flower seed in the hills and mountains, (v) beekeeping products in the hills and mountains, and (vi) raw silk in the hills.

7) Farming system

Nepalese farming systems are the complexity particularly in the Hills and characterized by the integration of the forestry, livestock and cropping components and, especially in case of small farmers, off-farm activities. Farming is first and foremost subsistence oriented. The primary objective is meeting family consumption requirements while a small portion of produce is sold or exchanged in order to acquire basic necessities like salt, kerosene and clothes. Some commercialisation occurs in areas in the vicinity of roads or urban centers where consumer goods and modern inputs exert their influence. Inadequate transport and market facilities has hindered monetization of the Hills economy in the past.

The monsoon climate exerts a strong influence on the farming system. The monsoon crops grow in a period of excessive rainfall. The winter crops depend on residual soil moisture to supplement the low rainfall received during the growing season. Irrigation can play a crucial role, especially in boosting winter crop production. Irrigation also permits early planting of monsoon crops thus making possible 2 and 3 crops per year. The restrictions imposed by the monsoon limit the options for improvement without irrigation, and also create peak resource requirements (labor and animal power) in April and November. Cereals such as paddy, maize, wheat and millet account for about 90% of cropped area leaving only minor areas of pulses, oilseeds

and other cash crops. Paddy is the dominant cereals in the Terai. In the Hills and Mountains, besides paddy, other cereals assume relatively more importance.

Existing common farming system in Nepal has been recognised over 19 systems in mountains region and 21 systems in hills and Terai. Farming systems of horticultural crops are mainly 18 systems as follows:

1 paddy-vegetable – vegetable
2 maize – vegetable – fallow
3 maize – vegetable – vegetable
4 maize – potato – vegetable
5 paddy - vegetable – paddy
6 paddy – vegetable – maize
7 vegetable – vegetable – vegetable
8 paddy – vegetable – fallow
9 paddy – vegetable – jute
10 paddy – potato – vegetable
11 paddy
12 paddy – potato – fallow
13 wheat – potato – fallow
14 maize – potato – fallow
15 potato – fallow – fallow
16 paddy – wheat – potato
17 paddy – paddy – potato
18 paddy – potato – maize

8) Production pocket areas

Following to the plan projected by the APP, nation wide production pockets have been selected by MoAC under agricultural pocket package programme in order to accelerate the growth rate of agricultural GDP. Bigger number of pockets has been given to horticultural crops. HMGN's support for increase of horticultural crops is concentrated on these areas from now on. Number of Production Pocket Areas by Crop are shown in Table 2-3, and Number of Production Pocket Areas by Horticulture Commodity in Table 2-4.

9) Projected area, production and productivity of horticultural crops

Area, production and productively in 2011/12 are estimated tentatively is shown in Table 2-5.

(4) Farm Input

1) AIC

The AIC , established in 1965 under the Corporation Act B.S. 2021, procures and distributes high quality and improved agricultural inputs to farmers as a parastatal with following objectives:-

- Import chemical fertilizers from the international market and distribute throughout the country.

- Produce and process recommended improved varieties of seeds and distribute throughout the country.

- Import, locally procure and distribute agricultural chemicals and implement whenever needs rise.

The AIC has full fledged offices at 62 districts out of total 75 districts and the remaining 13 d districts are served through the DADO. It has 71 field offices (1 central office, 11 zonal offices, 20 branches, 31 sub-branches, 6 godown units, 1 seed multiplication farm provided with 56 ha, and 1 vegetable seed collection and processing center) with 830 permanent employees. 7 field offices are provided with fully mechanised seed processing plants with a rated capacity ranging from 1 to 4 MT/hour. AIC does involve itself in the retailing of agricultural inputs. It has also employed both cooperative and private sectors in retailing inputs. In fact distribution of agricultural inputs is fully privatised at retail level. During the period of last 10 years, AIC has provided training to 2,500 dealers under FAO/DANIDA/ AIC project.

2) Seed

The AIC produces seeds at its own farm as well as launches seed multiplication program at the farmers' level under its own supervision to meet the demand for cereals and vegetable crop seed. The seeds are processed at the processing plants, tested for quality and released to farmers. Quality control system is introduced at each level to ensure high quality seeds. The seed branch has prioritized the distribution of cereals seed (rice, wheat, barley) to guarantee the food security of the country. With this target, AIC constructed six high capacity processing plants and built up a network of stores with a total capacity exceeding 15,000 MT. Vegetable seed is distributed through a supply channel of over 85 dealers spread throughout the 75 Districts of Nepal. Moreover, since practically anyone may become an AIC dealer by paying a nominal recruitment fee, thus being entitled to a 15% discount on the purchases, AIC officially counts on a network of more than 1,000 dealers.

Seed industry in Nepal are as follows:-

- The total number of traders operating in Nepal is estimated to be around 150.

- Purchasing channel: in Terai, the relevant sources are: (a) direct procurements abroad; small local dealerships; (c) seasonal sales at Haat Bazaars, and (d) seed retention

- The high level of activity being undertaken by the private sector. In fact, during 1998/99 the private sector marked more than 500 MT of seed while AIC and other government agencies distributed 12.4 MT. The private sector includes seed imports.

- The national seed industry concentrates its efforts on a few varieties and relies on imports for crop and variety diversification.

- Seed export is still an immature business with marketing linkages based on mutual trust yet to be established. At present, exports are irregular with supplies ranging widely from year to year.

Fertilizer: The AIC is a governmental corporation dealing mainly with fertilizers, for which it has the monopoly of the market. The AIC procures fertilizer under 3 different sources, i.e. AIC's own funding, bilateral grant aid assistance and borrowing from multilateral financing agencies. The large quantity of imports is under own source of financing, while imports under grant aid is subject to larger variation depending upon the donors programme. HMGN has been providing subsidy to transport fertilizers to 23 hills districts inaccessible by motorable roads. As a result, AIC has maintained uniform selling price of fertilizer and seeds throughout the country. Out of 23 districts, the subsidy programme of 9 districts, where AIC has no field offices is administered by the DADO.

A uniform fertilizer pricing policy has been adopted throughout the country. AIC determines selling price of fertilizer in view of the subsidy amount provided by HMGN. Urea fertilizer is currently under subsidy scheme and fertilizer other than Urea such as DAP, A Sulphate and Muriate of Potash are decontrolled. Subsidy per tonne of Urea is currently Rs. 2,728 only. The private sector is allowed to fix it own competitive retail price considering its cost price and the subsidy amount if any. HMGN has adopted the policy to encourage private sector in the importation and distribution of fertilizer and to withdraw price and transport subsidy by the end of 1999. Seeds, agriculture chemicals and implements are being distributed throughout the country on the actual cost basis i.e. break even basis. As the private sector participation in the marketing of agricultural chemicals and implements is increasing, AIC has given special priority to the distribution of such inputs in the hilly mountains districts, where private sector is reluctant because of cost effectiveness

3) Agro chemicals

Agro chemicals were also distributed by AIC until 1997/98 and then after handling of agro. chemicals has been privatised. In 1997/98, sales were decreased to liquid 235 liter, and powder 39 MT.

(5) Related Marketing Institution for Horticultural Crops

The importance of marketing has been lately recognised and as a result, the concept of marketing development had appeared first in the 7th Plan (1985-1990). Emphasis has also been given to improve marketing system in the 8th Plan.

The following 4 institutions are established and under operation to promote marketing of horticultural crops in the private sector in Nepal.

- Nepal Fruits and Vegetable Wholesale Traders Association
- Tankeshwor Fruits & Vegetable Wholesale Traders Association
- Federation of Vegetable Producers Association
- Seed Entrepreneurs Association of Nepal

(6) Situation of Post Harvest Handling

1) Current situation

Post-harvest handling of horticultural crops from harvest to the time they reach the consumers, must be understood by farmers in order to reduce losses which are caused by biological (respiration, ethylene production, compositional changes, growth and development, transpiration of water, physiological breakdown and physical damages) and the environmental factors (temperature, relative humidity, atmospheric composition and light).

a) Harvesting: Proper harvesting at proper level of maturity reduces the losses. Harvesting of improper mature crops result in shrivelling during storage. Crops are cuts, bruised and being collected in heaps without protecting from direct sun light and rain which results in rapid decay of the harvested crops

b) Grading: In Nepal so far, proper grading is not practiced. The grading is categorised normally as large, medium and small.

c) Packing: While packing horticultural crops, one must consider the in-mobility within the container, cushioned well against impact and compression. Container may be doko, plastic crates or large bins. In Nepal, horticultural crops are generally packed into doko (conical bamboo basket) with or without cushion. Wrapping of fruits with newspaper, tissue papers, dried grasses/straws, polyethylene sheets are also done before packing.

d) Transportation: High damage occurs during transportation. This damage can be minimized by use of proper container. Porters transportation may cause little damages if proper care is given. Mule transportation may cause higher damages than porter. Fruits shelf life can be increased if the temperature and humidity are regulated for long distance transport.

e) Loading and unloading

Careless loading at farm and throwing produce are common. All loading and unloading works are carried out by worker labour. Forklift together with pallets are not popular in Nepal.

f) Storage: Prolonged shelf life can be possible by proper process of storage.

g) Weighing

Tripod stand or hanging scale are generally used and sometimes stone or rock are used as weights. Mechanical or electronic scales like desk top or platform scale are not found in Nepal. Weighing Act and modernization are expected to establish for more correct statistics and economical development.

h) Processing: Horticultural crops can be preserved to prolong their shelf lives.

2) Rate of post harvest loss

Post-harvest loss is a serious problem for horticultural crops marketing also in Nepal. Rate of quantitative or physical losses are different depending on types of crops, perishability, distance between a collected points and retail outlets, packaging, handling during transaction and storage and display systems. Qualitative losses such

as appearance deterioration, flavour, nutritive value and saleability decrease, are low in winter and high in rainy season, (). Minimum extents of losses in some fruits and vegetables in Nepal are as follows:-

a) Tomato:23% loss mainly due to excessive heavy traditional way of packing, rough handling in loading and unloading, poor road and transportation manner such as produce being carried on the top of buses without any provision to protect against direct sunshine and rain.

b) 2) Cabbage:13% loss

c) 3) Junar (sweet orange): 29% loss

d) Apple:12% - 20% mainly due to storage losses
Particular records on post harvest losses are reported as follows:-

- Tomiyasu/Verma (JICA project): 29% storage loss of junar in Nepal
- Shrestha: 12-20% transportation loss of apple in Nepal, 20-40% french beans, 20-40% chilli, 30-35% tomato and up to 10% at Kalimati market in Nepal
- The Rural Save Grain Project: 20 to 50% in case of horticultural crops
- National Academy of Science: 16-35% onion, 62% lettuce, 37% cabbage, 20-25% tomato
- Kader et.el.: 20-25% in developing countries and 5-25% in developed countries
- National Horticultural Board of India: average 20-25% in Bhopal, India
- USDA: tomato 6.5% at wholesale market and 6.3% at retail market, lettuce 4.5% and 4.6%,
- Werner et. el: l21.3% lettuce, 9.41% carrot, 7.24% cauliflower, 9.86% tomato in Brazil

3) Efforts and results made by HMGN

During 1990s, significant efforts have been made by government sector to reduce post-harvest losses in horticultural marketing. Studies and demonstration programs had been carried out by HMGN/FAO under Vegetable and Vegetable Seed Production Project and Small Marketing Infrastructure Project in 1993/94**.** Alternatives were undertaken on the basis of returnable and "one-way" packaging in consultation and with support from PHLRD (Post Harvest Losses Reduction Division) and FTED (Food Technology Extension Division) including (i) cane framed-bamboo crates, (ii) wood framed-bamboo crates, (iii) iron framed-bamboo crates and d. bamboo woven baskets. Also, HMGN has aggressively promoted group delivery and transportation, and alternative packaging by means of the following countermeasures:-

- Collection of vegetable from different small scale farmers to make a full truck load
- Systematic loading and unloading
- Use of plastic crates instead of traditional doko (cone type bamboo basket), tokari (round type bamboo basket) or bhangh, and

- Demonstration trial to show comparative advantages from improved packaging and transportation.

Results are good but lack of continuity. In fact, the major constrains are lack of technical manpower in horticultural marketing development sector. As reported in National Seminar on Fruits and Vegetable Marketing in Nepal held on 1998, agricultural marketing manpower availability in Nepal are total 37 persons, of whom trained only 13.

(7) Farmers' Involvement in Products Distribution

1) Eastern region

The distribution channel differs depending upon whether the vegetable harvested is for export or domestic consumption. The export vegetables are high quality seasonal crops grown in the hill area, they are gathered at a local collection station and then shipped to the final destination through farmer's organization(s) or distributor(s). The vegetables produced for domestic consumption are for the most part consumed within the region. Therefore, except for a few seasonal crops, the most crops are directly brought to the traditional wholesale or open (retail) markets by farmers themselves or distributors.

a) Export Vegetables

- Pattern 1: Farmer – Farmer's Organization (collection, sorting, packaging and shipment of crops handled at a local collection station) – Wholesaler (domestic or Indian).
- Pattern 2: Farmer – Middlemen (collection, sorting, packaging and shipment of crops handled at a local collection station or collection point) – Wholesaler.

b) Vegetables for Domestic Market

- Pattern 1: Farmer – Farmer or Middlemen– Traditional Wholesale Market – Wholesaler – Retailer – Consumer.
- Pattern 2: Farmer – Collection Center for seasonal crops – Middlemen– Traditional Wholesale Market – Wholesaler – Retailer – Consumer.
- Pattern 3: Farmer – Open Market (Hat Bazaar) – Direct sale by farmer.

2) Central Region

Apart from local consumption, the widely distributed horticultural crops are consumed either in Kathmandu or its suburbs. In the case of the potatoes produced in the hill area, all the harvested crop, except for the portion designated for Kathmandu, is transported to the plain located in the south of the district and then consumed either in the plain region or India. Of the portion of the crops designated for consumption in Kathmandu, the leafy vegetables produced in the Kathmandu valley is sold directly at retail markets bypassing the wholesale market (often such crops are sold on the road or directly to consumers).

Other vegetable crops for the most part are at first collected at the harvest site by the farmer and shipped to the Kalimati Market through the middlemen. In recent years,

some farmers have taken over the administration of some collection stations and then manage their own wholesale stores at the Kalimati Market. In either case, farmer's organizations are not directly involved in the transaction and these activities are being carried out at farmers' own risk.

Potatoes are at first collected at a harvest site (by local collection merchants) and then shipped directly to the wholesaler in the plain region through the middlemen.

As for the fruit crops, if they are for export or general consumption they are shipped to the Harsha Wholesale market. On an experimental basis, the wholesale agents from Kathmandu are purchasing directly from the area farmers the so-called seasonal and luxury fruits and selling them to institutional buyers such as hotels.

a) Vegetable Crops

- Leafy Vegetables (the hill area, the Kathmandu valley production – Kathmandu): Farmer – Kathmandu Retail market – direct sale by farmer/retailer – consumer.
- Other Vegetable Crops (the hill area, produced in the area outside of the Kathmandu valley region – Kathmandu):

  Pattern 1: Farmer – Farmer's organization (collection and sorting at a collection site) – Middlemen – Kalimati wholesale market – Retailer – Consumer.

  Pattern 2: Farmer – Farmer's organization (collection and sorting at a local collection station) – Direct sale at the Kalimati wholesale market – Retailer – Consumer.

b) Potatoes

- (Hill area to Plain area): Farmer – Middlemen – Wholesaler in the plain region – retailer in the plain area/exporter.
- (the Plain area production site – Kathmandu): Farmer – Farmer/Middlemen– wholesaler (Narayangadh wholesale market) – Retailer from the surrounding area/Middlemen – wholesaler (Kalimati wholesale market) – Retailer – Consumer.

c) Fruits

- Imported fruits: Indian wholesaler or its Nepalese representative – Harsha Market – Retailer – Consumer.
- Luxury fruits: Farmer – Wholesaler – Institutional Consumer (hotel, restaurant, etc.)

3) Western Region

The farmers in the hill area are not accustomed to using the wholesale market, therefore they tend to sell their crops directly to the traditional retail market without going through the wholesale channel. The participation by farmers in the distribution channel is on an individual basis. In the plain area, the production of the seed potatoes and vegetables for export has been improved due to the improvement of the

agricultural organization. Thus, with the organizational assistance, the farmers are able to individually transport their crops to the nearby collection station and beyond that point they relegate all transactions to the professional agents.

a) Hill area, for the Pokhara wholesale market: Farmer – Middlemen – Direct sale by Farmer/Wholesaler (the Pokhara wholesale market) – Retailer – Consumer.

b) Plain area, for export: farmer – Farmer's organization – Collection station/storage facility – Indian wholesaler – Export.

c) Consumption in the surrounding areas of the plain area: Farmer – Open market – Retailer – Consumer.

4) Mid-Western area

The farmer's organization has been better organized to handle the shipment of the luxury crops designated for export (ginger and other spices). The farmers themselves bring the crops to the nearby collection station. Then form that point on, upon receiving a request from the collection station, the professional agent pick up the crops at the station and ship them to the market for sale. In the plain area, the efforts are under way to enhance the capacity of a farmer's organization in the production of seed potatoes and vegetables designated for export. With the organizational assistance, the farmers on an individual basis bring their own crops to the nearby collection station and the rest is handled by professional agents. In the case of the crops consumed internal to the region, the farmers are selling their crops directly at an open market.

a) Hill area, for export: farmer – Farmer's organization (collection, sorting and packaging at a collection station) – Middlemen – Wholesaler – Export.

b) Plain region, for export: farmer – Farmer's organization/Middlemen – Wholesaler – Export.

c) Consumption in the areas surrounding the plain Region: farmer – open market – consumer.

5) Far Western Region

The production of vegetables is at a self-sufficient level. The production of fruits as seasonal and luxury crops for export to India is popular. The bananas from the plain region and luxury fruits from the hill/mountain regions are often produced in a plantation managed by a distributor or investor. Farmers are considered as either the farm land provider or agricultural laborers and are not involved in the distribution of the crops.

a) Plain area fruits for export: Banana producer – Middlemen – Exporter – Indian wholesaler.

b) Hill/mountain area fruits for export: Luxury fruits producer – Middlemen – exporter – Indian wholesaler.

c) Vegetables: Farmer – Retailer.

2.3.2 Horticulture Marketing System

(1) Government Development Policy

In the light of importance and urgency to develop marketing of agricultural product as well as to facilitate better management and operation of market centers, HMGN has established various Acts and Rules. They are:

- Agriculture produce market center management and operation directives of MoAC 1996 (with Amendment in 1998).

- Development Board Act, 1957.

- Cooperative Act, 1992.

Furthermore, Agricultural Marketing Development and Management Act, 2055 has been proposed recently and under the due course for execution. This Act contains definition of market, establishment of MMC, selection committee, roles, responsibility and rights of MMC, funds, accounts and auditing, staff management, etc. Private market participation is also allowed by registration. Every legal condition can be fulfilled for the development of agricultural marketing when it becomes effective.

(2) Demand and Supply

1) Domestic production

Horticulture production means potato, vegetable, fruit and spice. The domestic production of these commodities is the biggest in the Central region by quantity (1,180,465 tons), then followed by the Eastern region (865,364 tons). 68% of horticulture product in Nepal comes from the Central and Eastern regions. The production in the Western, Mid-Western and Far-Western region are far less than the Central and Eastern regions as shown in the Table 2-6.

2) Domestic consumption

The consumption of fruit/vegetable should be proportional with the population. In Nepal, the population is scattered all over the country. It is not concentrated in Kathmandu Municipality that is a Metropolitan area. The population of Kathmandu district is merely 4% of the total nation. This means that product demand is also scattered everywhere in the country.

In order to estimate consumption, per capita consumption figure is calculated. For this purpose, crops retained as seed for the next planting should be deducted, particularly for potato and ginger as category of spice. The figure is shown as domestic availability in the Table 2-7.

Per capita consumption of horticultural products by region has been calculated as shown in the Table 2-8. For reference, the figure published by FAO Food Balance is also shown in the same table.

JICA Survey Team had carried out household consumption survey with sub-contract at major urban areas during July to August 2000. The sample number of household was 900 in total where 300 selected in Kathmandu and each 100 in other cities. From the data, per capita consumption was calculated. The result is as shown in Table 2-9.

The figure for potato and fruits are within the range of previous calculation but consumption of vegetables and spices seems too high. The reason should be attributed to the questionnaires that were made on commodity-wise and its content was rather complicate including consumption of meat, milk, egg and fish. The figure reported on the Master Plan of Kathmandu Valley conducted by FAO in December 1999 is summarized in Table 2-10.

The Nepal Rastra Bank has conducted Household Budget Survey from July 1995 to July 1996. Per capita consumption in urban Nepal is shown in Table 2-11.

There is no data available on per capita consumption figure for fruits in the report, similarly not much data on vegetable consumption is available from the data published by Nepal Rastra Bank.

From the viewpoint of various data has been revealed regarding per capita consumption, JICA Survey Team has reinvestigated per capita consumption data by hearing of household in Kathmandu and Lalitpur municipality on November 2000. The number of sample was 195 covering different income household. The result is summarized in Table 2-12.

Per capita consumption of vegetables and spice has been decreased than those of previous survey done in August 2000. All data of per capita consumption are summarized in Table 2-13.

From the various data above mentioned, per capita consumption for horticulture product in Nepal is estimated as follows:

Potato: 30 to 40 kg; Vegetables: 50 to 80 kg; Fruits: 20 to 30 kg; Spices: 4 to 7 kg.

The figure determined by JICA Survey Team shall be used in this report.

3) External trade

a) Import

The volume of import from India is not so large. According to the data provided by Plant Quarantine Office, the amount of import was 83,143 tons in 1998/99, while total horticultural production in Nepal was 2,998,449 tons in the same year. The commodity-wise import data has been compared with those of domestic production as shown in Table2-14.

All commodities have their own characteristics on season and check post regarding import. Major portion of Potato and vegetables are imported from Kakarbhitta and Bairhawa during September to November. Onion is imported from Bairhawa during March to May. Most fruit is imported from Bairhawa and Birgunj during March to May. These characteristics relate to the off-season of the production in Nepal.

b) Export

The data for quantity of exported potato/vegetable/fruit/spice has been provided at the Plant Quarantine Office, DOA. The result of 98/99 is summarized in Table 2-15.

There is no description regarding data on potato export. Ginger and Cardamom are the major product exported as spice. According to the data provided from Plant Quarantine Office, the quantity of vegetable and fruit exported to India is very limited due to less production quantity and higher production cost. There is no need to attach a phyto-sanitary certificate with cargo crossing the boarder between India and Nepal by truck. Besides the above, there are some agricultural products that are of higher value exported from Kathmandu International airport with the phyto-sanitary certificate issued by Quarantine Office, DOA. (see Table 2-16)

c) Trade in general

Data of import/export volume showed by a plant quarantine officer in Kakarbitta Check Post when he participated at the workshop held at Biratnagar on October 2000 is shown in Table 2-17.

The mandate of Plant Quarantine Office is to protect domestic agriculture product from the invasion of plant diseases from foreign countries. Accordingly, the volume those are measured at each check post should be the minimum figure. There is no check post at the boarder in the Far-West region and with Tibet. For example, in case of fruit, more than 50,000 tons are being imported annually from India to Harsha Fruit Wholesale Market in Kathmandu, while the import data of fruit is 13,770 tons in 1998/99.

There are two institutions in Nepal that are publishing the data of export/import agricultural products. One is Trade Promotion Center and another is Nepal Rastra Bank. Trade Promotion Center has published "Nepal Overseas Trade Statistics" every year. The statistics shows quantity and value of commodities exported and imported to and from foreign countries. But data for imported/exported to and from India shows only value (see Table 2-18).

It seems very strange that Nepal exported Cardamom to India amounting Rs. 196 million but at the same time Nepal imported Cardamom from Singapore amounting Rs. 548 million.

There are some data regarding volume and value of exported fruits and vegetables to Bangladesh. As clearly shown from Table 2-19, FOB price of these commodities are not so high compared with their domestic market price.

Nepal Rastra Bank is collecting data of export and import commodities to and from India in terms of value at six Custom Offices located along the Indian boarder (refer to Table 2-20).

The purpose of collecting data for the Bank is to estimate the requirement of foreign exchange for imported commodities and also the earnings of foreign currency for exporting. They are not concerns the data about in terms of volume. There are two data in Nepal regarding the value of import/export horticultural products to and from India. Both data shows that value of import is greater than that of export. For vegetables import, Bairhawa and

Kakarbihtta occupied major entry post and for fruits Bairhawa and Birgunj occupied the majority. (See Figure 2.1 and 2.2)

Even in terms of value, there is some discrepancy in the data obtained from Trade Promotion Center and that from Nepal Rastra Bank. Assuming that the import price of vegetables and fruits are Rs.10/kg and Rs.20/kg, then the volume is estimated as 43,400 tons for vegetables and 4,600 tons for fruits respectively. Those figures are less than the figures published by the Central Quarantine Office. It can be concluded that volumes of import/export fruits and vegetables shall be adapted the volumes presented from Quarantine Office as the minimum.

During the workshop held at Biratnagar on October 2000, many traders complain about import tax when importing fruits and vegetables from India. The custom tariff has been decided by Ministry of Finance as of 2000/2001 that all fresh vegetables and fruits is imposed 10% of Import Duty under the Chapter 7 "Edible Vegetables and certain Roots and Tubers" and Chapter 8 "Edible fruit and nuts; peel of citrus fruit or melons" of the said Custom Tariff table. The exception for import tax is peas and dried fruits. The former is 5% and the later is 15%.

4) Demand and supply balance

Nationwide demand and supply balance is shown in Table 2-21.

In general, there is enough supply potential for potato and vegetable in Eastern and Central Regions while there is low supply level for the same commodity in Western, Mid-Western and Far-Western Regions. For spice, supply is very low in Central Region but it is the commodity only to have enough capacity for export outside of country particularly from Western and Mid-Western Regions.

5) Origin and destination of distribution volume

As previously reported, the movement between the region is not so large because the population is scattered nation wide. Present O/D conditions are summarized in Tables 2-22 ~ 2-24.

a) Eastern Region

There is sufficient domestic supply of Potato in mountain area, Fruit and Spice in hilly areas and Vegetable in Terai. Since the population in this region is the second biggest following to Central Region, almost all of the products, particularly vegetable are consumed in the Region itself. Some portion of vegetable and potato goes to Central, Western and Mid-Western Regions. Off-season vegetable comes from hilly area of Central Region. There is a major checkpoint at Kakarbhitta for potato and vegetable exported/imported to and from India.

b) Central Region

There is sufficient domestic supply of Potato in mountain and hilly area, and Vegetable in Terai. Since the population of this region is the biggest in the country, almost all of the products are consumed in the Region. There is a

biggest wholesale market in Kathmandu that absorbs a lot of domestic product and imported commodity. Supply of Spice, particularly ginger seems to be shortage in the Region, some quantity is imported from Tibet to Kalimati Market in Kathmandu.

c. Western Region

Demand of Potato and Vegetable exceed supply quantity from the Region. These commodities are coming from Eastern and Central Regions. Sufficient supply has been seen on Fruits and Spice. Some portion of Spices particularly ginger is exported to India together with the product in Mid-Western Region.

d) Mid-Western Region

Demand of Vegetable exceeds domestic supply quantity from the Region. This comes from Western Region. Fruit and Spice are sufficient in the Region.

e) Far-Western Region

Demand of Potato, Vegetable and Fruit exceed domestic supply quantity from the Region. No internal trade for such commodity has been seen at Mahendranagar, since the size of market is very small. The market of agricultural products in Far-Western Region is entirely under the control of Indian market crossing the boarder.

(3) Product Marketing and Distribution System

1) Product distribution pattern

Agriculture sector contributed 40.1% share of GDP and provided job opportunity of 80% population in Nepal in 1998/99. From its topographical condition, marketing of horticultural products throughout country is not easy. Recently, international institutions have implemented projects to improve such difficulties on marketing. Some projects have already shown successful performance to improve horticultural marketing, but some have failed. The build-up of sustainable marketing system is urgently required with the collaboration of municipality and private sectors.

a) Eastern Region

There are two large markets in urban area and one collection center in the region. Large markets are: Biratnagar Traditional Market (Dist. Morang) and Birtamod Wholesale Market (Dist. Jhapa). The collection center is called as Agricultural Produce Market Center, Dharan (Dist. Sunsari). All facilities are located in Terai.

Only incoming volume data is available at Birtamod Market that was established in 1977 by funding of UNDP and renovated in 1991 with additional funding from ADB. The incoming volume in 1999 was 809 tons for vegetables and 456 tons for fruits. 90% commodity comes from hilly area of 200 km radius. The volume is only 0.96% of vegetable and 0.92% of fruit produced in hilly area. The member of MMC says that some vegetable and Lime will go to Kathmandu and Pokhara. The occupancy rate of vegetable

from Jhapa is only 2% in Kalimati Market, that is about 2,800 tons in 1999. While vegetable production in Jhapa was 48,450 tons in the same year that means only 5.8% of the regional production goes to Kathmandu. The major portion has been consumed in the Region.

Biratnagar market has two functions: that is wholesale and retail. The market is not well managed either by officials of the municipality or by traders in the market. The incoming volume data to the market is not available. There are about 15 to 20 vegetable, 3 to 4 for potato and very few fruit wholesalers in the market. Each vegetable wholesaler sells 1 to 1.2 tons product in one day. A lot of product from West Bengal, such as Chili, Bitter gourd and Watermelon were sold in the market in May 2000. Potato from Bhutan was sold in October 2000.

DDC Morang is conducting a preliminary feasibility study of fruit/vegetable marketing center in Biratnagar jointly with Municipality, VDC, DADO, Chamber of Commerce and Industry, cooperatives and private sectors. The report will be drafted by October 2000. The population in Biratnagar Municipality is 200,000 and existing market capacity is estimated as 20,000 to 25,000 tons per year.

Collection center at Dharan was established by funding assistance of ADB to collect fruit and livestock from hilly area in 1996/97. Due to inconvenience for access, it is only used seasonally.

b) Central Region

There are three wholesale markets and several collection centers called as Agricultural Produce Marketing Center in Terai. These are established by the funding assistance of UNCDF/FAO under the project entitled "Small Marketing Infrastructure". Two wholesale markets were established at Narayangadh (District. Chitwan) and Janakpur (District. Dhanusa). Both markets have dual function as wholesale and retailing. The incoming volume to the market is not clear because MMC do not collect such statistical figures. In Narayangadh, the daily transaction is estimated as Rs.2 to 2.5 million per day. In Janakapur, the estimation of trade volume is about 15 tons vegetable and 12 to 14 ton fruit in a week. Almost vegetables are locally grown products and majority of fruit is imported from India during off-season for Nepalese fruit.

A typical collection center locates at Nawalpur (District. Sarlahi) that was established by funding of UNCDF/FAO in 1999. Since the area is tomato producing pocket, the trade volume was about 60 tons/day for season. The season is 5 months and center opens 2 times in a week. Accordingly, the trade volume of tomato is about 2,400 tons in a year. 40% goes to Kathmandu, 10% goes to Pokhara and 10% goes to Butwal. The incoming volume of tomato in Kalimati Market was 7,500 tons in 1999. Tomato from Nawalpur occupies about 13% of total tomato trade at Kalimati Market.

The biggest wholesale market in Nepal is Kalimati Market in Kathmandu. It was established in 1987 and its' renovation completed in 1997 by UNCDF funding assistance. Since 1996, this market has been supported for its

management and operation under the project "Support to a new Kalimati Market" implemented by FAO. This is the only wholesale market that is available for trade volume by item as well as price tendency. The incoming volume was 138,992 tons in 1999/2000 in which fruit occupied only 5,192 tons (3.6% of total). The product in the Central Region occupied 68% of incoming commodities. Hilly areas such as. Dhading, Makwanpur and Kavre district and Terai such as. Bara, Sarlahi and Chitwan districts are the major supply source. Some portion of product from Dhading, Makwanpur and Terai goes to Eastern and Western Region but the quantity is very limited.

For incoming volume to Kalimati market, another FAO Project (Master Plan of Kathmandu Valley) has different opinion. They did independent survey for one week in November 1999 and estimated that incoming volume is around 100,000 to 112,000 tons in a year. The data surveyed by JICA Team in November 2000 was also about 100,000 tons as incoming volume to Kalimati market.

c) Western Region

There is one wholesale market in Pokhara established in 2000 by funding assistance of UNCDF/FAO. The market has just commenced its operation on April 2000 and it expects 15 tons vegetable and 10 tons fruit trade every day. This amount corresponds to 9,000 tons per year. Since the population of Pokhara Municipality is about 100,000, this seems reasonable amount. Most vegetable comes from Terai of Western Region and some comes from hilly area of Central Region, such as Dhading and Makwanpur. Fruit comes from India through Bairhawa in off-season.

There is no managed market in Terai. Only Hat Bazaar exists in Butwal and Bairahwa. No data is available for incoming volume to these markets. Also no collection center exists in Terai. Most farmers bring their product to Hat Bazaar where they sell by themselves or sell to traders.

d) Mid-Western Region

There is no managed market in the Region. Gorahi, the municipality of Dang District, provides small market facility to attract farmers for direct selling to consumers. Most trade for fruit/vegetable is carried out in Haat Bazaar at roadside. The trade volume is very small and the daily transaction of some wholesaler amounts to Rs. 5,000. The origin of commodity is mostly from hilly area such as Salyan. Outside traders come from Butwal and Narayangadh.

Nepalgunj, the municipality of Banke District, also provides small market facility to retailers. But wholesalers are scattered in different markets in the municipality. The trade volume is very small and daily transaction of some retailer is only Rs.500 to 700. Since door to door hawkers are prevailing in this area particularly by Indian individual traders, consumers visiting retailing stores are very few.

There are two collection centers in Terai. One locates in Lamahi (Dang district) and another locates in Kohalpur (Banke district). Both centers were

established by funding assistance from ADB in 1997/98. These centers are not functioning entirely at present. Farmers do not need to bring their product to the centers because traders come to purchase to the village at Lamahi and traders do not like to go the center at Kohalpur centers because they find it too far and the structure is not suitable as a market.

e) Far-Western Region

There is no managed market in the region. Mahendranagar, the municipality of Kanchanpur District, provides small marketing facility to local trades. There are also five Hat Bazaars in the Kanchanpur District. Potato, Cabbage, Onion, Tomato, Cucumber and Chili come from India. No products come from other regions of Nepal. The district and region has been entirely isolated from other regions. The demand in the region is too small to attract business interest to traders in other regions. The population of Kanchanpur District is merely one third of Kathmandu and Morang District.

2) Product marketing system

There are many patterns regarding marketing system of fruit and vegetable in rural and urban area, particularly by volume of trade. The marketing system is well developed at Terai and hills of Central Region, and at hills of Western Region. Both have large consumption area, namely Kathmandu and Pokhara. Farmers bring their product mostly to collection centers where they sell to traders. Almost collection center has been managed by VDC or by cooperative that is operated by members of farmers and traders, and is equipped with stalls and weighing machine. Farmers have to pay a fee for weighing either by cash or in kind. Traders have to pay entrance charge on daily basis. The trade volume in each collection center is shown in Table 2-25.

Regarding out of District trading, farmers in the western part from Kathmandu (Dhading and Makawanpur) have a great advantage on marketing because they have an option to select markets either Kathmandu or Pokhara and some other place in Terai. While farmers in the eastern and north part from Kathmandu (such as Kavre and Nuwakot) have no option besides Kathmandu because of difficulty on accessibility to other market.

There are few collection centers functioning in Mid-Western and Far-Western regions. Farmers bring their product to Hat Bazaar to sell either by themselves or to traders.

The wholesale market at Birtamod in Jhapa (Eastern Terai) was established in 1977 by UNDP funding and further renovated in 1991 by ADB funding. It collects the product from hilly areas and it works only seasonal that is operating from June/July to January/February.

The wholesale market at Biratnagar in Morang (Eastern Terai) is a typical traditional market mixed with wholesalers and retailers. Most wholesalers work as a commission agents, renting their stalls to producers or traders for selling product and take commission. Even if products are left unsold, they are never taking responsibility for such losses. The market space is narrow and not paved, there is no drainage around

market. Uncomfortable smell arises from sewage. Sanitary environment of the market seems very poor.

The market at Janakpur in Dhanusa (Central, Terai) was also established by funding from UNCDF/FAO in 1999. The purpose of establishment was to provide opportunity for farmers nearby to sell their product and also to provide trading opportunity for wholesalers and retailers. Some wholesalers complain that the space is too narrow to have both functions. It was observed that this market couldn't fulfil the demand of Janakapur municipality due to inconvenient accessibility. This market opens two times a week. There are other two markets that open on different days.

The market at Narayangadh in Chitwan (Central, Terai) was established by funding from UNCDF in 1994. It has 45 stalls for wholesalers. It is functioning as retail market after 8 am. Farmers bring their products to sell wholesalers or their agents. Once farmers tried to sell their products by themselves but it did not succeed; very often they could not sell their products. So, the trial failed. The reason is that farmers lack awareness of formulating organized marketing system like group or company for joint delivery.

The wholesale market at Pokhara in Kaski (Western, Hill) was just established in April 2000 by funding assistance of UNCDF/FAO. The space is 2.3 ha and construction cost was Rs. 27 million. Most wholesalers working outside have moved to this new market. There are 72 stalls and 34 open sheds for farmer producers to sell their products directly to consumers.

There is no managed market for fruit and vegetable in Terai of Western, Mid-Western and Far-Western Regions. There exists Hat Bazaars that opens on fixed days in a week. The characteristics of wholesale market are summarized in Table 2-26.

It was found from the survey that the daily transaction of retailer is very small. There are many door to door hawkers for fruits/vegetables particularly by Indian traders crossing the border in Biratnagar, Nepalgunj and Mahendranagar. The number of consumers who visit retail shop is decreasing. The retailers hope to settle marketing law by the central government.

Marketing of fruit shows different aspect than vegetable marketing. As mentioned in the previous chapter, the traded volume of fruit at Kalimati Wholesale Market in Kathmandu is merely 5,192 tons in 1999 which is only 3.6% of the total trade. There is another wholesale market for fruit called as Harsha Fruit Market operated by Fruit & Vegetable Wholesalers Association. Many fruit suppliers come from India directly by truck mostly through Bairahwa. Incoming volume is 50 to 60 tons every day as minimum. These fruits never go directly to Kalimati Wholesale Market. Harsha market handles Nepalese fruits such as orange, pineapple, mango, banana and watermelon only at peak season in Terai, but quantity is limited because of high transportation cost. There is another fruits market called as Kirshak Bazaar in Kthmandu handling only domestic fruits. The wholesalers business is on commission basis. The commission rate is mostly 7 to 8%. The method of transaction from wholesaler to retailer is mostly on credit system and payment is done after the fruits are sold.

Nepalese fruits, particularly winter fruits produced in Mountain areas, have difficulty in transportation to urban area where it is consumed. Apples produced at

Mustang need three days to reach Pokhara on donkey's back. Hills in Western region is a big citrus production pocket, and one Butwal Fruit wholesaler said that in peak season farmers in hilly area sell by themselves more than 10 tons per day at roadside open market during November to February. There is no room for fruit wholesalers to enter into this trade. These evidences show that fruit trading and distribution system has not been fully stabilized in Nepal.

3) Pricing mechanism

a) Wholesale price

The prices of fruit and vegetable have been recorded only at Kalimati Wholesale Market together with incoming volume by the management board since 1997. There is no record on price except incoming volume before 1997. The price of fruit and vegetable in the market is decided on the basis of demand and supply.

The incoming volume of vegetable to Kalimati market is fluctuating year by year. In May 1999 to April 2000, Potato (Red and White) was biggest in volume (20,652 ton), followed by Egg plant (9.553 ton), Onion (9,176 ton), Cabbage (8,913 ton), Green chili (6,338 ton) and Ginger (5,769 ton). There is a tendency that incoming volume decreases in October to November.

As clearly shown from the table, the price of potato becomes cheapest during February to March, which is the harvest season in Terai. The price of most products increase during September to November as the incoming volume is decreases.

Not much green leafy vegetables are traded in Kalimati market. Since these leafy vegetables are highly perishable, farmers sell it by themselves at roadside such as at Anam Nagar Street market in Kathmandu. The price fluctuation of leafy vegetable is much higher than that of other vegetables.

The incoming volume of fruit to Kalimati Market is very small because it handles only domestic fruit and does not trade fruit imported from India.

b) Wholesale price comparison at different market

Agro Enterprises Center (AEC) under Nepal Chamber of Commerce and Industry is now providing advice to investors such as potential market where is selling market, lobbying work to the government on policy matters and collecting and disseminating daily market news particularly on fruits and vegetables. Recently, AEC is collecting fruits and vegetable prices at 16 major markets in the country. But they do not collect the data of incoming volumes in these markets. Prices are collected every morning, input into computer for data compilation and sent back to those 16 markets in the afternoon of the same day. AEC, Chamber of Commerce and Industry, and DADO offices have shared this work. This system began in 1988.

Among 16 markets, the data of 9 major markets were provided by AEC. These markets are Birtamod, Biratnagar, Hetauda, Narayangadh, Kalimati, Butwal, Pokhara, Nepalgunj and Mahendranagar. The prices of major products for past two years have been summarized in the Fig. 2-3 and 2-4.

In general, the price tendency is not so much different by commodity. It is rather stable except some seasonal fluctuations. The price in Kathmandu, the capital of the country, is not always the highest among 16 markets. There is a tendency that the price in Pokhara and Mahendranagar is slightly higher than in other markets. The reason is that the former market always requires higher quality product than other markets and the latter may be caused by shortage of supply due to remote area with long distance.

c) Retail price

JICA Study Team has collected retail prices of fruit and vegetable from May to July 2000 at the time of their site observation. The result is summarized in Table 2-27. Since these prices are on spot basis and some of products are not peak season, it seems rather difficult to compare the price difference at different market.

d) Transportation cost

There is need of transportation for inter regional trade of agricultural product. At the survey of rural market, JICA Study Team had inquired traders on transportation costs.

From the above table, the unit cost is in between Rs.500 to 1,250/ton. Many wholesalers use the roof of bus for transporting their products particularly when the distance to market is not so long.

Palung/Daman locates in the middle of Makwanpur, and farmers have options to deliver their product either to Kathmandu or Terai.

From the above tables, the transportation cost of agricultural product is mostly deemed as Rs. 1/kg or less within the country where there is connecting road.

e) Price comparison with Indian market

AEC Mahendranagar Branch has been collecting the fruit and vegetable prices at Indian market near the boarder since June 2000. The data was provided by AEC and summarized in the Table 2-28.

As clearly shown from the table, only 20km distance from the boarder causes great difference on the price of fruit and vegetable. In general, the price in Indian market is cheaper particularly for Eggplant, Tomato, Capsicum and Mango. These products are summer vegetables and fruits. Accordingly, there is no opportunity for Nepal farmers to compete with these Indian products. Only possibility is for off-season vegetable such as Cabbage produced in hilly area. There is no cold storage in Mahendranagar. This is the reason why Potato and Apple are so much expensive in Nepal.

f) Price formation between traders

During production site survey in July 2000, the price formation procedure has been clarified by interviewing with wholesalers and retailers. The result is summarized in Table 2-29.

As the table shows, the rate of margin is different for different commodities. For wholesalers of potato and onion, the margin is 16 to 22% because these commodities are not perishable in short time. While for tomato and cucumber, the wholesalers' margin become about 30%. Retailers take much higher margin for tomato and cucumber, say 75 to 100% because there is a risk of deterioration in freshness when unsold.

In July 2000, farmers in Makwanpur (Central, Hill) sold potato at Rs.5 to 6/kg to traders coming to the village. Accordingly, buying price (Rs.7 to 8/kg) minus farmers' selling price (Rs.5 to 6/kg) becomes transportation cost, labor charge and commission of transportation. As reported in the previous chapter, transportation cost is deemed as around Rs.1/kg in Nepal. At the same time, the price of potato at India was Rs.3.2 to 4.2/kg. Wholesalers may obtain more profit when they handle potato from India than domestically produced potato.

The traders' commission is in between 16 to 21% that is cheaper than wholesalers' commission for tomato and cucumber in Nepalgunj and Gorahi. There is no price difference of tomato in Tinpiple and Nepalgunj/Gorahi.

MDD estimated the cost of production and farm gate price for various vegetables during the implementation period of "Small Marketing Infrastructure Project". The result is summarized in the Table 2-30.

As far as tomato concerns, purchasing price at Tinpiple, Nepalgunj and Gorahi is a good price for farmers comparing with production cost. Farmers in Dhusa, Dhading sold Eggplant as Rs.6 to 7/kg and Tomato as Rs.15 to 16 at Charaudi Collection Center in July 2000. These prices are also a good price comparing with production cost.

(4) Market Information System

Agro Enterprises Center (AEC) under Federation of Nepal Chamber of Commerce and Industry is now rendering service and advice to investors regarding market and executing lobby work to the government on policy matters and disseminating daily market news particularly on agricultural product in Nepal. AEC also collects data of various commodities in foreign market, such as cut flower price. This information seems useful for export oriented enterprises.

Regarding fruit and vegetable price, AEC is collecting wholesale price from 16 different markets in the country. The major markets are: Birtamod, Biratnagar, Hetauda, Narayangadh, Kalimati, Butwal, Pokhara, Nepalgunj and Mahendranagar. AEC collects the price data in the morning and after the compilation on computer they send back to each market by facsimile in the afternoon. of the same day This work has been shared by AEC through its branch, Chamber of Commerce and Industry, and DADO office. Also the price information is being broadcasting by Radio Nepal every day.

The market information seems useful for traders but not many traders are utilizing the information because the distance of each market is very far to transport product immediately. Also for farmers working in remote area from consumption center, it is not possible to reflect the price information on their transaction with traders visiting to buy

product. Not only price but also delivery volumes to each market are needed as market information.

(5) Quality Control

It is common practice for farmers to do sorting and grading of the product before delivery to add value of commodity. But there are a very few farmers to work such practice before delivery except in few areas. There is a tomato production pocket in Surunga, Eastern Terai. Farmers in this area rent a facility as the collection center for grading, packaging and weighing. Many farmers in other area are not aware of the existence of such facility carried out by farmers.

Many traders are doing such practice at the market before they sell to retailers and consumers. This means that traders realize the necessity of sorting and grading for their commodity. It takes time to grow some consciousness for quality of fruit and vegetable among farmers, traders and consumers.

Regarding food safety aspect, there is a regulation on residual pesticides contents settled by the government. But it is said that there are no official institutions to conduct analysis periodically on pesticides contents that are contaminated fruits and vegetables in Nepal.

(6) Characteristics of Kalimati Wholesale Market

Kalimati Wholesale Market is a typical wholesale market handling various kinds of vegetables in Kathmandu. Although the trade volume of fruit and leafy vegetables is not so large at present, it is the model of wholesale market in Nepal. The developmental history and physical facilities of this market is discussed earlier in Section 2.2.1. It is designed for loading of 90 trucks at the same time. From 1993/94, the incoming volume to Kalimati market has increased rapidly. The government formulated the Kalimati Fruit & Vegetable Wholesale Market Development Board (KFVWMDB) in 1995 to facilitate efficient management of the market. In order to assist the management, the project "Support to a new Kalimati Market" has been implemented since 1996 funded with UNDP and implemented by FAO.

The board is recording the monthly incoming volume and average price since it was established. The recent incoming volume of commodities is summarized in Table 2-31.

The "Master Plan for Agricultural Marketing in Kathmandu Valley" described in Section 2.2.2 conducted 7-days inflow survey in November 1999. It was found that 308 tons produce was incoming to Kalimati market. This amount corresponds to 112,420 tons per year.

Among the incoming volume, the share of fruit is very small as shown in Table 2-32, because this market handles only domestically produced fruits.

75% traders in Harsha Fruit Market have Indian citizenship who are importing fairly large amount of fruit from India to Harsha fruit wholesale market in Kathmandu.

The tendency of wholesale price at Kalimati market seems stable. While the incoming volume is increasing, the price is becoming rather cheaper year by year as shown in Table2-33.

The above evidence reveals that present inflow volume of vegetable and potato has been well balanced to meet with the total demand of Kathmandu municipality. Some quantity of vegetables and potato are going to other market in the Kathmandu Valley. But that volume is quite limited from the past data.

The FAO report on Master Plan in Kathmandu Valley has recommended that a new wholesale market should be established outside ring road to cope with the rapid increase of population in the urban area of Kathmandu Valley. The establishment of new collection centers in production area surrounding municipality has been also included in the plan . Since the existing Kalimati market locates in the center of Kathmandu municipality, the market will remain with several options such as a central retail shop for horticultural product and fish. To realize this plan, fruit wholesale market should be transferred to the same market from existing Harsha Fruit Wholesale Market. At present, there is less function as fruit wholesale market in Kalimati market. JICA Study Team will conduct more detailed survey how to realize the proposed idea made by FAO Master Plan that is explained in the Chapter of Action Plan.

The advantage and disadvantage of the proposed project by FAO Master Plan are summarized briefly in Table 2-34.

2.3.3 Livestock Marketing system

(1) General Background of the Sector

Livestock is indispensable for Nepalese agriculture in supplying draft power and compost (refer to Figure 2-5). About 75% of the farmland is cultivated by both draft cattle and buffaloes.

Currently livestock sector contributes 31% (1998/99) out of AGDP, and about 50 % of which from Hills, 10% from Mountain and 40% from Terai, respectively. Chicken and egg production had been remarkably developed during these 10 years compare with other livestock (refer to Figures 2-6 and 2-7).

Export of agricultural commodities earned Rs.17,936 million in 1997/98 which accounts for 65% of the total exports in value. The major animal products exports are ghee, hides and skin and carpets. India is the major trading partner for Nepal exporting Rs.850 million. Imports of food and live animals accounts for 6 % of the total imports in value in 1998/99. Small scale exports are also done at the Indian " Open Border" for which no data is available. Livestock trading with India is indispensable for Nepal to meet domestic demand particularly for buffaloes and goats because Nepal is basically importing country of animal products. Live livestock has been exported and imported through the "Open Border" on daily basis in addition to formal trade.

The Table 2-35 shows the current livestock population in 98/99.

Per capita consumption of animal products is not so high because of traditional life style, preference and household economic condition etc. Buffalo meat is the main source of meat in Nepal (refer Table 2-36).

Various consumption patterns for meat and animal products must be taken into consideration in Nepal. For example, Newar people who are the largest ethnic group in the Kathmandu Valley prefer buffalo meat, while Rais, Limbus, Tamangs, Magars and

Tharus who are mainly living in the eastern Hills prefer pork. Chicken and goats are consuming by all ethnic groups. As for milk, people prefer buffalo milk for milk tea and cow milk just for drinking (refer to Tables 2-37 for the various usage of livestock). The preferences for livestock and meat by ethnic groups and zones are as below:

1) Preference of Livestock by Ethnic Groups

All ethnic groups prefer goat meat commonly known as mutton. After the goat meat, chicken is widely accepted except some person of the Brahmin community. So demand for the chicken is increasing day by day because of low price compared to goat meat. Newar communities specially consume buffalo meat. So demand for the buff is very high in Kathmandu Valley where most of the people are Newar. Pork preferring groups are Rais, Limbus, Magars, Tamangs and Tharus.

2) Preference of Livestock by Ecological Zones

The majority of cattle and buffalo are in the hill zone for the purposes of milk production and manure. In the Terai, both cattle and buffalo are kept for milk production. Buffaloes are used for draft, fuel and transportation. Sheep are mainly kept in hills and mountain areas.

The largest concentration of goats is in the hill zone, especially in the transition areas between the Terai and hills because of availability of extensive forest area for grazing.

Pig production is concentrated in the eastern hills because of the resident of pork eating ethnic groups.

Poultry are generally concentrated in large urban areas like Kathmandu Valley, Pokhara, Chitwan.

3) Social Customs on Female and Male Livestock

People prefer male livestock for meat purposes, so male animals are slaughtered. Previously female slaughtering was banned. Now there is no restriction in slaughtering the female animals but general people do not know this.

4) Nepalese Preference on Meats

Nepalese eat meat with skin. Excepting in some Muslim areas meat is offered in retail shops with skin.

People also prefer fresh meat instead of frozen meat, chilled meat. So there are large number of butcher shops offering fresh meat. But with the increase in population and urbanization, there is a trend towards the increased use of cold stores especially in urban areas, which trade frozen meat and meat product.

5) Religion and Livestock

People keep all livestock irrespective of the religion. But Muslim Community does not keep pig even does not touch it.

6) Religion and Consumption

Muslim community does not consume pork.

(2) Regional Characteristics in the Livestock Sector

As for animal production, five Development Regions could be roughly characterized as shown in Table 2-38.

(3) Production System

Livestock sector in Nepal has developed keeping close relationship with agriculture and this implies that any full-time farmer raising only livestock has not been existed excluding some commercialized poultry farmers. Major source of buffalo meat is come from male buffaloes, which were used for draft purposes. Therefore, buffalo meat is considered as by-product.

About 70% of milk are produced by buffaloes which is sold to DDC or private milk company and consumed in households as well. Unproductive old female buffaloes are exported to India because Nepalese people generally do not prefer meats come from female livestock.

Goats are also important livestock that is extensively grazed in the forest, roadsides, shrub land etc. Goat meat (particularly male) is the most preferable meat for the people in Nepal.

Commercialized poultry and egg productions are mainly observed in Chitwan and Kathmandu Valley. However small-scale poultry farming is prevailing in most farm households keeping several birds in their backyards.

(4) Demand and Supply

1) Domestic Consumption

According to the estimation, only pork, milk and eggs supply meet domestic demand. To meet domestic demand live buffaloes, cattle, goats and chicken are imported.

2) Domestic Production

Growth of pork and chicken production show remarkable change compared to other commodities (refer to Figures 2-8 and 2-9).

3) Import

A large number of live livestock is imported from India and Tibet. Particularly during the festival season (Dashain) 11,000 to 12,000 head of goats are imported from Tibet in 1998 and 1999 by NFC (National Food Corporation). Since Indian border is near to the Terai Districts, fresh eggs and milk are also imported as well as live livestock and poultry.

4) Demand and Supply Balance

Table 2-39 shows the estimated demand and supply of animal products in 1999. Basically Nepal is an importer of livestock and animal products excluding pork and milk. Skim milk is the major imported milk commodity accounting for 3,091 ton in 1997/98.

5) Origin and Destination of Livestock

Marketing flows of livestock in Nepal are complicated as shown in Figure 2-10. Some livestock imported from India at the Western Region are transported to the Eastern Region to bring them to India. Western Region is the main producing area of buffalo meat, Eastern for pigs and goats, Central for poultry, respectively. In addition to these, goats and buffaloes imported from India are mostly transported to Kathmandu and Pokhara.

6) Marketing Route of Livestock

Figures 2-11 and 2-12 show the typical trade flow of live livestock and chicken.

7) Regional Feature of Livestock

According with statistical data, regional feature of livestock products are divided into five areas as shown in Table 2-40.

a) Eastern Terai: important area because of existence of Animal Quarantine Check Posts, big livestock markets (ex. Damak) and DDC's milk plant and consuming area

b) Central Hills: important area because of big consuming area and existence of DDC's milk plant

c) Central Terai: important area because of good accessibility, existence of big livestock markets (ex.Jitpur) and animal Quarantine Check Posts

d) Western Terai: important area because of good accessibility, existence of the Animal Quarantine Check Posts, livestock markets and DDC's milk plant

e) Mid-Western Terai: important area because of good accessibility, existence of Animal Quarantine Check Posts, big livestock markets (ex. Thapuwa) and livestock collection center at Khohalpur in Banke District.

2.3.4 Sanitary Control of Livestock Products

(1) Government policy

Nepal government in the APP has not mentioned any slaughterhouse and sanitary control of meat. Only in ADB's soft loan was there proposal for the construction of slaughterhouse with financial support under the conditions of 16 % interest per year but this has not yet been realized.

(2) Law and Regulation

1) Food Act 1966/ Feed Act 1976.

Main purpose of this act is that the food and food production must be kept at a good sanitary condition such as hygiene and eradication of microorganism, heavy metal and chemical hazard for human health, etc.

Sanitary control of meat, by prohibition of the use of diseased animals or contaminated meat, must be conducted for human health. According to this act with food/feed sanitation standard, food cannot be sold if malpractice food is found.

Food/Feed Inspector will be nominated according to the act. They collect the food/feed samples from the market and send these samples to CFRL for analysis. CFRL will check these samples and identify whether these are satisfactory or not from the viewpoint of sanitary standard.

2) Food Regulation 1971/ Feed regulation 1983.

This Act enforces MoAC through CFRL to implement. It contains regulation on the analysis of samples of food/feed and food/feed products by Food/Feed Inspectors, when request is directed by MoAC or requested by local authorities. When sellers of these foods/feeds are not satisfactorily certified through this analysis, it may be reported to the District Administration Officer who has a responsibility to prosecute them.

3) Animal Health and Livestock Service regulation 2000

This regulation became effective in July 2000. Main purpose of this regulation is to prevent import of infectious animal disease from other country. According to this regulation, not only livestock but also livestock products, feed and feed stuff are to be checked. This regulation empowers MoAC, DLS, animals quarantine check post to conduct actions. Main import gates through the international border are 25 quarantine check posts. Every day, 3 persons change system by 8 hours shift has been introduced for checking. If an importer violates this regulation, prosecution against malpractice will be posed for importers. Five Livestock Service stations are existing in Nepal and function as sanitary control base.

4) Animal slaughterhouse and Meat Inspection Act (not yet authorized)

Above sections 1), 2), 3) are sanitary control law and regulation for meat and meat products, but it's not enough for sanitary control because of lack of slaughterhouse in Nepal. The act provides base for maintenance and control of hygienic slaughter facilities where it is required that approved veterinarians carry out the proper ante- and post-mortem examinations of animals. The act also prescribes sanitary and other standards on transporting and selling of meat. The objectives are the prevention of contamination and adulteration of meat or meat products.

Under this act, a meat vendor would be prevented from accepting or handling meat from any facility other than the one licensed and established for that purpose. Butchers will be required to take their animals to such an approved facilities and pay the activities for slaughtering and inspection by trained staff. Only animals, which are slaughtered by the approved facilities and inspected, may be sold for human consumption.

This sanitary control by law has been effected but has not been enforced. Not even disease animals are prohibited. Contaminated meat or adulterated of meat must also be eradicated but are not yet enforced. Meats and meat products need for quality assurance system is urgently required.

(3) Sanitary Control Institutional Activities

1) MoAC: At the Central Government level, only MoAC has responsibility for sanitary control of foods and foods products

a) CFRL

- Main office in Kathmandu employed 105 persons, of which 35 persons as laboratory worker and 70 persons as the other workers. This office employs every year 4 to 5 persons as new staffs who have graduated from the 3 years course of high school. There are five branch offices in Pokhara, Biratnagar, Hetauda, Nepalgunj and Dhangadhi.

- Quality check system

  There are 2 methods of food inspection system; First method: Food Inspector picks up samples of foods and food products from the market and then bring these samples to CFRL for analysis. Second method: Based upon the request from local authorities, food producers bring their products to CFRL for analysis to check that these products meets a satisfactory sanitation standard. Analysis on microorganisms, chemicals and nutrition must be done in order to decide whether they fulfill the standard.

  During 1996/98, meat products samples analysis were conducted on bacteria. Numbers of samples on bacteria test are 23 for sausage, 24 for dry meat, 36 for other meat product. All samples include E.Coli, Salmonella and S, Aureus, and all samples were significantly contaminated. Only case of raw meat samples that came from 5 star hotels in which meat was imported, was negative. But all other raw meat samples from domestic market were contaminated without any exception.

  Food inspectors' training has been done by CFRL every year. In 1996/97, 17 food inspectors conducted two day training program, of which the first day is for explanation by each division and the second day is for visit to food industry factory regarding way of collection of samples, and check point of factory.

  Consumers' education is also important on food and nutrition through mass media.

  There is a lack of human resources, every kind of equipment and machinery on food inspection and test. There was a significant coverage around October 2000 in the newspaper regarding residuals of antibiotics in chicken meat. Consumers won't buy chicken meat afterwards and price of chicken meat fell down by about half price than that before the controversy.

b) DLS (Department Livestock Service)

The Division of Veterinarian, DLS must control sanitation especially on animal disease, at the central office of Katmandu. There are 64 veterinarian working in the laboratory and office with 25 animals quarantine check posts located at the main entry point of the imported livestock from India and

China. There are 5 veterinary service stations with 102 persons in this public sector but there are no private veterinarian.

Chitawan Agriculture University has a separate veterinary 5 years course. Every year, 20 new veterinarian graduate and almost all are employed by the government.

Animals quarantine mentioned above also check livestock products and imported feed items. The veterinarian and assistants of the quarantine check posts inspect the commodities, mainly buffaloes and goats from India. They check the export permission and number of animals in the trucks, but have difficulties to find out goats transported with other commodities on buses.

2) Municipality Government

Livestock market and slaughtering facilities belong to the local governments. In case the private firms own their shops in the market, they must receive a certification from the municipality government. However there are only a limited number of shops, which were authorized through the formal procedure.

Regarding meat shop, there are almost none of the licensed shops among 400 to 500 meat shops operating in Katmandu valley. Therefore it is difficult to conduct sanitary control based upon the registration system of meat shop.

(4) Meat Production to Meat Shop

1) Slaughter, Dressing, Cutting

a. Buffaloes are slaughtered early in the morning in the open space along the riverside. This activity is conducted on the muddy ground without proper drainage system and under the worst sanitary conditions. It is done on the bricks or concrete pavement in some places. Many street dogs, rats and flies gather looking for plenty of blood, bone and head. Even under such conditions slaughtering are repeated several times a day. The used water from the river is terribly contaminated, by dressing and cutting meat especially in case of buffalo. About 500 peoples of special ethnic groups in Kathmandu Valley engaged in this business.

b. Goats are slaughtered in front of meat shop. Their slaughter place is unsanitary but not so bad as that for buffalo.

c. Other than integrated chicken meat industry, only a few live chickens are sold directly to consumers. There is no significant problem in the chicken meat sanitation.

d. Almost all pig production is used for processing and only a limited portion is distributed to meat shops with similar handling as goat. The problem of the trichinas mentioned before is the matter to be solved.

All slaughtering places above have not received any authorization by the necessary application and procedure of inspection. Almost no ant- and post-mortem inspection of meat is conducted. Therefore, slaughtering of disease animals may be a cause of serious human health problems after consuming that meat. Also, livestock traders,

butchers, meat shop workers are easily exposed to the dangerous sanitary and health conditions.

2) Transportation

Especially buffalo's meat is exposed significantly to sanitary problems during transportation. Quarter carcass shouldered by two persons using a pole is transported up to the roadside . From there, it is transported by bus or other public transportation means. During transportation, meat is easily contaminated because of treatment method such as putting meat on the newspapers on bus floor. There is no instance of the use of container box.

3) Meat shop

Sanitary conditions of meat shop are very poor, even in keeping a minimum sanitary level of the meat quality. Buffalo meat is already contaminated during transportation, while goat meat is treated in front of meat shop. However, there is no check of anti- and post-mortem examinations in both cases.

Compared with buffalo and goat meat, chicken meat is treated in a better condition, because cold chain system is developed and adapted. However, anti- and post-mortem examination has not yet done.

Regarding sanitary control of meat, treatment in production, transportation and selling at the meat shop is in a very poor condition. On the other hand, people's consciousness on meat hygiene has increased in a big city like Kathmandu. Therefore, quality control assurance system of raw meat and meat product will be more required year by year. The developed quality control system for chicken meat needs to be applied to buffalo, goat, and pig meat market.

2.3.5 Fish Marketing System

(1) Fishery Development Policy

FDD, which is part of the Ministry of Agriculture & cooperative, is responsible for fisheries development. Aquaculture and fisheries development project, and extension services are executed by DADO under the technical supervision of DCC. The Fisheries Development Centers (FDC) are resources centers, located in 9 different districts. Their basic duties are: providing fish seeds for farmers, and as technical support for fish farmers in coordination with DADO.

Research related to fisheries in Nepal is undertaken by Fisheries Research Division of NARC that undertakes various fisheries research and investigations. It is headquartered in Godawari (Kathmandu), with 5 Fisheries Research Centers (FRC), i.e., Godawari for cold water fisheries, Trisuli for riverine study, Tarhara and Parwanipur for warm water aquaculture, Pokhara for lake fisheries. The institute is expected to meet information requirements for both fisheries and for the related aquatic environmental matters.

At present, national policy in the fisheries sector is guided by "the Ninth Plan" and "Fisheries Perspective Plan".

The Ninth Plan aims to increase the present production to 75,000 mt in the coming 20 years (2016) from the present level of 23,000 mt (1997). To achieve this target,

programmes are focused on maximum utilization of the natural river and the other water resources and construction of fishponds. Key elements in the Plan for the sector are: (1) Carrying out technical and managerial services for the farmers in a package concept; (2) Improvement of supply of fish seeds; (3) Encourage private sector through loan and technical service; (4) Supporting lease of community pond, swamp on group basis; (5) Passing the Aquatic Act; (6) More effective extension programmes in district level; and (7) Establishment of fisheries laboratory at the central level.

At the Fishery Section of the Ministry, neither the Fishery Statistic System nor the Fishery Development Monitoring System is fully operational. This represents a huge problem in terms of devising effective fisher policies. In Nepal, the fishery production through fish farming and traditional fishing has continuously grown over the last twenty years. However, the Nepalese government is not in a position to objectively assess various factors attributing to such a phenomenon. In order to develop such an assessment capability with the limited budget, it is indispensable that accurate data are collected so that the effects of investment and development can be evaluated properly.

(2) Fishery Demand Trends and Analysis

1) Trends in Fishery Demand

The per capita consumption of fishery products is 1.2 kg annually in Nepal as of 1998. This figure is equivalent to the level of fresh water fish consumption in India and China in 1980. In both India and China, due to the growth of fresh water farming, the consumption level of fresh water fish has grown in both countries since then. The current per capita consumption levels are 2.4 kg and 4.5kg for India and China respectively. In Nepal, the consumption level rose sharply in the 80s, from 0.3 or 0.8kg in 1980 to 1.0 kg in 1990. As a result, fish consumption surpasses the consumption of pork, poultry and egg. This fish consumption rate has leveled off somewhat in the 90s', however, fish consumption continues to grow.

2) Regional Consumption Patterns

In Nepal, where the distribution system is not fully developed, there exists some gap in terms of fish consumption patterns between the production and non-production area. For instance, in the Terai region, which accounts for 99% of the national fish farming production, the per capita consumption of fishery products is 1.2 – 2.3 kg which is more than twice the consumption level in the mountain/hill regions (0.5 kg per capita consumption). This gap in the consumption level is also due to the discrepancy in the level of income, hence the purchasing power of the people in these regions. The per capita income among the residents of Terai is double that of those people living in the mountain region. The regions where the largest per capita fish consumption is observed in the Terai region in the Central District and the Eastern District with 2.3 kg and the capital, Kathmandu, where the income level is high, with 1.7kg.

3) Fish Estimated Consumption from the household survey

The household survey conducted in July, 2000, in the seven major urban areas and fifteen agricultural communities indicated that the per capita annual fishery consumption among the urban residents is twice the national average figure. Particularly, in Biratnagar and Birganj, located close proximity to the major fish

producing region, the consumption level was extremely high: 4.7 kg/per person/per year and 3.8 kg/per person/per year respectively. A huge discrepancy in the consumption of fish between the urban and rural areas is also observed. For instance, a rural community in the hill area of the Central District, the per capita consumption is mere 0.12 kg per annum. In Kathmandu, located within the same district as above village, the per capita consumption of fishery products is 20 times that of the above village. This gap is probably attributable to the differences of opportunities to purchase fish. However, the potential demand for the consumption of fish is considered to be at the level between 2 – 5kg, equal to the level observed at the urban area.

(3) Fish Production

1) Production and Production Trend

The production of Nepalese fisheries increased by about 78% between 1989 and 1998. The contribution of aquaculture to Nepal's fisheries increased from 21% in 1981 to 51% in 1998, during which period aquaculture production rose from 750 mt to 13,063 mt. Aquaculture had remarkable growth in the 80s with about 120% average growth rate. But during this 10 years (1989-98), its growth is showing moderate rate of 4.5%. Capture fisheries also showed rapid growth at 130% during 1989 and 1998. But, it should be noted that this figure includes many unknown factors for the production estimate. The production from rivers where professional fishermen exist shows 3,950 mt but there is no increase during 1989 and 1998. As the growth of capture fisheries owe greatly to fish collection from paddy field and swamp, at present increase of capture production does mean of increased marketed fish.

2) Production Pocket

The production of different region as fishpond culture in 1998 is shown in Table 2-41. By district, Dhanusa, Mahotari, Saptari and Morang ranked highest, producing 1,667 mt, 1,241 mt, 1,309 mt and 1,088 mt respectively in 1998. The production of these 4 districts accounts for almost 50% of total fishpond production. Fish from these production areas is sent to Kathmandu as well as consumed at local community/market close to the pond.

Fisheries Development Division estimated capture fisheries production at 12,752 mt in 1998, but no accurate data (breakdown of production by location, by month, by species, etc) are available. Three large river system, Koshi River, Candaki River and Karnari river system, are the main sources of capture fisheries. Nepalese capture fishery is characterized by extensive-small scale with low productivity. It is estimated that certain amounts of catch produced in these rivers by subsistence fishermen and large percentage of this catch is consumed by fishermen's immediate household and local inhabitants. There are more than 270,000 fishermen in Nepal

(4) Fish Distribution and Marketing System

1) Fish Distribution Pattern

Except for some of the largest cities, fresh fish is locally consumed in Nepal. The system as it presently operates is simple and straightforward. Fish farmers are highly

dependent on fishermen who act as retailers at the same time for selling their products. However, high margin of producers does not necessarily mean unfair exploitation. The survey team could not find any serious problem on the relation between producers and fishermen from interviews with them.

In the present context, these small numbers of links contribute to shorten the length of fish staying in the chain (except fish imported from India). For example, fish harvested on Monday in Janakpur are already in the retail shop of Kathmandu on Tuesday afternoon. The problems of the present system are:

- Limited use of ice during all stages of the chain reduce the fish quality rapidly.
- Poor packaging and handling result in poor fish quality.
- Lack of storage at wholesaling stage (local and consumption city) necessitate smaller fish distribution quantities to meet only daily requirement. This smaller distribution reduces the transport efficiency and intentional supply.

Share of the quantity passing to the local market in the chain is considerably low. The handling volume of Gudri wholesale market in Biratnagar accounts for about 15-30% of farm fish production in Morang District. Similarly, about 20% of farm production are handled by Janakpur wholesaler in Dhanusa District. Above Biratnagar and Dhanusha are the largest markets in production pocket; the share in the other town are still smaller.

2) Origin and Destination

Most of the fish are sold and consumed locally in Nepal. According to the disposal survey of fish farmers (ADB, 1994), 8.7% was consumed at home, 61.5% was sold in local market, and 20.5% was sold in other parts of Nepal (other parts are not defined). Export to India was recorded as 2.78% in Dhanusa and 16.5% in Kailai district. In this JICA study, export of table size fish to India was not reported. The origin and destination of pond cultured fish at national level is recorded based on the interview with traders (see Table 2-42). It is estimated that only 5% (583 mt) of cultured fish was widely distributed in the country and about 90% of it was directed for Kathmandu.

3) Fish Market Price

Compared with other animal meat, fish price (Rs70-100/kg) is between buffalo, pork (Rs60-70/kg) and chicken, mutton (Rs120-220/kg). However, in reality, consumption of pork and buff is limited due to religious reason (especially in Terai area). Fish is then recognized as the cheapest animal protein source in Nepal.

The fish price is clearly higher in Mountain/Hill area (Rs.104/kg) than Terai area (Rs.80.9/kg) and India (78.2kg) (refer to Table 2-43). Similarly, western part of the country trends to be more expensive than eastern. The cheapest average price of Rs.76.4/kg is found at Dhanusa, followed by Morang (Rs.70.9 kg) which is the largest production area. Indian markets near the border have cheaper price except Paliya market (near Mahendranagar). This figure agrees with the fact that Kailali district has large portion of fish export, 15% of cultured fish (ADB, 1994).

The supply of fish increases in winter season because of the harvest pattern of pond culture. During winter season, traders' sales pick up to almost double than that of summer. This may maintain the balance of supply and demand at present. Monthly record of fish price in Biratnagar (1999) also shows no clear changes between the summer and winter.

4) Market Margin

During the survey, calculation of market margin of three different patterns of trade was attempted. Case 1 shows the trading of Nepalese pond cultured fish sold in Kathmandu, Case 2 is imported Indian fish via Birganj to Kathmandu, and Case 3 shows the domestic trading observed within Nepalgunji. The Case 3 is the most commonly found in Nepal, and retailers who are also fishermen at the same time, directly buy their fish from the farmer. The trader's share of the retail price is given as: producer 63.3% to 83.6%, local wholesaler 6.8% to 16.6%, wholesaler in Kathmandu 3.3% to 18.2% and Retailer 12.5% to 16.4%.

The share of the farm gate price in retail price is calculated as 83.6% in Nepalgunj (Rohu), while in Kathmandu market, its share was lower at 62.5% due to the higher transportation cost. The gross profit of Janakpur wholesaler was Rs.3 per kg when they sent silver carp to Kathmandu. On the other hand, if this wholesaler sell the same fish to Janakpur retailers, their gross profit was estimated at Rs.6.5 per kg. These figures suggest the local marketing as in Case 1 is the most profitable for both producers and traders, but its transaction volume is limited. For Kathmandu wholesalers, trading of Indian imported Rohu is more profitable than local fish which is the present situation Kichapokari market.

2.3.6 Law, Institution and Organization of Market Management System

(1) Legislation For Market Development and Management

Legislation available for the agricultural marketing development and management of the market centers are ①Agriculture Produce Market Center Management and Operation Directives of MoAC, 1996 (with Amendment in September 1998), ②Development Board Act, 1957, and ③The Newly Proposed (not approved) Agricultural Marketing Development and Management Act, 2055.

1) Agricultural Produce Market Center Management And Operation Directives Of MoAC 1996 (With Amendment In 1998)

a) The Directives of MoAC

The directives of MoAC for agricultural produce market center management and operation was approved in June 1996 (with amendment in September 1998). The directives are presented in 12 sections such as Preamble, MMC establishment, Chairpersons Managements, Qualities of members, Roles/Responsibility and Right of MMC, MMC Funds, Appointment of Market Manager, Ownership of Market, Memorandum of Understanding and Agreement, Steering Committee, Dissolution or Termination of MMC, HMGN decision on conflicts.

b) Establishment of MMC and its composition

According to the provision made at the Directives of MoAC the composition of Agricultural Market Management Committee (MMC) is as follows

- Farmers representative by Socio-Metric election system - 3
- Traders representative by Socio-Metric elective system - 3
- Representative of Related VDC (Municipality-1) - 1
- Representative of Related DADO office - 1
- Related Ag. Service Center Chief Member-Secretary - 1

c) Selection of the Chairperson

The directives made provision to elect chairperson from among the representatives of farmers, traders and local government.

d) Qualification of the MMC Members

The directives has made provision of the following qualification as the pre requisite to be the member of MMC; (i) Nepali citizen (ii) Age 25 years or above; (iii) local residence; (iv) social morale; and (v) mentally fit (not mad).

e) Roles, Responsibilities and Rights of MMC

The directive has clearly stated the roles, responsibilities and rights of the MMC and they are Market Management, Market Information, Staff Appointment, Market Facilities, Service Charges, Conflict Resolution, Maintaining Cleanliness, Repair and Maintenance, Any work related to Market Operational Management.

f) Classification of Market Centers for MMC Fund Management

The directive has made provision to classify the market centers in three categories based on the annual income of the center.

- `A' Class market center: with income of Rs. 1.5 million or above;
- `B' Class market center: with income ranging from Rs. 0.5 million to 1.5 million; and
- `C' Class market center :with income less the Rs. 0.5 million.

Regarding the MMC fund management the directive has made provision to utilize 70% of the fund raised in daily market operation and repair maintenance to A class market centers; 80% in `B' class and 90% in `C' class market centers.

g) Appointment of Market Manager

The directives have made provision for the appointment of the market manager. Provision has been made to appoint the Chief of the concern Agriculture/Livestock Service Centers (ASCs/LSCs) as Market Manager by the central government.

However, Market Managers have also been selected among the MMC members as the quality, experience, and qualification is considered met. The quality, experience and qualification of the market manager that can be appointed by the MMC will influence on the regular operation and management of the market centers.

h) Ownership of the Market Centers

According to the directive the ownership of the physical infrastructure at the market center will be with HMGN.

i) Memorandum of Understanding and Agreement Between MMC and HMGN

The directive has made provision for Memorandum of Understanding be signed between MMC and HMGN and agreement paper signed to indicate the rights and duties of each party.

j) Steering Committee

The Directives has made provision to form a steering committee under the chairmanship of the Director General, Department of Agricultural and Chief Marketing Development Division as Member Secretary. The other two members of the steering committee are Deputy Director General Planning, DOA and Director, Agro Enterprise Center (AEC/FNCCI).

k) Dissolution of MMC

The directives have made provision to dissolve the MMC by HMGN as per the need based.

l) HMGN Decision to Resolve the Conflicts

The directives have made HMGN authorized and responsible to resolve the conflicts on any agreement between HMGN and MMC.

2) Development Board Act, 1957

a) The Act is presented in 10 sections such as Preamble / Definition, Formation of Committee, Committee as Corporate Body, Committee Fund, Committee Staff, Directives of HMGN to the Committee, Dissolution of the Committee, Conflict Resolution, Dissolved Laws.

b) Formation of Committee

According to the provision made by the Act, HMGN can form a committee for development works. While forming a committee HMGN also define the functions, roles, and responsibilities of these committees. The members of the committee are directly appointed by HMGN and function only as per the authorities provided by HMGN.

c) Committee as Corporate Body

The act has made provision for the committee to function as a corporate body.

d) Committee Fund

According to the provision made in Act the committee can have its own fund to operate and manage the market centers. The main sources of fund utilized at Kalimati Wholesale Market by the Board are the stalls/stores rentals and plastic crates rentals.

e) Committee Staffs

The Act has made provision to appoint staff to implement the work assigned. In case of Kalimati, the Board members are nominated by HMGN.

f) Directives of HMGN to the Committee

According to the provision made at the Act the committee will operate as per the direction of the HMGN.

g) Dissolution of Committee

According to the provision made at the Act the committee can be dissolved by HMGN as per required.

h) Conflict Resolution

The Act has made provision for conflict resolution and HMGN can make rules and regulation for resolving these conflicts.

i) Review of the Development Board Act, 1957

The Act is based on the centralized principle of HMGN prepared before democracy which needs to be amended to meet the present democratic needs. The Act has made provision and stated that the HMGN will provide new directives at any time to be followed by the committee. HMGN changing directives to the committee and the changing members of the committee will not allow the market center to follow the rules and regulation on a continuous regular way.

The Kalimati wholesale Market is operated under the Development Board Act of 1957 with its special rules and regulations of 1998 called "Kalimati Fruits and Vegetable Wholesaler Market Development and Operation Regulation, 1998".

A few points have been raised on the management of the Kalimati Wholesale market.

- Changing directives to the committee by HMGN
- Changing members of the committee
- Changing rules and regulations of Kalimati wholesale market

3) The Newly Proposed "Agricultural Marketing Development And Management Act, 2055"

The Act is segmented into 9 (nine) parts such as Preamble / Preliminary Statement, Market Center Establishment, Market Management Committee, Roles/ Responsibility and Rights of the Committee, Funds/ accounts and Auditing,

Management of office staff, Facilities and special provisions, Punishment/penalty and appeal, Miscellaneous.

a) Definitions of Market Related Terminology

- Agriculture Market: market area demarcated for agricultural products
- Agricultural Products: any product of agricultural origin
- Market Place: a place specified for transaction of commodities between the farmers and the traders
- Haat Bazaar: a periodic market yard/place
- Wholesale Market: a place where a large volume of products are handled by the wholesalers for distribution to the retailers
- Retail Market: market for retail marketing
- Wholesaler: Traders handling large amount of bulk of the products for distribution to the retailers
- Market Management Committee: a committee formed for the management of the market center
- Members of MMC: representative members from the actors of the markets
- Market Manager: a manager cum member-secretary designated for the operation and management of the market center
- Service Charge: rental and other service charges
- Manager appointed by MoAC
- Specified by Act

b) Types of Agriculture markets or Market Centers

- Wholesale Markets
- Retail Markets
- Haat Bazaar
- Group Markets
- Collection Centers
- Mixed (wholesale + retail) Market

The Act has also made provision for the registration of Private Agricultural Markets at the Department by providing specific (a) Name of the agricultural market; (b) Address of Market Management Office; (c) Types of Market; (d) Agricultural Products handled; (e) Objectives; (f) Market Management Committee members name and address; (g) Area covered by the market place; (h) Area covered; and (j) Financial Sources.

c) Establishment of MMC

The Act has also made provision for the establishment of autonomous and organized Agricultural Market Management Committee at markets established by government, cooperative or by private sector.

d) Market Management Committee

The Act under has made provision for the establishment of MMC with the following members for the period of 4 (four) years with provision for renewal.

- Chairperson – Appointed by HMGN as per the recommendation of the selection committee.
- Member (1) – Representative of the DoA/DoLS or Agricultural Market Development/Promotion Directorate.
- Member (1) – Representation of the related ward committee nominated either by the Mayor or by the VDC Chairperson.
- Member (1) – representation of FNCCI nominated by the Management of FNCCI.
- Members (2) – Representations of Subject matter specific organization, nominated by the respective market development directorates
- Member (1) – Representative from Traders organization selected/elected from among the traders associations.
- Member (1) – Representative from farmer's organization, selected/elected from among the farmer's cooperatives, farmer's groups, or farmer's associations.
- Member – Secretary – Market Manager, either nominated by the Central government or selected/elected among the MMC members.

The Act has also made provision for the establishment of 3 member selection committee by MoAC/HMGN to recommend the chairperson and member of MMC. And the members of the selection committee are :

- Agricultural Marketing Specialist – Chairperson (Appointed by MoAC/HMGN)
- Representative of MoAC/HMGN – Member
- Representative of FNCCI - Member

e) Roles, Responsibility and Rights (refer to Table 2-44)

f) Funds, Accounts and Auditing

The Act has made provision for MMC Funds to operate and manage the market centers. The main sources of fund visualized are the rentals, fees, various charges, penalties, etc. It has also specified the Accounting System of HMGN and Auditing by HMGN Auditors for the MMC fund financial management.

g) Staff Management

The Act has made provision for the employment of market manager and has defined his/her roles, responsibilities and rights.

h) Facilities and Special Provision

The Act has made provision for the reduction on taxes, customers and import duties as required.

i) Punishment, Penalty and Appeal

The Act under has made provision for punishment and penalty up to Rs. 10,000. The Act has also made provision for appeal at MoAC in case of dispute.

j) Review of the MoAC Directives

A review of the directive was supplemented by the opinions of the MMC members in the course of interviews/meetings at both wholesale markets as well as at collection centers. Most of the MMC members expressed their satisfaction and positive impact of the directives on their products marketing. In most of the newly established wholesale markets as well as in collection centers with new physical infrastructure MMC have been established as per the Directives of MoAC for market management. The establishment of MMCs has been a very positive step in the management and operation of market centers. All the users – Farmers, Traders, and Local Government, have also taken it as a positive step in their participation in the management and operation of market centers.

The MMC has brought together all the users – farmers, traders, local and central government together in one place for the management and operation of the market centers. And HMGN is in the process of providing legal status to these MMCs by introducing a new Act "Agricultural Marketing Development and Management Act, 2055".

(2) Legislation For Farmers Cooperative Formation

Legislation available for farmers organization as farmers cooperatives are ①Cooperative Act, 1992, ②Cooperative Rules and Regulation, 1993, and ③National Cooperative Development Board Act, 1993.

1) Cooperative Act 1992

The Act is presented in 12 Chapters such as Preamble, Establishment of Cooperative Society, Membership of Cooperative Society, Operational Procedures, Registrar, Financial Resources and Mobilization, Unification or Division of Cooperatives, Information/Record Keeping/Book Keeping and Auditing, Facilities and Subsidies, Dissolution or Termination of Cooperatives, Punishment and Penalty, Miscellaneous.

a) Cooperative Formation

- The Act has made provision to form cooperative society based on the cooperative principles and approaches for the economical and social development of the members. The basic requirements for the formation of cooperatives are as follows:

- The Act has made provision to form a Cooperative Society with at least 25 members in the organization.

- The Act has made provision to form a cooperative society with at least five commodity specific groups

- The Act has made provision to form a District Cooperative Union with at least 5 cooperatives in a district.

- The Act has also made provision to form a Central Cooperative Union with 5 cooperatives.

- The Act has also made provision to form a National Cooperative Union with 15 cooperatives.

b) Membership

The Act under has made provision for membership at various levels.

♦ Members of cooperatives.

♦ Share holders of cooperatives

♦ Members participating in savings and credits

c) Operational Procedures

According to the provision made at the Act, Cooperative Society prepares rules and regulation for operation. These rules and regulations are required to be approved by the registrar of cooperative department.

The following meetings will be conducted by cooperatives.

- General assembly meeting at least once a year

- Executive members meeting on a regular basis.

- Sub-committees formation and meeting as required.

d) Registrar

The Act has made provision to appoint the `Registrar' and delicate authorities.

e) Financial Resource and Mobilization

- Mainly by the sale of share

- Saving & Credits

- Loans Provision

- Capable to handle Banking System

f) Unification or Division of Cooperative

g) Record Keeping, Book Keeping, Accounts, Auditing and Information Dissemination by Cooperative

h) Facilities and Subsidies to Cooperatives

The Act has made provision for some facilities and subsidies for the cooperative societies especially in the area of customs, local taxes, etc.

i) Dissolution and Termination of Cooperative

The Act has made provision for the dissolution of the cooperative based on the 2/3 rd member decisions.

j) Punishment and Penalty

k) Miscellaneous

l) Review of the Cooperative Act,1992

According to the provision made at the cooperative Act, 1992 farmers could form a cooperative with at least 25 members or with at least five commodity specific groups. However, the cooperative society formed is to be registered at the office of the Registrar. The Act has also made provision to form a District Cooperative Union and Central Cooperative union. But the Act has limited to form more than one District Cooperative Union and Central Cooperative Union in a district. The Act has also made provision not only to restrict the use of cooperative for economic and social benefits to the members but also to penalize up to Rs. 2000 to those who utilize cooperative for businesses or professional enterprises.

(3) Existing Institutions And Organizations At The Grass Root Level For Agricultural Marketing Development

The main institutions and organization active for agricultural marketing development at the grass root level are as follows:-

- Farmers and farmers' organizations (Farmer's Groups, Farmer's Cooperatives, Farmer's Associations, Federation of Farmer's Association, etc.).
- Traders and Traders' Organizations (Traders' Groups, Trader's Associations, District Chamber of Commerce and Industries (DCCI), Federation of Nepal Chamber of Commerce and Industries (FNCCI), etc.)
- Local Government (Municipalities, and Village Development Committees (VDCs), District Development Committee (DDC), etc.)
- Central Governments (District Agriculture Development Office (DADO), District Livestock Services Office (DLSO), and their Agriculture Service Centers and sub-centers (ASC & sub-ASCs) and Livestock Services Office (LSC) & sub- LSCs)

1) Farmers organization

a) Farmers Organizational Development

Farmers in the first place have organized to receive training and technical supports from DADO/DLSO office and to transfer technology, purchase inputs in groups and to produce to market their surplus products.

Farmers realizing the weakness of government services have tried to organize to establish their own mechanisms for both (i) reception of support services; and (ii) provision of services to its members.

Farmers groups in order to become self-reliant are planning to gradually reduce their dependence on external services but strengthening their forward linkages in wholesale market and backward linkages with the sources of technology and inputs.

b) Legal Status of Farmer's Groups/Organizations

In general, these farmers groups formed under DADO/DLSO office / projects have no legal status as there is no law to recognize them.

Most of the farmers groups visited are in general, satisfied with their current (informal) status and indicated some resistance to the concepts of registration as it is largely rooted in dissatisfaction with the past and / or present behavior of the regulatory agencies to register.

c) Farmers Organization

Thousands of farmers groups have been formed under the DADO program based on its `Pocket Package Program Activities' with some diversity in terms of size, activities, financial status, operation level and organizational development.

The number of farmers groups estimated for vegetable, fruits, potato and fish groups are very rough estimation based on the verbal answers of the potential numbers in many districts. The exact numbers are not available in the reports as secondary sources.

A few selected farmers groups were visited by the JICA Study Team Members along with the field staff of the DADO office indicated that:

1) A majority of farmers groups formed under DADO program activities are young (less than three years of working experiences as groups);

2) A majority of these farmers groups are un-registered organization with weak legal status;

3) A majority of these farmers groups are making decision (as per their records maintained) on their saving and credit management even with the weaker legal status.

4) A majority of these groups, however, have a little savings for credit to their members;

5) A majority of these farmers groups are not making any decisions on their commodity specific production program activities except the DADO support services such as technical, educational tours, and inputs provisions.

6) A majority of them are, thus, dependent only on DADOs technical support, educational tours, provision of inputs, and other services; and

7) A majority of the farmers groups do not have a clear vision or plans for the future.

d) Farmers Organization for the Operation and Management of Collection Centers

Farmers Organizations especially the newly formed farmers marketing cooperatives have successfully initiated operating and managing collection centers at Dhusa, Dhading, Tinpiple and Tamaghat, Kavre, Handikhola, Makwanpur and at Sindhuwa and Jorpati, Dhankuta.

Farmers organization especially four farmers cooperative have been involved in the operation and management of the collection centers and they have indicated various characteristics in its operation and management. They are:

1) Farmers groups role in collection centers

2) Farmer's cooperatives capability to maintain backward linkages with farmers groups and production planning.

3) Farmer's cooperatives capability to maintain forward linkages with wholesale markets either directly or through traders.

4) Farmer's cooperatives decision making process in MMC chairperson selection (leadership development).

5) Farmer's cooperatives decision making process and conflict resolution on expansion of cooperative members.

e) Role of the Farmers Organization in Collection Center Management

The role of the farmers groups in collection center operation and management is very important. It has been realized by all users the farmers themselves and the traders and local government in particular. Traders have now realized their dependency on farmers produce and on their production-planning schedule. Traders especially the local traders are very much involved in the production planning of the farmers groups. Therefore, the representation of all the users MoAC Field technicians. Local Government farmers and local traders have been realized now as a very important aspect in the operation and management of the collection center.

f) Backward Linkages of Farmers Cooperatives with Farmers Groups

The MMC in cooperatives managed collection centers have very well realized the importance of maintaining backward linkages with farmer groups. The backward linkages with farmers groups are definitely working better where farmer cooperatives are linked with the networking of farmers groups.

g) Forward Linkages of Farmers Cooperatives with Wholesale Markets

The MMC in cooperative managed collection centers cannot function without good forward linkages with wholesale markets. Therefore the good business negotiation between these cooperatives at collection center and wholesalers at wholesale market is very important. In general it is expected that the MMC at wholesale will be dominated by the traders whereas the MMC at collection centers are dominated by leader farmers. A good business negotiation is therefore required with these two parties. The following arrangements have been made for their smooth business negotiation.

1) A stall has been made available to cooperatives at Kalimati wholesale market.

2) Traders including local traders have come to collection centers to help farmer's cooperatives.

3) Farmers cooperatives have joined together take their products to Kalimati wholesale markets on competitive basis.

h) MMC Chairperson Selection

The process adopted for MMC chairperson selection is very important and the leadership of the chairperson is very valuable. He is neither expected to be in controversy nor in loosing credibility status. His credibility and selection by the members is very important.

i) Expansion of Cooperative Members

It is expected to have various kinds of conflicts in the cooperative members expansion. Conflict resolution in one hand and expansion of members in other hand will very much depend on the leadership and on the group decisions.

2) MoAC Local Offices

There are around 1000 (one thousand) agriculture extension local office distributed in all 15 ecological zones both to promote pocket package programs as well as to promote the farmers groups and its organizational development.

a) Roles of MoAC Local Offices

The major roles played by these grass root level agricultural extension staffs are:

1) To provide technical support in the formation of farmers groups and in strengthening their local capacity;

2) To encourage farmers organizational development to farmers cooperatives;

3) To provide management support to local markets as member secretary of MMC at market centers;

4) To provide technical support services and new technologies for the promotion of the production activities in the specific commodities suitable for the production pocket areas; and

5) To co-ordinate agricultural development activities at the grassroots level.

b) Household Served by MoAC Local Offices

The average number of household served by ASC ranged from less than 1000 households in Western Mountains to more than 5,000 households in Eastern Terai. The average household numbers covered by ASC is around 3,300 households.

3) Local Government

With the necessity to decentralize the power from the center down to local level, HMGN has enacted the local self-governance Act, 2055 and recently introduced the local self-governance rules 2056. The local self-governance Act, 2055 provides a provision of local autonomous corporate body.

At present, there are 58 municipality with the total urban population of about 2.3 million and 3,641 village development committees (VDCs) with 20.0 million populations.

The urban population is about 10 percent of the total population in Nepal. The average number of population per VDC is about 5,500 with the range of less than 1000 in Manang District VDCs to more than 12,500 in Kailali district VDCs. The average number of VDCs per districts is around 48 (less than 50) with the range of 14 VDCs in Western Mountain to 77 VDCs in Eastern Terai.

The local self-governance Act, 2055 and the local self-governance Rules, 2056 has presented additional functions to local governments to look into the matters relating to the management of the grants received from the HMGN and funds received from the tax, duties, etc. and give directives for their productive utilization.

a) Roles and Responsibilities of Local Government on Agricultural Marketing Activities

The local governments have played various major roles in agricultural marketing activities.

1) Local governments have provided space and have managed haat bazaar development with stalls, drinking water, toilet electricity and drainage facilities.

2) Similarly municipalities have provided space, drinking water, toilet, electricity, roads and stalls for wholesale as well as for retail shops marketing activities.

3) Municipalities have encouraged individual traders and their associates for their promotional activities.

b) Participatory Cost Sharing Investment

A practice of undertaking developmental works in local government areas by sharing costs with institutions and/or individuals are observed in a few collection centers like Kapurkot, Sindhuwa, etc. It has generated income directly to local government and saved funds. This kind of practices is not only cost effective but also operational effective with active participation of parties concerned.

c) Participation of Local Government in Agricultural Marketing Development Programmes

Recently, local governments (Municipalities and VDCs) are participating in the following activities related to agricultural marketing development programs.

- Local government's involvement in planning and implementation of pocket package coordination program.
- Local government's direct involvement in newly established market centers both as the active member of the marketing management committees (MMCs) and directly participating in the management operation of these market centers.
- Local governments are actively participation in vegetable production planning in a few production pocket areas.
- Local governments are also providing space for agricultural marketing activities.

  All the major municipalities have provided land spaces within the town for wholesale and retail markets on a rental basis. But they have not provided any services in market management or in market development.

(4) Use Of Credit System

Farmers need loans both to purchase inputs and to market the products. Large proportions of farmers are poor and have little access to formal lending institutions. Many of these small farmers have no land or insufficient land to offer as collateral to the formal lending institutions (Banking Services). Most of the women do not have land to use as collateral. Most of the poor and women have difficulty in forming groups especially in the Terai regions for group lending due to mistrust among themselves and they do not believe each other in-group lending. Thus most of them have little access to the formal institutions for borrowing. Thus the 10 percent institutional loan available in the rural areas might have been used mainly by the elite groups of farmers.

1) Targeted Credit System

Targeted credit programs particularly Small Farmer Development Program (SFDP), Production Credit for Rural Women (PCRW), Intensive Banking Program (IBP), Grameen Bikash Banks (GBBs) and Women Farmers Development Program are the important agencies for credit disbursement in rural Nepal.

a) The Small Farmer Development Program (SFDP)

The Small Farmer Development Program (SFDP), initiated in 1975 is a national poverty alleviation programme executed by the Agricultural Development Bank of Nepal (ADB/N) The programme organizes groups of low-income farmers at the village level, providing them with credit, appropriate technologies and skills training.

SDP groups are the entry point for local mobilization of community development activities in education, health, nutrition, sanitation and water systems.

SFDP operates through 440 sub project offices in all 75 districts. The program is directed at both men and women. SFDP has mobilized more than 168,000 small farmers to form more than 23,000 groups in 620 VDCs. SFDP claims to have been able to reach 7 percent of rural households in over twenty years.

b) The Production Credit For Rural Women (PCRW) Program

The Production Credit for Rural Women (PCRW) program was introduced in 1982 in five of Nepal's 75 districts. It has now expanded to 67 districts covering 20,000 rural women. It has been assessed as one of the most successful program for women in Nepal.

The basic objective of PCRW is to improve the social and economic status of women by providing credit facilities for income generating activities based on group collateral. Credit groups serve as entry points for the initiation of activities in literacy class, drinking water, health education, and childcare canters. Credit is complemented with training in hygiene education, home finance, income generation skills and community mobilization for credit groups. PCRW is implemented by the Women Development Division (WDD) of the Ministry of Local Development. Credit is channeled by the Nepal Rastra Bank through three participating banks: The Agricultural Development Bank of Nepal (ADB/N), Rastriya Banijya Bank and Nepal Bank Limited. Financial coordination is provided by the priority sectors promotion committee comprised of representatives from the credit guarantee cooperative, participating banks and WDD. As of 1995, PCRW had mobilized 56,950 credit groups. WDD has been mobilizing NGOs in the micro-credit Project for Rural women with the objective to raise living conditions of women in rural areas by extending credit to rural women for utilizing their skills in small enterprises.

c) Intensive Banking Program (IBP)

Under the intensive banking program, commercial banks such as Rastriya Banijya Bank and Nepal Bank Ltd. are required to lend 12 percent of their loan outstanding to priority sectors. This IBP program is benefiting about 174,000 farm families through its 300 participating bank branches.

d) Women Farmers Development Division (WFDD)

The Women Farmers Development Division (WFDD), a Women's Agricultural Unit in the Ministry of Agriculture, was established in 1992 to channel credit, training and production into women farmers groups. WFDD has adopted a group approach and has helped to form over 2,000 women farmers groups.

e) The Rural Development Banks

The Grameen Banks, based on the model of the Bangladesh Grameen Bank, provide credit to landless and marginalized women. As yet Grameen Banks have been established only in the Terai areas not in the Hills and Mountain with the concept of Credit to the economically deprived people without collateral. Rural Development Bank has disbursed a total credit of Rs. 2090.2 million to its 87,317 Members through its 3157 centers.

2) Use of Credit System from the Formal Banking System

The loan investment of commercial banks on agricultural sub-sectors especially on horticulture was very low (negligible). Therefore, the focus of the present study is only on the loan investment of ADBN in Agriculture Sector.

The total loan investment of ADBN in agriculture sub sectors for the fiscal year 1998-99 was around Rs, 5,451 million in 15 ecological zones of Nepal. The share of horticulture sub-sector is only 6 % (Rs. 32.8 million) for the 15 zones, which is very low. Thus the formal loan investment in horticulture sub-sector is very low indicating the importance of informal sector in this sub-sector. The investment of private sector and the environment for the active participation of the private sector in the investment is very crucial for the commercialization of this sub sector with better market development strategies.

3) Use of Local Saving and Credit System

Most of the farmers groups have initiated a small scale saving and credit scheme saving their own money and providing credit to their own group members. One of the main reasons for their monthly meeting was for the management of such saving and credit systems.

2.4 Weakness and Development Issues of the Marketing System in Nepal

2.4.1 Horticulture production and post-harvest

Horticulture production and post-harvest subsector in Nepal has the following weakness, which will be improved through farmers' participation by their own initiatives. For that purpose, farmers should strengthen their organization such as farmers groups and cooperatives which will be the base for promotion of privatization and commercialization of production and marketing activities by farmers. Government bodies will be expected to focus on the support and technology transfer to farmers organization.

(1) Production

1) Gap with the consumers preference for the products

Production of horticulture crops in Nepal are almost under the same situation with cereal crops saying that "Entering into May, the import of Indian rice seems to be increasing even in Kathmandu. In case of consumers' rice purchasing, the traders (shop keepers), first of all, ask to the consumers (customers) whether they are willing to buy Nepalese or Indian rice". As the rice is always available at a lower price, most of the customers prefer to the Indian varieties. As a result, Nepalese rice of higher quality is unable to be distributed to the proper markets. This situation can

be seen not only in Kathmandu, but also outside of the valley. In order to meet consumers preference, market research activities should be strengthened linked with the organized management system by farmers at the collection centers.

2) Lack of production input and poor linkages among relevant organization

Despite of HMGN's efforts, most of the farm inputs such as vegetable seeds, fertilizer and farm chemicals depend on import. In fiscal year of 1998/99, horticultural seeds were supplied only about 40% of the requested volume of farmers. HMGN's program to set up a chemical fertilizer factory in Nepal is expected to be implemented as soon as possible. Under APP, it is projected to grow agricultural domestic production by increase of fertilizer application and irrigation facilities without any expansion of planting area. It is Important to meet with the demand of Nepalese farmers/consumers and to reduce production cost for the competitiveness with Indian products. For this purpose, supply capacity of farm inputs is expected to be strengthened. Farm inputs warehouses attached to the collection centers will support the delivery on proper time through establishment of linkage with AIC and private sectors such as farmers, traders and consumers.

3) Poor consciousness of farmers on the planned cropping pattern

Harvesting time has very much affected to the pricing mechanism of horticulture products because seasonal fluctuation of products price is extremely high. Farmers should learn and introduce the well planned and scheduled cropping in order to secure more and suitable income. For this purpose, farmers must also know the importance of marketing system linking from production to final consumption. The improvement of this consciousness should be improved by farmer' own initiatives through the more contribution to the collection centers and wholesale markets.

(2) Collection and distribution system at the production area

1) Poor access road from production area to market

Poor road conditions make growers hard to access to the market and cause a higher post- harvest losses. It takes a long time and much amount of national budget to improve the access road from farm land to truck road to the market. International organizations such as World Bank and ADB has focussed on the rural road rehabilitation in the remote areas from the viewpoint of poverty alleviation. For the encouragement of agricultural products commercialisation, rural roads from major production pockets to the collection centers should also be rehabilitated through involving the rural communities.

2) Lack of bulky transport means

Most of the farmers and farmers' organization, such as informal farmers' groups and the registered cooperatives, have used bicycle and live animals as transport means but rarely owned or rented from truck owners except special cases. Because of weak willingness and less use of truck for bulky transport, function of collection center and marketing network from these centers to the markets have been minimized for farmers.

3) Lack of the established farmers organization shipping from the production area

In case the same variety of products is prevalent within the villages and in the surrounded areas, the nearest collection center should be more used by the organized farmers' groups. It has been well operated in case of seed growers group and in the some organized vegetable groups/cooperatives for export to India. They have exported and sold their products in the form of the organized groups to the domestic markets through collection centers/points. They have participated the marketing activities which have been supported by the Government/Donors. Such kind of experience should be expanded as a model of the marketing system by farmers initiatives to the other farmers.

(3) Pre harvest handling

Consumers has been focussing on safety food as well as food security. This requires pesticides and antibiotic residues in or on the food. It should be as small as possible or within the limitation settled by the Government/international institutions. Some pesticides are forbidden for spraying before certain period of harvest. Practice of Integrated Pesticide Management (IPM) should be disseminated during vegetable farmers. Since vegetable farming requires organic fertilizer for healthy vegetable production, integrated farming with animal husbandry is recommendable.

(4) Post harvest technology

1) Shortage of proper post harvest handling facilities

To reduce over 20% quantitative and qualitative post harvest losses, proper packing methods shall be introduced together with extension services of proper harvesting and post-harvest handling. CA storage is required to install at the wholesale markets.

2) Less consciousness for post-harvest handling

Only a few farmers have conducted sorting, grading and packing activities for their products before delivery to the market. It is a indispensable practice for the farmers to improve marketing of products and it is also their first opportunity of quality control to increase their income. The selection of the suitable packaging material is also useful to protect damaging of products during transportation. It is also necessary to avoid warming and direct sunshine during storage for maintaining freshness and quality of the products. It is inevitable to protect from direct sunshine waiting for delivery at the roadside. Heat deteriorates the quality rapidly. Storage facilities even without cooling system, will be required in the collection centers and the collection points.

3) Lack of simple and small scale processing technology

When there are some horticultural product remained unsold or undelivered, it is advantage for producers to have some alternative method to preserve or to convert another product for selling particularly for remote areas to the fresh market. It is recommendable to have simple processing such as drying fruit or small scale food processing. The collaboration with Central Food research Laboratory under the Ministry of Agriculture is necessary.

(4) Lack of institutional support

1) Shortage of front line extension services

The extension services of farming technology has been conducted by DADO to the farmers or farmers groups. These supporting activities should be more promoted to establish the planned cropping pattern and to develop the more effective farming system suitable for each production pocket. Extension officers should be increased and/or privatised step by step including involvement of farm input traders for technology transfer.

2) Limitation of government support to farmers on marketing credit

MoAC have been implemented the support to the farmers mainly in the field of production increase. Within the limited number of well trained personnel and lack of operational budget, DADO has contributed to some extent in marketing and credit support. More effort will be required for these aspects through the strengthening of farmers organization and of collection centers and privatization of these fields will be more accelerated.

3) Lack of export promotion activities

To strengthen the production and the extension of high-value horticultural crops, HMGN is expected to accelerate the export promotion activities together with farmers organization and the other private sector such as AEC.

2.4.2 Horticulture Marketing System

From the viewpoints of marketability, agricultural products produced in this country are very weak on the production scale, productivity and quality aspect. It seems not to be commercialized in wider marketing area and not to be competitive with those imported from India. While horticulture production in Nepal has an advantageous position compared with Indian products particularly on supply of off-season vegetables because of its topographical characteristics, such advantage can be realized when the nationwide distribution and marketing system will become fully developed. At present, the modern marketing system of horticultural products is still being developed. In Kathmandu municipality, the system is fairly well functioning due to the assistance from international institutions together with physical aspect and human resources. The dissemination of the system to the national level is urgently required.

(1) Products demand and distribution structure

1) Demand for products

a) Regional gap of per capita consumption

Per capita consumption is much less than the required level of horticulture products and its difference is extremely high among Regions and ecological zones. It comes not only from inhabitants preference of consumption but also from the difference of production, income level and transport accessibility from production to consumption areas. It is important for consumers and farmers to commercialize the products to the external markets

as well as to keep sustainable farming for their own consumption. This effort for demanding area expansion will contribute to increase framers' income.

b) Limited volume of export but higher potentiality to increase the export of off-season products

There will be a difficulty to identify the exported volume of products. According data provided from Quarantine Office, it seems much lower than the volumes obtained by the Study Team interview survey. Even within the limited reliable data, future development potentiality is very high in some areas where farmers have been well organized by their own initiatives supported by the government and donors. Such kind of the succeeded cases should be authorized and opened to the public as a development model for export promotion for sustainability and extension of the developed system

c) Less competitiveness of peak-season products with Import from India

Much non-perishable horticulture products have been imported from India and transported to Kathmandu and the regional urban areas in Terai plain. Strong credit tie of Nepalese traders with Indian wholesalers is likely not to be broken by Nepalese wholesalers and farmers. And Nepalese products in season will not be able to compete with Indian products because of an economical production cost and the establishment of the bulky transport system in India. Price competition will bear more benefits to consumers and be effective for the Nepalese farmers to organize grouping activities in production and marketing. For this solution, it is important for Nepalese farmers to select competitive products and varieties, to establish the effective and commercialized marketing system as well as the competitive conditions in production

2) Limited area coverage of commercial zone from the production area to the consumption area

Commercial zone for each kind of product is rather small because of transportation constraints and high cost of production and transportation. Therefore establishment of the effective marketing network system within the Region will be a keen issue. It is to be followed by stage-wise strengthening approach of the nationwide Inter-regional and international linkages among regions and with foreign countries including India.

(2) Products Marketing System

Producers bring their products mainly for themselves to the collection centers or the collection points at the production areas, while traders collect products at the farmland as well as marketing from these collection centers or various types of collection points to wholesale market. Farmers rarely transport and market their products from collection centers or collection points to the wholesale markets because of less experience in the past and lack of group or cooperative transport/marketing system. This weakness comes from the lack of farmers' knowledge on income increase by change of marketing attitude because of prevalence of subsistence farming and from a weak government support. Although there is such kind of weakness, there are successful farmers in some areas by individual effort or through the establishment of farmers' group or cooperatives. Most

of these cases are commercialized for export to India or to bring and sell at Kalimati Wholesale Market in Kathmandu.

These successful cases should be transferred to other farmers and supported much more by the government for the establishment of the more commercialized marketing system.

The following cases are the typical successful activities as the initial stage of commercialization by farmers for marketing development:

1) Ginger and vegetable farmers group in the Mid-Western Region:

This group in hill area has been supported by MoAC and USAID/ADB for implementation budget. Farmers have fully controlled management of the Collection Center and established close contact with traders in the urban area for transport to India and for local consumption. Members of this organization are now increasing because of realization of benefits from their participation into marketing.

2) Individual and farmers group action in Central Region and in Far-Western Region

a) Central Region

Vegetable production has significantly increased because of an improvement of marketing effectiveness in the Central Region in the past. Rehabilitation and management improvement of Kalimati wholesale market are likely to provide more opportunity for the farmers to participate in marketing activities in Kathmandu. In Terai plain and also in hill areas, there are several advanced farmers who are conducting marketing activities for themselves from farmland to the Kalimati wholesale market. However, group activities have not been well functioning in this region except only one case because of lack of trust among farmers. The one exceptional case of group marketing system has been conducted in Collection Centers. In this case, a leader of this group has a strong influence on the members for the expansion of management committee function of this Center. In all cases, farmers are very much interested to own their stores in Kalimati market or the new proposed market outside of ring road in Kathmandu valley.

These farmers have been supported to some extent by the MoAC and donors' technical assistance from UNCDF/FAO and JICA. It is important to know how to extend this technology to the ordinary farmers with the limited number of government personnel and through the encouragement of farmers organization.

b) Far-Western Region

Some fruit producer who rented wide area of farmland in Terai plain and mountain area have succeeded in export their products to India even on a trial basis. New varieties of fruits have been introduced by applying the transferred technology from the research and experiment station such as a branch of the Kirtipur Horticulture Development Center in Kathmandu valley, participation in study tour organized by several donors and from Indian producers and wholesalers in India.

Far-Western Terai is one of the major producing area of banana. Banana producers organized farmers' cooperatives and have functioned only as a group for production and collection. In these cases, farmers are not yet involved in marketing but organized only for production, sorting and collection at the farmland. Most underdeveloped condition can also be seen in fruits marketing in this region while there is low potentiality of commercialization in vegetable production sector.

3) Vegetable farmers cooperatives in Eastern Region

Hill area in the Eastern region has been developed as the export base for seasonal crops. In this area, farmers' cooperatives have realized an income increase through the participation in marketing activities. Despite the intervention by Indian checking system of product transport and marketing, farmers' cooperative have exported to the Indian wholesale market for their members. In this case, leadership of managers of the cooperatives is a most important key factor for success and C.C. management is competitive with traders. The rest of C.C. management in the hill area has not maintained and farmers stopped to join marketing from C.C. to urban and Indian market because of weakness of competition with traders. Sustainable system of these farmers marketing activities will be developed through the expansion of urban marketable area and improvement of marketing infrastructure in Terai plain as well as improvement of quarantine check system to support export promotion.

4) Seed growers' cooperatives in the Terai plain

Potato seed growers group has been supported by DADO in production and collection aspects but they have a weak position against traders because of difficult access to the storage facilities. Their participation in marketing is not active.

(3) Pricing Mechanism

1) Regional price gap

Products price is not significantly different among regions. The major reason for this pricing mechanism is as follows:

2) Population is not concentrated in the specific urban areas but diversified all over the countries. Production area of horticulture products is also diversified at the surrounding areas of the major urban centers. It means that there is demand everywhere in the country. Therefore there is no significant gap between demand and supply of products among regions to maintain the existing consumption pattern.

3) Inflow of cheaper Indian products has adjusted price difference between Kathmandu and the other areas

4) Farmers as well as traders have easy access to price information of Kathmandu and India by mass media information mainly through radio and/or telephone.

5) Seasonal fluctuation

Seasonal price difference is extremely high in every region. Price of off-season products is advantageous in hill areas but it cannot work at the satisfactorily level because of lack of transportation means and weakness of group marketing system.

(4) Market information system

Price information system has been recently introduced by MoAC and AEC with financial support from USAID. This system is mainly utilized by large traders who covers the wider commercial areas. Farmers owned the radios through which they collect price information from Kalimati market in Kathmandu, some other major markets and India. However, they have not benefited much from these information because pricing system is mainly controlled by traders and they have no means of transportation to access from collection points to these wholesale markets and no wholesale stores in these markets. Price Information from the existing source is not effective for their daily use and for their prompt action because of lack of data base in each market and DADO. Expansion of marketable areas and development of data base including traded volume as well as price in each wholesale market are needed to support the existing AEC, MoAC and private mass media system.

(5) Market infrastructure

The following weakness is generally observed in each wholesale market in Nepal.

1) Drainage and sewage system has not been well designed considering drainage capacity.

2) Water supply network system such as water pipeline distribution and faucet was not considered for sanitary control. In case water resource is deep well, detail groundwater investigation such as aquifer and lifting capacity should be carried out. Deep well excavated in Kalimati wholesale market is now not used.

3) Unloading place is narrow and should be designed considering truck size and its turn radius.

4) Car parking and bicycle parking areas should be prepared as independent area for different activities.

5) Platform for products in Kalimati market is not suitable for maintaining of products in a good quality and for effective use of space because farm products are directly placed on the platform without better arrangement of selling/storing places. It is important to use plastic crates as packing method to keep good quality of products.

6) Weighing instrument and system should be improved to increase accuracy and to reduce weighing time.

7) Market inside is always dark due to poor electric lighting facility.

8) Flush toilet is not equipped that will create hygienic problem in the market environment.

9) Land around market should be paved to prevent muddy conditions caused by heavy rainfall.

(6) Market financing

To operate wholesale market sustainable, fee is collected from traders who have stall in the market and from truck drivers who bring commodity to the market.

Since there are 300 stalls for wholesaler in Kalimati market, the major income of market rely upon stall fee from wholesalers. According to the workshop held at Kalimati market in October 2000, most wholesalers complained their stall fee is too expensive. Wholesalers in Tukucha semi-wholesale market in Kathmandu also have to pay Rs. 1,360/month as stall fee for 70 square feet space. The complain is similarly with wholesalers in Kalimati market. The range of daily transaction of wholesalers differ by traders and its mean value is Rs.15,000 for traders in Kalimati and Rs.10,000 for those in Tukucha. Assuming their net profit is 6% of sales amount, then stall fee corresponds to 1.5 day's profit.

2.4.3 Livestock Marketing System

(1) Limitation of Livestock Production

As production was estimated using trend, it will be increased with annual growth by commodity. However, it is considered that more increase of livestock population might cause environmental problem in Nepal. This consideration is based on the field observation that feeding source for livestock has already come to limits. Productivity should be increased through improvement of livestock ability, not by increase of livestock population. However, chicken and egg production will be able to increase because of different feeding system with other livestock such as buffaloes and cattle. Pigs also will be able to increase because pigs are raised in the certain limited areas in small scale and extensively.

(2) Social Constraints on Meat Consumption

People prefer male livestock for meat purposes. Previously slaughtering female livestock was banned but now there is no restriction in slaughtering female animals. However, people still prefer meats of male livestock. Nepalese people generally do not have chilled or frozen meat as a custom. People also eat meat with skin.

As for meats and other animal products consumption in Nepal, difference in consumption pattern among the ethnic groups must be taken into consideration. For example, Newar people who are the largest ethnic group in Kathmandu Valley prefer buffalo meat, while, Rais, Limbus, Tamangs, Magars and Tharus who are mainly living in the eastern Hills prefer pork. Chicken and goat meat are consuming by all ethnic groups.

As for milk, people prefer buffalo milk for milk tea and cow milk is for just drinking.

(3) Poor Accessibility to the Wholesale Markets

Since farmers have no transportation mean for livestock, they depart from villages early morning on foot to sell livestock at wholesale markets. Buffaloes and goats going to Kathmandu are always transported through the route of Narayangadh→ Muling→ Kathmandu even from western or eastern end of Nepal because of poor road condition.

(4) Lack of Marketing Facilities

1) Wholesale Markets

Basically it can be said that there is no facility in livestock markets. Only ground is provided. However, Damak market in Jhapa District was improved by GTZ project by providing management house and loading/unloading unit. It is observed that there are some problems in the existing livestock markets on accessibility, drainage, accommodation for human and livestock, water supply, drainage (particularly in rainy season), toilet, management house, parking areas and weighing equipment etc.

2) Collection Centers

There are two type of collection center, one for live livestock e.g. Kohalpur in Banke District and another for milk collection centers (chilling center) of DDC which are distributed in the milk producing Districts.

Khohalpul livestock collection center is considered to be an important center to transport buffaloes for meat purpose to Kathmandu but the center is not provided with any basic facilities as well as livestock markets.

DDC's milk collection centers are much better equipped as compared with livestock markets. They are equipped with bulk coolers etc. and milk tank lorry comes to collect milk on daily basis. However, individual milk producers/farmers transport milk to a collection center everyday by using horse(in hills), bicycles, Ricksha and Tempo etc according to availability.

(5) Quarantine Inspection on Livestock and Meats

Quarantine inspection system has not been executed at both Indian border and retail markets. This attributes to delay in enforcement of Act on quarantine check for livestock and meats and people's unawareness to hygienic animal products.

On July 2000, issue on residue of antibiotic in chicken meat broken out and this is resulted in the fall of retail price and demand for chicken meat in Katmandu Valley. This issue took place on the Animal Health Workshop. At that time it was informed that there are possibility for residue of antibiotic in chicken meat, which might cause harmful effects on human health. This matter was reported on local newspaper and price of chicken meat has declined up to Rs 85/kg because of consumer's abstaining from buying chicken but after that it was recovered at Rs 120/kg. However, so far any scientific analysis has not been made to proof by showing precise data for this matter.

(6) Market Information System

Market information system for the livestock sector is not developed as compared with the horticulture sector. For more fair and reasonable transaction at the wholesale markets, market information system should be established.

(7) Livestock Farmer's Organization

Livestock farmer's organization such as goat farming group etc. are not active regarding marketing activity compared with dairy cooperatives which are relatively active. As well as technical training for farmers, farmers should recognize importance of timely marketing (ex. goats) and profits.

(8) Design Capacity and Actual Inflow of Milk at Lumbini

DDC milk plants excluding Lumbini milk plants process milk on designed capacity although "Milk Holiday" sometimes occurs during the flush season. Contrarily, Lumbini milk plant which has design capacity of 1,000 lit./day is not adequate to receive all raw milk inflow from wide producing areas. It is said that this small design capacity was due to lack of budget for construction. Some 12,000 lit. of raw milk are transported to Kathmandu and Pokhara to process on daily basis.

(9) Sanitary Control of Livestock Products

1) Lack of knowledge

There is lack of knowledge on and appreciation of the effect of poor quality, diseased or contaminated meat on their health. There is also, lack of knowledge about consumer's right to standards or what consumers have a right to expect; increasing consumer awareness and consumers education are very important.

2) Social customs for consumption

Generally, Hindus do not consume cattle. They can eat goat, sheep and chicken. Moslem do not consume pig. Most people, except vegetarian, consume chicken. But everybody can consume milk of cattle and buffaloes, which may be the reason why dairy industry is relatively well developed.

3) Pollution caused by slaughtering

It is said that traditional slaughterhouse causes pollution and suitable land is required for the construction of slaughterhouse. Management of the slaughterhouse should be reconsidered and is expected to be handed over to the butcher's group.

(10) Price Fluctuation of Meats

It can be said that price fluctuation remarkable in chicken meat that fall on Shawan (July to August) and Poush (December to January) and rise from Aswin (September to October) to Marga (November to December), which is because of main tourism and festival seasons in Nepal. As compared with chicken meat, price of goat meat and buffalo meat seems to be stable. The reason for this is considered that both live goats and buffaloes for meat are easily imported from India regularly through the year and their production is not affected by season unlike vegetables and cereal crops.

2.4.4 Sanitary Control of Livestock Products

(1) Lack of suitable slaughter house

There is no qualified slaughterhouse to meet the requirement for sanitary meat production especially for buffalo and goat meat. It is the most serious constraint for supplying sanitary meat to the market, because it is the facility of the initial stage of this industry.

(2) Low application of law and regulations

The law and regulation covering this field, including the Animal Slaughterhouse and Meat Inspection Act which will be issued soon, has been almost established and those provisions are of international standard with the appropriate application, but they can not be practically adopted yet due to lack of an effective application system.

(3) Lack of raw meat standard

The quality standard for animal meat has not been prepared yet. It is inevitable to enforce the quality assurance of animal meat and meat products in the market.

(4) Lack of knowledge for food sanitary

The persons working in this industry hardly have enough knowledge for food sanitary.

(5) Lack of consumer's attention to food sanitary

The market needs for sanitary food is still low that cannot generate the incentive to improving quality control of animal meat in the industry.

2.4.5 Fish Marketing System

(1) Small Quantity of Fish Consumption

Fish consumption of Nepal is still limited. Present consumption per capita of 1.2 kg is one-quarter consumption of India and one-ten of Bangladesh. However, price of fish is very much competitive with the other animal products and fish will be more advantageous conditions against these animal products because of limitation of animal feed from the viewpoint of environmental protection in Nepal.

(2) Scattered and Small Scale producers

The fish farmer owns only 0.4 ha per household, in average, that could produce 770 kg of fish a year. The formation of producing center also not well developed. Average fish pond surface of 51 production pockets recognized as relatively advanced, is only 12 ha per community of the pocket and it could produce 20-30 mt annually. In addition, these fish farmer is not active for coordination of production under the group/cooperatives. These small scale production and widely distributed production system is recognized as a weakness to establish the effective collection of the fish.

Above mentioned weakness causes the higher cost of cultured fish production and allows import of considerable Indian fish to Nepal. At present, major market of Indian fish is limited to Kathmandu, but according to the urbanization at other city, Nepalese

fish farmer could not avoid to involve more serious price competitiveness with imported fish near future.

(3) Transportation

Fish transportation highly depends on public buss system in its wide distribution chain. Within the present small transport quantity, this system is recognized as the most efficient means for fish transportation. But this does not mean there is no room to improve its system. Considering the increase of fish trading volume in near future, weakness of this system is a longer transportation time, inefficient and costly loading/unloading, rigid time schedule and lack of quality control system.

(4) Poor Market Facility

Lack of appropriate marketing facilities is a backwardness for the establishment of fish marketing center. Small trading space, and shortage of capacity to store fish at the market is the major limited factor of inflow of the fish to the market, as well as poor hygiene condition.

(5) Traditional Fish Marketing Operation System

Present fish marketing system is mostly operated by private commercial sector and the government contribution to this system is negligible small. The government is expected to lead the fish marketing on rearrangement of the market, introduction of more efficient transaction, quality inspection and monitoring the sanitary condition. However, taking into account of traditional relation between the market users and the limited human and financial resources of the government, initiatives from private sectors are significantly important and then government might support these private sectors activities by selective manners under the existing legal and institutional framework.

(6) Inaccurate Projects Parameters

Weakness of the data base and statistical information system is a constraint for the preparation of proper fisheries policy and project formulation. Project for capture fisheries should be cautious about overestimate of resources potential, by taking into account capabilities of fish stock, ecological behavior and socio-economic factors of the fishermen. Within the context, feasibility should be carefully studied under the consideration with the ecological-economical linkages.

(7) Weak Motivation and Participatory Approach

Although an importance of participatory approach is well recognized as a effective measures in all stages of planning and implementation, participation of the private sector is still passive. The project should contribute to encourage the motivation of private sector for participation and economic development activities.

2.4.6 Law, Institution and Organization

(1) Weaknesses of the Existing Laws Related to Agricultural Market Management System

In spite of the positive impact of the MoAC Directives, 1996 "Agricultural Produce Market Center Management and Operation", it has its own weakness

- The main weakness of the MoAC directives is on its legal aspects and legal authorities.
- The MMC formed under the directives has no legal authority or legal status.
- The MMC formed under the MoAC Directives has no autonomous status

(2) Weaknesses of the existing laws for agricultural marketing cooperatives

Cooperative Act, 1992 has been effectively used by a few progressive farmers to form cooperatives. However the Act has some limitations:

- The present Cooperative Act 1992 is neither simple nor clear for farmers cooperative institutional development especially for the purpose of agricultural marketing cooperatives development
- The present cooperative Act 1992 is not tuned towards agricultural cooperative development and farmers marketing cooperative development. It is more tuned towards (i) Saving and credit, (ii) Consumer oriented, (iii) Dairy cooperatives, (iv) Multi-purpose consumer oriented, and (v) Consumer Goods oriented rather than marketing of the local products.
- The present Cooperative Act 1992 is more subsistence oriented rather than supportive for Agricultural Marketing Development.

Cooperative Rules and Regulatory, 1993 are also effectively used by a few progressive farmers, but it has some limitations:

- More focus on the requirements for records, accounts and bookkeeping as of HMGN rather than on program for financial management on farmer's commercialized production planning and marketing for enterprise development.
- More complicated in registration and operational aspects especially in representing large numbers of farmer's involved in commercial production of the specific products as it is more focused on the requirement of the number 25 and their signatures and citizenships.
- In a large production pocket areas, to meet the economics of scale, there are number of farmers groups definitely more than five required for the registration of cooperative. It was found difficult and cumbersome to try to include large number of groups in a cooperative. It is always easy and safe if a very limited and focus area and number of groups are included in the cooperative. Therefore,

it has its own weaknesses that needs to be improved to make it suitable for the commercial production areas to cover the whole masses and groups

(3) Weaknesses of the Farmers Organization for the Operation and Management of Collection Centers

The weaknesses of the farmer's organization for the operation and management of collection centers based on the existing laws and regulation are as follows:

1) Agricultural Marketing Cooperative:

- More Subsistence Oriented: The present cooperative Act of 1992 is more subsistence oriented rather than supportive for the marketing management of collection centers for the Commercial Agricultural Marketing Development.

- Lack The Fine Tuning For The Development of Agricultural Marketing Cooperatives: The present cooperative Act of 1992 is not tuned towards agricultural marketing cooperatives. It has many limitations on its use for market management improvement plans especially in the areas of pricing mechanism, transaction system, and licensing, where the selection and variation is based on the competition and performance rather than only on the membership.

- Lack of Profit Making Aspects: The present Cooperative Act of 1992 is not very clear on profit making aspects by the agricultural marketing cooperatives. It has to be made very clear on sharing the benefits on a fair deal basis.

- Lack of Handover Process for Market Management of Collection Centers: A few farmers' cooperatives in Dhusa, Tamathok, Tin Piple, and Hadikhola have successfully initiated managing the collection centers with their own management body under MMCs. They have demonstrated the potential use of such farmer's cooperatives on the management of collection centers at many places in Nepal. However, there is lack of process for handing over the market management activities to these institutions.

- Lack of Clearly Defined Role for Agricultural Marketing Cooperatives: Farmer's cooperative of Dhusa has initiated its own marketing activities in a very preliminary stage but with a very good indication that some of the marketing cooperatives will be able to handle the management of the collection centers in due course of time. This has encouraged many others for the potential development of marketing cooperatives both for marketing their own products as well as to manage the collection centers. However, there are no legally defined role for marketing cooperatives in market management.

2) Individual Farmer's Organization:

- Lack of group approach for group benefit: In many production pocket areas, Individual farmer's are performing the marketing activities for the groups for his/her own benefit rather than for the benefit of all the producers and

marketers. It is mainly because of the lack of group approach in marketing of the local products.

- Lack trust with group leader**:** In many production pocket areas the group leaders have lost their credibility and trust for various reasons. Therefore these trained and efficient group leaders are performing marketing activities on individual basis. There is lack of trust, which needs to be developed for group marketing.
- Farmers depending more on traders: In many production pocket areas farmers have lost the strength in their own capability and on the institutional strength mainly because of the lack of the open market system. Therefore, they are depending more on the traders.
- Poor Development of Local Traders: In a few production pocket areas the experienced and capable farmers group leaders have initiated acting as local traders to market their own products as well as of the neighbors on an individual basis. The scale of handling of the products are low and are not cost effective.
- Lack of Association of Local Traders: In a few production pocket areas a few individual local traders have indicated their interest to form an association on their own both to strengthen their bargaining capability in business negotiation with Wholesalers/Traders as well as to be capable to handle the Collection Centers and its management system in their production pocket areas. This is demanding the institutional development of local traders.

(4) Weaknesses of the Institutions and Organizations Related to Agricultural Market Management System Development

The weaknesses of the institutions and organization involve in agriculture marketing system are as follows:

1) MoAC

- Low incentive for field staff for implementation of pocket package coordination program prioritized by MoAC for its implementation.
- The other main weakness is in its limited manpower with technical skills in enterprise development based on fruits, vegetables, potatoes, spices, and other high value commodities production.
- Lack of trained manpower in market management system at the grassroots level.
- No planning for modernization of the market management system.
- The limited participation of the women farmers in commercial production of high value commodities and in market management system.

2) Local Government

- Lack of skilled human resources at local government level for agricultural marketing development programs. The examples they have shown with traditional wholesale market management and haat bazaar management is poor.
- No plan for the improvement of the traditional marketing systems.
- No plan also for the modernization of the market management system.

3) Farmer's Organizations

- Members of the farmer's organizations are not trained in market management activities.
- Lack of resources and capability for improvement on the market management system.
- No program planned for the modernization of market management system

4) Trader's Organization

- Lack of training programs for the Traders and wholesalers in Auction System or in any other open marketing system.
- Lack of organized private market management system handled by the traders and wholesalers.
- Lack of resources and capability for improved market management system

5) Market Management Committee (MMC)

- MMCs' experience is limited to a very short period of two years.
- MMCs members have no or limited experience as Market Manager to handle the management body.
- Lack of resources and capability of the MMCs.

3 DEVELOPMENT POTENTIAL

3.1 Horticulture Marketing System

3.1.1 Projection

(1) Production

The Nepal Agricultural Perspective Plan (1994/94 - 2014/15) is a comprehensive document for agricultural development in Nepal. This plan was prepared with the assistance of ADB in 1995. Among others, the major objective is to intensify crop production for self-sufficiency and to transform the subsistence-based agriculture into a commercial one through diversification.

The plan has set the target to expand per capita agricultural growth six fold, from the level of 0.5% to3% per year. The agricultural GDP will increase from 2.96% during the period 1991/92 - 94/95 to 4.76% for the period 2010/11 - 14/15. By the period 2010/11 to 2014/15, the growth rates of horticulture GDP are 6.29% for fruit and 5.42% for vegetables. The important feature is to achieve food grain production with some surplus for export. Its production will increase from 5.88 million tons in 1994/95 to 13.88 million tons in 2014/15.

Regarding horticulture production, the priority shall be focussed on the following commodity in each region. In the plan, Terai should focus on food grain production for self-sufficiency. Accordingly, Terai is not considered as horticulture target area.

For the convenience of transportation, all target crops are lightweight and higher value products or commodities that can utilize topographical advantage for the production.

(2) Domestic demand

Domestic demands of horticultural product should be proportional with population. Assuming that per capita consumption remains constant at present level, the future domestic demand of horticulture product will increase by 150% in 2015 than those of in 2000.

3.1.2 Evaluation of Development Potential

(1) Evaluation criteria

To achieve horticultural product marketing in accordance with the demand envisaged in the future, following criteria will be used.

1) External conditions

   a) Natural conditions: topography, meteorology, land use and forestry resources are limiting factors for production and marketing activities.

   b) Socio-economy (latest year and past trend): population, urban population, industrialization and poverty level identification of economic development potential.

2) Production potential

a) Production by major products (latest year, past trend): cultivation areas (total and irrigated areas), productivity, production.

b) Land ownership: number of farmers by size of farm land.

c) Cropping pattern: peak and lean season of planting and harvesting.

3) Distribution potential

a) Demand and supply balance: Demand (domestic consumption and export), supply (domestic production and import), identification of volume for commercialization.

b) Distribution volume by origin and destination: Identification of commercial zones.

4) Marketing potential

a) Marketing system: marketing route and marketing and transportation system from farm land and import points to domestic consumers and external markets.

b) Pricing mechanism: farm gate price, wholesale price, retail price and income distribution to the beneficiaries.

c) Marketing information system: accessibility to price information by traders and farmers.

d) Quality control system: quality loss and quality control system at farm land, collection center, wholesale market and quarantine check post for external trade.

5) Sanitation and environmental control

a) Health care: for producers and consumers.

b) Quarantine check system:

c) Environment control: at the collection center in the production area and at the market in consumption area.

6) Market and transport infra-structure development

a) Accessibility and transport infra-structure development.

b) Transport net work: by trunk road, bus route and rope way.

c) Collection centers

d) Wholesale markets

e) Storage and processing facilities

7) Institution and organization

a) Legal support: law and regulation for farmers cooperatives and marketing system

b) Government support

c) Users organization

d) Market management: MMC and participation of users (farmers and traders).

e) Use of credit system

f) Taxation system: for external trade tax, VA tax, rental fee of stall, service charge at collection market/market and transport check post, security charge by police.

g) Training and extension activities: extension of new varieties/production technology and marketing know-how.

3.1.3 Result of evaluation for development potential

From the criteria, the development potential is classified as shown below:

Development Potential by region

Region	Ecology	Product	Population	Collection center	Market	Potential
East	Mount	Small	Very small	None	None	-
	Hill	Large	Medium	Some	None	+ +
	Terai	Large	Very large	Some	Several	+ + +
Central	Mount	Small	Small	None	None	-
	Hill	Large	Very large	Many	Many	+ + +
	Terai	Large	Very large	Many	Several	+ + +
West	Mount	Small	Very small	None	None	-
	Hill	Medium	Large	Some	Several	+ +
	Terai	Medium	Medium	None	Several	+
Mid-W.	Mount	Small	Small	None	None	-
	Hill	Medium	Medium	Some	None	+
	Terai	Medium	Medium	None	Some	+
Far-W.	Mount	Small	Very small	None	None	-
	Hill	Small	Small	None	None	-
	Terai	Small	Medium	None	Some	+

Remarks: Classification of population: over 3 million- Very large; 2 to 3 million- Large; 1 to 2 million- Medium; 0.5 to 1 million- Small; less than 0.5 million- Very small

Eastern Terai, Central Hill and Central Terai have big marketing as well as production potential. In Eastern Terai, the District Development Committee is currently undertaking a preliminary study to have a new market center in Biratnagar municipality. In Central Terai, many collection centers have been recently established with the assistance of UNCDF/FAO. Most centers are functioning well. There are also markets in Narayangadh and Janakapur funded by UNCDF/FAO. In Central Hills, there are some collection centers in the east and west of Kathmandu that are potential supply sources to Kathmandu municipality. There is a wholesale market in Kathmandu. The

capacity is the biggest in the country and it is expected to expand further along with urban population increase.

There is fairly big marketing potential in Eastern Hill and Western Hill. But the nature is quite different. The former has a supply potential to Eastern Terai and other regions including export possibility to India and Bangladesh. The latter has consumption potential on higher-grade commodity for tourists' preference. There were 103,895 tourists who visited to Pokhara in 1998 while total population in Kaski is about 360,000.

There is some marketing potential in Western Terai, Mid-Western Hill and Terai and Far-Western Terai. Bhairahwa in Western Terai, Nepalgunj in Mid-Western Terai and Mahendranagar in Far-Western Terai are functioning as transit points for trade with India while Mid-Western Hill is functioning as potential supply source of ginger and off-season vegetables to these municipalities except Far-Western region.

There are quite few marketing potentials for all mountain areas because of less production, less population and poor road net work.

The production cost of apple in 1997/98 was Rs. 40/kg. There seems no alternative way to bring apple to urban markets economically except to construct access road. But total production in Mustang is merely 1,500 tons in a year that correspond to Rs. 60 million. From the viewpoint of national economy, it should be compared with the cost required to new road construction.

3.2 Livestock marketing System

3.2.1 Projected Future Demand and Supply

(1) Production: 2000, 2005, 2010, 2015

Animal Products production by 15 Development Areas for the years 2000, 2005, 2010 and 2015 was estimated based on the statistics. As production was forecasted based on existing increasing trend, there is increase in the annual growth by commodity. However, it is considered that more increase of livestock population might cause environmental problem in Nepal. This consideration is based on the field observation that feeding source for livestock has already come to limits. Productivity should be increased through improvement of livestock performances, not by increase of livestock population. However, chicken and egg production may be increased because of difference in feeding system with other livestock such as buffalo and goats. Pig number also may increase because pigs are raised in the certain limited areas in small scale and extensively.

(2) Demand and Supply:2000, 2005, 2010, 2015

Demand and supply for the years of 2000, 2005, 2010, 2015 was predicted based on a) per capita consumption of commodities by FAO, b) projected population estimated on trend, c) production projection. Per capita consumption was fixed at current level.

3.2.2 Development Potential

(1) Evaluation Criteria

Basically the consideration of development potential for livestock will be different from horticultural sector. This consideration is based on the following findings from field survey, statistical analysis, review of various reports and interview survey.

- Livestock population increase is limited because of available feeding sources (excluding chicken, hen and pigs)

- Nepal is basically characterized as an importing country of live livestock and animal products, particularly from India

- Important to improve the marketing routes, which are composed of the following items;

1) Improvement of the existing livestock markets in Terai

2) Improvement of the existing livestock collection center which is important for transporting livestock to Kathmandu

3) Construction of slaughter slabs at the major markets which are urgently required to improve sanitary condition of meats at market level since the Animal Slaughterhouse and Meat Inspection Act is going to be executed in near future

Based on the said consideration, nine criteria were chosen for development potential, those are; a) surplus of animal products production, b) share of production, c) Production Pockets designated, d) Population density, e) existence of live stock market, f) existence of DDC's milk plant, g) existence of the Animal Quarantine Check Post, h) institution's viability, i) Accessibility to markets.

(2) Result of Evaluation

1) From the Economic Points of View

Five areas were selected to be the development potential areas as shown below;

- Eastern Terai: important area because of existence of the Animal Quarantine Check Posts, big livestock markets (ex. Damak) and DDC's milk plant and consuming area
- Central Hills: important area because of big consuming area and existence of DDC's milk plant
- Central Terai: important area because of good accessibility, existence of big livestock markets (ex. Jitpur in Bara) and Animal Quarantine Check Posts
- Western Terai: important area because of good accessibility, existence of the Animal Quarantine Check Posts, livestock markets and DDC's plant
- Mid-Western Terai: important area because of good accessibility, existence of Quarantine Check posts, big livestock markets (ex. Thapuwa in Bardiya) and livestock collection center at Khohalpur in Banke District.

Table 3-1 shows the result of evaluation of 15 areas (Development Areas).

2) From the Viewpoint of Poverty Alleviation

Poverty alleviation is one of the serious problem in Nepal particularly in rural areas. Goat raising has higher potential to alleviate poverty and will be recommendable for the rural areas for the following reasons:

- Goat produces the most preferable meat for Nepalese (high demand)
- Can be sold at higher price
- Can be raised for sale in relatively short period (eight months)
- Can be raised easily by women/women groups

3.3 Fish Marketing System

(1) Supply and Demand

Fisheries Perspective Plan estimated the demand as 65,382 mt based on 2.1kg/year of per capita consumption in 2015, taking into account population growth, economic growth and income/price elasticity. While the case if fish distribution system is not developed and half of population of mountain and hill area still could not access to the fish, projection will be limited to about 45,000 mt. Another case if per capita consumption will be kept present condition and demands increase following the population growth, the projection shows the minimum demand of 41,000 mt.

Similarly, projection of the fish production is estimated as 80,513 mt in 2015. Based on this estimation, during 1998-2015, fish farming production increase from 12,000 mt to 53,000 mt, as well as water surface of fishpond from 5,574 ha to 12,978 ha and productivity from 2.3mt/ha to 4.0mt/ha. While taking into account present annual growth rate (4.5%: 1989-1998), production from aquaculture (including fish pond, cage culture, etc) will come up to 26,000 mt in 2015. On the assumption that projection of natural capture fisheries owe to more use of the reservoir and the irrigated paddy field excluding river, lake, swamp productivity. Production of capture fisheries will be 17,000 mt. Above lower estimation could achieve the total production of 43,000 mt in 2015.

(2) Regional Fish Demand in 2015

Fish potential consumption areas will be of 12 areas in 2015, based on the present consumption pattern and population growth. In order to keep present per capita consumption, Central Terai area will be required largest supply of 4,473 mt, followed by Eastern Terai 3,853 mt, Western Terai 2,372 mt and Kathmandu 1,449 mt in 2016.

(3) Origin and Destination in 2015

Still fish distribution will be limited locally except Central and Eastern Region in 2015. Import will be minimized to frozen seawater fishes. Without development of new consuming center, People in Kathmandu will be still only major consumers of fish from producing center. In this case producer in Central and Eastern region has more advantage on effective production and marketing. As a result, these two regions might hold

dominant position for Kathmandu market in future including supply to the surrounding areas.

3.3.2 Development Potential

(1) Evaluation Criteria

- To widen the present distribution network and marketing of surplus production from major production pocket to large consumption area
- To develop utilization of water resources in rural area, in order to satisfy local demands.
- To improve the post harvest handling and processing, in order for fish distribution at normal temperature

(2) Result of Evaluation

1) Production Potential

a) Aquaculture Production

Considering the expansion of water surface by new fishpond construction, paddy production area is adopted as indicator, due to the similarity of water use and land soil. At present, Large production areas of paddy are well used also for fish production pocket at Central and Eastern Terai area. The trend of number of fish pond newly constructed also important indicator to estimate future expansion potential. Higher growth rate will be realized in Far Western and Mid-Western Region, probably reflecting shortage of fish supply. This may reflecting willingness of farmers, but its smaller size of pond and lower productivity restrict the increase of production.

12 Districts in Central and Eastern Development Regions will have further potential for fish production in short-middle term.

b) Capture Fisheries Production

Capture fisheries does not seem to have further potential for development on commercial base, considering present fishing technology and subsistence base of consumption pattern. Hereafter only limited amount of fish will enter the national market. Various types of processed fish might be increased if management and marketing efficiency are improved. Potential area will be classified into following categories, according to the criteria ① present production, ②existence of full-time fishermen, and ③trading pattern:

Category A: Fish is caught by subsistence fishermen. Fish collection at paddy field. There are no full-time fishermen. No particular landing place is formed.

Category B: Fish production is surplus more than local consumption. There are full-time fishermen. Mostly fish is processed and marketed out of community.

Category C: Fish production is surplus more than local consumption. There are full-time fishermen. Fish is marketed in wide area beyond the district border in fresh style, as well as local trade.

2) Market Potential

As evaluation of market development potential, ① existence of wholesaler, ② access to transportation, ③ access to the big market, ④ present market infrastructure and ⑤ local fish demand in 2015 are considered.

At present, wholesalers have been observed at Birganj, Janakpur and Biratnagar. Six municipalities in Terai area in Central and Eastern Development Region, and Kathmandu city/ Pokhara/ Mahendranagar have the possibility to be big marketable areas of fish.. Present fish consumption habit also improve the preference of fish in Central Region (6,092 mt) and Eastern Region (4,290 mt) than others in 2015.

3) Institution and Organization Development Potential

a) Access to the Service: Key issues for development of aquaculture production are supply of fish seeds and technical extension services. The poor quality of many fish emphasize the need for assistance in quality and handling practice. Fifteen government institutions in the sector concentrate in Central and Eastern Development Region (13 centers).

b) Community Organization/ Private Association: There is several fishermen/fish farmers group registered at district level. At present, these group activities are at very primitive level. Presence of full-time fishermen and fish farmer as fishpond operators might be a important factors to encourage the producers organization. Pokhara (Kaski), Bodhaban (Bara), Bardiya Birta (Morang) and Butwal (Rupandehi) are expected to be recognized as potential institutional areas.

4) Socio-Economic Considerations

a) Poverty alleviation

In the view of the rural development, aqua-culture is recognized to appropriate technology, as part of integrated crop production as alternative means of production to resource poor farmers. Aqua-culture development will contribute to attain agricultural diversification, to strengthen family food security and to ensure income generation. .

b) Women's participation

Women are playing a important roll for retail activities, processing and also work of aquaculture. The participation of women trader/processor in small-scale business, is relatively easier through their grouping. Improvement of the market effectiveness of these small business women through scale merit, formation of women cooperative/group should be encouraged, and capacity building of women be required. Promotion of fish retailers group and processing group will take priority in short term.

5) Development Potential Area (refer to Fig 3-1)

List of the District by Development Potential Area

Potential Area	Region and ecological zone	District
Area 1	Terai area of F/W Region, M/W region and Western Region	Kanchanpur, Kailali, Bardia, Banke, Dang Deokhri, Kapilvastu, Rupandehi, and Nawalparasi.
Area 2	Terai area of Central and Eastern Region	Citwan, Parsa, Bara, Rautahat, Sarlahi, Mahottari, Dhanusa, Siraha, Saptari, Sunsari, Morang and Jhapa
Area 3	Three municipality in Central and Eastern Region	Biratnagar (Parsa), Jankpur (Danusa), and Biratnagar (Morang)
Area 4	M/W, Western and Eastern region	Pokhara (Kaski), Kanchapur and Sapta Koshi (Sunsari, Saptari), Agniya (Banke)
Area 5	Central Region	Kathmandu, Bhaktapur, Lalitpur
Area 6	Hill and mountain area of all country	All of the rest

a) Area 1 Lower Aquaculture Productivity Production Area

• 8 District in Terai area of Far Western, Mid-Western and Western Development Region.

This area is facing the problem of seed supply and lower skill on pond management. Small fish pond and lower productivity is also the character of this area. These figure suggest the need of basic support of fish farming. Fish consumption in this area is considerably low with 1.2 kg per capita, however higher fish price in the area where it includes Indian surrounding areas, indicate the shortage of fish supply. Considering the volume of fish required and existing of large consuming center, local market supply oriented fish farming will be promoted in short-mid term.

b) Area 2 High aquaculture potential area

• 12 Districts in Terai area of Central and Eastern Development Region.

It contains the largest production District, such as Danusa, Saptari and Morang. This Area also holds 9 government fisheries institutions, including National Fisheries Training Center in Janakpur.

This area is characterized by relatively high productivity and present supply capacity of about 2.3kg per capita. This area has potential to be a supplier for Kathmandu to cover the fish deficiency of this urban center, as well as local market in near future. For is purpose, production area would emphasize the more effective production through the ① centralization of fish pond and production area, ② establishment reasonable size and healthy seed supply system, ③ encouragement of the group/cooperative work and ④ improvement of the production and marketing management skill.

c) Area 3 Marketing Center and surrounding production area

• 3 fish marketing center in Central and Eastern Development Region, that is Birganj, Janakpur and Biratnagar.

Presence of wide distribution channel is the character of area. However local market is not well facilitated and not form as a distribution center. According

to increase of marketing volume for both locally and out of area, present marketing system should be reorganized as well as facility improvement. The linkage of producing center and these market should be develop.

d) Area 4 Major fish landing place of captured fish

• 13 large landing places in the country, these are Pokhara (Lake Pewa, Rupa and Begnas), Sapta Koshi area (Koshi river) and Agniya (Rapti river).

In this area, irregular supply and large seasonal fluctuation are major constraints. In addition some landing place may be located at a remote area. To carry out intentional marketing, appropriate stocking function including processing should be needed here.

e) Area 5 Urban wholesales market area

•The largest consumer market is Kathmandu.

Kathmandu is only a major consumption center of the wider fish distribution chain and this situation will not change near future. Present transaction system that depends on individual network with producing center has a room to be improved by promotion of organization and establishment wholesale market.

f) Area 6 Other district (specially rural area)

• Hill and Mountain area in the country.

Mountain and Hill area has disadvantage for fish farming. The land use availability is smaller than Terai area. Considerable number of people in the remote community are not used to eat fish product.

3.4 Law, Institution and Organization

3.4.1 General View

1) The Potential Development of a Central Steering Committee to provide the national overview with a support group of subject matter specialists to provide factual comparative data for Agricultural Market Development process.

2) The Potential Development of Marketing Management Committee (MMC) at various types market centers with the five stages development process.

3) The potential development of Small Farmers Cooperative Society SFCS/ADBN to serve for the use of credit for agricultural marketing development aspect.

4) The developmental potential of DADO and DLSO towards market aspects as well as on farmers organization development.

5) The development potential of local government (Municipalities and VDCs) to ensure their positive and effective role both in market center operational

management as well as in their participant in the Marketing Management Committee (MMC).

6) The development potential of farmers cooperatives, both to provide a competitive force to provide sector as well as to provide equal share of benefit to all members.

The development potential of public policy commitment through Laws and Acts for Farmers Organizational development as well as for Marketing Management

3.4.2 Development Potential of Institution and Organization by Development Areas (15 Areas) for Market Management System

(1) Evaluation Criteria

The main criteria considered for the evaluation of the development potential of Institution and organization in 15 development areas are ①Legal Support, ②Government Support, ③Users Organization and ④Market Management.

(2) Result of Evaluation

1) Legal Support

The development potential of public policy commitment through `Laws and Regulation' for both "Farmers Cooperatives" and "Marketing System" development is considered as one of the evaluation criteria for the development potential of Institutions and organizations.

The existing legal support (Laws and Regulations) for farmers cooperatives and marketing system for 15 development areas the experience of legal support is limited to mainly central, eastern and western hills and terai development areas. Very limited experience of legal support in eastern and western mountain areas and all of the development areas of mid and far-western region.

2) Government Support

The development potential of MoAC (Central Government) and its field offices (ASCs) to ensure their effective and positive role both in farmers organizational development as well as in agricultural marketing system development is also considered as one of the evaluation criteria for the development potential of institutions and organization.

Similarly the development potential of local governments (Municipality and VDCs) to ensure their positive and effective role both in market center operational management as well as in active participation as MMC member is considered as one of the evaluation criteria.

The existing central and local government support for marketing system development is very limited in providing space and stalls for traders and open space for farmers both in haat bazaar and in market centers.

3) Users Organisation

The development potential of two users organization-farmers organization and traders organization are considered the two very important evaluation criteria for the development potential of institutions and organizations in the 15 development areas (Table 3-4 to 3-7).

The development potential of farmers cooperatives especially of marketing cooperatives are very important both to provide a competitive force to private sector trades organization as well as to provide equal share of benefit to all its farmer members in comparison to traders organizational members.

4) Market Management

The experience of market management through marketing management committee (MMC) is very recent in Nepal established only after the MoAC directives of 1998. Such marketing management committees (MMCs) are being established and operated mainly in the market centers where UNCDF/FAO has newly constructed the physical facilities and supported the formation of such committees. Such physical facilities in market centers are concentrated in central hills and terai development areas. Therefore, the experience of MMC in Management of market centers are limited to central hills and terai with a few in eastern and western hills and terai.

4 INTEGRATED AND COMPREHENSIVE DEVELOPMENT CONCEPT OF MASTER PLAN

4.1 Development goals

(1) Improvement of the food security by encouraging the domestic supply

(2) Increase of farmers' income

(3) Encouragement of employment opportunity for beneficiaries

(4) Poverty alleviation

Employment opportunity of farmers and women will increase through the establishment of the marketing infrastructure and organizations at the wholesale markets and collection centers ,collection points and transportation system. Through this opportunity, poverty conditions will be alleviated.

4.2 Basic principles for the development

(1) Promotion of commercialization

The government of Nepal has in the past, focused on the support of the self-sustainable agricultural development rather than the commercialization of agricultural products. Majority of the economic active workers are farmers in this country. In order to increase their income and to alleviate the poverty conditions of these people, commercialization of the agricultural products will be a keen issue in this country.

(2) Identification of commercial zones and establishment of the effective marketing system within the commercial zones and of inter-linkages among zones

For the establishment of the effective marketing system, commercial zones identified as the marketing areas of the products should be recognized. Within this zone , the regional marketing system will be formed for the development of the initial marketing system which will be established within a short period. This established system will be expanded step by step to the wider scale nationwide marketing system in the medium and long term.

(3) Strengthening of institution and organization

Consensus among beneficiaries and administrative sides are indispensable for the establishment of effective marketing system. Legal and institution support for this system should be authorized and effective. National board should be formed to identify and monitor the government policy and strategies for the agricultural marketing system. Management committee and operation bodies of the market infrastructure such as WM and CC should be organized. Farmers organization should also be more involved in these marketing infrastructure management and use.

(4) Improvement of international competitiveness

Quality control in all the marketing stages from production to the final consumers/export will be expected to meet the high quality demand and for the establishment of the production pockets with special brand. These products which will be identified with special brand will be promoted to the exportable products in the future.

Stable supply with reasonable price is a key factors for increase demand and income of producers. The effective pricing and distribution system will contribute to the international competitiveness.

5 MASTER PLAN BY SECTOR

5.1 Master Plan for Horticulture Marketing System

5.1.1 Horticulture Production and Post Harvest System

(1) Development goals

To improve and develop the profitable and sustainable horticulture crops production and pre-and-post -harvest handling technology through strengthening extension services by participation of selected aggressive farmers groups at selected production pocket areas as pilot groups for leading the neighbouring farmers and to sell the "pocket area brand" with high quality produce not only in domestic but also in outside countries to save their business power while the seasonal over production will happen and farm gate price may fall down.

(2) Basic principles of production/post harvest improvement plan

Master plan in this sub-sector will be planned on the basis of following principles:-

1) Availability of joint collaboration and participation of DADO, VDD, FDD, AEC etc. concerned for promotion of the extension services and contracted seed planting,

2) Participation of leading private traders with incentive of supply guarantee of high quality and reasonable price produce,

3) Possible participation of AIC and farm input suppliers for proper time delivery of seeds, fertilizer, agro-chemicals etc.,

4) Selection of aggressive farmers groups with powerful leader and suitable members without any consideration of political issues, and

5) Participation of women since horticulture crops farming is labor-intensive and almost farming activities like preparation of land for cultivation, carrying fertilizer, seed sowing and planting, weeding, harvesting, sorting and seed selection and drying excluding plowing, are particularly the responsibility of women.

(3) Sector program

Reasonable number of farmers groups are selected among production pockets initiated by MoAC considering the possible linkage with wholesale markets in neighbouring town. So far, those groups may be selected in Central Terai and hills, and Eastern Terai and Hills since there are higher production potential particularly by increasing productivity to meet with design of APP and 30.5% of total number of pockets are declared by MoAC in the field of horticulture as shown in Table 5-1.

Planting areas of production pockets range widely from 10ha (equivalent to 100MT) to 1,000ha (equivalent to 10,000MT). Implementing farmers groups are, however, selected not only by size but also by grouping ability.

Based upon statistics on the irrigated area (refer to Table 5-2), use of fertilizer and improved vegetable seeds, these development areas show the more advanced horticultural crops production area and have the production potential especially for high-value produce.

It depends on the scale and capacity but proto type collection point/point is provided with storage rooms and farm input supply rooms with wind-driven roof ventilators on the loading/unloading concrete bay with height of truck ground clearance to protect deterioration of produce, to prolong the shelf life and to guarantee the proper time supply of farm inputs, which brings advantages to all parties of producers, traders and consumers. Successful operation and management are supported by the following 3 programs.

1) Horticulture production improvement program

Under the package program, pre-and-post harvest technology training is extended periodically to the same farmers groups selected for program both by governmental agencies and private sector including introduction of improved vegetable seeds and seed production under contract with government and private seed traders.

2) Post harvest handling facilities improvement program

To improve post-harvest handling facilities by provision of spring weighing scale and packing crate at collection point/point for the purpose of reducing extra labor and losses below 10% loss together with the proper pre-and-post-harvest technology achieved by program (2).

3) Export promotion program

Under the support by the AEC and traders including exporters/importers and foreign import promotion agencies, export activities are promoted. Enough information and longer preparation period are required for export promotion since strict standards are requested in most import countries including MRLs (Maximum Residue Levels of agro-chemicals), grading level and packaging style with marketable design as well as price and quality. Consequently the program implementation period requires longer than other program.

5.1.2 Horticulture Marketing and Distribution System

(1) Development goals

1) To improve food security and to fulfill consumers' need by encouraging the domestic supply to meet demand through improvement in all of the marketing stages from agricultural production to final consumption.

2) To increase farmers' income by reducing the loss of agricultural products and to apply the high value products for commercialization of agricultural products in order to take off from the sustenance level of agriculture sector.

3) To provide more employment opportunity for beneficiaries by encouraging commercial activities of all of the beneficiaries such as farmers, traders and other related organization.

4) To alleviate poverty of farmers and other small scale beneficiaries including small scale farmers and women by provision of more opportunity in commercial activities to these groups

5) To motivate more entrepreneur spirit among traders and farmers organization to have enough capital to be involved profit oriented business such as marketing, export, transportation and simple processing.

(2) Basic principles for the development

1) To establish the effective marketing system to achieve the APP target that is to say "commercialization of the production pocket program" for promotion of commercial production at production pockets and development of its supporting system.

2) To identify the commercial zones of the products and to establish the zone cores which is the base of access to collection centers and farmer's organization for strengthening of marketing system within zones and inter-linkages among zones.

3) To strengthen the farmers organization and management of collection centers through the legal support and government services for technology transfer to the farmers for the promotion of the commercialized marketing system.

4) To develop internationally competitive production and marketing system in order to be WTO member countries with good quality product

5) To alleviate poverty level, especially in the mountain and hill areas, to solve nutrition problems and to facilitate the employment opportunity for the poor.

(3) Sector Development Concept

1) Production system

a) To identify the potential production pockets in order to meet demand for the wider commercial area covering major urban areas in the country and India.

b) To provide information on the planned cropping pattern through the reorganization of farmers groups.

c) To support production of the off-season products which may be competitive and have high demand in India and urban area such as in Kathmandu.

2) Post-harvest handling system

a) To strengthen farmers' accessibility to the wholesale market through close linkage with the existing farmers' organization and collection centers.

b) To promote marketing incentives of farmers through their own management by direct contribution of farmers, such as the farmers organizations and collection center management bodies with major share holders of farmers .

c) To increase the opportunity of wholesale activities by farmers' organization in the existing and/or the new proposed market.

d) To educate farmers on the consumers' preference for quality control and to show the realization to bear much more benefit for farmers by reducing marketing losses.

e) To introduce and to extend the improved technology to control quality and quantity losses to the farmers through more participation in use and management of collection centers and wholesale markets.

3) Marketing and distribution system

a) To establish integrated and comprehensive marketing system to promote commercialization of the products within the marketable zone from production to consumption.

b) To support successful cases of farmers involvement in the past and to establish as the Nepalese models of products commercialization for the selected projects.

- Ginger and vegetable farmers group in the Mid-Western Region
- Individual and farmers group action in Central Region and in Far-Western Region
- Vegetable farmers cooperatives in Eastern Region
- Seed growers cooperatives in the Terai plain

4) Institution/organization and management system

a) To strengthen a link of the Marketing Management Committee (MMC) with farmers' organization as well as the involvement as wholesalers in wholesale market.

b) To promote easier access method for farmers to receive formal credit from Small Farmers Cooperative Society (SFCS/ADBN) for the development of agricultural product marketing.

c) To strengthen the capacity of guidance of DADO and DLSO offices towards market aspects as well as on farmers organization development.

d) To encourage the involvement of the local government (Municipalities and VDCs) to ensure their positive and effective role both in operational support of wholesale market management as well as in their participant in the Marketing Management Committee (MMC).

e) To provide a competitive force to farmers organization as well as to provide equal share of benefit to all members.

5) Market infrastructure and O&M system of the facilities/ equipment

To construct or rehabilitate the collection centers and wholesale markets to provide products with enough volume and quality within the identified commercial zones and to develop the wider marketing network system covering whole countries.

6) Marketing information system

AEC has developed the nationwide price information system but it is only effective for the limited number of farmers and big scale traders. This marketing information network system has not well functioned at the collection centers as farmers' information source because of less interest by farmers. Farmers are not interested in the centralized price information system. It has been used only at the limited number of the wholesale markets. It is expected to be linked with farmers and traders to meet their timely request and to provide information on the quantity/quality as well as price. This market information network system will function for farmers at the collection centers and for traders at the wholesale market through the suitable monitoring activities. Therefore, collection center and wholesale market should be the field-based training centers to teach farmers on how to utilize price and other marketing information as well as physical base for commodity flow.

5.2 Master Plan for Livestock Marketing System

5.2.1 Sector Development Plan

The Ninth Development Plan has been enforced since 1997. The Plan targets to meet domestic demand of meat and egg. APP targets 6.1 % of growth in livestock sector for the period of 2009/2010 to 2014/15. When considering relationship between environment and livestock sector, however, conservative development will be recommendable for the livestock sector. India is the major source for the supply of live animals for meat and draft purposes and will be able to supply live livestock and animal products to Nepal continuously. Under the condition, production should be increased through breed improvement of livestock.

1) As TLDP proposes, fattening of male buffalo for meat purpose will be considered as one alternative to reduce buffalo imports for meat. Live livestock marketing should be encouraged by improvement of existing livestock markets and collection center.

2) Considering current condition of feeding sources of Nepal, goat raising is suitable to reduce goat imports from India and Tibet and also suitable to alleviate poverty and increase incomes in rural areas.

5.2.2 Basic Principles of Sector Development

(1) Collection and Distribution System Strengthening Plan

Collection centers will be improved to provide basic facilities. This will contribute to prevent loss of live weight of buffalo during its staying at the Center, and for smooth marketing between livestock markets and the center.

(2) Preparation of Regulations related to Marketing Distribution/ Operational Planning

The acts and regulations on live livestock and animal products could be considered to be enough if surely executed. Although it might be considered difficult to operate these acts surely if considering people's traditional custom and preference on meats consumption, "step by step method" will be suitable to improve current situation. As per plans for

this issue, distribution of veterinarian(s) at each Animal Quarantine Check Posts and meat inspection by DLSO veterinarians at small scale slaughter slabs will be an initial stage. Strong initiative by the governmental agencies concerned is required on this matter.

(3) Administrative Management Operational Improvement Plan

Currently any systematic market management has not been done excluding collection of market tax (entry fee) by the contractor. Setting up of marketing committee at each market will be planned to manage livestock market in good condition. The Committee will be composed of officials of VDC, Municipality, DLSO, representative of farmer's groups, market contractor etc. The Committee will have regular meeting to discuss financial status of the market operation, problems and prevailing market prices etc.

(4) Market Information Improvement Plan

The Livestock Marketing Directorate (LMD) was set up in the Department of Livestock Service in late 2000. DLSO will be responsible to collect market information through the proposed marketing committee at each market and inform LMD for compilation. All the information collected will be informed to all persons concerned with the livestock sector through publication, radio and newspaper etc. This will contribute to stimulate fair transaction at livestock markets.

(5) Sanitary Control Plan

Along with the enforcement of the Animal Health and Livestock Services Act slaughter slabs will be planned to prevent consumers from diseases and food poisoning through animal products. Distribution of veterinarians at each Animal Quarantine Check Post will also be proposed. However those should be considered to be an initial stage to improve quarantine check system.

(6) Environment Preservation Plan

Increase of large size livestock (buffalo, cattle and cow) population is not recommendable due to limits of feeding source. This concept will contribute to preserve environment at forest, riverbanks, grazing land etc.

5.2.3 Sector Development Concept

(1) Production System

Livestock sector in Nepal has been developed keeping close relationship with agriculture and some sub-sector of which like egg and poultry production have been commercialized compared with other sub-sector. However, agriculture will be developed with livestock along with Nepalese custom and preference as same as before and it is also the case for the production system of animal products. Therefore, when planning, conservative development taking into account live livestock imports from India is appropriate for the livestock sector.

(2) Marketing and Distribution System

At present there is one livestock collection center at Kohalpur in Banke District. However, no appropriate facilities are provided here. This collection center is important to supply buffaloes for meat to Kathmandu on the channel of livestock market →collection center → Kathmandu. To strengthen collection and transportation, this center should be improved.

Other than bulk transactions, individual farmers./sellers and buyers come to market to make small scale transaction. In this case they bring livestock on foot every market days. Existing markets should be improved from the viewpoint of individual farmers by providing basic necessary facilities in order to encourage them in marketing.

(3) Institution/Organization and Management System

1) Law and Regulation of Marketing System

Currently the Animal Health and Livestock Services Act(1998) and Animal Slaughterhouse and Meat Inspection Act (1999) are the only laws concerning with live animal and meat marketing. These Act are proclaimed in order to improve animal quarantine check and supply of hygienic meat. The former Act states healthy production, sale, distribution, export and import of animal, animal products or animal production inputs.

The most important thing is to execute these Acts at Quarantine Check Posts, livestock markets and meat shops in the whole country. All the persons working in the livestock sector are required to be aware of these Acts through campaign, training, workshops, mass media etc., though it will take a long time to execute these Acts in every level.

2) Administrative Management

It is necessary to organize a livestock market management committee at each market. This committee will be composed of officials from VDC, Municipality, DLSO, representative of farmer's groups, market contractor etc. and meeting will be held regularly to discuss the status of market operations, prevailing prices information, animal health and hygienic condition of market, financial condition of each market and problems facing etc.

3) Farmers and Community Organizations

Farmer's organizations are primarily organized for the purpose of receiving government services. If evaluating their group basis activities from marketing point of views, they are weak excluding some cases like dairy cooperatives and goat group. To encourage group activities, timely selling (goats), marketing particularly prevailing market prices should be discussed on regular meeting which should be held before the market days. On market days, each group members should sell livestock at the prices discussed in the group. Group leader is required to collect price information in other markets through DLSO, traders, etc.

(4) Marketing Infrastructure and O & M System of the Facilities/ Equipment

To encourage live livestock marketing activities, existing livestock markets and collection center should be improved. Currently each market has no adequate facilities for marketing. Basic equipment, such as a) balance, b)shed, c)water supply facility, d) garage, e) loading/unloading unit, f) management house, g) feed storage, h) drainage, i) fencing, j) toilet etc. will be necessary.

VDC, Municipality and DLSO will be responsible for the suitable management of livestock markets by organizing committee which is composed of officials from VDC, Municipality, DLSO, representatives of farmer's group and traders, and market contractor. Regular meeting shall be held to discuss physical, financial and overall status of markets.

(5) Market Information System

As compared with market information system for horticulture sector, livestock sector is not developed enough. The Marketing Development Division(MDD) of DOA has been collecting price of animal products and publishing them on the Agricultural Marketing Information Bulletin. In late 2000, the Livestock Marketing Directorate (LMD) was established in the Department of Livestock Services to perform in market information sub-sector. LMD is required to collect price information of live livestock at farm level and wholesale market level based on the designated forms. At the wholesale market level proposed Market Management Committee will be responsible to collect these data in cooperation with DLSO and to inform them to the LMD on monthly basis. Form will be designated at least to cover market name, livestock type, body weight, age, sex, prices, origin, breed and usage etc.

(6) Sanitation Control System

The Animal Slaughterhouse and Meat Inspection Act is going to be enforced in the near future and Animal Health and Livestock Services Act has been enforced on July 2000. However, it is considered that it will take a certain period to execute this Act. Animal quarantine check system will be expected to be improved gradually with the execution of this act. For sanitary control the Animal Slaughterhouse and Meat Inspection Act(1999) should be enforced. Sanitary control must be planned in two sub-sectors, one for retail market level and another for the Animal Quarantine Check Post level.

Slaughterhouse is suitable to produce sanitary meats but Hetauda slaughterhouse gave us an important lesson of the necessity for detailed feasibility study when planning slaughterhouse. Considering the enforcement of the said Act, small scale slaughter slabs in the major market are suitable for the initial stage of sanitary control of meats. DLSO veterinarian will be responsible for animal health check before slaughtering. This method is expected to be expanding to other areas gradually.

As to the Animal Quarantine Check Post, initial step is to distribute veterinarian(s) who can check animal health at the Indian border and then to provide necessary basic equipment. EC is now planning improvement of Animal Quarantine Check Posts at six sites.

Butchers themselves must be educated to treat meats hygienically. TLDP gives them training courses, which is highly evaluated from the viewpoint of sanitary meat production.

5.3 Master Plan for Sanitary Control of Livestock Products

5.3.1 Basic concept

(1) Strengthening application system of the Law and Regulation

The provisions of the Law and Regulation concern, including Animal Slaughterhouse and Meat Inspection Act that will be enforced soon, are the enough legal background to ensure the establishment of food quality assurance system in Nepal. Then the management capability should be strengthened in MoAC especially CFRL and DLS.

(2) Establishment of the slaughtering slabs

Establishment and extension of the qualified sloughing facility is prior for supplying sanitary meat to the market. The model facility should be introduced and demonstrated for extension to the other area.

(3) Extension of food sanitary control technology

In addition to the above two issues, the necessary technology for food sanitary control should be extended to all persons concerned in various stages and fields concerned this industry such as butchers, distributors, sellers, inspector, veterinarians and consumers.

5.3.2 Development program/component

(1) Model slaughter slab construction for Buffalo

1) Objectives
   - Production of sanitary meat
   - Expansion of same facility to the other area

2) Activities
   - Preparation of the guideline for slaughtering using this model facility
   - Registration of butchers who will work this facility
   - Training to bluchers according to the guideline
   - Operation of facility by the registered butchers
   - Monitoring of operation by the regional authority as the owner of the facility
   - Ant- and post-mortem examination carried out by the authorized inspectors dispatched from DLS

3) Input
   - Construction of facility qualified for sanitary meat production
   - Provision of equipment and materials
   - Facilitation of qualified utilities especially sanitary water
   - Fermentation chamber for waste.

4) Implementation agency:

Regional authority. DLS should be the supporting agency.

5) External requirement
   - Establishment of the animal meat standard
   - DLS will prepare the guideline and carry out the retraining to staffs in charge of ant- and post-mortem examination.

(2) Sanitary control component for "Improvement of Livestock Market Program"

1) Objectives
   - Enforcement of sanitary meat and meat products distribution
   - Establishment of model food quality monitoring and assurance system to be extended to the other area.

2) Activities
   - Training of food sanitary knowledge to persons concerned to the market such as sellers
   - Strengthening the registration system to the participants worked in the facility
   - Periodical sampling inspection by Food Inspectors
   - Quality inspection and official announcement of the results by CFRL

3) Input
   <Market>
   - Facilitation of proper water supply and drainage system
   - Processing facility for garbage and waste

   <Monitoring and inspection>
   - Provision of equipment and materials to fulfill the activities

4) External requirement

The authority and CFRL will prepare the guideline for all persons work in the market concerning the utilization of facility and the food handling.

5.4 Master Plan for Fish Marketing System

5.4.1 Development Goals

The primary goal is to support the food security and poverty reduction of the fishermen/fisher farmers and traders through the strengthening of marketing system and increase the fish productivity. Within this broad framework, this master plan aims (a) improve the extension and input supply for different type of stakeholder and development potential zone; (b) improve the market facility; (c) improvement of post harvest handling technologies; and (d) strengthening management and planing capacity in FDD and private organization.

5.4.2 Basic Principles of Fish Marketing Master Plan

The design of Fish Marketing Master plan has taken into account following 5 issues and frames.

(1) Budgetary constraints of government fisheries institutions

(2) Poverty reduction and improvement of women's status

(3) Promoting privatization

(4) Lessons learned from Aquaculture Development Project

(5) Coordination with Fisheries Perspective Plan and Fisheries Pocket Package Strategy

5.4.3 Sector Development Concept

(1) Fish Production Programme

The primary objective of the programme is to promote production of aquaculture fish in potential area, to meet the increase of national fish demands . The programme also aims to provide nutritional supplements and income generating for poor population in rural areas.

(2) Marketing and Distribution Programme

This programme aims efficiency in fish distribution and marketing system among the linkage between producing center and urban and city area. Considering existing market system and its location, Kathmandu, Birganj, Janakpur and Biratnagar is recognized as key center for fish distribution for district and national level. Under the programme, these centers should be strengthened the primary wholesale marketing function and improvement of the facilities necessary for its function.

In particular, the programme support:

1) strengthening of producing market-market center linkages

2) formulation of market research and low-cost technology of the Nepalese fish

3) diversifying the traders in wide fish distribution chain

4) improvement of marketing facility to meet the hygiene demands of consumers

(3) Post-harvest Handling Programme

The programme aims improvement of losses at production site by (a) building sufficient cold storage facility and ice supply, (b) introduction of fish processing and its facility and (c) linking remote fishing village to market.

(4) Fisheries Institutions Programme

The objectives of this programme are to: (a) strengthen the government support services on fish farming extension, (b) support the improvement of institutional and management capacity of fisheries staff and private organizations, and (c) strengthen the fish marketing research.

5.5 Master Plan for Market Management System

5.5.1 Development Goals

The APP strategy puts great stress on the needs to develop high value agricultural produce, especially livestock and horticultural products. These products offer the opportunity for high income per unit area and the Plan emphasize the development of markets and a market- oriented approach through a policies, institutions, and investments. The Ninth Plan has adopted the APP in its entirely as its strategy for economic growth through agricultural commercialization and market development. Therefore, market management system has to be in place for economic growth of the producing farmers involved in commercialized marketing system. And the development goals of the master plan for market management system are as follows: -

(1) To develop effective market management system through the participatory approach of the users of the markets, especially at the Collection Centers and Wholesale Markets;

(2) To motivate farmers and farmer's organizations (Farmer's Groups, Farmer's Cooperatives, Farmer's Associations, and Federation of Farmer's Associations) for more and active participation in the market management system;

(3) To create better environment for traders/wholesalers and private sector in general both for their organizational development as well as for their active participation in the market management system especially the wholesale market management system; and

(4) To alleviate poverty level of farmers with increased farmers' income by reducing intermediary losses in market management systems and providing fair share at fair deal basis.

5.5.2 Basic Principles for Market Management System Development

The basic principles considered for market management system development are as follows: -

(1) **Laws and Regulations of Market Management System**: - Nepal is recently preparing laws and regulations for market management system. Therefore, strengthening of Market Management System through legal support and regulation for market management has been considered as the basic principle for market management system development;

(2) **Autonomous Market Management Committee**: - Nepal has limited experience in both the formation of market management committees as well as in the operation and management of Collection Centers and Wholesale Markets. Therefore, establishment of Market Management Committees (MMCs) at various level of markets, especially at Collection Centers and at Wholesale Markets has been considered the basic principle for market management development;

(3) **Participation of Main Actors in the Markets**: - Nepal has recently experienced market management committees, which brought together all the main actors of the markets in one place as representative members of their organizations. This has created new feelings among the various participants in the markets to come together for their own benefit and decide for the benefit of all. This has also resulted in the strong feeling among the farmers and traders for their organizational development.

Therefore, representation of all the main actors of the markets in the market management committee (MMC) has been considered as the basic principle for market management development;

(4) **Integrated Market Management System**: - Integrated market management system with new Central and Regional Wholesale Markets as basis of access for the farmers and farmers organization to distribute and market their local products through Collection Points to Collection Centers and to Wholesale Markets will also be taken as the basic principle for market management development; and

(5) **Promotion of Cooperative marketing: -** Nepal has very limited institutional and organizational development in the area of market management development. Therefore, strengthening of farmer's institutions and organizations has been considered as the basic principle for market management development, especially for agricultural marketing cooperatives for the promotion of group marketing in commercialized production pockets.

5.5.3 Market Management Development Concept

Three areas have been focused for the improvement plan of the market management system.

(1) Laws and Regulations of Market Management System,

(2) Institution/Organization for Market Management System, and

(3) Market Management Committee at Collection Center and at Wholesale Market.

(1) Laws And Regulations of Market Management System

Three policy priorities that greatly increase the efficiency and operative opportunities for agricultural marketing management systems through Laws and Regulations are proposed here for improvement. The policy priorities proposed here for improvement are as follows:

1) *First*, it proposes improvement Plan with a public policy commitment to encourage agricultural marketing system at all types of market centers with legal status for its operation and management through the proposed autonomous marketing management committee (MMC). The legal support for marketing system improvement plan is proposed at various levels (refer to Figure 5-1).

- Legal status for the formation of autonomous MMC involving all the market participants.
- Legal status for the operation and management of market center by MMC;
- Legal status of marketing cooperatives and other farmers organizations for its involvement both as member of MMC as well as handed over of collection centers for its operation and management;
- Legal status of traders associations and other trader's organization for its involvement as member of MMC as well as for handing over the market for its operation and management.

A review of the proposed Agricultural Marketing Development and Management Act is required to meet the improvement plan proposed in the project. A good look on the following aspects are necessary especially on the (I) formation of the autonomous MMCs; (ii) its membership and participation of the key actors; (iii) rights to own the market and its facilities as well as on the use and management for marketing activities in the market area; (iv) Financial management; and (v) on the organization of market management body.

2) *Second*, it proposes improvement plan with a public policy commitment to encourage farmers groups to organize and register with legal status for its operation and management system on: (I) transfer of technology on high value commodities for expansion on the scale of production and marketing; (ii) transfer of technology on collection, washing/cleaning, sorting/grading, packing, transportation and distribution of their products; (iii) production planning; (iv) small farming saving and credit scheme to meet their own small credit requirements; and (v) fine tuning of cooperative Act, 1992 and Association Registration Act 1977 to meet the requirements of producers cooperatives and producers associations especially for marketing management system. The legal support for farmers organizations are proposed as follows:

- Legal status on private-to-private transfer of technology both for expansion of production as well as for quality improvement aspects;
- Legal status on production planning;
- Legal status for small farmers saving & credit system;
- Legal status for producer-marketers groups for its registration & operation.

3) *Third*, it proposes improvement plan for legal status to participate and investment of private sector in market management system. The legal support for private sector participation and investments are proposed in the following aspects.

- Legal status of private processors and enterprises on production planning with producers based on contractual agreement between producers and private sector processors and enterprises;
- Legal status of private sector on financial dealing with producers and processors based on their private accounting system;
- Legal status of private sector on transfer of new technology and dissemination for its scale of production and marketing.

(2) Institution And Organization For Market Management System

Seven institutions play an important role in agricultural marketing development at the grass root level. The `Agricultural Marketing Development Project' proposes development plan to strengthening these seven institutions that are critical to the success of the agricultural marketing systems in the kingdom of Nepal.

1) First, it proposed to strengthen the respective implementing agencies of the Department of Agriculture and Department of Livestock Services, Agricultural Marketing Development Directorate of DOA and Livestock Market Promotion Directorate of DOLS for its successful implementation. An Apex body, " Nepal Agricultural Marketing Board" under the chairmanship of the Secretary of MoAC with chief of Agricultural Marketing Development Directorate or the chief of Livestock Market Promotion Directorate as member secretary is proposed to be established to provide the policy guidance and national overview (refer to Figure 5-2). However it would be a more pragmatic strategy to begin with a Steering Committee rather than NAMB in the immediate run and to gradually evolve into a full fledged Apex body in the long run. This Steering Committee is to be chaired by the Secretary of MoAC and composed of chiefs/ representatives of all concerned agencies and stakeholders.

a) Functions of the Board: - Role of the board for development, management and operation of the collection center and wholesale market is as follows:

- Provision of legal authority to develop, manage and operate collection centers and wholesale markets by the farmers groups/ cooperatives, traders groups/ associations, local government, market management committee, and by the private sector.
- Legal provision for the formulation of market management committee for its composition and functions.
- Function as Apex body in policy making to provide legal entity to all the actors in the market centers and guidance of agro-business activities.
- Planning, monitoring, evaluation, and promotion of agricultural marketing at the collection centers and wholesale markets in the country.
- Making the choice of option for operation and management of Collection Center and Wholesale Market based on the government policy.

- Institutional options with legal provision or arrangement in new Agricultural Marketing Development and Management Act, 2055 or in Development Board Act of 1957.
- Management of "Marketing Development Fund" as Board's Fund.

b) Board's Fund

- Every MMC pay 20% of the net profit derived from market management
- Governments and donors grants and loans
- All money received by Board constitutes the "Marketing Development Fund".

  This fund will be invested for education/training and test operation of the pilot project for modernization of agricultural marketing system.

  This fund is supervised under the control of the Board, while it is deposited to ADBN or micro-credit system managed by MMC/CC/community fund.

  A group of professional experts need to be organized as a unit to provide the factual competitive data for advising the Nepal Agricultural Marketing Board. Therefore a "Market Development Committee" has been proposed at the Departmental level. An added role has also been proposed for the Agricultural Marketing Development Directorate and Livestock Market Promotion Directorate.

c) Functions of the Market Development Committee

- Coordination of the working of the MMC
- Assistance in Planning and development of marketing
- Directives to MMC
- Support in administering the Market Fund
- Conducting research and studies
- Conducting workshops
- Provide factual competitive data to the Board

d) The following roles have been added to the respective Agricultural Marketing Development Directorate (MDD) and Livestock Market Promotion Directorate (LMPD).

- Serve as the Executive Agency
- Provide Marketing Experts
- Serve as a Training Unit
- Arrange meetings of the Board
- Maintain records of the proceeding of the meeting of the Board

- Conduct other functions such as research and studies as assigned by the Board
- Carry out the decisions made by the Board
- Monitoring and supervision
- Arrange meetings of the market development committee
- Maintain records of the proceeding of the meeting of the committee
- Carry out the decisions made by the committee
- Carry out other functions assigned by the committee

2) Second, it proposes to create establish and strengthen with legal authority, the Marketing Management Committee (MMC) at all types of market centers with full and active participation of all users including farmers, traders, cooperatives, private sector associations, banking agencies, local enterprises, local government, and central government field offices.

a) Members of MMC at Wholesale Market

A composition of the Market Management Committee (MMC) for wholesale market as suggested by the participants in participatory Approach is (refer to Figure 5-3):

i) Traders Representatives - 3 Members
Wholesaler Representative
Intermediate Wholesalers Representative
Traders Associations Representative

ii) Trading Farmers Representatives - 3 Members
Agricultural Marketing Cooperative Representative
Farmer's Traders / Collectors Representative
Local Traders Representative

iii) Central & Local Government Representatives - 3 Members
Municipality Representative
DADO / DLSO Representative/
Livestock Marketing Expert or
Ag. Marketing Expert

Total MMC members for Wholesale Market - 9 Members

b) Members of MMC at Collection Center

i) Farmers Representatives - 3 Members
Farmers Groups
Farmers Cooperatives
Farmers Associations or Individual Farmer

ii) Traders Representatives - 3 Members
Trader Cooperative
Traders Farmers Associations

Local Traders/ Traders/Collector/ Wholesalers

iii) Central & Local Government Representatives - 3 Members
VDC or Municipality
Chief of ASC/LSC
Representatives of Central Government

Total MMC members of Collection Center - 9 Members

c) Role and Functions of MMC of the Wholesale Market and of Collection Center

The following roles and functions will be regulated under law such as marketing act or byelaw;

- Establishment of the marketing route
- Development of transaction system
- Development of pricing mechanism
- Introduction of licensing system
- Introduction of the quality control system
- Development of the market information system
- Introduction of the waste management system
- Improvement of the security control system
- Development of financial management system
- Development of education and training

3) Third, it proposes to strengthen the Farmer's Groups/Organizations especially Agricultural Marketing Cooperatives to provide a competitive force for the private sector. In order to revitalize farmers' organizations, especially the agricultural marketing cooperatives, the plan proposes to help farmers learn how to organize and manage cooperative group approach for the benefit of all members. However, it will take a long time to rehabilitate the sector and the philosophy towards the sector needs to be reevaluated.

4) Fourth**,** it proposes to strengthen the Farmer's Groups/Cooperatives Society especially Marketing Cooperatives to provide a competitive force for the private sector. In order to revitalize farmers cooperatives, especially the marketing cooperatives, the plan proposes to help farmers learn how to organize and manage these cooperatives for the benefit of all members. However, it will take a long time to rehabilitate the cooperative sector and the philosophy towards the sector needs to be reevaluated.

5) Fifth, it proposed to strengthening the MoAC field offices (Agriculture Services Centers of DADO and Livestock Service Centers of DLSO offices) for its important role in agricultural marketing systems: (i) As Marketing Manager of MMC; (ii) As Technical personnel for technology transfer; and

(iii) As motivator for farmers groups formation with some incentives of technical support educational tours and support services.

The MoAC field offices (ASCs/LSCs and Sub-ASCs/LSCs) is proposed to be expanded and redirected in its extension activities both in farmers organizational development as well as in the marketing Management aspects of local products. The MoAC field offices is also expected to play an important role in ensuring quality products in the newly expanding products of high value commodities.

6) Sixth, it proposes to strengthening the local government (Municipalities and VDCs) offices for their active participation in the successful implementation of the project. The project proposes to provide both the technical training as well as the market management training to the local government officials to ensure that the project program is implemented in the right place/areas in the municipalities and VDCs for the benefit of all the participants.

Roles and Responsibilities of Local Government on Agricultural Marketing Activities

The local governments have played various major roles in agricultural marketing activities.

- Local governments have provided space and have managed periodic market called "Haat Bazaar" development with stalls, drinking water, toilet electricity and drainage facilities;
- Similarly municipalities have provided space, drinking water, toilet, electricity, roads and stalls for wholesale as well as for retail shops marketing activities.
- Municipalities have encouraged individual traders and their associates for their promotional activities.

7) Last but not least, it proposed to strengthening the private sector in general for their active participation and investment in agricultural market systems and wholesalers and traders in particular for their role in wholesale market management. It also proposes for better public-private partnership in accelerating market centers development. A large number of commodity specific farmers and traders associations have been formed but only at a few limited areas.

6 REGIONAL DEVELOPMENT PLAN

6.1 Horticulture Marketing System

6.1.1 Eastern Region

The new wholesale market in Biratnagar will be established which will contribute to the integrated and effective marketing system, quality control, sanitation control and competitive modernized function to absorb high quality products from the hill area and to accept the better quality products from India. There exist successful collection centers and collection points for seasonal and high value varieties. The technical and management support on how to link with these collection activities and the newly established wholesale market should be provided. This project will be a regional model of commercialization of the high quality products to meet APP policy.

6.1.2 Central Region

(1) The new Kathmandu valley wholesale market

Kalimati wholesale market has been fairly well operated in the past supported by UNCDF/FAO and MoAC but it only functions for the vegetables except leafy vegetables and fruits. The designed capacity of this market is already short to meet the demand in Kathmandu Valley. Products that are not brought to this market are sold outside that is poorly managed open shed retail market in Katmandu such as Anam Nagar Street Market. Kalimati market is located in the central part of the city. Therefore, farmers, traders and transporters encounter difficulties to use this market during daytime because of the traffic control derived of congestion and lack of parking space in the market. Most of the farmers in the Central Region have requested to establish the new wholesale market outside of ring road of Kathmandu Municipality that should be located at Lalitpur Municipality. Fruits wholesale activities have been done at Harsha Wholesale Market that is controlled by Indian traders. Other vegetable wholesale/retail markets are scattered in Kathmandu Municipality. Integration of these scattered small markets selling horticultural product will contribute to urban planning and to save time/cost loss for beneficiaries such as farmers, traders and transporters. In addition to this benefit, municipal residents will directly and indirectly receive benefit by effective use of urban market.

The new proposed wholesale market will function as the model of national market and also as the education and extension center for the development of modernized commercial skills and management model for farmers and the other various types of beneficiaries groups.

After the completion of Sindhuli road construction, the accessibility of Terai plain areas to Kathmandu will be improved significantly. The new wholesale market will also promote commercialization of horticulture products that will be produced in the whole Terai areas of Central Region. This market will be connected with the new wholesale market in Biratnagar of the Eastern Region. The nationwide and international marketing network system will be realized together with the promotional activities in the East part of the countries.

(2) Strengthening of the function of the existing collection centers

The collection centers in the hill areas are well operated even though they are in the initial stage of operation. The linkage with Kalimati Wholesale Market with these collection centers have been done mainly by traders, but some farmers' organizations have experienced marketing system by their own initiatives and through the educational tours supported by UNCDF/FAO. It is important to encourage farmers for participating more developed marketing system as well as management committee of the collection centers. The new wholesale market will provide opportunity for farmers to join more actively to the management of the collection centers and marketing activities.

(3) Strengthening the extension services for high quality horticulture products

In addition to this regional marketing network system of the products, the extension activities of the developed technology of high value fruits will be conducted for institutional and higher income consumers including tourists as well as producers. This extension activity will be closely connected with the function of Kirtipur Horticulture Center under MoAC.

6.1.3 Western Region

Pokhara is the biggest urban municipality of this region but the demand is not so high because of the limited number of population. However, this area is the most attractive location to invite many tourists from foreign countries. These visitors as well as residents in Pokhara will consume higher-grade commodities.

The newly established wholesale market is in Pokhara but it has just started its operation. Accordingly, the volume handled is still small. Farmers' interest is also very low. Community participatory approach to invite more farmers shall be necessary for the effective use of this market. Number of production pockets in this region is the biggest in the country. But those are for the subsistence production but not for commercialization. It is important to encourage MMC to utilize the wholesale market as the Regional centers of marketing.

6.1.4 Mid-Western Region

One of the major commercialized farmers' group has well operated at the collection center of hilly area supported by USAID/DADO. This collection center should be upgraded as a model of commercialization of high quality vegetable products in the hill area of the West part of the country when the security problems have been solved. Farmers concerns for the use of this collection center have accelerated because many traders have come to collect the high quality products mainly for selling to India. The involvement of farmers in marketing and transport to India and Kathmandu will benefit farmers much more. Such kind of the developed model can be seen in the farmers' cooperatives in the Eastern hill. Their close linkages will change farmers' attitude more market oriented farming and better post-harvest handling acceptable to urban consumers.

6.1.5 Far-Western Region

This region has better access to Indian market near the boarder such as Khatima, Plivit and Barali. It is within the reach of Indian market because of distance to other regions in the country. There is limited linkage with Kathmandu area at present. This region should be more self-sustainable and self-sufficient. The survival strategy in the short term is to become the commercial base for high quality and off-season fruits and vegetables to India at hill and mountain areas when access road established. From mountain areas, accessibility is fairly good because of direct connection to Indian side not passing through Terai plain. Individual farmers and some cooperatives have already succeeded in commercial production of fruit at their plantation to Indian market. Technical support for the extension of the high quality products will be the major issue in this region.

6.2 Livestock Marketing System

6.2.1 Regional Development Concept

Each development area has its own characteristics in marketing and production. As shown on Table 3-1, five development areas were chosen using nine criteria, those are, Eastern Terai, Central Hills and Terai, Western Terai and Mid-Western Terai. Among these, Mid-Western Terai has the highest priority because of importance in supplying goats and buffaloes for Kathmandu, followed by Central Terai (see below for the priority development areas).

Priority of Development Areas for Livestock Marketing

Priority	Development Areas	Reason
1	Mid-Western Terai	Better accessibility & major markets
2	Central Terai	Best accessibility & major markets
3	Western Terai	Best accessibility & major markets
4	Central Hills	Major consuming area
5	Eastern Terai	Major markets

6.2.2 Regional Development Plan

(1) Kathmandu Valley

This area covers Kathmandu, Lalitpur and Bhaktapur, with about 1.1 million people and characterized as the largest consuming area in Nepal. TLDP estimates that about 125 thousand buffaloes, 74 thousand goats and six million chickens are slaughtered during a year. There exist 15 livestock markets and holding yards in the Valley, out of which two are for goats and 13 for buffaloes. Though this area is the largest consuming area of meats, construction of a large-scale slaughterhouse could not be proposed because of lesson of Hetauda slaughterhouse. However, taking into consideration necessity for supply of sanitary meats to people, small-scale slaughter house will be proposed. The selected major livestock markets will be improved.

(2) Eastern Region

This area, particularly Terai area is important as one of the supplying area of goats imported from India though numbers supplied to Kathmandu are very few. Annually

28,000 head of goats on an average are imported from India through four Animal Quarantine Check Posts distributed in the area. This area is also the producing area of goat meat accounting for 23.9% of the total. Belbari livestock market located along the highway is one of the largest market trading goats, pigs, cattle and buffaloes.

(3) Central Region

This area has the largest consuming area of Kathmandu and is also the largest producing area of buffalo meat in the country accounting for 34% of the total. And at the same time the area is also major importing point of live buffaloes and goats from India accounting for about 84,000 head a year for the former and about 30,000 head for the latter. Jitpur market in Bara District is the largest buffalo market in the country and 98 % of buffaloes traded here are transported to Kathmandu Valley for meat.

(4) Mid-Western Region

This area is producing area of goat meat accounting for 25% of the total and at the same time the area is the largest importing point of goats and second largest for buffaloes from India importing 88,000 head for the former and 24,000 head for the latter annually on average. Accessibility to Kathmandu is comparatively good. In this area Banke and Bardiya are particularly important Districts in which major livestock market and collection center are located.

(5) Western Region

Pokhara is the third populated municipality in the country with 95,000 people and famous for tourism. However there is no regularly-opened livestock market in Kaski District excluding seasonal market(from July to September). According to TLDP report, annually about 8,500 head of buffaloes and 4,080 head of goats are slaughtered here and mostly consumed in the District. Demand for hygienically treated meats is high from restaurants and hotels. This imply necessity for slaughter slabs at the major markets.

Accessibility to Kathmandu from this area is the best. Terai in this area is the major importing point of cattle importing 21,000 head a year from India. The area is also second largest producing area of milk accounting for 26.6 % of the total. However capacity of Lumbini milk plant of DDC is only 1,000 lit./day, implying a possibility for expansion.

(6) Far-Western Region

This area is located at the western end of Nepal and can be classified as remote area. India is nearer than domestic markets considering marketing condition. There is seasonal livestock market which is opened during the cultivation period of paddy from July to September. It could be said that the area has lower priority in the livestock marketing compared to other Regions.

6.3 Fish Marketing System

(1) Project 1: Integrated Fish Farming in Rural Community Project

1) Objective : improving the production and productivity as well as welfare of the fishing community and increasing per capita consumption. These objectives will be achieved through an integrated approach to fish farming and other agriculture activities, taking into account the present extension flame of Pocket Package Programme.

2) Proposed Project Area

Development Area 1: Terai area in Far-Western, Mid-Western, and Western Development Region

Development Area 6: All Mountain and Hill area

Project will target Far-Western and Mid-Western Region as primary priority, in order to redress the balance of fish consumption and fish prices.

(2) Project 2: Fish Marketing Network Development Project

1) Objectives: establishing of sustainable and efficient fish distribution chain in Central and Eastern region, through improvement of marketing facility and also trading system. In addition, the project aims the achievement of low-cost production system in the target production pocket, in order to hold the share of the fish selling in Kathmandu and other large market instead of Indian fish. The project aims creation of 1,000mt level market center and 600mt level production center, under a model project within 5 year.

2) Proposed Project Area

Development Potential Area 2 and 3: Terai area in Central and Eastern development Region.

Birganj, Janakpur and Biratnagar are recognized as target of marketing center. Out of these three markets, one of the potential market block (market-production center linkage) will be select as model area.

(3) Project 3: Small Scale Fish Processing Project

1) Objectives

The project aims reduction of losses (not only quantity, but value), at production area, through providing fish processing technology and necessary facility to fishermen group. This project is expected to give impact on more secure fishing operation and production, because they do not fear the oversupply and its preservation. Involvement of fisher women groups is another objectives with a view to improving the standard of living, employment and income of rural women in fishing villages.

2) Proposed Project Area

Development Potential Area 4, Pokhara and Sapta Khoshi are priority area recognized.

(4) Project 4: Kathmandu New Fish Wholesale Market Project

1) Objectives

The objectives of the project are follows:

a) Reducing the marketing cost and sustainable supply in appropriate price
b) Supply high quality of fish to Kathmandu people and as a result incase the per capita consumption
c) Provide the more opportunity selling Nepalese fish in KTM

2) Proposed Project Area

Development Potential Area 5: Kathmandu city

7 SELECTION OF TARGET SECTORS/AREAS FOR ACTION PLAN

7.1 Horticulture Marketing System

Among regional development plan, the central region and the east region are selected for the target of action plan. The reason is that the both regions have good potential of production for horticulture products and also there are good potential for marketing because of population and its high density.

7.1.1 Selection Criteria

(1) Inclusion of the commercialized production pocket

(2) Demand/supply and Origin/destination of the products

(3) Marketing route and transport system

1) from farm land to domestic consumers and external markets
2) form import points to domestic consumers and external markets

(4) Pricing mechanism for the beneficiaries

(5) Quality control system for quality loss at

1) the farmland
2) collection center
3) wholesale market
4) quarantine check post for external trade

(6) Sanitation and environment control

(7) Market and transport infrastructure development

(8) Institution and organization including

1) legal support
2) Government support
3) farmers organization and
4) market management

(9) Training and extension activities for

1) the extension of new varieties
2) production technology and
3) marketing know-how

7.1.2 Selected Projects

(1) Development of the Integrated Horticulture Marketing System in the Central Region

1) **Goals**: Establishment the effective and modernized marketing system for the domestic and for the promotion of export

2) **Objectives**: Acceleration of farmers organizations' involvement through the collection centers and the upgrading of the wholesale function in the Metropolitan area

   a) Option 1: to cover the shortage of Kalimati wholesale market

   b) Option 2: to transfer all of the wholesale function from Kalimati to the new market

   c) Option 3: to transfer all of the wholesale function from Kalimati ,Harsha and the other private wholesale markets to the new market

3) **Major components**

   a) New wholesale market: traditional level components like the Kalimati market and inclusion of the modernized technology for the high quality products(new facilities and equipment for demonstration, extension and training for the whole countries)

   b) Integration of wholesale function in horticulture sector

   c) Strengthening of the farmers organizations for marketing through the existing collection centers and the new collection centers

   d) Development of effective management regulation

4) **Executive agencies**: Coordination (MoAC), Marketing Committee organized by the representatives from private sector and municipal government

5) **Benefit**: Stable supply and price adjustment, cost/time saving, production increase, reduction of quantity/quality loss, increase of export of high quality /off-season products

6) **Beneficiaries**: farmers, women traders, traders, retailers, consumers and exporters

(2) Development of the Integrated Horticulture Marketing System in the Eastern Region

1) **Goals**: Establishment of the effective and modernized marketing system for the Eastern Region and for the promotion of export

2) **Objectives**: Acceleration of farmers organizations' involvement through the collection centers and the upgrading of the wholesale function in Biratnagar (to transfer all of the wholesale function from the traditional wholesale market in Biratnagar to the new market)

3) **Major components**

a) New wholesale market: traditional level components like the Kalimati market and inclusion of the modernized technology for the high quality products-new facilities and equipment for demonstration, extension and training for the Eastern Region

b) Integration of wholesale function in horticulture sector

- Option1: inclusion of fish market
- Option2: inclusion of fish and meat market

c) Strengthening of the farmers organizations for marketing through the existing collection centers and the new collection centers

d) Development of effective management regulation

4) **Executive agencies**: Coordination (MoAC), Marketing Committee organized by the representatives from private sector and municipal government

5) **Benefit**: Stable supply and price adjustment, cost/time saving, production increase, reduction of quantity/quality loss, increase of export of high quality /off-season products

6) **Beneficiaries**: farmers, women traders, traders, retailers, consumers and exporters

(3) Model Project of the Market Management System in Pokhara of the Western Region

1) **Goals**: Establishment of the effective and modernized marketing system for the Western Region and for the promotion of export

2) **Objectives**: Promotion of full use of the existing wholesale market involving farmers organizations in Pokhara (Full use of design capacity)

3) **Major components**

a) Demonstration, extension and training through the participatory approach for the Western Hill area

b) Strengthening of the farmers organizations for marketing through the existing collection centers

c) Development of effective management regulation for Pokhara wholesale market

4) **Executive agencies**: Coordination (MoAC), Marketing Committee organized by the representatives from private sector and municipal government

5) **Benefit**: Stable supply and price adjustment, cost/time saving, production increase, reduction of quantity/quality loss, increase of export of high quality /off-season products

6) **Beneficiaries**: farmers, women traders, traders, retailers, consumers

(4) Model Project of the Collection Center Management System in the Mid-Western Region

1) **Goals**: Establishment of the effective marketing system for the Mid-Western Eastern Region and the promotion of export

2) **Objectives**: Acceleration of farmers organizations' involvement through the collection centers in the Mid-Western Hill area (to expand coverage of trading volume by the existing collection center in the hill area)

3) **Major components**

a) Expansion of the existing collection center and inclusion of the modernized technology for the high quality products in the collection new-new facilities and equipment for demonstration, extension and training for the Mid-Western Hill

b) Strengthening of the farmers organizations for marketing through the expanded collection centers

c) Development of effective management regulation

4) **Executive agencies**: Coordination (MoAC), Marketing Committee organized by the representatives from private sector and municipal government

5) **Benefit**: Stable supply and price adjustment, cost/time saving, production increase, reduction of quantity/quality loss, increase of export of high quality /off-season products

6) **Beneficiaries**: farmers, women traders, traders, retailers, consumers and exporters

(5) Model Project of the High Value Fruits Development in the Far-Western Region

1) **Goals**: Establishment of the effective marketing system for the export of fruits from the Far-Western Region

2) **Objectives**: Acceleration of extension of the modernized technology for individual farmers and farmers organizations in the Far-Western Region (Terai/Hill/Mountain areas)(to cover the exportable volume of fruits based upon the farmers own planned production by bottom-up approach

3) **Major components**

Extension of the modernized technology for the high quality products -new facilities and equipment for demonstration, extension and training for the Far-Western Region

4) **Executive agencies**: Coordination (MoAC), Management Committee which will be organized by traders(including investors) and farmers organizations

5) **Benefit**: Stable supply of high quality products to the foreign countries including India, production increase, reduction of quantity/quality loss

6) **Beneficiaries**: farmers, traders/investors and exporters

7.2 Livestock Marketing System

7.2.1 Selection Criteria and Project Options

As shown in the result tabulated below, Morang in the Eastern region, Banke in the Mid-Western and Kathmandu were selected for the Action Plan.

Selection Criteria for Livestock Action Plan

	Criteria	Candidates
1	Area(s) important for distribution of livestock to Kathmandu	Banke(Khohalpur)
2	Area(s) important for imports from India	Bara(buffalo), Banke(buffalo & goat), Bardiya(cattle), Jhapa(goat), Rupandehi(cattle)
3	Area(s) important for trading live livestock both for farmers and traders	Bara(Jitpur & Kholiya), Morang(Belbari), Jhapa(Dhulabari), Banke(Ramawapur), Bardiya(Thapuwa)
4	Producing areas (Production pocket program)	Jhapa(goat), Morang(goat), Dang(goat), Rupandehi(goat), Banke(goat), Bardiya(goat), Mahottari(goat), Bara(goat), Sarlahi(goat),Sindhuli(goat), Makawanpur(goat), Ramechop(goat)
5	Existence of DDC milk plant	Rupandehi, Morang, Kaski
6	Population density (major consuming areas)	KTM, Lalitpur, Biratnagar(Morang), Pokhara(Kaski), Birganj(Parsa), Nepalganj(Banke),
7	Accessibility	Banke, Rupandehi, Bara, Morang, Jhapa, Kapilbastu, Bardiya, Dhanusha, Silaha

7.2.2 Selected Projects

(1) Major Components

① Improvement of livestock markets, ② Construction of slaughterhouse and slaughter slab, ③ Improvement of livestock collection center

(2) Goals

1) Provision of necessary facilities for livestock markets

2) Supply hygienic meats for consumers

(3) Objectives

1) Improvement of the selected livestock markets and collection centers for strengthening marketing system between markets and consuming areas

2) Construction of the slaughterhouse and slaughter slab for supply of hygienic meats

(4) Executive Agencies

1) Livestock market: DLS, DLSO, DDC and Municipality offices

2) Livestock Collection center: DLS and DLSO, Municipality office/VDC

3) Slaughterhouse and slaughter slab: DLSO, DDC, Municipality offices and butcher group

(5) Benefit

1) Improvement of livestock markets

- to encourage farmer's and trader's marketing activities
- to improve environment in and around the market
- to improve transportation method
- to fair pricing
- to improve holding/staying conditions for livestock

2 Improvement of the livestock collection center

- to make transportation of livestock smooth
- to improve environment in and around the Collection Center
- to encourage trader's marketing activities
- to prevent livestock from loss of live body weight during the stay (3 to 4 days) at the Collection Center

3) Construction of slaughterhouse and slaughter slabs

- to improve slaughtering conditions of livestock
- to improve environment in and around the retail market and riversides
- to improve selling condition of meats
- to contribute to supply hygienic meats to a certain extent

4) Improvement of Market information system

- to encourage farmer's/group's marketing activities of livestock
- to fair pricing

5) Setting up market management committee

- to manage the livestock markets in good condition
- to collect useful market information

(6) Beneficiaries

1) Livestock market: Farmers, traders (Nepalese and Indian), VDC, Municipality

2) Livestock Collection center: Traders (Nepalese and Indian), consumers

3) Slaughterhouse and slaughter slab: Consumers and butchers

7.3 Fish Marketing System

7.3.1 Selection Criteria and Project Options

Please refer below for selection criteria and project options.

Selection Criteria for Fisheries Action Plan

Selection Criteria	Project 1	Project 2	Project 3	Project 4
Increase of Production to meet national demands	A	AAA	A	B
Equitable development of the country	AAA	C	A	C
Implementation capacity	B	A	AAA	B
Effectiveness of investment	B	A	AAA	B
Immediately potent of project	A	B	A	A
Coordination with other project	-	-	-	-
Security in project area	B	AAA	AAA	-

Remarks:
1. [Project1]: Development Area 1 (Terai area in Far-Western, Mid-Western, and Western Development Region) and 6 (All Mountain and Hill area)
2. [Project2]: Development Potential Area 2 and 3 (Terai area in Central and Eastern development Region), Birganj, Janakpur and Biratnagar as marketing centers
3. [Prolect3]: Development Potential Area 4, Pokhara and Sapta Khoshi
4. [Project4]: Development Potential Area 5(Kathmandu city)
5. AAA-well adopt to criteria, A-adopt, B-moderately adopt, C-not adopt

7.3.2 Selected Projects

(1) Project 2

Priority project under this master plan is "Project 2", considering the impact for production and implementation capacity.

1) **Goals**

a) Establishing of sustainable and efficient fish distribution chain in Central and Eastern region, through improvement of marketing facility and also trading system

b) Achievement of low-cost production system in the target production pocket, in order to hold the share of the fish selling in Kathmandu and other large market instead of Indian fish.

2) **Objectives**: Creation of 1,000mt level market center and 600 mt level production center, under a model project within 5 year.

3) **Major components**

The project consists of developing producing center and developing market center, and improvement of fisheries institution component.

a) Development Producing Center

- Review and strengthen seed supply network
- Formation of producing center

- Support to Fisheries Pocket Package Strategy

b) Developing Market Center

- Strengthen wholesale function at marketing centers for wide distribution network
- Building of new market facility
- Organization of new whole-sale group

c) Improvement of Fisheries Institution

- Developing data base and statistic system
- Capacity building of extension staff
- Support to NGO for organizing and strengthen of private sector

4) **Executive agencies**: MoAC

5) **Benefit**

a) Effective utilization of fish pond with higher productivity

b) Reduction of the losses during market chain

c) Reduction of transaction cost and saving time

6) **Beneficiaries**: Fish farmer and fish trader in Central and Eastern region, Consumer in the same region and in Kathmandu

(2) Project 1

1) **Goals**: to balance the economical and social gaps in the country, including poverty consideration

2) **Objectives**: Improvement of the production and productivity as well as welfare of the fishing community and increasing per capita consumption.

These objectives will be achieved through an integrated approach for fish farming with other agriculture activities, taking into account the present extension framework of Pocket Package Program.

3) **Major components**

Key fish farming input is fish seeds supply and extension service on basic fish farming technology.

a) Review and strengthen seed supply network

b) Support to Fisheries Pocket Package Strategy (extension service)

c) Building of fish supply center

d) Developing data base and statistic system

e) Capacity building of extension worker

f) Support to NGO for organizing and strengthening private sector

4) **Executive agencies**: MoAC/FDD, FDC, DADO, FRC

5) **Benefit**

Fish is one of the cheapest source of animal protein, so the increase of fish availability is expected to benefit relatively poor consumers the most.

a) Increase of incomes to the small farmers from diversifying into cash crop

b) Nutritional benefit: increase of home consumption of fish improves the nutritional condition of poor farmer.

c) Female farmer will get benefit from labour-saving technology (fish farming is labour extensive than other crop farming) introduced by project.

d) Institutional benefit is expected from the capacity building of fisheries staff on cost-effectiveness extension service.

6) **Beneficiaries**: Fish farmers, Consumers in the rural community

(3) Project 3

1) **Goals**: Impact especially for women in the fishing community with minimum input, regarding to job creation and income generation

2) **Objectives**:

a) Reduction of losses (not only quantity, but value), at production area,

b) Impact on more secure fishing operation and production

c) Involvement of fisher women groups

3) **Major components**

a) Introducing regular monitoring system of capture fisheries

b) Building of cold storage and processing plant

c) Training on fish handling and processing

d) Support to NGO for organizing and strengthening of private sector

e) Establishing the linkage of the products and market

4) **Executive agencies**: Fisheries Division of MoAC, fishermen's cooperatives, Agricultural Marketing Division of the MoAC

5) **Benefit**

a) Increase of fishing opportunity and increase of production.

b) Value-add for fresh fish

c) Reduction of quality losses

6) **Beneficiaries**: Fishermen and their family in Pokhara and Sapta Koshi, especially women

8 PARTICIPATORY APPROACH FOR DEVELOPMENT OF ACTION PLAN

8.1 Selection of the target groups

(1) Farmers and women groups from the commercialized production pockets by commodities : Central and Eastern Region

Selection criteria:

Criteria 1:Commdity-wise organization: Vegetables, Potato, Spice, Fruit

Criteria 2: Level of commercialization: Commercialization of the production pockets (leadership, group formation and regulation, cooperative activities, development of the informal credit system, ownership of the facilities and equipment such as land and production inputs, regular meeting)

Criteria 3: Level of marketing activities: Use of the wholesale markets and collection centers (leadership, MMC membership, regulation and cooperative activities, development of the credit system, ownership of the facilities and equipment such as land, market, storage and processing facilities, regular meeting)

(2) Traders/entrepreneurs associations and institutional consumers: Kathmandu and Biratnagar

Selection criteria:

Criteria 1: Commodity-wise association: Vegetables, Potato, Spice, Fruit

Criteria 2: Origin and destination of the products: Domestic products for domestic consumption, imported products, exported products

Criteria 3: Users level of a wholesale market: Users of Kalimati market, the other wholesale markets and C.C.

(3) MMC of C.C. and Wholesale market

(4) Government officials : Central and local governments

8.2 Workshop

8.2.1 Objectives

Clarification of users needs and way of use and management of wholesale market and collection centers

8.2.2 Participants

Representatives from each target group selected by the MoAC and Study Team

8.2.3 Methodology

(1) **Participatory approach:** General and Focus group discussion

(2) **Enumerators:** Team member and counterpart by Sector, Resource persons provided for Focus group discussion , Assistants selected by DADO/DLSO

(3) **Focus Group Discussion:** Participants will be classified into 4 groups but government officers be possibly allocated to the other groups

1) "Focus items":① interest on the IT/R, ② use of the planned CC, ③ use of the planned WM, ④ management of CC and WM

2) "Group classification"

a) Group 1: Horticulture(Production side = farming and collection -- Farmers and women's organizations and MMC of CC)

b) Group 2: Horticulture(Marketing side -- MMC of WM , traders and entrepreneurs)

c) Group 3: Livestock and fisheries(producers, butcher, wholesalers, retailers, entrepreneurs)

d) Group 4: Central and Local government officers

8.2.4 Questionnaire and Evaluation

(cause and level of participation in marketing system)

(1) **[Question 1: Existing conditions of participants]**

Q1: Commercialized level
- Production volume by commodities (Possibility of stable supply)
- Per capita production by commodities (Possibility of marketability)

Q2: Organized level
- Farmers group (informal)
- Farmers Cooperatives(formal)
- Members of MMC
- Leadership(FG,FC and MMC)

Q3: Functional level of organization
- Production function
- Marketing function
- Credit function

Q4: Activity level by functions
- Individual
- group involvement

Q5: Marketing and distribution level
- Farming only
- Marketing and transportation from farm land to C.C.
- Marketing and transportation from C.C. to WM)

Q6: Quality control level
- Use of high quality seed
- Sorting
- Storing

- Packing
- Transport handling

Q7: Accessibility to the trunk road
Q8: Accessibility to price information system,
Q9: Accessibility to the credit system
Q10: Ownership of market facilities and equipment
Q11: Technology level

- Production function
- Marketing function
- Credit function

Q12: Management ability
Q13: Financial and human resources

- Central gov., Local gov., DADO/DLSO
- MMC(WM and CC), users organization
- Community participation

Q14: Support level by the government

(2) [Question 2: Impacts and Future prospect for participants]

8.3 Study Tour

8.3.1 Domestic tour in Nepal

(1) Objectives

Exchange of opinions on the optimum use and management of collection centers and wholesale markets(both of the existing and proposed system)

(2) Participants

Representatives from each target group

(3) Places

Kalimati wholesale market

8.3.2 External tour to India

(1) Objectives

Site inspection for export promotion/international competitiveness of Nepal products and exchange of opinions on the optimum use and management of collection centers and wholesale markets with Indian MMC members

(2) Participants

Representatives from each target group

(3) Places

Major cities in the adjacent States

8.4 Output of Participatory Approach

8.4.1 Objectives of the Participatory Approach

(1) Exchange of opinions on the weakness of the existing marketing system in Nepal and the future development concept

(2) Exchange of opinions on the use and management of Collection Centers and Wholesale Markets

(3) Technology transfer on the institutional and organizational improvement of agricultural marketing system

8.4.2 Workshop in the Eastern region (Oct. 17 2000,at Biratnagar)

(1) Participants

Biratnagar city mayor, Assistant Regional Director, LDO, Regional director of Livestock in the Eastern region, Central and local government officials, farmers/women, traders/entrepreneurs, counterparts, Study Team (80 Participants)

(2) Focus group discussion (FGD)

1) Farmers/women's group
   a) Establishment of the integrated production and marketing system through the participation of farmers and women
   b) Strengthening of support system by the government
   c) Introduction of the education and training system for agricultural marketing

2) Traders/entrepreneurs group
   a) Establishment of agricultural marketing system from Collection Centers (CC) to Wholesale markets (WM)
   b) Management under the clear-cut regulation of the wholesale market
   c) Education and training for management of the wholesale market

3) Livestock/fisheries group
   a) Construction of the marketing facilities
   b) Establishment of management system

4) Government officials group
   a) MMC as the management body of the CC/WM
   b) Members of MMC selected from the representatives by users groups
   c) Support by the central and local government on the management of CC/WM
   d) Establishment of the well organized information system
   e) Better use of the credit system

8.4.3 Workshop in the Central region (Oct.24, Kathmandu)

(1) Participants

Laltipur city mayor, Narayangadh city mayor, Central and local government officials, farmers/women, traders/entrepreneurs, counterparts, Study Team (70 Participants)

(2) FGD

1) Farmers/women's group
   a) IT/R: Proposed sites for the construction of CC
   b) Expansion and upgrading of CC/WM function
   c) Use of CC: Expansion of CC users group
   d) Use of WM: Close linkages with CC and establishment of the marketing net work system
   e) Management of CC and WM: Securing of guaranteed marketing route and human resources
   f) Human resources development through the education/training

2) Traders/entrepreneurs group
   a) IT/R: fully understood
   b) Use of CC : Development of effective linkages among Production Pocket, CC, WM and the well organized marketing system among farmers and traders
   c) Use of WM : Establishment of the new wholesale market with multipurpose and integrated functions
   d) Management of CC and WM: Effective space allocation for the facilities and establishment of MMC by users representatives

3) Livestock/fisheries group
   a) Issues on marketing system : High marketing cost due to the underdeveloped conditions of law, institution, physical infrastructure and marketing system such as quality/sanitary control and external trade information
   b) Market management : Promotion of marketing activities as well as establishment of the facilities, law/institution and organization for marketing

4) Government officials group
   a) IT/R : Reconfirmation of the external trade information
   b) Use of CC : Establishment of management system and education and training of marketing system
   c) Use of WM : Location and expansion of wholesale market function
   d) Management of CC and WM : Development of law/institution and facilities and establishment of MMC system

8.4.4 Domestic Study Tour (Kalimati wholesale market)

(1) Main points of discussion

Required conditions for the establishment of the new wholesale market for the following 4 points

1) Law and institution
2) Management
3) Location and space
4) Facilities components

(2) Participants

Central and local government officials, farmers/women from the Central and Eastern Regions, traders/entrepreneurs including 3 major wholesale

Markets in Kathmandu metropolitan area, counterparts, Study Team (60 Participants)

1) Farmers/women's group

   a) Law and institution : Underdeveloped conditions of implementation support of law and institution as well as law itself

   b) Management

      - Establishment of the Autonomous body for market management
      - Establishment of MMC by the representatives of users and agencies concerned (no contribution of farmers and women's group for the selection of the market management board members of the existing Kalimati wholesale market)

   c) Linkages with the wholesale markets and wholesalers :Needs for the education on the use and management of the wholesale market

   d) Location of the wholesale market :outer area of the ring road to escape from constraints by urban traffic control

2) Traders group

   a) Law and institution : Establishment of practical and effective law and implementation of law

   b) Market management : Establishment of autonomous MMC, formulation o of market management regulation, selection of MMC members and chairman led by private sector initiatives

3) Government officials group

   a) law and institution: Establishment of clear-cut market regulation including quality control and market management

   b) Management

      - Short-term basis : MMC formation and selection of the members, management jointly by private and public sectors
      - Long-term basis : Introduction of auction system such as Indian wholesale markets

   c) Location of the market : near the ring road

   d) Components: Wholesale market with multi purpose function

8.4.5 PRA

Simple participatory approach based upon the PRA principles was applied as a trial base in addition to the workshops and study tours to check the interest and possibility of farmers/women involvement for the establishment of the organized management and use of CC.

PRA is generally a conceptual design method based upon the participation of inhabitants. In development project, it is applied to provide incentives to the inhabitants

through the subjective participation and preparation of implementation program by their own way for the provided development framework.

The Team conducted three days trial in the selected village, Dhusa VDC of Dhading district. Through this short time trial, consciousness of inhabitants on the CC management and use were provided. This consciousness is almost same as opinions and comments extended by the participants of workshops and study tours.

(1) Objectives

1) Application of PRA for project implementation

To apply the study methodology and output of PRA for the preparation of technology transfer guideline to farmers / women on the development of the organized marketing system

2) Purpose of PRA

To know the existing situation of CC, to know the uses of CC and how to make effective of its management, to identify the major constraints and opportunities of CC, to make plan for the future action in the future, to enhance the participants' skill on the application of some PRA tools for participatory marketing study, how to involve more community people in the use and management of the Center

(2) Objective area

Syadul of Dhusha VDC of the Dhading district

(3) Participants

Farmers, representatives from the VDC and community workers

(4) Output

Social and resource map, Time line, Pair-wise ranking, Mobility map, Seasonal calendar, Institutional diagram, Flow diagram

(5) Background of the VDC

1) Social aspect

Dhusha VDC = one of the 40 VDCs of Dhading district = total population(6,541, 1,055 households), Ethnic group (main = PRAJA = Chepang people, Brahmin, Chhetri, Nawar), along Trishuli river and mid-hills, 3 hours on foot from Charaudi CC along the national highway)

2) Economic aspect

a) Prime income source(vegetables-cabbage, tomato, beans, eggplant, squash, bitter guard - and fruits- orange, lemon, banana, guava, citrus), Sales from orange farming of VDC (Rp.20 mill/year), major grains (paddy, millet, maize, phapar), vegetable seed production (garlic, ginger, cabbage, eggplant)

b) All households using compost/organic manure due to the lack of chemical fertilizer and popular Urea manure, orange which was traditionally adopted

crop loosing its production due to disease/insects every year, requirement of suitable cropping technology for high yielding variety

(6) Participants

1) Farmers, community leaders, social workers and members of CC

   25 households in Gyaza Tole, ward No. 7 and 18 households in Bhanjyang Tole, ward No. 8 of Dhusha

2) Selection criteria

   Purposive sampling from ① CC covering area, ② CC users, ③ target group for the Study

(7) CC

1) Consciousness on CC : SAHAKARI(Cooperative) for participants

2) Less and Ineffective use of CC: because of ① far from village, ② no purchasing by CC, ③ no sufficient space, no cold storage and no security to store mainly for fruits (high cost to rent a room for storage), dealing capacity of the weighing machine ④ no coordination by CC to sell the product, ⑤ no communication from CC on tome, ⑥ lack of technical personnel(JT/JTA), ⑦ lack of capital

(8) Change of marketing (before and after CC=1998)

1) Before CC: sell products on the highway, sell at the fixed price to traders from outside because of no options, sell without weighing by lump sum basis

2) After CC: very comfort and easy to sell products, sell at a better price by knowing a recent price in Kalimati and the other wholesale market, sell products after weighing at CC, store for next day in case of no completion of selling

(9) Problems list

Lack of capital, lack of own vehicle, lack of infrastructure, lack of resources (materials/human resources), lack of telephone and fax, lack of sufficient stall at Kalimati, lack of coordination and cooperation from farmers, lack of sufficient exposure visit/training, lack of cold storage

8.4.6 Indian tour (Siliguri, Patna, & Delhi)

(1) Objectives

The main purpose of study tour to India was to understand the marketing system in India as well as to find out the potential opportunity for export promotion to India. The main objectives of India study tour was to visit the wholesale markets at Silguri in West Bengal and Patna in Bihar both to observe the management system as well as to explore the potential export promotion / international competitiveness of Nepal products in India.

The specific objectives were:

1) Site inspection of India wholesale markets and collection centers;
2) Individual observation of Indian wholesale markets and collection centers;
3) Separate group Discussions at Wholesale Market and collection centers;
4) Observation and discussion on the Management of the collection centers and wholesale markets; and
5) Exploring export promotion of Nepal products.

(2) Methodology

The methodology adopted for the participatory approach were mainly for the clarification of (i) physical facilities required for wholesale market and collection centers; (ii) Options for management of wholesale market and collection centers; and (iii) use of wholesale market and collection centers.

The main procedure adopted for Domestic and India study tour were (i) selection of workshops participants interested in study tour, (ii) preparation for the implementation of both domestic and India Study Tour; and (iii) implementation of India Study Tour.

1) Visit to Silguri wholesale market
2) Three hours observation and discussion on the spot in the market area
3) Various groups and individuals among the participants observing and discussing on separate groups and locations based on their interests.
4) A demonstration of Sindhuwa cabbage supply (export from Dhankuta) to Silguri Wholesale Market.
5) An introduction to the wholesalers at Silguri handling Nepali products.
6) An official meeting with the secretary of the Market management secretariat under the Bengal Market Development Board at Calcutta.
7) An official meeting with the staff of the Secretariat at Musallapur Patna wholesale market and at Mujafferpur Patna and Mujafferpur wholesale market is managed by the secretary under the Bihar State Market Development Board at Patna.
8) Visit to vegetable, fruits and fish blocks operated in separate blocks.
9) Visit to Dhupguri, Jalpaiguri collection center discussion with traders comittee.
10) Participants observation of Dhupguri collection center for 2 hours on its operation, management and cash dealing during sale.
11) Answer to the questionnaire for individual evaluation.

(3) Major output

1) All the participants felt Indian Study Tour a necessity, beneficial/knowledgeable, and successful for their purpose.
2) All of the participants observed differences in market development between Nepal and India especially in production volume, planned production grading and packaging, transportation network, quality and linkages development.
3) All of the participants observed differences in wholesale market management between Nepal and India especially in infrastructure development, management system, volume of transaction, and on market information system.

4) All of the participants felt that they have learned some lessons that could be used/implemented back in Nepal.
5) All of the participants visualized potential sale of Nepalese agri. products in Silguri Market. The main commodities for export to Silguri market are cabbage/cauliflower, off-season, vegetable, potato, orange, squash, ginger, cardamom, chillies and other commodities.
6) Seventy five percent of the responding participants believed that they have comparative advantages to produce off-season agri. products to supply to Silguri market both in terms of price and volume.
7) The main suggestion of the participants regarding improvement on marketing system in Nepal were (i) increased production in planned manner, (ii) adopting planned institutional development and (iii) development and disseminate of a new technologies on most potential agri. commodities.
8) The main suggestions of the participants on marketing system improvement were:
   - Institutional development of farmers;
   - Institutional development of traders;
   - Contract negotiation with Indian marketers;
   - Production expansion of agri. products on planned manner;
   - Trade agreement between Nepal and Indian government;
   - Review of West Bengal Plant quarantine rules; and
   - Many others.
9) All of the participants felt need of this kind of Indian Study Tour in Future for their exposure to Indian Marketing Systems.
10) However, the participants have various suggestions on the improvement of the tour organization and management especially for
11) Official permission of Indian government
12) An advance arrangement for meeting and interactions
13) Careful selection of limited participants to represent traders, farmers, and other
14) Need a well informed tour guide for each location,
15) More detailed discussion with participants on specific issues on daily basis,
16) Provide tour schedule in advance and discuss with participants,
17) Need systematic programs scheduling and time management.

8.4.7 Closing ceremony of the participatory approach on Nov. 22

The Team introduced participatory approach for planing of the proposed projects. Participants are the target groups for commercialization of agricultural products, such as farmers/women, traders/entrepreneur, relevant persons in livestock/fisheries and government officials both of central and local levels.

Major outputs through this participatory approach may be summarized as follows:

1) Establishment of the integrated production and marketing system
2) Introduction of the education and training system for the improved agricultural marketing
3) Management under the clear-cut regulation of the collection centers (CC) and wholesale market(WM)

4) Establishment of Market Management Committee of the CC/WM, of which members should be selected as representatives from users groups
5) Establishment of the Autonomous body for market management
6) Support by the central and local government on the management of CC/WM
7) Establishment of the new collection centers and wholesale market with multipurpose and integrated functions
8) Importance of location of wholesale market which will be the less conflict areas with urban development use

Points raised in the final session of the closing ceremony are as follows:

1) Main Points Suggested by Dhankuta Group

a) The capacity of wholesale market in Biratnagar should be of 75,000 to 100,000 metric ton (capacity).
- Production amount in Eastern Region is high.
- Variety of off-season vegetables are produced in Eastern Region.
- Farmers/Traders of production pockets are directly selling at Silguri, India (might have not recorded in Nepal).

b) Birganj as Export point to both Biratnagar and Kathmandu.
- Birganj – Raxual – Majaffarpur – Patna main high way to supply products
- Birganj central to both Kathmandu and Biratnagar
- Birganj – Raxaul has good network both in Nepal as well as in India.

c) Users Role and Representation in CC & WM.
- MMC of CC represented by farmers and traders.
- Member of MMC at CC represented in wholesale market (c).
- Users role in WM through CC.

d) Management Problems in MMC formation and market management.
- Lack of physical facilities at CC / WM
- Lack of management capability
- Political interferences

e) Suggestion for more physical facilities provision in CC & WM.

f) Since Cardamom is exported to India, Cardamom Marketing need to be included in WM management.

g) Regulation are not clear both in Nepal and India. The project need to work out in regulation matter.

2) Farmers / Women's Group : Main – Points Suggested

a) Inputs Provision (seeds, fertilizer etc.) quality, on time, and reasonable price.

b) Expansion of commercial production.

c) Transport constraints to CC/ WM.

d) Government Create facilities to farmers as in the case of Phuentsiling, Bhutan.

e) Kakarbita and Birganj are two main Export Center for Eastern and Central regions.

f) Representation of MMC of CC in MMC of WM.

g) Farmers Institutional Development from Community level to village to VDC to District to region and at national level.

h) Solution on the plant quarantine problem.

i) Increase capacity of Biratnagar WM.

3) Local & Central Government Officials Group

a) CC area - 2 to 3 hectare with
- Open shed – 5 sheds
- Stalls – 30 stalls
- Storage including cold storage
- other utilities and facilities

b) WM area – 15 ha.
- Open shed – 15 sheds
- Stalls – 200 stalls
- Storage including cold storage
- other facilities

c) MMC in Collection Center
Representation of farmers groups + Women Groups (25%)
Representation of Traders
Representation of Local Government
Representation of DADO office.

d) MMC in WM
Representation of selected CC.
Representation of Traders/ Wholesalers
Representation of Regional Directorate
Representation of DCCI

e) Use of CC & WM
- Market information systems/ centers
- Based on market regulations
- Proper allocation of stalls
- Maintenance based on local revenue generation
- Quality control including packaging facilities.
- Practical training in marketing to producers and traders.
- Model demonstration for training.
- Transport facility from Farm to CC and to WM.

4) Traders Group : Main Points Suggested

a) Stall Facilities in New Wholesaler Markets
Size A of 500 sq. ft. areas
Size B of 1000 sq. ft. areas
Size C of 1500 to 2000 sq. ft. area.
(with walls and shutter for protection.)

b) Adequate toilet, drinking water and other utilities.

c) Office facility and staff rooms.

d) Banana ripening chamber (place) with oven, & storage facilities.

e) Cold storage facilities within the WM for price competitiveness with India Price.

f) Selection of location at convenient place with less traffic problems

g) Number of stalls suggested at WM
900 stalls for vegetables
500 stalls for fruits
(Cooperative / Farmers / CC stalls at WM also considered wholesaler)

h) New wholesaler market declared as Central Wholesaler Market with defined criteria.

i) New WM construction with more long term planning and long term vision.

j) Separate blocks for vegetable, potatoes, fruits, fish and meat suggested.

k) Qualification for Hiring stalls at WM
- Citizenship
- Licensed Traders
- Approval of Traders Associations
- Farmers Groups and Farmers Cooperatives Representative
- Non political

l) Stall Rent
At present Rs. 20 / sq. ft.
Need to be reduced to Rs. 4 / sq. ft.
(Indian rate – Rs. 2 / sq. ft.)

m) Introduce new sources of revenue such as
- Marketing fee
- Entry fee
- Parking fee etc.

n) Banking Facilities

o) Telephone Services

p) Kitchen for Tea & Snacks

q) Grading and Packaging Facilities
- Main point of disagreement and bargaining are on weight measurement and quality aspects

r) Road linkage between CC to WM with less traffic problems.

s) Information Center at WM

t) Management of CC/WM based on regulation

u) Dumping sites and sewage problems.

v) Hostel arrangement for farmers and traders for over night stay.

9 ACTION PLAN

9.1 Development Concept of Regional Integrated and Comprehensive Agricultural Marketing System

9.1.1 Development Goals

Development goals for this Action Plan is to contribute to the national economic development by ① the establishment of effective marketing system and promotion of modernization for all marketing stages of agricultural products such as production, post harvest, transport, wholesaling/retailing, domestic consumption and external trade and ② to increase income of farmers, women and traders involved in marketing activities and redistributed income more to the poverty group, ③ improvement of environment conditions both in the urban and rural areas.

9.1.2 Development Concept

(1) Establishment of marketing policy

Nepal Market Management Board or Steering Committee will be organized under MoAC and has role of preparation and monitoring of national marketing policy as adhoc basis. This board will prepare legal, institutional and organizational development of the new marketing system and physical infrastructure.

(2) Establishment of commercial zones

Administrative Region is the existing commercial zone based upon the origin and destination pattern. The new wholesale market (NWM) in the Kathmandu Metropolitan area will be the regional base of agricultural marketing in Central Region during the short period. Regional agricultural marketing system will be established from the production pockets (PP) to the NWM, covering the marketing route from PP to the collection points (CP), from collection points to the collection centers, collection centers to the NWM. This regional marketing system will be expanded as the nationwide marketing system in the long run.

(3) External trade of agricultural products

The imported agricultural products will be transported and traded at the NWM through the phyto-sanitary inspection procedure. The exported agricultural products will be collected at the collection centers by way of CP from PP and directly exported from CC to the foreign markets mainly in India, Bangladesh, Tibet and Bhutan. There is only a limited portion of the exported products to the other countries in a short period . During this period, test trial for the expansion and diversification of export will be expanded for long term development.

(4) Integration and establishment of simple marketing structure of the wholesale activities

There is no integrated agricultural wholesale market in the Kathmandu Metropolitan City. There are various types of agricultural wholesale markets such as vegetable wholesale markets, fruits wholesale markets, wholesale/retail mixed markets and. Under such conditions there is a difficulty to promote the effective marketing systems which include the bulky and stable marketing system, quality standardization, improvement of the complex transaction/payment system and establishment of a fare/effective pricing mechanism. For the solution of these ineffectiveness, the integrated NWM of agricultural products will be proposed in Kathmandu Metropolitan area (KMA) and Biratnagar city. NWM In KMA will include the modernized function of Kalimati wholesale market, wholesale function of Harsha fruits market , Tukucha markets and the other mixed markets. The function of Kalimati wholesale market will be transferred to a multipurpose urban retail market because of being located at the urban center of Metropolitan area. In Biratnagar, NWM will function as real wholesale market in the future while it will also contribute to work as retail market once or twice a week in the short period. After establishment of NWM, the existing traditional wholesale market will be transferred to the other purpose of urban use.

(5) Major function of NWM and CC

1) Collection, sorting, grading, packing and transport of the agricultural products will be strengthened and modernized

2) Open and fair pricing mechanism will be established through the introduction of the open transaction system like auction system and marketing information system.

3) Farmers organization will be supported through more involvement of farmers groups in marketing activities, establishment of effective market infrastructure and institutions.

4) Legal support will contribute to establish the orderly controlled NWM/CC through reorganizing of management committee, licensing system and the other regulation.

5) Financial conditions of WM/CC will be significantly improved by introduction of the new fee collection system.

Management system

NWM/CC will be managed and operated by the representatives of users (beneficiaries). For this purpose, Market Management Committee (MMC) will be organized by bottom-up method supported by the government.

Research and test operation by the Pilot Project

1) Horticulture products: Pilot project will be established in NWM for sales promotion of the high quality products and export promotion.

2) Livestock and livestock products: Model projects of NWM/CC for live animals , of the slaughter slab and of sanitary control promotion of livestock

products will be proposed for demonstration of the improved livestock marketing system.

3) Fish: Small scale community project will be proposed for marketing /processing technology transfer to the small scale fish farmers and women.

Education and training

All of the target groups of agricultural marketing system, like farmers/women, traders, management organization of the existing WM/CC and government officers, have less knowledge and experience on the effective marketing system. For the solution, sustainable education/ training system should be introduced and fund arrangement for training will be proposed in a long-term basis.

9.2 Formulation of the Action Plan by Sector

9.2.1 Sector 1 Action Plan for Horticulture Production and Post-harvest system

(1) Central Region

1) Regional Characteristics

Potato production in Central Region is lead by Central Hills and then Central Terai. However, Central Mountains and Hills are supply areas to Central Terai, where the consumption is biggest.

Major production areas of fruits in Central Region are Terai and Hills.

2) Vegetable production

Vegetables in Central Region are produced mostly in Terai with share of 63.6% in area and 62.1% in production volume respectively.

3) Spice production

Spices consisting of cardamom, ginger, garlic, turmeric and chilli are produced only 13,017 metric ton despite their bigger demand.

(2) Eastern region

Potato production in Eastern Region is highly produced in Hills.

Vegetables in Eastern Region are produced mostly in Terai with share of 70.0% in area and 69.8% in production volume respectively.

Of spices, large cardamom is a one of the major cash crops of Nepalese farmers in Eastern Hills zone. Marketable forms are dried and ungraded and dried graded. Currently all cardamom is exported to India and prospective importing countries are Bangladesh, Pakistan, Qatar and Saudi Arabia.

(3) Proposed Project (Collection Center Establishment)

1) Goals and purposes

To realise smooth market access and to increase farmers income by the integrated horticultural marketing system between PP, CP, collection center (C.C.) and wholesale market (W.M.) in the Central and Eastern Region respectively.

2) Project Description

Reasonable number of farmers groups or cooperatives is selected among production pocket areas initiated in Kathmandu and Biratnagar. So far, those groups are selected in Central Terai and Hills, and Eastern Terai and Hills since there are higher production potential particularly by increasing productivity in meet with design of APP and lots of pockets are designated by MoAC in the field of horticulture. Sites and organizations for establishment of C.C. are selected by the following conditions:-

a) Establishment of C.C. shall be in leading production pocket area with availability of land preparation by farmers,

b) The site of C.C. should not be far from village in production pocket area,

c) The site shall be prepared at most convenient place from collection points/farmers' field in production pocket area with transportable access road to the market by truck,

d) Infrastructure of commercial electricity shall be provided for precooling facility to store both produce and farm inputs especial of seeds as required, and

e) Cooperative, farmers or women group is now operated and managed in good condition or has the capability under the strong leader.

Following 5 sites in Central Region and 4 sites in Eastern Region, total 9 sites are proposed as pilot models by means of feasibility study.

3) Project Component

a) Major function of C.C.

- to link farm yard and consumer market effectively in due course,
- to be operated and managed by Cooperative, Farmers' group, Women group or their joint venture,
- to be operated and managed on the basis of democracy and self-reliability,
- to decrease quality deterioration and prolong shelf lives,
- to support the front line extension services for technology transfer mainly by other institution such as Cooperative, Farmers' group or Women's group jointly with extension agencies ,
- to improve chances for organizing group transportation to various urban markets and reduce individual transportation cost,
- To introduce improved packaging which will reduce en-route damage to reduce, protect quality and decrease handling and transportation loss,

- to implement grading by size and freshness,
- to handle any horticultural produce,
- to be provided with storing function to avoid daily sale in cheap price and in credit,
- to be provided with precooling facility to store both produce and farm inputs especially of seeds for high quality produce
- to be provide with transportation facility for enabling to purchase farm inputs and deliver produce by farmers' initiative on time and to save expenses,
- to be equipped with modern weighing model to eliminate queuing for a long time to save time and to increase profit, and
- to be provided with communication system to inform the update prices of produce to member farmers quickly on time.

b) Major components

Building components are a. main block consisting of storage rooms (5MT precooling storage room for farm input, 10MT precooling storage room and 10MT atmospheric temperature storage room), loading/unloading/grading bay, office room, machinery room, kiosk annexed with storage room, store block, toilet block, water tank, waste disposal box and gate and fencing.

Major equipment to be provided are a. precooling facilities consisting of refrigerating condensing unit, unit cooler, air cooled condenser and control panel, standby generator, measuring equipment such as top-pan scale and platform scale, transportation equipment consisting of plastic crate, wooden pallets, trolley and vehicle, office instrument of signboard, wall clock, desks and chairs, cabinet, calculator, office stationary, information board and ceiling fan, communication equipment of radio and telephone/telefacsimile and quality control equipment of thermometer and refractometer.

4) Transaction system at C.C

5) Project Impact

a) Direct (short term) benefits:

- Smooth access to C.C. alleviates heavy porter works usually done by women,
- Realisation of smooth marketing and storage bring reasonable and fair price to farmers,
- Storing function is to alleviate day by day sale even though in low price and in credit,
- Cold storage function is to alleviate seasonal price fluctuation and to increase profit,

- Storing function of farm input especial of seeds causes farmers available to get them on time without any quality depreciation,
- Minimize the post harvest loss (quantitative loss) associated with lack of appropriate facilities to provide protection for produce from rain and sun,
- To alleviate quality depreciation (quantitative loss)b of produce,
- Distribution of palletised plastic crates facilities traders, transporters and wholesalers to reduce transportation loss (qualitative, quantitative, loading/unloading labour and time) significantly,
- Available to eradicate the exploitation of middlemen monopoly,
- Farmers can enjoy fair price through fair price information,
- Traders joining to transaction at C.C. can increase income by reducing extra transportation cost and time for collection patrol and by handling quality produce, and
- Also private transporters joining to transaction at collection center can reduce transportation and labour cost together with extra time for collection patrol.

b) Indirect (medium and long term) benefits:

- Establishment of collection center shall give the incentive to farmers for successful acceleration of organization of cooperative, Farmers' group and Women's group as a strong business weapon in addition to mental power,
- Capable of selling also credibility and brand of production pocket by distributing of high quality produce, which causes produce with higher price,
- Smooth marketing of produce brings farmers widen horticultural area and increase production, and
- Group activity strengthens the organization and production technology, which causes increase of yield.

9.2.2 Sector 2 Action Plan for Horticulture Marketing System

(1) Central Region

1) Central Regional Characteristics

It is reported by the government that Nepal attained 4.99% growth in agriculture in the last fiscal year. When highlighting to vegetable production, it becomes steady from 97/98 to 98/99 that is in between 1.3 to 1.4 million tons per year. The production in Central Region occupies 27% share of total domestic production that is the biggest among the Region. Marketing of vegetable has only 10 years history in Nepal. Previously, it was not commercialized but subsistence product. The projection of demand and

supply for vegetable is assuming to 2.2 to 2.3% as yearly growth rate (refer to Table 9-1 to 9-4 for projection of S/D and O/D). While Agriculture Perspective Plan is estimating much more increase. To cope for the future expansion of supply, the establishment of orderly marketing system is urgently required as the target of this project. The population in Central Region is expected to increase up to 10 million in 2015 that is almost one third of the nation. There are Kalimati Wholesale Market, Tukucha Market and Harsha Fruit Wholesale Market, and some other few markets in Kathmandu Municipality, that is the capital of the country, but these markets are not being in operation as it should be. Most traders and producers are complaining disorderly and weak management of the market.

2) Kalimati Fruit and Vegetable Wholesale Market

a) Existing facility and human resource

Kalimati Wholesale Market is in operation since 1986. At the initial stage, it was started with one shed built with the resource of the Department of Agriculture. Due to increasing incoming volume and not well equipped facility, HMGN had requested UNCDF for assistance of improved facility. All new facilities completed by 1998 in the area of 2.25 hectares with 4,900 sq. meter shed and 790 sq. meter building for administration and management. For effective management on an independent basis and commercial basis operation, the Government formulated Kalimati Wholesale Market Development Board in 1995. To assist the board in management and operation, the project "Support to a new Kalimati Market Project" had started since 1996 with the funding assistance by UNDP (US$962,000) and implemented by FAO. The Kalimati board now holds 60 staffs including accounts officer and planning officer.

b) Data of incoming volume to the market provided by the Board.

The board collects quantity of incoming by asking traders twice a day, 7 am and 1 pm. The incoming volume in 1999/2000 was 138,992 tons. (See Figure 9-1)

The incoming volume is not significantly increasing since 1995/96. This comes from the establishment some new market in the municipality such as Tukucha (1998) and Harsha (1997). The latest information on incoming volume is 9,378 tons in Sep./Oct. 2000. The volume was 9,378 tons.

Among the volume, Potato occupies the biggest portion that is 27%, then followed Tomato 9%, Onion 8%, Ginger 8%, Christophine 7% and Cabbage 6% respectively (See Figure 9-2).

Regarding origin of commodity, the share of Dhading and Kavre are the biggest that is 9% each, then followed Bara 8%, Makwanpur 7%, Sarlahi 7% and Chitwan 6%. The share of the product in Kathmandu Valley is not so large in Kalimati Market.

c) Data of incoming volume surveyed with truck drivers.

In order to check figures of incoming volume provided by the Kalimati Marketing Board, the survey of incoming truck has been conducted by surveyors for successive 7 days starting from November 7 to 13, 2000 during 7 pm to 7 am. The numbers of truck and their cargo weight during the period has been summarized in Table 9-5.

As shown from the table, 431 trucks are coming to Kalimati Market and total weight is 1,500 tons, that is 213 tons per day in average. The peak arrival time is in between 3 am to 5 am to avoid the traffic restriction hour in the city. The size of truck is not so large, that is less than 4 tons per truck.

Not only trucks during mid-night to early morning, but Tempo (three-wheel vehicle), van/pick-up and cycles are incoming to the market with cargo during daytime. The quantity was surveyed from 7 am to 7 pm on November 21, 2000. The result is shown in Table 9-6.

Incoming volume during daytime amounts 36.84 tons that correspond to about 15 to 20% volume incoming by trucks during mid-night to early morning. It is concluded that total incoming volume to Kalimati Market is 250 tons in a day from the survey conducted by JICA Team during November 2000.

The origins of trucks have been revealed from the survey. The summary is as shown in Table 9-7.

The data of origin is just similar with the data provided by the Kalimati Marketing Board. 70 to 80% trucks are coming from the hilly area of the Central Region. The incoming volume of fruits is very few. One or two trucks with orange are coming from Tanahu and Gorkha, West Region, every day in this season.

d) Marketing Territory of Kalimati Market

To know marketing territory of Kalimati Market, numbers of outgoing trucks together with volume and destination were surveyed during mid-night to early morning from 11 to 13 November, 2000 (refer to Table 9-8). The size of outgoing truck is almost small, such as van/pick-up and three-wheel vehicles loading 200 to 500 kg. The peak time was 4 am to 6 am.

Among outgoing commodity from Kalimati Market in the early morning, the biggest portion had gone to Tukucha market, then followed to Anam Nagar and Lagankhel. The marketing territory of Kalimati can be assumed to other market in the center of Kathmandu Municipality and Lalitpur Municipality as well. (See Figure 9-3)

Regarding the volume outgoing from Kalimati in the early morning is in between 30 to 40 tons per day, among which 10 to 20 tons go to Tukucha Market.

During daytime, some amounts are going out from the market. The survey at the gate on November 21, 2000 is summarized in Table 9-9.

Outgoing volume during daytime from the front gate is estimated as 176.925 tons. There is another small gate that opens only daytime. Outgoing volume from this gate is estimated as 36.84 tons. Accordingly, outgoing volume during daytime becomes 213.7 tons in a day.

The volume of incoming and outgoing fruits and vegetables in Kalimati Market is well balanced from the survey conducted by JICA Study Team (refer to Table 9-10).

e) Mode of Transaction in Kalimati Market

Most traders purchase fruits and vegetables from intermediary, then followed from farmers. The portion of direct purchasing is quite few. The major clients are wholesalers and retailers in other market. There are many options as the mode of payment. It is usually 50% each as cash and credit. 65% traders sell more than Rs.10, 000 per day and 30% sell more than Rs.20,000 per day.

f) Traders' Willingness to Move New Market

Among 300 wholesalers in Kalimati Market, 269 traders were surveyed their willingness by individual interview whether they will move to a new wholesale market if constructed along the ring road. The result is summarized in Table 9-11.

90% traders showed interest to move a new market if wider stalls shall be allocated to traders. The major reasons to move are 1) Too narrow stall space. 2) Traffic problem. 3) High rental fee for stall. 4) Poor market management. 5) Lack of security for stall. The reason of negative answers is 1) Lose of fixed client and 2) Convenience of access.

2) Tukucha Semi-wholesale Market

a) Existing facility and human resource

Tukucha is a semi-wholesale market established in 1998 by some entrepreneurs and social workers, with the objectives to provide a marketing opportunity for farmers of the valley. The market is located on space (0.5 hector) leased by contractors from the Social Service National Committee. The contractor has built sheds in the market and built a fence. Stall space (96 sq. feet) is rented to the traders for Rs.1,300/month. Almost traders in the market suppose that Tukucha is a temporary market because of uncertainties of the contract period. There is no Marketing Committee in Tukucha only just the office of contractor who collects the fee of stalls.

b) Data of incoming volume surveyed form truck drivers.

No statistic data is available form the market since there is no management body in Tukucha. To estimate incoming volume to the market, the survey has been conducted for successive 7 days starting from November 7 to 13, 2000 for truck drivers incoming by surveyors during 7 pm to 7 am. The numbers of truck and their cargo weight during the period has been summarized in Table 9-12.

As shown from the table, 355 trucks are coming to Tukucha in a week and total weight is 374 tons, that is 53.4 tons per day in average. The peak arrival time is in between 4 am to 6 am. The size of truck is small, that is 1.05 tons per truck. The difference with Kalimati Market is that almost commodity has been brought by farmers by rental trucks.

Not only trucks coming to the early morning, but Tempo (three-wheel vehicle), van/pick-up and cycles are incoming to the market during daytime. The quantity was surveyed from 7 am to 7 pm on November 21, 2000. The result is shown in Table 9-13.

Incoming volume during daytime amounts to 6.165 tons that correspond to 12% volume incoming by trucks in the early morning. It is concluded that total incoming volume to Tukucha Market is 60 tons in a day from the survey conducted by JICA Study Team during November 2000.

The origins of incoming trucks are quite different with those of Kalimati Market (refer to Table 9-14).

Many trucks are coming from Kalimati Market but almost are Tempos carrying with 200 to 400kg. Accordingly, the volume is not so big. It is about 10 tons per day in average. Besides Kalimati Market, Bhaktapur is the biggest supply source to Tukucha Market. Farmers in Bhaktapur bring leaf vegetables such as Spinach, Coriandar, Mustard and Cabbage to Tukucha by themselves with rental truck and sell to traders. The capacity of truck is almost less than 1 ton. This means that no joint shipping disseminates among farmers in Bhaktapur. Traders via trucks bring commodities from Kavre and Makwanpur which are mostly of larger capacity such as 4 to 5 tons.

c) Marketing territory of Tukucha Market

To know marketing territory of Tukucha Market, numbers of outgoing trucks together with volume and destination were surveyed during mid-night to early morning from 11 to 13 November, 2000 (refer to Table 9-15). The size of outgoing truck is small such as van/pick-up and three-wheel vehicles that carry 100 to 200kg.

It is clear that outgoing commodity from Tukucha Market has been scattered to more central area within the Kathmandu and Lalitpur city areas. Total volume of outgoing in the early morning is 2.7 tons per day in average. (See Figure 9-5)

Since Tukucha locates in the center of city, much volume is outgoing during daytime. Whole day's survey was conducted by surveyors at the gate on November 21, 2000 (refer to Table 9-16).

Outgoing volume during daytime from Tukucha Market is estimated as 49.53 tons.

The volume of incoming and outgoing fruits and vegetables in Tukucha Market is well balanced from the survey conducted by JICA Study Team (refer to Table 9-17).

d) Mode of Transaction in Tukucha Market

Out of 126 traders, 59 traders have option to purchase fruits and vegetables from either farmers or intermediary. The majority traders purchase from intermediary. Direct contract traders are very few. There are many options as the mode of payment. The share of cash payment exceeds that of credit. 70% traders sell less than Rs. 10,000 per day. The volume of transaction is very small compared with traders in Kalimati Market.

e) Traders' Willingness to Move New Market

Among 175 wholesalers in Tukucha Market, 126 traders were surveyed their willingness by individual interview whether they will move to a new wholesale market if constructed along the ring road. The result is summarized in Table 9-18.

90% traders showed interest to move a new wholesale market if wider stalls shall be allocated to traders. The major reasons to move are 1) Too narrow stall space. 2) Traffic problem including parking space. 3) High rental fee. 4) Poor infrastructure, and 5) Garbage collection. The reason of negative answer is 1) Lose of fixed client and 2) Convenience of access.

3) Harsha Fruit Wholesale Market

a) Existing facility and human resource

Harsha Fruit Wholesale Market was established in 1997 with the initiative of a real estate developer (Tulsi & Harsha Housing Company) and Nepal Fruit Wholesalers Association. There are about 80 traders in this market and the space rental is Rs.10 and Rs.9 per sq. feet for trading and storage areas respectively. The land space is about 0.42 hector and 6,690 square meter building is used for stalls, storage, maturing room and office space. There is no parking space in the area and the road is muddy. 75% traders are Indian citizenship. There is no Market Management Committee in the market. The chairman and vice-chairman of Association collect the data of incoming volume.

b) Data of Incoming Volume provided from the Association

The association has provided JICA Study Team on the monthly incoming volume of each fruit. The summary is shown in Table 9-19.

Banana supply is throughout year but other fruits have their own harvest season. Orange has a peak in March/April. Apple is from September to November. Mango is only June to August. Grape is only February to April. Monthly average incoming volume is in between 6,000 to 7,000 tons per month. The incoming volume drops less than a half volume in December and January as compared with other months. This is attributed to off-season of fruits and less demand from consumers. (See Figure 9-5)

Regarding the destination of incoming fruits, the Association says that 60% consumed in Kathmandu Valley, 15% goes to Pokhara, 15 to 20% goes Kavre and Sindhpalchowk, and 5% goes to Chitwan.

c) Data of Incoming Volume surveyed from Truck Drivers

In order to check figures of incoming volume provided by the Association, a survey of incoming truck was conducted by surveyors for successive 7 days starting from November 7 to 13, 2000. For the first three days, surveyed was only from mid-night to the early morning, but the numbers of truck were so few. Since the Association has acquired a special permission from the police to enter inside the ring road in daytime for their trucks, the survey for the last four days were changed to 24 hour survey. The result is summarized in the Table 9-20.

The incoming volume in the survey period is very small, that is 42 tons per day in average. Even the average figure for whole days' survey is 65 tons per day. The reason is that the survey period is just after the national festival. The demand of consumers was low and almost all retailers had gone back to India during this period. It is estimated that the incoming volume of fruits to Harsha Market is in between 50,000 to 70,000 tons per year.

Regarding origin of fruits, all large size trucks come from India such as Banana from Bihar, Orange from Nagpur, Apple from Delhi and Papaya from Nagpur. All trucks loaded with 10 tons. The domestic origin is some Banana from Sunsari and Apple from cold storage at Balaju and Sita Paila by small truck. Harsha Market can be called as Indian Fruits Market.

d) Marketing Territory of Harsha Fruit Market

To know marketing territory of Harsha Fruit Market, numbers of outgoing trucks together with volume and destination were surveyed. Since transaction terminates in mid-night, this survey was carried out in daytime. The size of trucks is very small such as van/pick-up or three-wheel vehicle. The result is shown in Table 9-21.

The destination shows the largest volume is focussed to the center of Kathmandu and Lalitpur Municipality including Kalimati Market and outside of Kathmandu such as Kavre and Bhaktapur. It also includes 5-star Hotels, schools and hospitals. The total destination is in between 30 to 40 per day. The average outgoing volume from 10 to 12 November was 29 tons. This amount reflects that incoming volume in this survey period is very low like as 42 to 65 tons per day. Since Harsha Market locates in the center of Kathmandu Municipality, many buyers come during daytime particularly in the morning such as cycle hawkers. The volume was surveyed on November 22, 2000 (refer to Table 9-22).

Tempos carrying fruits are usually heavy loaded than tempos carrying vegetables. We assumed 300kg for each Tempo. Accordingly, total volume outgoing from Harsha Market becomes 45.285 tons in a day. This figure is higher than the figures surveyed during 10 to 12 November because previous survey did not include volumes brought out by cycles and porters. The outgoing figure seems good balance with incoming volume estimation, that is 65 tons in average.

e) Mode of Transaction in Harsha Market

Almost traders purchase fruits from intermediary or direct contract with traders in India. There is no opportunity for farmers to participate in fruit business at Harsha Market because of business size. More than 90% is sold to retailers to other market. The mode of payment is usually credit. Retailers pay to traders after they sold, then retailers can get next commodity to sell. The daily sales amount of Harsha traders is very high compared with traders in Kalimati and Tukucha. More than 50% trader sells Rs.20,000 or the above in a day.

f) Traders' Willingness to Move New Market

Among 80 traders in Harsha, 75 traders were surveyed their willingness by individual interview whether they will move to a new wholesale market if constructed along the ring road. All traders were very positive to move from present market. The major reasons to move are 1) Too narrow space of stall. 2) Traffic problem including parking space. 3) Dirty environment. 4) High rental fee. 5) Security problem and 6) Porter problem.

4) Other market in Kathmandu

a) Anam Nagar Street Market

This market was established in 1997. This is managed by Kathmandu Valley Green Vegetable Traders Association. This is a street market that opens only in the morning. There is no facility and traders sell commodity on the road. Traders pay Rs.150 per month. There are about 150 traders in this market. Among them, 10 traders were surveyed regarding trade items and volume on November 21, 2000 (see Table 9-23).

About half traders come from Bhaktapur. All traders adapt cash payment. From the trade volume of 10 traders, it is estimated that about 50 ton vegetable is sold in a day at Anam Nagar Street Market. Some part of vegetables is coming from Kalimati and Tukucha Market.

b) Krishak Bazaar, Balkhu

This market was established in 1998. The facility is rented for 5 years at Rs.9,000 per month. There are 12 traders at present. Almost come from Dhading and Kavre. The market is for domestically produced fruits and opens from October till March. Farmers bring Junar, Orange and Jyamir to the market and borrow the stall as 7% commission. The volume of transaction is about 30 ton/day and amount is Rs.600,000 in total. This corresponds to Rs.5,000 per one trader.

5) Project Goal

The project goals are:

a) To establish orderly wholesale market in Kathmandu Valley.

b) To establish one stop wholesale market for fruit and vegetable for traders' convenience.

c) To establish better linkage between traders and farmers by exchange of the market information.

d) To promote farmers' motivation to grow/harvest/deliver more products acceptable for urban traders/consumers.

e) To motivate the enlargement of farmers group to obtain bargaining power to traders.

f) To enable obtaining more profit both for farmers and traders by the establishment of orderly market.

g) To secure enough quantity and safe quality fruits and vegetables for use of public living in the capital.

6) Project Concept

a) Physical aspect

- To establish a new wholesale market along the ring road in Lalitpur Municipality so as not affected by traffic restriction.
- To establish collection centers at potential production area for the convenience of transport to the urban market.
- To increase stalls owned by farmers' group not by individual farmers so as to realize them consumers' needs directly.

b) Institutional aspect

- To establish Market Management Committee in the market and collection centers enables orderly marketing.
- To educate farmers' group regarding most profitable farming plan of vegetables by analysis of past market information on price and traded volume.
- To educate farmers' group on most suitable post-harvest handling for harvesting and packaging.

7) Projected Capacity of Market

a) Present situation

The number of traders, trade volume and transaction characteristics are summarized in Table 9-24.

There are two different figures in the table, one is Kalimati and another is Harsha. Both figures provided from the Board or the Association are higher figures than those of our survey.

b) Projection of new market capacity

New market capacity in the year 2010 has been estimated from the volume of vegetable and potato coming to Central Region, total volume coming to Kathmandu Valley, and present Kalimati Market. Duplicated incoming volume to Tukucha is excluded (refer to Table 9-25).

In addition to the above figure, incoming volume directly to Tukucha Market that is estimated as 15,000 tons will be added. Then the capacity of new market is estimated as 83,000 tons per year. Besides, there are about 15,000 tons green leaf vegetables coming directly to Anam Nagar. It is a matter to be decided in future whether these green leaf vegetables would be involved in a new market, and the incoming volume will might be increased due to establishment of new collection centers in potential production area. The final projection of capacity in the year 2010 will be estimated as 100,000 tons per year.

Regarding fruits market, incoming volume has been estimated from figures coming to Harsha and Krishak Bazaar. Referring to Table 9-26, in case of Harsha, the figures at bottom and average are considered.

From the figures estimated by both tables, the capacity of a new wholesale market in Kathmandu area shall be 100,000 tons for vegetables and 40,000 tons for fruits.

c) Justification from per capita consumption

There is an estimation of population increase in urban and rural in Kathmandu Valley in the FAO Report on Master Plan in Kathmandu Valley (refer to Table 9-27).

Considering with per capita consumption, the demand of fruit and vegetable in 2010 and 2015 is estimated as shown in Table 9-28.

From the figure of future demand for vegetable and fruit in urban area of Kathmandu Valley, the designed capacity seems to have good capacity and has still some space. When we use the figures per capita consumption reported by FAO Master Plan, that is 73.3kg for vegetable + potato, then present demand becomes merely 67,400 tons in a year. This is too small volume considering with existing trade in Kalimati and Tukucha.

Regarding fruit market, it has a function of intermittent base to transport other district from Kathmandu. Its capacity should be rather larger than the demand in Kathmandu.

8) Project component

a) Software

- Marketing Route
- Transaction System
- Pricing Mechanism
- Licensing System
- Quality Control System
  - Quality control activities of cleaning, washing, grading, sorting, storing, packing with brand name and transporting
  - Quality test
- Market Information System
- Waste Management System
- Security Control System

- Financial Management System
- Education and Training

b) Hardware

i) Wholesale Market Hall

The size of the new wholesale market is to handle 120,000 tons in 2005and 140,000 tons in 2010 (fruits= 40,000 tons from mostly Harsha market and others, vegetables = 50,000 tons from Kalimati market which is overcrowded at present and another 50,000 tons from Tukucha market , the new collection centers and others.)

A number of the wholesalers for the vegetables(Market Hall-1) are estimated to be about 200 (100,000ton handling/year @1.5 ton/ wholesaler/ day) at maximum, reference being Kalimati Market with 301 wholesalers and 120,000 ton - 140,000 ton annually.

A number of the wholesalers for the fruits(Market Hall-2) are estimated to be about 50 (40,000ton handling/ year @ 2.5ton/ wholesaler/ day) at maximum, a part of the Harsha Market wholesalers to be transferred to the NWM.

The Market Hall plans call for flexible enough to cope with annual turnover which varies year to year, a number of the wholesaler and/or size of the stalls for the target year 2010. Therefore, the plan for the wholesale market provides no rigid wall, but screens or grills with posts that could easily be altered. The following suppositions are made from the Operation Schedule of New Wholesale Market.

ii) Administration & Training Center

The building will have mainly 2 functions: spaces required on management for and maintenance of the new wholesale market, and training and learning spaces for modernization of marketing system for traders and others. The 1st floor provides lecture spaces with simple pantry to serve canteen. The 2nd floor consists of the management offices and the laboratory for the training center.

iii) Pilot Project Building

Pilot Project Building is utilized to demonstrate the technology improvement for growing and harvesting of horticultural product. There are mainly two functions for this facility: Exhibition corner and Cold storage.

Facing to the lecture hall, the Pilot Project Building consists of a Cold storage room (5 degrees Celsius) with the machine room, Seeds demonstration spaces where hi-quality seeds will be displayed for visitors to purchase, office, storage and entrance hall.

(2) Eastern Region

1) Regional Characteristics

Vegetable and potato production in Eastern Region is next to Central Region. Illam is dominant for potato production, and Morang and Jhapa are dominant for vegetable production. Population of Morang is also next to Kathmandu that is 862,000 at present. Biratnagar, the municipality of Morang, is the second large city in Nepal having 160,000 population at present. There is Gudri Market in the center of the city. It is a typical traditional market mixed with wholesalers and retailers. The road in the market is not paved. In dry season, it is very dusty and it becomes muddy in rain season. Environment is not clean in the market. Most traders complain problem at loading/unloading and lack of facility for drinking water and toilet. There is no Market Management Committee. At present, not so many commodities come from hilly area of Eastern Region. The product from India prevails in the market.

2) Gudri Market

a) Existing facility and human resource.

This is a traditional market located in the center of Biratnagar Municipality. It is mixed with vegetable wholesalers and retailers. Meat, eggs and fish are also sold in the market.

The facility of stall is very old and not well equipped. In stalls for wholesalers, there is no stage that makes difficulties at unloading/loading. The road in the market is not paved. It becomes muddy in rain season and dusty in dry season. But the space of stall is wide enough to store the commodity. Most wholesalers rent stall of 560 sq. feet as Rs.1,400 per month from the municipality. Even retailers rent stalls of 100 sq. feet as Rs.400 to 600 depend on location. There is no Market Management Committee in the market. There is only the association that communicates with Municipality. Accordingly no statistic data is available on trade volume and value. There are 19 vegetable wholesalers and 24 retailers in the market.

b) Data of Incoming Volume

It is estimated that incoming volume of vegetables to Gudri Market is about 25,000 ton per year from previous survey. To confirm this figure, survey of incoming truck together their origin, commodity loaded and volume were carried out from 21 to 23 November, 2000 at the gate of the market (refer to Table 9-29). The survey hour was from 7 pm to 9 am.

As shown in the table, 33 trucks are coming to Gudri Market and total volume becomes 139 tons in 3 days that corresponds to 46.3 ton per day. 67% commodity, particularly potato and onion comes from India and Bhutan by large truck.

Heavy loaded truck cannot enter to the market due to traffic congestion and narrow road, but Rickshaw and cycles can enter into the market. The number was counted from 6 to 9 am that is the peak business hour of the market (refer to Table 9-30).

Incoming volume at the peak business time is in between 12 to 15 tons, that is 13.7 tons per day in average. Accordingly, incoming volume of vegetables to Gudri Market is estimated as 60 tons per day. This volume does not include fruits. Fruits wholesalers locate outside Gudri Market.

Regarding the origin of truck, it is very few coming from East Region. Only one or two trucks come from Dhankuta and Siraha. No trucks come from Morang, Jhapa and Ilam. Most vegetables come from Terai of Central Region such as Nawalpur (Sarlahi) and Narayangadh (Chitwan) except those from India. Some trucks come from hilly area of Central Region such as Makwanpur, Kavre and Kathmandu.

c) Marketing Territory of Gudri Market

To know marketing territory, numbers of outgoing truck were surveyed during same period. Only one truck went out from Gudri Market during 3 days' survey. Its destination was Ittihari (Sunsari). The marketing territory of Gudri Market only focuses within Biratnagar Municipality. Big difference with Kathmandu market is that there are no three-wheel vehicles available for product transportation in Biratnagar. This should be one of major constraint for the development of horticulture marketing in this area. All local transportation has to rely upon man-driven vehicle such as Rickshaw and cycle. Outgoing volume from Gudri Market were surveyed at the peak business hour from 22 to 24 November, 2000 by counting numbers of man-driven vehicles and hand-carry as well. The survey was conducted at two places in the market (refer to Table 9-31).

Outgoing volume in 3 days' survey was 28.23 tons, that is 9.41 ton per day in average. This volume is very small compared with incoming volume to the market, that is 60 ton per day in average. Another survey was conducted after 9 am till 1 pm (refer to Table 9-32). From this survey, it was revealed that the peak business hour was longer than expected.

During 9 am till 1 pm, outgoing volume from the market reached to 40 tons for 2 days' survey. This is 20 tons per day in average. Accordingly, outgoing volume in the morning become some 30 tons per day. After 1 pm, it becomes the time for retailers' transaction. There are 24 retailers in Gudri Market. Fairly large volume of vegetables is sold to retailers in the market. The balance of incoming and outgoing volume in Gudri Market can be estimated as shown in Table 9-33.

d) Mode of Transaction in Gudri Market

Most wholesalers purchase vegetables from intermediary. Some has direct contact with traders in India. Farmers' involvement for vegetable trade in the market seems small. As for payment system, credit is much more used than cash. The feature of wholesalers in this market is that mostly they have long experience for trade in the market, some says 50 years experience. Regarding sales amount of traders, it has very wide range, the highest sells Rs. 150,000 per day and the lowest sells only Rs.3,000 per day. The average sales are in between Rs.10,000 to 15,000 per day. This is almost similar with wholesalers in Kalimati Market.

e) Willingness to Move New Market

Among 19 wholesalers surveyed, all wholesalers agreed to move a new wholesale market if enough space of stall is allocated. The major reasons to move are 1) Too narrow space, 2) Unloading/loading problem and 3) Poor facility such as toilet and drinking water.

3) Fruits Wholesale Market

Fruits wholesale market in Biratnagar locates outside Gudri Market. There are 6 wholesalers and 3 retailers at Jana Path near Gudri Market. There is no Marketing Committee or Association. They usually sell Apple, Orange, Mango, Orange and Grape. The average sales volume of 6 wholesalers totaled 1,870 kg per day and 3 retailers was 200 kg per day. Some wholesalers sell very small amount in this season, but average wholesalers sell 500 to 600 kg per day and 50 to 100 kg for retailers. There are many fruits retailing hawkers come from India crossing the boarder with cycle. This is the reason of small sales amount for wholesalers and retailers in Biratnagar. Total sales amount by traders is estimated as 1,200 tons in a year.

Incoming volume is also not much. During 22 to 24 November, 2000, three trucks arrived at the Market. The volume was 2,140 kg orange from Makwanpur and Narayangadh and 540 kg apple from Narayangadh. This volume is well balanced with sales volume at present.

Almost wholesalers show their interest to move new wholesale market to explore possibilities for business expansion, but retailers do not like to move because of the distance.

4) Project Goal

The project goals are:

a) To establish orderly wholesale market in Biratnagar Municipality.

b) To establish better linkage between traders and farmers by exchange of the market information.

c) To promote farmers' motivation to grow/harvest/deliver more product for consumers' preference.

d) To motivate farmers more involvement to farmers group to obtain better farming plan and to acquire bargaining power to traders by joint shipping.

e) To motivate farmers to bring more commodity to Biratnagar market.

f) To enable obtaining more profit both farmers and traders by the establishment of orderly market.

5) Project concept

a) Physical aspect

- To establish new wholesale market in the center of city to enable consumers' one stop shopping both vegetables and fruits.

- To establish collection centers at potential production area for convenience of transport to the urban market.
- To increase stalls to be owned by farmers' group so as to realize them consumers' need directly.

b) Institution aspect

- To establish Market Management Committee in the wholesale market and collection centers enables them orderly marketing.
- To educate farmers' group regarding most profitable farming plan of vegetables by analysis of past market information on price and trade volume.
- To educate farmers' group on most suitable post-harvest handling for harvesting and packaging.

6) Projected capacity of market

a) Present capacity of market

The number of traders, trade volume and transaction characteristics are summarized in Table 9-34.

Since there is no marketing committee in Gudri Market, no statistics figure on trade were available. JICA Study Team conducted the survey by counting the numbers of incoming trucks and outgoing vehicles for a three days' period.

From the data obtained, present market capacity is estimated as 24,000 tons for vegetables and 1,200 tons for fruits. There are a lot of cycle hawkers who carry fruits from India and directly sell to consumers and retailers' shop. This is the reason why fruits incoming volume is so small.

b) Projection of new market capacity

New wholesale market capacity in the year 2010 has been estimated from the volume of vegetable and potato coming to Eastern Region and present capacity of Gudri Market (refer to Table 9-35).

Regarding capacity of fruit market, it is estimated to be 2,000 tons per year.

Accordingly, the capacity of new wholesale market in Biratnagar shall be 32,000 tons per year.

7) Justification from per capita consumption

The population in Biratnagar was 130,000 by the census survey carried out in 1991. Assuming yearly 2% increase, then it is 160,000, 195,000 and 215,000 in the year 2000, 2010 and 2015 respectively. Considering with per capita consumption, the demand of fruit and vegetable will be estimated as shown in Table 9-36.

From the figures of future demand for vegetable and fruit in Biratnagar Municipality, the designed capacity of new market seems good balance. If the stalls for fruit become shortage, then vegetable part shall be converted.

8) Major components

Same as Central Region.

9.2.3 Sector 3 Action Plan for Livestock Marketing system

(1) Central Region

1) Regional Characteristics of the Central Region

The Central Region occupies 33% of population of Nepal and has the largest consuming area of the Kathmandu Valley. Notable things in the livestock sector are higher share in chicken meat and egg production with intensive and commercialized production compared with other areas. As well as the Eastern Region, there are many livestock markets in this Region. Among eight animal quarantine check posts in this Region (one at Tibetan border), one at Bara District is one of main entry point of buffalo from India.

2) Projection of S/D and O/D in Central Region

a) Buffalo meat

The Central Region also cannot meet demand of buffalo meat by the internal buffalo meat production in the Region. Compared to 40,612 ton of production, demand is 54,254 ton causing deficit of 13,642 ton in 1998/99. There is no Zone that can produce per capita production of higher than 7.2 kg of FAO's per capita consumption. Particularly per capita production in Terai is lower at 3.7 kg.

Despite the Central Region is largest producing are of buffalo meat in Nepal, OD analysis shows that the Central Region is supplied buffalo meat from the Western, Eastern and Mid-Western Regions to meet regional demand. The Terai in this Region is also main entry point of buffalo from India importing 14,900 ton. Per capita consumption of buffalo meat is estimated at 9.4 kg/year on average that is biggest in the five regions. There are 24 major livestock market in Terai and Kathmandu Valley.

b) Goat meat

The Central Region accounts for one fourth of total goat meat production in Nepal. As well as Western Region, the areas along highway form major producing area of goats known as "goat belt".

But internal production of goat meat does not meet regional demand causing 4,079 ton deficit. Per capita production of 1.2 kg is classified lowest in five Regions and there is no zone producing more than 1.7 kg of FAO's per capita consumption.

According to OD table, Central Region is supplied goat meat from Eastern, Western and Mid-Western, and 1,373 ton are imported from India. Terai in this Region is the major entry point of live goats from India. Per capita consumption of goat meat is estimated at 2.6 kg/year. There are 17 major goat markets mainly in Terai and tow of which are in Kathmandu.

c) Pork

The Region doesn't meet internal demand for pork by internal production causing 1,563 ton deficit. Per capita production in Hills is highest at 0.69 kg that is the only zone exceeding 0.6kg of FAO's consumption rate.

The Region is supplied pork from Eastern Region based on OD analysis. Exports and Imports of pork from this Region are about 320 ton for both. Per capita pork consumption is estimated at 0.7 kg/year. There are one pig market and two in Hills.

d) Chicken

The Central Region is the largest chicken meat producing area in the country accounting for 50% of the total production. Particularly, Hills form major area producing 35.7% of the total. Internal production meets internal demand and has 2,302 ton surplus. Especially per capita production in Hills is two times of 0.5 kg of FAO's per capita consumption and has 2,701 ton surplus. Chicks are also marketed from Terai to Hills as well as live chicken.

According to OD table, per capita consumption of chicken meat is estimated at 1.2 kg which is the highest in five regions. There are 3 chicken markets in Terai and two in Hills.

e) Eggs

The structure of egg production is similar to that of chicken meat. The Central Region is the largest region in egg production occupying 48% of the total in Nepal. Hills, in which Kathmandu Valley is located, accounts 30% of the total and forms egg producing area. Egg production in this region meets internal demand and has much more surplus of 2,088 ton. Per capita production in Hills is about two times the 0.9 kg of FAO's per capita consumption and Hills have 2,657 ton surplus.

Based on OD analysis, the region is the highest among five regions in per capita consumption at 1.2 kg.

f) Milk

Central Region is the milk producing area accounting for 27.4% of the total but supplied milk from Terai of this region and Eastern Region. According to OD table, per capita milk consumption, from which milk for nursing, manufacturing and loss are reduced, is estimated at 39.2 kg/year that is slightly higher than 39kg of FAO's per capita consumption.

3) Proposed Project for the Central Region

a) Improvement of Livestock Markets and Livestock Collection Center

Mahadevstan market will be newly established in Kathmandu. The purpose of this project is to strengthen linkage between the local markets in Terai and Kathmandu market to support stable supply of livestock to Kathmandu Valley that is largest meat consuming area in Nepal. Ramwapur livestock

market and Kohalpur livestock collection center in Banke will also be improved since they have close linkage with Kathmandu market.

b) Slaughterhouses

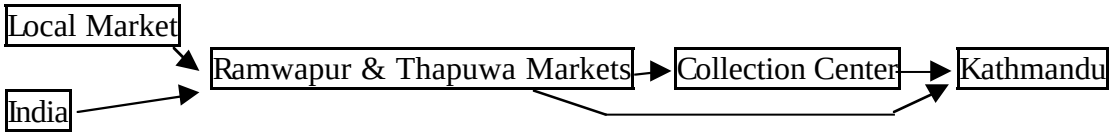
Current slaughtering condition in Kathmandu is very unsanitary, which might have been caused diseases combined with lack of actual animal quarantine check system. Therefore, the purposes of constructing slaughterhouses at Mahadevstan and Thankot areas are to supply hygienic meats for consumers as much as possible.

4) Project Description

a) Project Concept and Marketing System

• Improvement of Livestock Markets and Livestock Collection Center

Buffalo meat consumption in the Kathmandu metropolitan is the largest in the country. Since demand for buffalo meat has not met from the adjacent districts, supply not only from domestic local markets but also from India has been indispensable. The marketing flow is as shown below;



As buffalo is marketed to the metropolitan area of the Central Region on channel as mentioned above, improvement plan of marketing must be consistent from local markets to consuming area of Katmandu Valley. Therefore, improvement of livestock markets will be planned to establish consistent marketing network for buffalo and goat taking into consideration close linkage between Ramwapur and collection center at Terai and Mahadevstan market at Kathmandu. Although there are many livestock markets to be improved such as Lamahi and Jitpur, Mahadevstan and Ramwapur in the Central region were given priority as action plans, therefore, other livestock markets will be improved during medium and long term plans.

b) Slaughterhouses

When planning slaughterhouse, some issues must be taken into consideration such as a) Nepalese prefer fresh meat to frozen or chilled meats, b) consumer has to tend to buy cheap meats than hygienic meats because of unawareness to hygienic meats, c) because of religious reason, livestock must be slaughtered and processed separately, d) consumption pattern of meats is different area by area.

Regarding slaughtering facility planning, Kathmandu and local level should be planned separately because there is demand for hygienically processed meats in Kathmandu Valley from restaurants, hotels and supermarkets, and people's acceptance to frozen or chilled meats is higher than local consumers.

For Kathmandu Valley, small scale but modernized slaughterhouses are proposed as action plan at Thankot and Mahadevstan. Since, capacity of the proposed slaughterhouses are not enough to meet demand in Kathmandu Valley, this type of the facilities should be increased in the near future like in Bhaktapur in the Kathmandu Valley. According to the result of the workshop held at Kathmandu, it was recognized that at least 14 slaughterhouses will be necessary in Kathmandu Valley, those are, six (6) in Kathmandu, four (4) in Lalitpur and four (4) in Bhaktapur. It is considered that construction of large-scale slaughterhouse should be planned as a long-term plan based on detail feasibility study.

c) Marketing Route

i) Live Livestock

Main sources of buffalo for meat purpose and goats for Kathmandu Valley are supplied from domestic local markets and imported from India. Buffaloes are transported to Kathmandu directly through regularly open livestock markets like Ramwapur and Thapuwa markets or held at Kohalpur collection center temporarily to take rest and then transported to Kathmandu by truck. While goat are directly transported to Kathmandu by two-storied trucks. Though livestock markets will be planned to improve, but marketing route does not change even after the improvement.

ii) Meats

Livestock purchased at livestock market are transported to slaughterhouse in case of Kathmandu and slaughter slab in case of local markets and then slaughtered after the inspection by veterinarian. Veterinarian also inspects dressed meats. Thus meats will be slaughtered and dressed more hygienically than now and sold to consumers through retail shops.

d) Handling System: loading/unloading, weighing, sorting, packing, storing

i) Live Livestock

Live livestock are transported from local market to Kathmandu market by truck. Collection center at Kohalpur, therefore, is equipped loading and unloading unit for efficient transportation. In order to improve past weighing method by eyes, weighing machine will be equipped to make fair pricing and negotiation.

ii) Meats

At present meats, particularly buffalo meat is transported from riverside to retail shops by Tempo, Ricksha and bicycles etc. in Kathmandu, which might have had caused contamination even during transportation. It is recommendable that meats processed at slaughterhouse and slaughter slab will be packed in plastic case and transported by small car or Tempo equipped with van to retail shops in Kathmandu. For local level, Tempo with van will be recommendable. Projected slaughterhouse in Kathmandu is planned to equip cold storage to meet demand from star hotels and restaurants.

e) Transaction System

i) Live Livestock

Transaction of live livestock has been done on negotiation between seller and buyer according to their demand (draft, milking, meat). Weighing machine will be introduced in the proposed livestock markets to make transaction fairer by weighing live body weight of livestock accurately.

ii) Meats

As purchasing and selling of meat by sections is not established in general, current transaction based on prevailing meat price will be followed. However, the system will be different for star hotels and restaurants that order meats on its section like loin and rump etc.

f) Price Information System

Price information on livestock has not ever been established in each livestock markets. Detail price information about livestock type, buying and selling prices, live body weight, breed, estimated age, origin and destination etc., has not been recorded excluding collection of entry fees. It will proposed that items mentioned above will be filled in the prepared form to make it possible to analyze dealing number per market day, sold number, origin, destination and prices by livestock markets. The Livestock Marketing Directorate was established in the DLS (Department of Livestock Service) in November 2000, which will be responsible for price and market information in cooperation with DLSOs, proposed market management committees etc.

g) Internal Transport Control System of Truck and Commodities

Livestock come from production areas or marketed to domestic consuming area, local markets and Indian markets, are transported by truck and loading and unloading unit will be constructed in each market for the efficient transportation. The leading fence will also be equipped to make it easier to lead livestock to weighing machine. Truck's parking space will be provided taking into account number of necessary truck in each market.

Fresh meats processed at slaughterhouse or slaughter slab will be packed in plastic case and transported to retail shops by small car or Tempo with van to avoid contamination during transportation.

h) Market Operation System

Current system that opens livestock market one or two days a week is considered convenient for both farmers and livestock trades because they can move market to market according to market day of various markets that results in more chance for selling and buying. Therefore, Ramwapur and Belbari markets will be open on the same days as now. Balambu market for Kathmandu Valley should be open every day like Kirtipur buffalo market taking into consideration its importance in stable supply of meats for various and a lot of consumers.

It is proposed that those proposed livestock market would be managed under the livestock market management committees (LMMC) which is composed of representative of livestock trades, VDC, DDC, Municipality office, DLSO, farmer's group and NGO etc. This proposal on management was agreed with all participants at the workshops held at Biratnagar and Kathmandu. As for Kohalpur collection center, the same management committee involving landowner of the private school will be proposed for sustainable management. Although market contractor has currently collected only entry fee, regular maintenance will become necessary after the improvement and financial status also must be reported to the LMMC that will be open monthly basis. Following is the organization of the proposed LMMC.

As for the management of the slaughterhouse for Kathmandu, meat seller's group who have purchased Thankot are will be suitable because of their strong unity and sense of harmony in dealing meat sector in the community. Following shows the proposed organization of management committee for the slaughterhouse.

i) Dealing Volume

• Mahadevstan Livestock Market, Kathmandu

Buffalo, goat and chicken will be traded at Mahadevstan market. Number of dealing buffaloes in year 2010 will be 130 head per day which is nearly same number as the Kirtipur buffalo market. Based on 90 head buffalo per day and annual population growth (1981 to 1991) in Kathmandu Valley, projected number of buffaloes in 2010 was estimated at 130 head per day.

As to goat, Tukucha goat market has been planned to shift to other area since it is located in the center of town. Mahadevstan market will be able to trade goats instead of the existing Tukucha market in the near future. Therefore projected number of goats in Mahadevstan will be estimated based on the size of the Tukucha market in which about 700 head goats are dealt in maximum during Dashain festival. Consequently dealing goats in the year 2010 was estimated at 1,000 head based on annual growth of population in the Kathmandu Valley.

There is no organized chicken market in Kathmandu Valley at present. Some participants participated in the workshop at Kathmandu have wanted to establish chicken market in Kathmandu. Number of dealing chicken in this market will be projected to deal 60% of chicken consumed in Katmandu Valley taking into account dealing by other chicken dealers.

• Slaughterhouse at Mahadevstan, Kathmandu

Slaughtering target was decided based on land size available for the slaughterhouse because the area is also used for the Mahadevstan livestock market as mentioned above. Dealing number of livestock is targeted as follows:

Buffaloes 90 head/day

Goats	25 head/day
Pig	10 head/day
Chicken	400 birds/day

• Slaughterhouse at Thankot in Kathmandu

Projected dealing number of livestock is estimated based on the land size of five (5) Ropani (0.25 ha) available now as of November 2000. Number of livestock being able to be slaughtered in the proposed slaughterhouse will be as below;

Buffaloes	40 head/day
Goats	10 head/day
Pig	10 head/day
Chicken	200 birds/day

• Ramwapur Livestock Market in Banke District

Since Ramwapur market has close linkage with that in Katmandu metropolitan area in buffalo marketing number of dealing number of buffaloes in the year 2000 is estimated on annual growth (1981 to 1991) of population in Kathmandu Valley. While, as collecting and marketing of cattle are mainly in Banke and Bardiya Districts, projected dealing number of cattle is estimated based on annual growth (1992/93 to 1998/99) of cattle in the two districts. As the result, numbers of dealing cattle and buffaloes on market day in the year 2000 were estimated as below;

Buffaloes	900 head/day
Cattle	630 head/day

• Kohalpur Livestock Collection Center in Banke District

On an average 350 head buffaloes are traded on market day of Saturday and Sunday. The function of this collection center is to supply buffaloes for meat purpose for Kathmandu with stability, therefore relevancy with consuming tendency for buffaloes is considered very strong. Taking into consideration this condition, dealing number of buffaloes in the year 2000 was estimated at 500 head based on annual growth of population of 3.73% in the Kathmandu metropolitan area since 1991.

j) Land Acquisition

• Mahadevstan Livestock Market and Slaughterhouse in Kathmandu

The site is located at outside of the Ring Road and has 32 Ropani (1.6 ha) owned by DDC. Present land use is paddy field. There is a small cattle shed constructed by GTZ whose project was terminated in 1997. Agreement on usage of this land with DDC (District Development Committee) and one with butcher's group exist. People living around the site are welcome to construct livestock market but not for slaughterhouse.

• Thankot Slaughterhouse in Kathmandu

Out of 0.25 ha of the Thankot area, 0.15 ha has already purchased by the Quality Meat Products ltd. group to construct small-scale slaughterhouse. They are waiting for license and permission from municipality office. If considering current unsanitary condition of slaughtering beside riverside etc. and this project will become model case to improve unsanitary slaughtering, the municipality office should provide them license and permission as soon as possible to produce hygienic meats for consumers.

• Ramwapur Livestock Market in Banke District

Land size is 2.7 ha and owned by four (4) private land owner who are also the market contractor of the Ramwapur market. They collect fee of Rs 25 per head from users to manage market. Though they recognize a necessity for improve market but when implementing discussion with these landowners will be necessary.

• Kohalpur Livestock Collection Center in Banke in Banke District

Kohalpur collection center has 2.0 ha owned by adjacent private school. Traders group have used this area by annual contract basis with school since 1978. When implementing, discussion will be necessary with school, VDC, DDC and traders group. As the alternative site, there are site of 0.7 ha along the highway in the north, in which vegetable wholesale market has constructed but not in service now.

5) Project Component

a) Improvement of Livestock Markets

Improvements of livestock markets are composed of both hard and soft aspects. Hard aspect is to improve facility and equipment which consists of relatively simple components such as cattle shed and warehouses etc. and those will be able to construct in a short period. While, soft aspect should be planned by means of middle to long-term plans because this aspect involves educational issues and training matters for personnel concerning to livestock marketing.

b) Projected Training on Management of Livestock Markets and Livestock Collection Center

The purpose of training plan is to enlighten people concerning to the management of LMMC and collection center, and definite program will be composed of the followings;

- Role of livestock market and collection center in the livestock marketing system
- Function of LMMC
- Financial management of the LMMC
- Maintenance of facility and equipment
- Management method of the LMMC

- Law and acts concerning livestock
- Animal quarantine, animal products and food inspection system
- Collection, analysis, management and utilization of marketing information

c) Slaughter Slab

As well as the improvement of livestock markets, project component of slaughter slab is composed of hard and soft aspects. Compared to easiness to construction work, soft aspects should be planned carefully taking into consideration Nepalese traditional custom, preference to fresh meats, unawareness to hygienic meats etc. Therefore, educational training will be necessary for the people concerning to meat sub-sector (governmental officials, consumers, producers, wholesalers and retailers, and meat processor etc.) in order to enlighten and make them understood deeply about hygienic meat and its production. For general consumers, campaign through media will be suitable to make people recognized this matter.

d) Projected Training on Management of Slaughter Slabs

The educational training for the people concerning to the meat production such as members of management committee of slaughterhouse, government official, wholesalers, retailers etc. will be carried out to enlighten them on processing and production of hygienic meats. Definite program will be composed of the following. Training course of two weeks now conducting under TLDP is evaluated very effective to train young meat sellers on OJT method. This kind of OJT must be carried out before and after construction of slaughterhouse for the staff of the plant. Staff of the slaughterhouse for Kathmandu should be trained to make them able to process cut meat by meat section to meet demand from star hotels and restaurants.

- Hygienic meat processing, storing and marketing system
- Cut meat processing by meat section
- Financial management of the slaughterhouse
- Operation and maintenance of the facility and equipment
- Law and acts on livestock
- Animal quarantine, animal products and food inspection system
- Management method of the slaughterhouse

Though proposed slaughter slab for local markets might not meet standard to produce hygienic meats compared to slaughterhouse for Kathmandu Valley, it is recommendable for local level to apply stage development with long term because meat consumption pattern and preference of people are different with the metropolitan area. Contents of the training for personnel concerning to meat processing and production will be basically the same as that for slaughterhouse for Kathmandu mentioned above.

6) Project Impact

a) Improvement of Belbari livestock market will contribute;

- to encourage farmer's and trader's marketing activities
- to improve environment in and around the livestock market
- to keep livestock more healthy during staying in holding yard
- to fair pricing
- to make transportation of livestock smooth

b) Slaughter slab at Belbari local market will contribute;

- to contribute to supply hygienic meats to a certain extent
- to improve slaughtering conditions of livestock
- to improve selling condition of meats
- to make consumers aware of consuming hygienic meats

(2) Eastern Region

1) Regional Characteristics of the Eastern Region

The Eastern Region has higher population coming after the Central Region. The notable things in the livestock sector are that pork production in this Region accounts for 43% of the total pork production, which is considered because of the ethnic group's occupancy that are living in this region.

Per capita production of goat meat/mutton, pork and milk are higher as compared with per capita consumption of FAO (1998) (refer to Table 9-37). There are many livestock markets in the Eastern Region and seven animal quarantine check posts are distributed along the Indian border to deal export and import of livestock.

2) Projection of S/D and O/D in Eastern Region

a) Buffalo Meat

If based on per capita consumption of 7.2 kg/capita/year of FAO, buffalo meat production of 25,437 ton (1998/99) in the Eastern Region cannot meet demand of 38,344 ton for 5.3 million population causing being short supply of 12,907 ton. If comparing per capita production, only Mountain producing more than 7.2 kg has surplus.

According to OD analysis, the Eastern Region is the supplying area of buffalo meat to the Western Region and also exports 136 ton to India. Per capita consumption is estimated at 4.6 kg/year on average. There are 17 livestock markets in Sunsari, Morang and Jhapa in Terai.

b) Goat Meat

The Eastern Region is one of the main goat producing area as well as Mid-Western and Central Regions. Especially, Terai in this Region accounts for 15.4 % of the total goat meat production in the country. The areas along the

highway are known as the “goat belt”. However, only Terai can produces more than 1.7 kg of per capita consumption of FAO causing 383 ton deficit in the Eastern Region itself.

Based on OD analysis, the Eastern Region is the supplier of goat to Western and Central Regions. And 30 tons of goat meat are imported from India to this Region and 89 ton are exported. Per capita consumption is estimated at 1.0 kg/year. There are 19 goat markets in Terai of this Region.

c) Pork

The Eastern Region forms pork-producing area by accounting for 43% of the total production in Nepal. Especially Hill s in this Region accounts for 25% of the total production. The Regional production meets internal demand and has 2,770 ton surplus exportable to other areas.

According to OD table, Eastern Region supplies pigs to Central Region and exports 319 ton to India. Per capita consumption of pork in this region is estimated at 0.8 kg/year, which is the highest among five regions. There are 20 goat markets in Terai and three in Hills.

d) Chicken

The Eastern Region occupies 19% of the total chicken meat production, which is placed on second following to the Central Region. However, internal production of 2,331 ton doesn’t meet demand of 2,662 ton causing 331 ton deficit.

Based on OD analysis, Eastern Region supplies chicken to the Central Region and exports 4 ton to India. Per capita consumption in this region is estimated at 0.3 kg/year. There are 17 major chicken markets in Sunsari, Morang and Jhapa.

e) Eggs

The Eastern Region doesn’t meet internal demand by internal production causing 1,042 ton deficit. The area is an entry point of eggs from India.

According to OD analysis, per capita consumption of eggs is 0.7 kg that is slightly lower than 0.9kg of FAO.

f) Milk

The Eastern Region is placed on third in milk production among five regions. Almost 100% of cheese processed at Hills is marketed to Kathmandu and other milk products are consumed in this region.

3) Proposed Projects for the Eastern Region

a) Improvement of Livestock Markets

Belbari market was chosen to improve in Eastern Region. The purposes of improving these livestock markets are to encourage farmer’s marketing activities and to strengthen marketing system between the livestock market and major consuming areas.

b) Slaughter Slab

Along with the improvement of Belbari livestock market, a slaughter slab is proposed at adjacent are of Belbari market where a retail market opened every Monday exists and meats are processing in unsanitary condition as well as other areas.

Unlike Kathmandu Valley, it is considered that local people's preference for fresh meats will be continued in the future too. Therefore, since proposal of construction of modernized slaughterhouse is considered risky at this moment judging from the lesson of Hetauda, simple slaughter slabs are proposed in local market level as an initial stage for producing hygienic meats. Though this type of slaughter slab is not complete one from the viewpoint of hygienic meat production, it will contribute to improve current status of unsanitary meat processing " to a certain extent".

Proposed slaughter slab for local markets should not be considered as a complete facility from the viewpoint of hygienic meat production. But if considering current status as mentioned above, it must be said that rapid improvement of meat processing will be difficult in Nepal. Step by step development is recommended in this issue. Therefore, small-scale and simple slaughter slabs have to be proposed at this moment.

4) Project Description for the Eastern Region

a) Project Concept

i) Improvement of Belbari Livestock Market

Although there are many livestock markets to be improved such as Lamahi and Jitpur and others, Belbari livestock market in Morang District was chosen because of its importance, good accessibility, and easiness for land acquisition and good location for demonstration.

ii) Slaughter Slab at Belbari Local Market

Proposed slaughter slab for Belbari local market should not be considered as a complete facility from the viewpoint of hygienic meat production. But if considering current status of slaughtering, it must be said that rapid improvement of meat processing will be difficult in Nepal. Step by step development is recommended in this issue. Therefore, small-scale and simple slaughter slabs have to be proposed at this moment. It will contribute to improve current status of unsanitary meat processing "to a certain extent".

b) Marketing Route

i) Live Livestock

Live livestock traded at the Belbari market are come from adjacent districts of Sunsari, Jhapa and Morang itself and marketed to other markets in Jhapa, Morang and India as well as butchers and farmers. This marketing route will be kept even after the improvement of the livestock market of Belbari.

ii) Meats

Meats of buffalo, goat and pig will be processed at the proposed simple slaughter slab at Belbari local retail market in hygienic condition to some extent and then retailer will transport them to retail shops with plastic cases by insulated vans.

c) Dealing Volume

i) Belbari Livestock Market in Morang District

Belbari market is a local livestock market mainly collecting and marketing in the three districts of Sunsari, Morang and Jhapa. Therefore, dealing number of livestock in the year 2010 is estimated based on annual growth (1992/93 to 1998/99) of livestock population in those three districts. Consequently, the number of livestock on market day in 2010 was estimated as shown below;

Buffaloes	170head/market day
Cattle	150head
Goats	230head

ii) Slaughter Slab at Belbari in Morang District

The model of the slaughter slab for local level is further small-scale than slaughterhouse planned for Kathmandu, which will have approximately 155.5 m^2 area (7.7m x 20.2). Stalls for slaughtering buffalo, goat and pig will be provided. Dealing capacity per day will be planned for 3 to 5 head buffaloes, 10 to 20 head goats and 5 to 10 pigs. Since local markets are scattered, when planning this type of slaughter slabs number of slabs and size including number of stalls should be decided based on consuming volume. As the action plan this type of slaughter slab will be planned in Belbari as a model.

d) Land Acquisition

i) Belbari Livestock Market

Belbari market has 1.9 ha owned by VDC and private school. It is considered that land acquisition will be easy according to the discussion with VDC officers.

ii) Slaughter Slab at Belbari Retail Market

Simple and small-scale slaughter slab with 155.5 m^2 (7.7 x 20.2m) will be planned at Belbari retail market in Morang District, which will be a model slaughter slab for other local markets. Taking into consideration environment and transportation, the site will be suitable to select near a retail market.

5) Project Component

Same as that for the Central Region.

6) Project Impact

Same as that for the Central Region.

9.2.4 Sector 4 Action Plan for Sanitary Control of Livestock Products

(1) Strengthening Plan for DFTQC's Activities

1) Background of DFTQC

- CFRL established in 1961 is the sole responsible agency to prevent human health hazard caused by edibles.
- To realize this purpose, the Food Act was issued in 1966 and the Quality Standard of Food Commodities as Food Regulation was followed in 1970. They have been applied to 36 districts among all 75 districts in the country.
- The food inspectors collect samples in quarantine office, food factories and markets and CFRL analyses and inspect them. The Food Standardization Committee assigns the food inspector among officials above 3 grades of gazette. Twenty (20) inspectors were assigned in Nov. 2000, and 30 inspectors are now in charge totally
- The Feed Act was established in 1976. And the Feed Regulation followed in 1983 as the same manner above. They have been applied for six commodities in 40 districts.
- The analysis and inspection fee for the samples collected by the food inspectors is paid by the various rates from 350NR for simple physical analysis to 2,500NR for complicated method as biological culture.
- The result of inspection is treated as "attention", "warning" and "legal action" according to the degree of infringing to the standard..
- The food factory has to receive the license to start its actual operation after inspection by the inspector from CFRL. The results are treated the same way as above..
- The training program is carried out 32 times for total 546 trainees from food factories about 6 kinds of commodities in 1999, in order to improve sanitary control.
- Extension of sanitary technology and knowledge to consumers is one of the very important roles of CFRL. CFRL delivers simple test kits to each district and demonstrate and teach how to detect food adulation, as well as disseminates it by national TV program, newspapers and extension posters delivery.
- CFRL were reorganized to DFTQC on Sep. 2000 and placed the forth Division of MoAC following Div. of Agriculture, Div. of Agricultural Cooperative and Div. of Livestock Services.

In these regards, the application of the Food Act was improved; the kinds of commodities were expanded to 86 and the area applied was also expanded to all 75 districts of the country.

- By the provision of the Food Act, the annual report is published in the gazette containing the analysis results and district and name of maker of commodities inspected.
- The strengthening Project for DFTQC is placed on the prior project in APP (1997-2002).

2) Present Organization of DFTQC

CFRL is reorganized and changed name to Div. of Food Technology and Quality Control on Sep. 2000.

3) Man power of DFTQC

Total 200 persons are working in DFTQC, in which there are 135 persons in Katmandu consisting of 3 technical officers of 1st class, 12 of 2nd class, 23 of 3rd class, 30 of assistant technician and 67 of others management and supporting staff.

4) Activity

- Analysis and inspection of food commodities
- Inspection of food processing factories
- Issuing of various license
- Extension of sanitary information to consumers
- Training of workers in food processing factories

5) Building

Name of building.	Area (m^2)	Total area (m^2)
Management building	102	204
Analysis building	96	192
Nutrition research building	132	132
Library building	32	64
Pilot building	225	225
Total	587	817

The other buildings are guardsmen cottage and a shed for temporary storage.

6) List of existing equipment & its present condition.

	Name	Origin	Introduced	Condition
1	Fruit pulpier 1,2	India	1972,1974	Working
2	Jukce disintegrator/blender	USA	1980	Working
3	Stone peeler/abrasive peeler	India	1972	Working
4	Bottle soaking/washing tank	India	1972	Working
5	Blancher (batch type) 3 set	India	1972	Working
6	Steam jacketed cooking kettle	India	1972	Working
7	Syrup/brine filling tank	India	1972	Working
8	Exhaust box (straight tunnel type)	India	1974	Not Working
9	Can body former (manual)	India	1974	Not Working
10	Double seamier	India	1974	Not Working
11	(can seamier for 3 pcs cam)	India	1982	Working
12	Ri grinder (blander mill)	India	1974	Working
13	Heat sterilizer (autoclave)	India	1974	Working
14	Batch pasteurize tank	India	1976	Not Working
15	Hand bottle sealer	India	1974	Not Working
16	Bottle filler	China	1974	Working
17	Dough mixer	India	1976	Not Working
18	Oil expeller	India	1982	Working
19	Disc grinder	India	1974	Working
20	Cabinet drier	Denmark	1980	Not Working
21	Niro atomizer	China	1998	Working
22	Grinder mill	India	1984	Working
23	Fruity juicer	India	1974	Not Working
24	Wanson boiler	India	1985	Working
	Baby boiler			

7) Budget

The annual budget of DFTQC was as follows:

1999	$262,000	Fixed
2000	$275,675	Fixed
2001	$360,000	Projection

The income of inspection fee is equivalent to 14–16% of above that can be mainly used for the expenditure of consumables.

8) Assistance from outside

There are six technicians studied in Japan and one JICA expert joined on Nov 2000.

9) Constraints

DFTQC is facing the following constraints:

- Laboratory space is too small to increase number of analysis sample.
- The existing equipment cannot fulfill the present demand of analysis.
- Modern and advanced equipment are not available. Mostly classical methods of analysis are performed.
- The quality of food inspectors is not adequate to carry out their role satisfactorily.

- Lack of transportation facilities for regular inspection and monitoring to keep the quality of samples.
- Modern instrument and audiovisual facilities for consumer's education is not available to enhance consumer awareness and communication to the people.
- Weak activities on R & D.

10) Preliminary design of the Action Plan

a) Target

To protect consumer's health by strengthening sanitary control system of food.

b) Strategies

- Strengthening food inspection and observation system
- Development of food industry by improvement of sanitary control technology.

c) Project site

DFTQC campus in Kathmandu

d) Activities to be strengthened

- Toxic matter eradication
- Expansion of standardized commodities and coverage area
- Prevention of food adulteration and food born disease

e) Component

- Main building (Two stories)
  Total floor area: 1,296m^2
- Research and development building (Two stories)

  Total floor area: 921m^2.
- Machinery and equipment
- Miscellaneous

  Sampling goods, automobile, clothing for freezing, etc.

  Material for sampling, safety glasses, dust protection mask, etc.

  Photographic apparatus, developing unit, etc

f) Maintenance plan

The maintenance system for the facilities and equipment has been existed already in DFRQC, where the staffs in charge are assigned in each department under Director General. Based on the system, the following strengthening measures will be taken in the Plan.

- The responsible staff(s) of operation and maintenance will be assigned for the expensive and sophisticated equipment that procurement cost will be more than US$1,000. Two staffs will be in charge for the equipment more than US$50,000.
- Those staffs will be allocated from the staffs who will be trained in the training program in the Plan.
- One mechanic engineer and two electric engineers will be assigned as the permanent staffs for maintenance of all facilities and equipment.

9.2.5 Sector 5 Action Plan for Fish Marketing Improvement

(1) Project Objectives

The primary goal is to realize fully the potential contribution of the fisheries sector to the local economy, through (a) increasing fish production to improve nutrition and protein supply, (b) generating additional off-farm employment and income to reduce poverty among the rural populations, (c) conserving the natural resources of Koshi Tappu Wildlife Reserve and (d) improving institutional capacity of the fisheries staff and local organization for better planning.

The project's main objective is establishment of sustainable and efficient fish distribution chain in Central and Eastern region, which is the bottleneck of the large fish production. In addition, the project aims the achievement of low-cost production system in the target production pockets, in order to hold the share of the fish selling in Kathmandu and other large market including Indian fish market such as Silguri. This project aims to create of 1,000mt or 300ha fish pond level production center in Koshi Barrage Area by implementation of a model project within 10 years.

(2) Project Site

1) Project Site

Marginal agricultural land (900ha) of Koshi Barrage in Sunsari District where includes the VDC of a)Vokraha, b)Madhuban,, c)Dugraharde, d)Prakashpur, e)Lauki, f)Wesh Kusaha, g)Shriour and h)Haripur. Location of the project site is shown in following page.

2) Present utilization of the land

Land suitable for crop agriculture	: 14,489 ha
Forest covered area	: 195 ha
Koshi Tappu Reserve	: 17,500 ha
Marginal unproductive land area	: 900 ha (land used for fish farming is 60 ha at present)
Total house holds in the area	: 8,695
Fish farming house holds	: 66

3) Access to the market and support services

There is good access to the East-West Highway and therefore good opportunity for fish distribution to large fish market, namely Kathmandu (400km), Siliguri (km) and

Calcutta (600km). This means the site has advantage in terms of distance compare with Andhra Pradesh which is 1,000~1,4000km away from above market. The area is also situated close to several government fisheries centers (National Training Center in Janakpur, FDC in Rahan, and FRC) which could support technical services and fish seed supply. Ice plant is in Itahali (30Km) and feed plant is in Hetauda (100km).

(3) Project Concept and Description

The project concept focus on development of fish farming activities in marginal agricultural land where is not suitable for crop production due to high ground water level, but having large potentials for fish pond farming. The proposed area is situated east of Koshi Barrage where also large potential area of river fisheries. The idea of the project is to develop this area as production center with function of intensive fish collection and distribution to the market center.

The project comprises (i) Infrastructure component, for creation of pilot fish pond and collection center which is the base of cooperative marketing, (ii) Institutional building component, for strengthening of both FDD staff and fisher's organization, (iii) Production and marketing component, for promotion commercial fish farming by supporting larger fish seed supply and establishing a pilot marketing programme to distribute fish to urban market, and (iv) Research component for strengthening of FDD's research capacity, focusing on fisheries information and statistics and assessment of fish pond designed in the area.

(4) Project Component

1) Infrastructure component

New collection/packing center and pilot fish ponds would be constructed. Investment would include the following:

a) Collection/packing center

The project building of 300m2 would be constructed. This includes the construction of new fish handling shed of 200m2 including storage room, a project office building of 100m2 and construction of staff house.

b) Pilot fish pond (community fish pond)

Fishpond of 10ha would be newly constructed at marshy land owned by VDC or government. The pond would be rented to fish farmer's association and the project provides on the job-training on more intensive production system through the co-management of these pilot fish ponds. Production from the pilot fish pond is expected about 30 mt per year.

2) Institution building component

a) FDD

The project would strengthen the extension services by providing the extension staff. Under the project appropriate training on semi-intensive fish farming focusing on two phasing raring system, to produce marketable size regularly fish. Training activities would be oriented to more commercial and economical knowledge of the fish farming and marketing operation to meet the need of fish

farmers. Staff skill would be improved through OJT training under supervising of expert, and also study tour to Andhra Pradesh, India would be provided. The curriculum of the fisheries Training Center, Janakpur would be upgrade and updated to new orientation of commercial farming. Extension staff would be provided the office in the collection/packing center and equipment to enable to carry out their function of data collection and analysis, including motorcycle.

b) Fisher's organization

Emphasis would be placed on the formation of functional fish farmer's association to enable them to realize cost-effective farming operation and to ensure the sales of their product. The project provides the rental fish pond for incentive to formulation of association. Additionally, the project also promotes yearling fish seeds supply through this association, to strengthen the group activity. To achieve the regular supply to the urban market on commercial base, scheduled production and cooperative shipping is key issue of the association. The project would provide training which include;

- cooperative management and fish marketing business,
- improved fish production system by phasing of nursling of yearlings and rearing of table fish,
- proper fish handling, packing and quality control

The training would be provided for fishermen in Koshi Barrage, to ensure the quality fish supply to the center from this area. The project would provide to fishermen group with small plastic insulated boxes for both storage and transport to the collection center.

3) Production and marketing component

a) Extension service and yearling seeds supply

This is a pilot programme which would develop a scheme for commercial fish farming in swampy zones. The project would support expansion of existing fish pond of 60ha to 300ha through technical service for better designing of fish pond, credit for pond construction and lending service of tractor. Fish production of both table size fish and yearlings at pilot fish pond would be under taken by project, in order to keep the minimum supply for the pilot marketing programme. Production would be oriented to marketable fish in urban market which is larger (1.5-2.0kg) Rohu, common carp and Catla species. The supply of these yearling seed also supported by project with technical service until private nursling farmer could take place.

b) Pilot fish marketing programme

The project would carry out a pilot marketing programme which aims establishment of delivery system of fish from fish farmer's association to urban consumer center. Sufficient volume of fish would be collected for bulk transporting by 5 ton truck once a week from pilot fish pond, private fish pond and also natural fish from Koshi barrage. The most potential market is Silgri in India, which is 200km away from the this project center. For this programme, one

truck (5 ton) and plastic fish boxes would be purchased by project. This marketing activity would generate the part of operation cost of the project.

c) Fish Sales Trust Fund

Fish sales trust fund would be established to realize the fair distribution of the benefit of the project to local community. Five percentage of fish sales by project is expected source of this fund. The fund aims to improve the community infrastructure, such as agriculture road, schools, clinic etc, as well as public welfare of fish farmers.

(4) Research Component

The studies to improve the planning of pond construction design and fish marketing operation would carried out. These would include a baseline survey of the community and topographic survey which would help to determine attitudes of farmers to fish pond development and designing of water supply system for the area. To orient the best fish market, a socio-economic survey of the targeted market (Kathmandu, Silguri, Calcutta) would also included.

Project would upgrade the data collection and analysis system of FDD. This would focus on the economy analysis of pond production which enable the farmer operating the fish farming more commercially and aware the profit of cooperative work. The fisheries statistic survey on Koshi Barrage is the another studies to address issues facing and to assess fish stock, in terms of supplying center of the fish to this collection center.

(5) Project implementation

1) Organization and management

a) MoAC/FDD

MoAC will have an overall responsibility for project implementation. FDD would be responsible for coordinating and monitoring the implementation of the project. This unit also would be responsible for the planning of applied technology which learned from this project. Civil engineering services for fish pond design would be provided by FDD.

b) Project Management Committee

The project management committee would be establish, comprising of the members who represent the fisheries institutions and beneficiaries groups, such as FDD, VDC, DADO, fish farmer's association, fish traders group. The role of committee would advisory to ensure the project objectives and coordination/resolving the problems that arise among the different interest group. The committee also approve the annual work plan, including pricing of fish purchased by project.

c) Project Office

The project would employ 12 staffs. These are 1 project manager, 2 extension staffs, 1 accountant, 1 clerk, 2 pond maintenance workers, 1 driver and 4 watchmen. The project would be implemented by project manager, from FDD, who have overall responsibility for project execution in the field level.

d) FDC/FRC

FDC in Janakpur, Lahan and FRC in Tarhara are located in the distance where the project could expect their service for supplying fish seed and technical advises. Production and supply of yearling seeds to the project is mostly expected to FDC/FRC for initial stage of the project. Planning and implementation of the extension-training programme will be a responsibility of the FDC. Present extension programme will be reviewed and improved by National Training Center in Janakpur for more intensive production system as well as market oriented training.

e) DADO in Sunsari

DADO in Sunsari will be responsible for implementing general extension activities.

f) FRC

In the area where is no FDC, Fisheries Research Center will play the same role as FDC. FRC will also contribute to the extension of indigenous cold water fishes culture from accumulation of research experience.

g) ADBN

ADB would support construction of fish pond, financially.

(6) Benefit

The major economic benefit of the project would be increase fish production that is estimated about 750 mt per year in 2010, that is equivalent amount of $686,000. If there is no project, the production increase would be no more than 50mt. This assumption is justified in view that the area production may not meet the new fish demand by present fish distribution system, therefore increase would depends on the growth of local demands. Creation of fish sales trust fund would expect about $20,000 per year in 2010 and this would contribute improving the community infrastructure and social life of the all community people.

The project also has some non-quantifiable benefits. These are;

- Reducing the exploitation pressure on the Wildlife reserve
- Increasing nutrition and food security by improving the quality of fish by replacing more fresh local fish from imported Indian fish
- Generating off-farm employment opportunities
- Enhancing the ability of FDD staff to establish an effective planning of the swamp development.

(7) Environmental Impact

Project is expected to have a positive impact on the environment. Creation of alternative of the incomes through fish farming development would reduce the pressure on exploitation of the resources in Koshi Tappu Wildlife reserve. Strengthening research capacity of FDD would enable to manage of fishing activities. Fish ponds may be exposed threat of attack from the fish eating birds. It is difficult to estimate the impact of use of bird protection net over the ponds in this study. In the project, FDD staff

would be expected to have training on appropriate environmental safeguards to enable them to carry out their monitoring function effectively.

9.2.6 Sector 6 Action Plan for Management System

(1) Laws and regulations of market management system

1) Project Goals

a) To provide legal status to the formation of the proposed MMC at market centers

b) To provide legal status for small farmers organizations

c) To provide legal status for the involvement of private sector in market management

d) Thus, to provide Laws and Regulations of Market Management System, and

e) To form an Apex Body

2) Project Concept

The legal support is essential to provide Legal status of agricultural marketing cooperatives and other farmers organizations for its involvement both as member of MMC as well as to hand over the operation and management of Collection Centers.

The legal support for private sector participation and investments are proposed for legal status of private sector to participate in market management system

3) Project Activities

a) Support in the establishment of an Apex Body: "Nepal Agricultural Marketing Board"

b) Support in the establishment of "Market Development Committee"

c) Support in the formation of "Market Management Committee (MMC) at Wholesale Market.

d) Support in the formation of "Market Management Committee (MMC) at Collection Center

4) Executing Agencies

The proposed project needs a public policy commitment at various levels of Governmental Organizations. Therefore, the executing agencies are the MoAC and its Market Development Directorates.

(2) Market Management System at Wholesale Market and at Collection Center

1) Project Goals

a) To facilitate the formation of an Autonomous Market Management Committee at various levels of markets,

b) To encourage the participation of all main market actors in improved management system,

c) To develop participatory approach of the users of the markets.

2) Project Concept

Nepal has limited but good experience of Market Management Committees formation and operation system. However it is lacking in its legal status and operational management.

MMC in Nepal has been established at both wholesale markets as well as at collection centers. It has been established under the directives of MoAC, which does not have legal status. Therefore, the MMC members are aware of the fact and now are demanding for its legal status as an autonomous body.

The representation of members in the MMCs at wholesale markets and at collection centers has raised a few issues basically on its representation process and in selection criteria

3) Project Activities

a) Support in the development and approval process of the Nepal Agricultural Marketing Development and Management Acts,

b) Support in the formation of adhoc apex body "Nepal Agricultural Marketing Board",

c) Support in the formation of adhoc unit at the departmental level "Market Development Committee",

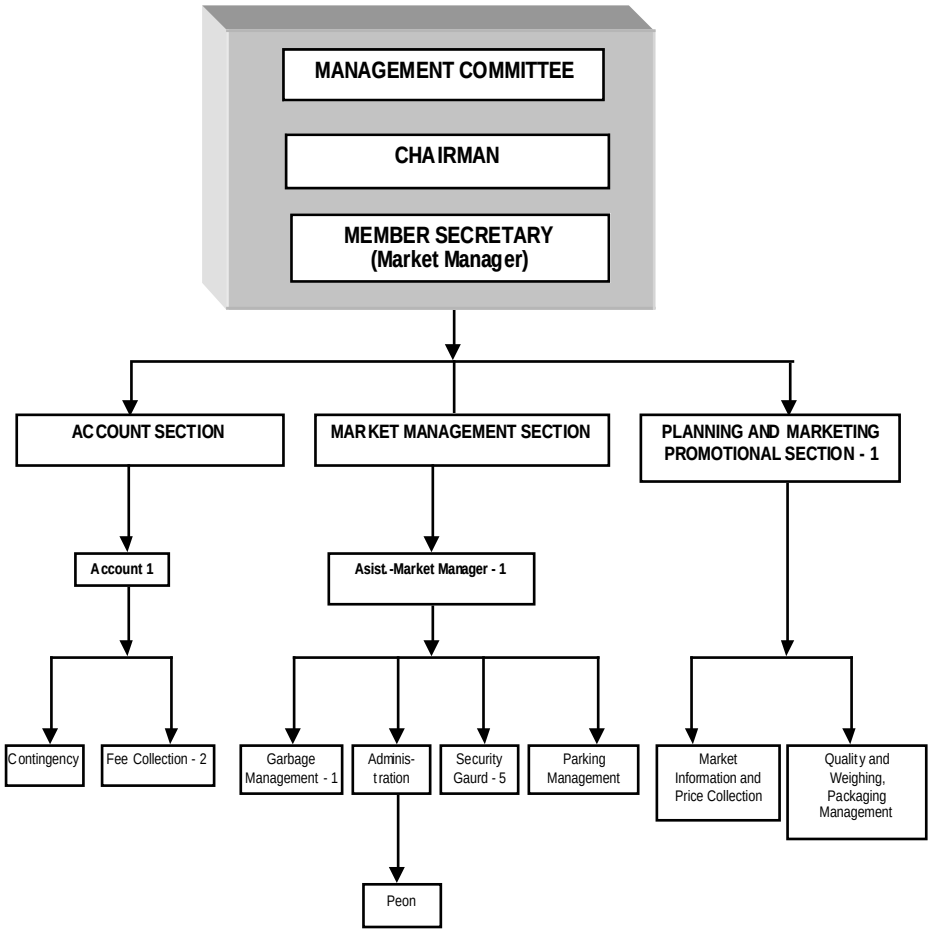
d) Project assistance in the formation of "Market Management Committee" at both wholesale markets and at collection centers, and

e) Support the MMCs in its operation and management.

4) Executing Agencies

The proposed project needs a public policy commitment at various levels of the governmental organizations. Therefore, it is bound to have the involvement of MoAC and its Departments for approvals and directives.

The market management committee organizational chart at CC and WM is shown below:



Organizational Chart of Market Management Committee at CC and WM.

(3) Detailed Activities of the Wholesale Markets And of Collection Centers

1) Marketing Route

Farmer's Groups, in case of Dhusa, Dhading; local traders, in case of Daman, Makwanpur; and traders in case of Dhalkebar, Dhanusha and Farmer's Cooperatives in case of Sindhuwa/Jorpati, Dhankuta bring products as suppliers from CC to WM. Wholesalers receive or buy these products from these suppliers. Wholesalers sell these products to buyers through the auction and/or negotiation method. Thus the main marketing route is:

a) Producers bring their product to Collection Center.

b) Farmer's Groups or Traders collect at CC,

c) Farmer's Groups or traders clean, wash, grade, sort, pack, trade mark, store, and transport,

d) Farmer's Groups or traders takes the local products to the wholesale market,

e) Wholesalers receive these products from farmer's groups or traders,

f) Wholesalers sell these products to buyers through negotiation method, and

g) Buyers distribute to the retailers and to the institutional buyers.

2) Transaction System

There will be a difficulty to establish the unified payment method within a limited period. Therefore, in the short-term basis, transaction system will be still complex with payment method of cash on sale, cash after sale, several types of credit system including advance payment from wholesalers to intermediaries/farmers and contract method between intermediaries and farmers. Even under such conditions, wholesale price should be opened to all of the market users by MMC and recorded. Farmers Groups are expected to open the wholesale price to producer farmers through their direct supply to the wholesale market.

In the medium term basis, fair and more open pricing mechanism should be introduced based upon the trial operation of auction system during the short term. In the long-term basis, open auction system excluding the traditional credit system will be proposed.

a) The present transaction system

- Producers sell their products at the farm price fixed by the traders
- Traders take all the risk to take the products to wholesale market and sell at the wholesale market on the same day
- The producers at the farm gate do not know the wholesale price.

b) The proposed Transaction System

- Producers take their products to the Collection Centers,
- Producers decide either to sell to the farmer's groups (those poor farmers who has limited quantity of production and who need the cash immediately) for group marketing (in some cases farmer's groups have decided to market their collected products through a market managers on their own risk),
- Farmer's Groups or its contracted marketing manager wash, clean, grade, sort, pack, trade mark, and take it to the wholesale market,
- Marketing Managers sell it on auction through the wholesalers,
- The Farmer's Groups get the fair price through the auctioning, the highest bidders buy the products,
- The farmer's groups after deducting the commission to the wholesaler, the cleaning, grading, packing, transporting, handling, and other expenses pay to the producers with its charge for marketing the products,
- In this case every transaction is transparent and clear to the producers and they know the every day wholesale price.

Proposed Transaction System is shown in Table 9-38.

3) Pricing Mechanism

Pricing mechanism: The proposed transaction system will be effective for the fair and upgrading of quality through farmers consciousness that quality will influence to price. Farmer's Groups should play a major role in demonstrating the quality products as well as in upgrading in pricing mechanism through its role in between farmers and buyers (see Table 9-34). Producers Groups can play the following role in upgrading the Pricing Mechanism: -

- Producers collect their products at Collection Centers
- Producers decide to bargain the price in a collective way,
- Producers clean, grade, and pack their products by quality standards and bargain for the price based on the quality of the products,
- Producers through their own Groups " Trade Mark " their products to take it to the wholesale market for auctioning sale
- Farmer's Groups sell their products in wholesale market through auctioning by the quality of the products as trade marked,
- As the auctioning will be conducted based on the quality products, the farmers with quality products are expected to be paid higher price,
- Thus the project proposed quality products demonstration for upgrading in pricing mechanism through farmer's group marketing.

Market information: Daily traded volume and price of products at the Collection Center and Wholesale Market in Kathmandu Metropolitan area should be informed to users for their prompt action on effective marketing in harvesting, selling, buying, storing and transporting.

Proposed Pricing Mechanism is shown in Table 9-39.

4) Licensing System

The project proposes the following licensing system for the upgrading of the agricultural marketing management system: -

a) Licensing to the Farmer's Groups: - There is no licensing system for the Producer's Groups involved in marketing of the local products and who take their products to the new wholesale market will also be in the advantageous position to receive the licenses. This system will be introduced closely linked with the upgrading of the farmer's organizations and their function in quality upgrading at CC. Therefore, they are also planned in Phase-wise basis as shown in Table 9-40.

b) Licensing to the Traders/Collectors: - There is no licensing system for traders/collectors. Traders/Suppliers who are members of Collection Centers and recommended by the Collection Centers will be in advantageous position to receive the licenses. This system will be introduced closely linked with the establishment and upgrading functions of Collection Centers. Therefore, they are planned in Phase-wise basis as shown in Table 9-35.

c) Licensing to the Commission Agents and Auctioneer: - Commission fee of 5 to 6 % of total sale will be authorized to the present wholesalers. The present Wholesalers/Commission agents will make a significant role as auctioneer after training during the short term. The project proposes to train the present wholesalers, commission agents, and auctioneers to introduce an open auctioning system in the new wholesale markets. And they will be licensed to do so.

d) Licensing to the Buyers: - In India, there is not a clear licensing system for intermediate wholesaler, buyers, institutional consumers and distributors in the wholesale market. In Nepal, the project proposes to introduce Licensing system to the buyers. Licensing should be provided to those persons: intermediate wholesalers, buyers, distributors and institutional consumers, after the education and training during short term.

Proposed licensing system is shown in Table 9-40

5) Quality Control System

The following quality control system has been proposed in the project:

Quality control activities of cleaning, washing, grading, sorting, storing, Packing with brand name and transporting

The project has proposed the quality control activities of cleaning, washing, grading, sorting, packing with Brand name at Collection Centers before entrance to Wholesale Farmer's Groups as well as the Local Traders will introduce the quality control activities at the New Collection Centers with the improved space available at the CC,

The project has also proposed the quality control activities after entrance to Wholesale Market especially for re-grading and re-packing for distribution by wholesalers / middlemen at the wholesale market

a) Quality test

The project has proposed to introduce the sampling survey and quality test of the local products by the production pocket or by the Collection Center

The project therefore recommends implementing sampling survey and quality test for the products

The project also recommends providing certificate of a special brand to the farmers organization of the selected production pockets or CC as high quality products supply area

Finally, the project recommend to establish and improve a unit at Collection Center level to recommend and demonstrate the selected seed varieties, products size control and spoilage reduction method and other technical support services through ASC/LSC of the DADO/DLSO office at the illaka level.

Proposed Quality Control System is shown in Table 9-41

6) Market Information System

The following market information systems have been proposed for the improved management system in the project.

Data base (trading volume and price at Wholesale Markets and at Collection Centers): Data collection and recording at the exit points reported from buyers (daily, weekly, monthly and yearly) and sampling survey

Data processing: Recorded data will be processed at Wholesale Market by MMC & HMGN by applying the computerized system step by step.

• Step1: wholesale price

• Step2: wholesale price and traded volume

• Step3: fully computerized on wholesale price (auction price), traded volume and origin and destination of products

a) Dissemination of information

Processed data will be disseminated through the media such as newspapers and radios in a short-term basis, and in the future, directly disseminated from management body under MMC.

7) Waste Management System

a) The Suggested Garbage Collection Timing is as follows:

i)	Auctioning time	-	5.00 am to 10.00 am
ii)	Buyers handling time	-	10.00 am to 2.00 pm
iii)	Garbage collection time	-	2.00 to 7.00 pm
iv)	Arrivals, receiving, Unloading & lots for auction	-	7.00 pm to 5.00 am

b) Garbage Collection Areas: Weighing, Markets, Auctioning, Grading, Packaging, Loading & unloading and Other general areas.

c) Garbage Treatment System

i) Simple garbage treatment by decomposition at CC.
ii) Simple garbage treatment plant at WM
iii) Garbage either dumping or treatment plant outside the WM.

d) Recycling use of Wastage and Treated Garbage

Use as organic manure

f) Dumping of the waste materials

Proposed Waste Management System is shown in Table 9-42.

8) Security Control System

a) Protection from Stealing

i) Security check during entrance
ii) Security check during out with purchase bill for 1 % marketing charge
iii) Security in Auction Area

iv) Security in Stock Area
v) Security in Marketing Area

b) Reduction of Conflicts among Users

i) Different blocks defined for vegetables, fruits, potato spices, and fishery and livestock products.
ii) Defined area for auction.
iii) Stall and store area of each wholesaler defined.
iv) Market yard is defined with users.
v) Parking place on payment basis.
vi) Loading and unloading as per the MMC regulation.

c) Penalty & fine on Road blockage.

9) Financial Management System

a) Commission on Auction sell: 5 to 6% of sales amount or as fixed/approved by MMC

b) Fee: In Nepal, major source of MMC income at the wholesale market is the store rental fee and no system on marketing fee, while, in India, major source of MMC income is a marketing fee (1 % of total sales). The following fees will be proposed for MMC revenue, which will be exclusively used for rehabilitation and operation/maintenance of the wholesale market.

- License fee
- Store rental fee
- Marketing Fee
- Entry fee
- Parking fee
- Land use tax: paid to land owners such as MoAC, city/municipal government or DDC/VDC

c) Accounting system: Budget preparation, revenue (source of income) and expenditure (salaries, O&M, depreciation cost), Cash flow (equity, source of fund, interest payment), Reporting (monthly and annual report, publishing of financial statement)

Proposed Financial Management System is shown in Table 9-43

10) Education and Training

a) Extension of knowledge on marketing, use and management of marketing facilities / equipment

b) Extension of experience for effective use and management through OJT

c) Education and Training on Quality Control Aspects

- Washing and cleaning

- Grading and storing
- Packaging with Trade Mark
- Storage and transport
- Sample survey and quality test
- Select seed varieties
- Product size control
- Spoilage reduction method

d) Education and Training on Licensing

- Commission agents & Auctioneers
- Buyers
- Traders and collectors
- Marketing Farmer's Groups
- Middlemen, transportation, etc.

e) Education and Training on Accounting

- Budget Preparation
- Reporting and publishing financial statement
- Cash flow management

f) Education and Training in Market Information System – Data Collection, Processing and Dissemination

- Collection of price and traded volume
- Processing of collected data
- Dissemination of these data to users

g) Education and Training in Management and Operation of WM and CC

- Operation and maintenance of facilities and equipment
- Operation of WM & CC
- Management of WM and CC
- Users Representative in the formation of MMC at WM and CC
- Strengthening MMC of WM & CC

Proposed Development of Education and Training is shown in Table 9-44.

(4) Proposed Pilot Projects of Market Management System

The following three pilot projects have been proposed here for the improved management system

a) Pilot project on Grading and Packaging of local products
b) Demonstration Project on Auctioning System
c) Pilot Project on Micro-credit system

1) Proposed Pilot Project on Grading And Packaging

a) Project Goals

- To introduce the quality control activities at the Collection Center level,
- To introduce Trade Marking system at the Collection Center level with packaging,
- To demonstrate a unit for the quality control activities at the Collection Center,
- To introduce technical support system for the quality control activities, and
- To introduce sample-testing system for quality control activities.

b) Project Concept

A large number of Production Pocket Package Program areas have initiated producing commercial fruits, vegetables, and spices products for marketing. However the grading and packaging program has not been initiated in any of the location except the local bamboo baskets for packaging. The marketing route for these products to reach to wholesale markets through collection points and collection centers are sometime long distance therefore improved packaging is felt necessary. Similarly the quality demand of the new wholesale markets has improved with willingness to pay higher price for the quality products. Therefore, grading of local products to take advantage of the situation the grading pilot project has been proposed.

In a few production pocket areas a large number of farmers have initiated producing a specific commodity such as cabbage, tomato, cauliflower, radish, brinjal, orange, mango, banana, etc. in a reasonable scale. They have initiated collecting these specific commodities in collection centers. Therefore, the project has proposed for the construction of a few Collection Centers with the facilities of washing, cleaning, sorting and grading. These new Collection Centers will also have the facilities for packaging. Therefore, quality packaging is proposed here as pilot projects for these newly constructed collection centers.

It will also be linked with the proposed Auctioning system in the wholesale market. The proposed Auctioning system will demand for the packed, leveled and quality products for higher price of the local products.

Thus, the concept of the proposed pilot project is both linked to each other and supplementary and complementary to each other. However grading and packaging is taken as the first step in the process of development of the agricultural marketing management system, which is in general is conducted at the production pocket level with the facilities at the collection center.

c) Project Activities

The following pilot project activities are considered for the proposed grading and packaging pilot project.

- A focused production pocket area with planned production system,
- Farmers organization for planned production,
- Most of the producing farmer members bring their products to the collection center,
- Most of the products are handled either by the farmers groups, cooperatives or by the association of local traders,
- Farmers Groups or Local Traders Association conduct the cleaning sorting and grading activities at the collection center,
- They are also expected to continue packaging with trade mark of the production pocket, and
- These graded and packed local products of the specific production pocket are taken to the wholesale market, where these products are either Auctioned or negotiated with the wholesalers and buyers.

d) Executive Agencies

The main executive agencies for the proposed pilot projects are: -

- Farmers of the focused production pockets involved in commercial production of the specific commodities,
- Farmers Groups and cooperatives involved in Planned production program,
- MMC at Collection center either for directly handling with its own management body or through handing over to the Farmer's Groups or to the Local Traders Association
- Farmers Groups or local traders association responsible for cleaning grading and packaging,
- Trade Marking will be decided by the suppliers to the wholesale market,
- Farmer's Groups or local traders association will take it to the wholesale market for sale either in Auction system or with direct negotiation with the wholesalers, and
- The main executive agencies considered here are either the Farmer's Groups or the Local Traders Association.

e) Beneficiaries

- The main beneficiaries of the proposed pilot project are the farmers,
- The other beneficiaries are the farmers groups and local traders associations,
- The list of beneficiaries will also include the Auctioneers, Wholesalers, Buyers, and Retailers.

2) Demonstration Project on Agri-Products Processing

a) Project Goals

- To introduce the agri-processing activities at the Collection Center level or at the wholesale market,
- To introduce trade marking system for the agro-processed products
- To demonstrate a unit for the agro-processing activities

b) Project Concept

A large number of Production Pocket Package Program areas have initiated producing commercial fruits, vegetables, and spices products for marketing. However the agri-processing program has not been initiated in any of the location except the local household level activities. The marketing route for these products to reach to wholesale markets through collection centers are sometime long distance therefore improved agro-processing is felt necessary to handle the glut situation as well as the regular agro-processing units. Similarly, the quality demand of the agro-processed products has improved with willingness to pay higher price for the quality products. Therefore, it is proposed here to demonstrate the quality agro-processing unit.

In a few production pocket areas a large number of farmers have initiated producing a specific commodity such as cabbage, tomato, cauliflower, radish, brinjal, orange, mango, banana, etc.in a reasonable scale. They have initiated collecting these specific commodities in collection centers. Therefore, the project has proposed for the construction of a few Collection Centers with the facilities of agro-processing. Therefore, demonstration of quality agro-processing is proposed here as pilot projects for these newly constructed collection centers.

c) Project Activities

The following pilot project activities are considered for the proposed demonstration of agro-processing units.

- A focused production pocket area with surplus products,
- Farmers organization for planned production but with extra surplus products,
- Most of the producing farmer members bring their products to the collection center,
- Most of the excess products (Surpluses or Gluts) are handled by the agro-processing units,
- These agro-processed products of surpluses are marketed

d) Executive Agencies

The main executive agencies for the proposed demonstration on agro-processing units are: -

- Farmers of the focused production pockets involved in commercial production of the specific commodities,

- Farmers Groups and Co-operatives involved in surplus production program,
- ß Private trader or the Local Traders Association collect the surplus products for processing
- Private Traders establish agro-processing units to demonstrate the quality agro-processed products
- Trade Marking will be decided by the private traders, and
- The main executive agencies considered here are the private traders.

3) Proposed Demonstration on Auctioning System

a) Project Goals

- To demonstrate the Auction System at the Wholesale Market,
- To train the main actors in wholesale market in both Auction system as well as on other open market system,
- To provide fair price to the producer farmers by Auctioning open market system

b) Project Concept

- The Auction system was adopted in India since 1960's are reported beneficial to all concerns,
- It is expected by the participants in the participatory approach methods that the Auctioning system will benefit to them,
- The farmers are reported not receiving fair price at wholesale markets mainly because of the selling process at the wholesale market,

c) Project Activities

The project activities related to the Auctioning system are as follows: -

- Training to the Auctioneers,
- Licensing to the Auctioneers,
- Fixing the Commission Rate,
- Defining the Auction place and time,
- Training and Licensing the Buyers,
- Training on handling and preparation of Lots at wholesale market for Auctioning, and
- Training farmers on grading and packaging for Auctioning.

d) Demonstration of Auction System

Demonstration of Auction system is planned to be conducted in both Central Wholesale Market at Kathmandu and Regional Wholesale market at Biratnagar. However, it may be delayed for the requirement of its prerequisites such as the

space for auctioning, local products for auctioning, training on auction system, and others. A few demonstrations will be conducted by the project in the initial stage for the pilot grading and packaging products from the selected collection centers. The following process will be adapted:-

- Training of the Auctioneers,
- Licensing to the Auctioneers,
- Allocation of the Auction place and time,
- Training to Buyers,
- Preparation of Lots for Auctioning,
- Grading and Packaging at Collection Centers, and
- Preparedness of the farmer's groups and local traders associations.

e) Executing Agencies

The main executing agency for Auctioning activities will be the Auctioneers themselves.

However there are many actors participating in the Auction system and they are:-

- Buyers/Wholesalers,
- Traders/Suppliers,
- Marketing Cooperatives/Suppliers,
- Other traders,
- Retailers,
- Institutional Buyers, and
- MMC

In the initial stage the project may also get involved as executing agencies for demonstrations.

f) Benefits

The main benefit will be on fair price to every body from the Auctioning system.

- The farmers will also benefit from fair price that they will receive from the auction system.
- All the actors of the wholesale markets as well as of the collection centers will be benefited with the open pricing information at the auctions.
- The wholesalers will benefit the most with the clear and open market system. They are to receive the fair commission rate fixed by MMC.
- The Buyers are very much benefited for their own opportunity to buy on the price that they are willing to bid or pay.

- The Retailers are benefited, as the auction they know price. And
- The Marketing Farmer's Groups are also benefited from the open pricing system at the auctions

g) Beneficiaries

The main beneficiaries of the Auction system are the producing farmers as they receive the fair price of their products.

However there are many other beneficiaries in the Auction system. Some of them are: -

- Auctioneers, who receive the commission rate/salary for the Auctioning work.
- Wholesaler/Auctioneers are also the beneficiaries as they receive training and education.
- Buyers, who buy at the auctions, are also the beneficiaries.
- The Traders/Suppliers, who supply the products for the Auctioning activities are also the main beneficiaries of the system.
- The Marketing Farmer's Groups are the most important beneficiaries of the auction system as they have open and clear opportunities for their marketing business.

3) Proposed Pilot Project On Micro-Credit System

a) Project Goals

- To provide share contribution on the development of small infrastructures at all level of markets and production pockets.
- To provide special funds for training and education of all actors in the marketing system.
- To conduct the test operation of the pilot project for the modernization of agricultural marketing system.
- To upgrade the small Saving & Credit Scheme of Farmers' Groups and Organizations.
- To provide the seed money for farmers organizations to start their marketing activities.

b) Project Concept

- Besides the main collection centers and collection points that the project is going to provide support in its construction, operation and management, there are many other production pockets under the MoAC Pocket Package Program (PPP) that will need small scale support especially the fund for: (i) Education and Training, (ii) Testing the Pilot project, (iii) Small Infrastructure development on cost sharing basis, (iv) Up-grading the Small Farmers Saving & Credit Scheme, and (v) Seed Money for small farmers marketing activities.

- Many small production pockets may not be able to be handled by the project, so it is for the better of every body that the market actors handle these small funds by themselves.
- The number of production pockets is not only small but also are scattered and inaccessible. Therefore, it is suggested to be covered on participatory approach through micro-credit system as incentives for their active participation.
- The project has suggested for the introduction of the Board's Fund as Agricultural Marketing Development Fund. The proposed micro-credit system could be the incentive for the functional operation of these funds. And
- The proposed Micro-Credit System is expected to cover the large number of pockets and it collection points and collection centers for the effective operation and management of the newly proposed Central Wholesale Market and the Regional Wholesale Market.

c) Project Activities

- At first the project is proposing to channel the Micro-Credit Funds through the Board's Fund.
- All actors eligible to receive the Board's fund for the project activities are approved by both the Board and the Committee and implemented through the project with its micro-credit system.
- The project will carry out the major activities in the initial phase for the proper cash flow of Board's fund for the appropriate pilot test, education and training, and small infrastructure development.
- The project will also provide the technical support for the initial phase.
- The project will supervise and monitor the progress in the initial phase with the participatory approach.
- The project will also train the major market actors on report preparation on the success and failure cases. and
- The project will provide the progress report on the performance of the micro-credit system for the initial phase and submit to the Board through the Committee.

d) Details of the Activities

The details of some of the activities are presented below for detail actions

<u>Eligibility Criteria</u>

The eligibility of each actor in the marketing system requesting for the Board's fund will be checked, monitored, supervised based on the following criteria's.

- All eligibility criteria's met,
- Local capacity and willingness demonstrated to complete the project on time,

- Local capacity building on the specific areas are adequate,
- Local contribution or match fund including the VDC contribution is available,
- Micro-credit system in the area is active, and
- Local capacity to handle the fund.

Eligible Actors

The actors eligible for the funds are: -

- Farmer's groups with "Saving & Credit Schemes"
- Farmer's Cooperatives with "Saving & Credit Schemes",
- Farmer's Marketing Groups involved in local products marketing,
- MMCs at Collection Centers, and
- MMCs at Wholesale Markets.

i) All the producer farmers groups with saving and credit scheme could be eligible to receive seed money up to Rs. 100,000 for the following activities: -

   - Creating small infrastructure at their own production pocket area for establishing collection points,
   - Provision of fund for education and training and test operation of the pilot projects with and for the farmers' groups local capacity building,
   - Up-grading their small saving and credit system to include more productive and commercialized operation of production planning and marketing planning activities.

ii) Farmers Groups willing to invest in marketing functions could be eligible to receive the seed money up to Rs. 200,000 for the following activities: -

   - Creating small infrastructure for cleaning, washing, grading, packaging, and storage space at collection points,
   - Provision of funds for education and training and for test operation of the pilot projects for their local capacity building, and
   - Provision of seed money for marketing the local products from the collection points to the Collection Centers and even up to the Wholesale Markets.

iii) Farmers' Marketing Groups involved in marketing local products from collection centers to wholesale markets are eligible to receive the seed money up to Rs. 500,000 for the following activities: -

   - Provision of seed money to market the local products from collection centers to the wholesale markets,
   - Provision of funds for training and education as well as test operation of the pilot projects for local capacity building, and

- Up grading of market management system and the management body.

iv) Wholesalers and traders trained in wholesale marketing activities of local products are also to receive the fund up to Rs. 500,000 for the following activities: -

- Provision of funds for training on auctioning system as well as in the test operation of auction system,
- Provision of funds for re-grading and re- packaging for marketing and distribution, and
- Provision of funds for market promotion of the local products in export market as well as to demonstrate in the markets of the bordering towns.

e) Executing Agencies

The main executing agencies for the micro-credit system are the market actors themselves for implementing the activities in participatory approach. However for the approval of the micro-credit system funds it is the Board and Committees who decide through the Market Development Directorate of the respective Departments. In the initial phase, however the project will take the lead to implement the micro-credit system successfully

f) Beneficiaries

The main beneficiaries of these micro-credit funds are the small farmers with their small saving and credit schemes and small production pockets where they need rural infrastructures such as shades for collection points and training for their skill development.

The other main beneficiaries are the farmer's group members involved in marketing activities and the traders, who need training and education

9.2.7 Sector 7 Action Plan for Marketing Facilities Improvement

Following projects are the proposed market facilities.

Sector	Proposed facilities
Horticulture Marketing System	- New Wholesale Market in Kathmandu Metropolitan Area - New Wholesale Market in Biratnagar - Collection Centers in Central and Eastern Region
Livestock Marketing System	- Livestock Markets - Collection Centers - Slaughter Houses
Fish Marketing System	- Collection/Packing Center
Sanitary Control System of Livestock products	- Food Technology & Quality Control

(1) Market Facilities Improvement for Horticulture Marketing System

1) New Wholesale Market in Kathmandu

a) Goals

To establish the efficiently and modern wholesale market of horticulture products in the Central Region.

b) Project Concept

The new wholesale market facilities will be a core of the integrated marketing base in the Central region to enhance commercialization and modernization of agricultural products marketing. The size of the new wholesale market is to handle 120,000 tons in 2005 and 140,000 tons in 2010. The volume of 140,000 tons in 2010 is made up of 50,000 tons of vegetables products from Kalimati market, 50,000 tons of vegetable from Tukucha market, and another 40,000 tons of fruits transferred from mostly Harsha market.

In addition as Pilot Project, the facilities will have the program for training of the traders and the related, and for demonstration of marketing a high quality horticultural product as to transfer the technology required in the field.

c) Project Site

As the result of the reconnaissance of all the proposed sites by Lalitpur sub-metropolitan city and MoAC, the proposed Sites, No.1 and No.6 are recommended as the suitable sites; to avoid the confusion, Site No. 1 is referred to as Site-A and Site No.6 is referred to as Site-B hereinafter. These sites are two alternative sites in Khumaltar.

Site-A is, located in Khumaltar , about 500m from the southern tip of the Ring road and 1 km from the Ashok Stupa, the famous Buddhist temple. The access to the site, therefore, is convenient for vehicles. The access road is paved but not wide enough for the big trucks to pass in the opposite direction. The site is said to be used as pastureland in future.

Site-B is, located also in Khumaltar, 500 m from ring road and close to and East of the Site-A. The site is used as seed foundation farm with the water irrigation pipes.

Both sites seem to be suitable from a physical point of view.

Both sites are rather low land which will be flooded, in rainy season from June to September, but about 1.5 m of banking should be enough to solve the flood problem.

Refer to Fig 9-7 for the proposed sites for NWM in Kathmandu.

d) Natural Condition

(Climatic Condition)

Average temperature in winter is 11 degrees in Celsius and 24 degrees in summer. The average monthly rainfall is very little except during the rainy season from June to September, the precipitation is 207-338 mm. The average relative humidity in annual is from 69 to 85%.

(Earthquake)

There were no serious earthquake around Kathmandu region to date, but recent the earthquake recorded at N.E. part of Solukhumbu and Dolka Godum reached to a magnitude of 5.6-5.7. Nepalese building code specifies all area in Nepal by the seismic zoning factor, Z which indicates the size of the earthquake by the area. The Kathmandu is in the Z= 1.0 area which is the highest among the major cities in Nepal.

(Geologic Condition)

The soil bearing capacity for both Site-A and Site-B are judged fairly good without structural pilings, especially for Site-A, since the boring survey was done at the proximity of the site recently. The data shows the soil bearing to be 7 ton / m^2 for 1.5m x 1.5m independent footings at 1.5m depth. Site-B is also about 500m to the point where boring survey has been done. Before the construction of the new facilities, the accurate soil boring data should be collected.

e) Building Regulation and Design Standard

(Building regulation)

There is a national building code in Nepal to be observed. However, the emphasis should be on qualification and experience of the engineer or the architect who design a building in his country.

(Design Standard)

Since many building materials and equipment are imported from India, Indian standard are used as most common practice. The past British colonial ruling of India influenced Indian Standard and therefore, British Standard is still seen in Nepal. Japanese standard are used in term of the specification of materials and system, when the materials are required to be imported from Japan.

f) Equipment, Construction Materials/Machinery Procurement condition

The followings are the list of the material to be procured. The further study is required for more information. Especially, for the construction duration to be 12 month, the timing for the procurement is vital in successful completion of the Project.

Countries of Procurement Materials & Equipment and the Reasons for the Selection

	Kingdom of Nepal	Japan	Third Country	Reasons for the Selection
Aggregate	O			Mountainous rocks, crushed from tamaris in riverbank.
Cement			India	Stable in supply and quality
Reinforce Bar	O			Structurally sound
Steel	O		India	Local Steel used except structural steel
Brick	O		India	Indians for exterior wall, interior partition from Nepal
Wood	O			Used widely for furniture, sash But requires to be dry before use
Tile		O	India	Many types & cheap, Italian tile through India

	Kingdom of Nepal	Japan	Third Country	Reasons for the Selection
Sash			Singapore	Aluminum from Singapore, Steel type from India & Nepal
Asphalt		O	India	Pavement from India, Built-up roofing from Japan
Corrugated Steel Roof			India	Supply volume, Scheduling of procurement is important
Paint			India	Requires to study the quality
Glass			India	
Finish Materials			India	Vinyl floor, Dry wall, Ceilings
Mech.& Elec. Equipment			Singapore	Thailand, Malaysia possible, dependent on quality and prices

g) Infrastructure Condition

(Access Road)

Both Site-A and Site-B have a filler road from the Ring road as the access roads.

Required width of the filler road in Satdobato, and Khumaltar is 8 meter and therefore, the both roads must be widen and the road bearing capacity to be not less than 10 ton/m^2. The portion of the sites along the access roads must be used as roads.

(Electric / Telephone Maine Line)

The close proximity to the both sites have available main lines and the construction of main line to the sites will be 3 phases,3 wires, 11kv.

(Potable Water Main Line)

The water supply by the City is not enough for the demand. The main line must be extended to both site boundaries.

Well-water can be used as portable water

(Wasted Water Treatment and Its Discharging System)

There is no sewage and the drainage piping around both sites .

There is no restriction or standard for the processed water discharged from septic tank or water treatment plant. Local practice for the processing sewage water is permeation in large septic pond.

(Garbage Collection Service)

Garbage collection serviced by the municipality is available provided that the collection container to be conformed to the standard specification.

(Access by bus)

Regularly scheduled buses along the Ring Road are available daily. However, both sites are about 1km distance from the Ring Road.

h) Facilities and Equipment Design

The topographic survey of the Site-A was not carried out, however, the Study Team has confirmed, by measuring all the sizes of the site carefully, that the planned NWM is designed suitably and correctly. The Site-1 has vast enough space to accommodate wide range of planning possibilities.

Refer to Table 9-45 for details of facilities component.

(Required Floor Area and Design for Main Facilities)

i) Wholesale Market Hall

The size of the new wholesale market is to handle 120,000 tons in 2005 and 140,000 tons in 2010 (fruits= 40,000 tons from mostly Harsha market and others, vegetables = 50,000 tons from Kalimati market which is overcrowded at present and another 50,000 tons from Tukucha market , the new collection centers and others.)

Calculation methods used for estimating floor space at Market Hall –1 and Market Hall-2 are as follows:

- Calculation method uses the net area required to accommodate the average daily sales for each of the main commodities for wholesalers, plus daily fluctuations and for the overall circulation.
- An approach to estimate a required average space for each wholesaler to be multiplied by a number of the wholesalers , calculated from the expected annual turnover in 2010. Also the capacity to unload and load the expected number of trucks at the peak hour is another important consideration.

As the result of the above calculation method used, floor areas for the Market Halls are determined as the followings:

A number of the wholesalers for the vegetables (Market Hall-1) are estimated to be about 200(100,000ton handling/year and @1.5 ton/ wholesaler/ day) at maximum, reference being Kalimati Market with 301 wholesalers and 120,000 ton - 140,000 ton annually.

A number of the wholesalers for the fruits (Market Hall-2) are estimated to be about 50(40,000ton handling/ year and @ 2.5ton/ wholesaler/ day) at maximum, a part of the Harsha Market wholesalers to be transferred to the NWM.

The Market Hall plans call for flexible enough to cope with annual turnover which varies year to year, a number of the wholesaler and/or size of the stalls for the target year 2010. Therefore, the plan for the wholesale market provides no rigid wall, but screens or grills with posts that could easily be altered. The following suppositions are made from the Operation Schedule of New Wholesale Market as follows:

- One vegetable wholesaler will handle 1.5 ton of vegetable per day.
- One fruits wholesaler will handle about 2.5 ton of fruits per day.

The stall unit size for the Vegetable Market is calculated by the storage area of 4 stacks of plastic crates (0.36m width x 0.54m depth x 0.29m height and average of 25kg of vegetables/ crate for 1.5ton/ wholesaler) of 1.62m x 1.8m, display area of

about 2m x 2m, desk with chair and single bed. The area is required to be minimum of 18.75m^2 (5m x 3.75m).

The Building -1 and Building-2 of Market Hall-1 have truck loading and unloading dock of 80 places which is enough to accommodate (actual requirement being 75 spaces of 4 ton trucks @ 300ton/ day of vegetable handling).

As for the Fruits Market, the stall has an average size of 800 square feet at the Harsha Market because the present stalls being renovated from the housing units, therefore, the comparison can not be made on these basis. If we are to use the same plastic crates and same calculation procedure as in the vegetable, for the wholesalers to handle 2.5 ton/ day, the required area of the stall to be 28.1 m^2/ wholesaler.

Kalimati has an average stall size of 7.5m^2 and the stall size will be 2.5 times that of the present size in the new Market Hall. The truck dock for the Market Hall-2 has 32 spaces (requirement being 31 spaces of 4 ton truck @125 ton/ day of fruits handling)

The sizes and the number of the stalls for the Market-1 and Market are therefore, planned as follows:

- 200 wholesaler's stalls @ 18.75 m^2 per stall (5 m x 3.75 m) for Market Hall-1
- 50 wholesaler's stalls @ 28.1 m^2 per stall (7.5 m x 3.75 m) for Market Hall-2

Refer to Table 9-46 and 9-47 for plans of stalls for vegetable and fruits wholesaler.

ii) Administration & Training Center

The Administration & Training Center will have important functions to manage and maintain the NWM, and the demonstration of technology transfer, including training and learning the process for the commercialization and modernization of marketing system. The Administration & Training Center will be placed near the entrance and the center for easy access and convenience in overlooking the whole complex for the maintenance. The 1st floor provides reception for visitors, toilets and lecture space for the training with simple pantry to serve canteen. The 2nd floor consists of the management offices and the laboratory/ workshop for the training center (refer to Table 9-48 and Table 9-49).

iii) Pilot Project Building

Pilot Project Building is utilized to demonstrate the technology improvement for growing and harvesting of horticultural product. There are mainly two functions for this facility: Exhibition corner and Cold storage.

Facing to the lecture hall, the Pilot Project Building consists of a Cold storage room with the machine room, Seeds demonstration spaces where hi-quality seeds will be displayed for visitors to purchase, office, storage and entrance hall. (refer to Table 9-50)

(Cold Storage)

The purpose of providing the cold storage in NWM is to store the high-quality vegetables and fruits from the collection centers, and to sell them at the prices better than the regular prices. The sample of the fruits and the vegetables will be displayed for purchasing in the exhibition room.

The handling volume is calculated to be 2 ton of fruits and 5 ton of vegetables to receive them twice per week Also, vegetable spaces and the fruit spaces are clearly separated. The required store space will be then calculated with the plastic crate and the wooden pallet follows:

If we are to use plastic crates of 514 x 360 x 307mm (capacity of 25 kg of vegetable or fruits / crates) a pallet by 1400 x 1100mm have capacity to store 24 crates or 0.6 ton, the vegetable storage can have 10 pallets of 6 ton capacities. As for the fruits, there are 7 pallets for 4ton capacity. Both cold storages have access way in the center for loading and unloading, and the pallets are placed on each side of the access way.

The whole process of receiving, storing and selling the vegetable and the fruits of high quality in the NWM, is a demonstration and training for the traders and the related people, and hence, transferring the technology.

iv) Mechanical and Electrical Services Outlines

Plumbing System

(Water Supply System)

Water supply system will have 2 separate systems of city water and the well water. City water and well-water are collected and stored in the water reservoir and then carried up to the elevated water tower by pump. The water will be distributed to the required points from the elevated water tower.

Capacity of water reservoir will be about $40m^2$. This will be enough to provide for half a day in NWM.

Capacity of the Elevated Water Tank to be $5m^2$. The pump will run constantly to keep the water in the tank.

Electric water heater will be installed for drinking use in the Market Hall and Administration buildings.

(Building Drainage System)

For the drainage system from toilet, wastewater treatment facility will be installed. For the drainage system from floor washing, it will have dust-collecting facility. Water treatment plant, receiving all the wastewater will have the process of storing, neutralizing and discharging to city drainage through monitoring manhole. Rainwater it to be collected and discharged to the city drainage system

Electrical Services Outlines.

Electricity is mostly consumed by lighting, ventilation fans and outlets for the Market Halls and other buildings and for the machinery uses, water pumps for water supply, air conditioning and others.

(High- tension power receiving system)

High- tension power supply from the city line is available provided that extension works to the site is completed.

(Power generator)

Emergency power generator will be provided, consisting of power generator, oil-feeder system, chimney will be provided.

(Lighting system)

Luminous level and type of lighting fixture will be selected according to the room requirement. .Market Hall (200-300 lx), Office Building (300 lx)

External lighting system will be installed for the car parking and green area.

(Communication system)

- Telephone piping system.

Cable racks, terminal boxes, and conduit piping for telephone wiring will be installed.

- Public address system.

Public address system is convenient for its size of the site. Therefore, emergency public address system will be installed at the existing security control room. This system will have the function of general broadcasting, BGM and paging system by telephone.

(Safety and fire alarm management system)

Fire alarm and monitoring panels those are installed in the office of Market Hall to monitor the fire alarm system of the building.

(AV conference system for publicity purpose)

Audio system, Lighting control system and Visual system such as projector will be equipped in the lecture room.

(Lightning protection system)

Lightning rod with the cable will be provided.

- Other Services

(Gas Supply)

Propane gas will be provided for cooking service in the Canteen service.

(Layout Plan of the Facilities for Site-A and Site-B)

Site plan is based on the effective relationship of each zoning and the efficient circulation for market operation and clear separation of the pedestrian and vehicles for the safety.

There are mainly three zones: market hall zones, mechanical and electrical zones and the management and pilot project zones, all of which are located to close to the entry and access road. The pedestrian walk-way will be provided all around the periphery of the site boundary for the safety. The Administration building with the Training center and the Pilot Project building are placed in the front of the site to symbolizing the importance of the project purpose.

The Market Hall on the 1st floor consists of wholesaler's premises and unloading, loading bay,, security office, electrical room and other minor required spaces.

The 2nd floor consists offices and conference room, toilets for wholesalers, placed along the corridor.

In the Market Hall – 2 for the fruits, the banana ripening room of 4.5m x 6m will be provided. The handling capacity is about 35-50 ton/ day. The room will be tightly enclosed as the processing smoke will not get to the other rooms or corridor.

Layout Plan Kathmandu New Wholesale Market in the Site A and the Site B are shown in Fig 9-8 and Fig 9-9.

(Building Structure)

The structure of the all the facilities are reinforced concrete structure, except for the structural steel roof of the Market Halls and Cold Storage.

(Facilities Plan)

Drawing for design of the New Wholesale Market building , the Administrative office / Training Center building, Pilot Project building and other building are shown in Figures 9-10 to 9-14.

2) New Wholesale Market in Biratnagar

a) Goals

To establish the efficiently and modern wholesale market of horticulture products in the Eastern Region.

b) Project Concept

The New Wholesale Market in Biratnagar Sub-Metropolitan City and New Collection Centers in the hill area will be established in order to strengthen agricultural marketing system in the Eastern Region. The New Wholesale Market has mainly two functions as wholesaling and education. The wholesaling function by transferring from the existing traditional market Gudri and the existing fruits wholesale market will be integrated into the New Wholesale Market. In addition, some of the products will be transported to the new Wholesale Market from the New Collection Center in the hill area, and the wholesaling function by farmer's cooperatives in the hill area will be introduced in the new market as a pilot case. Further, the Training Center will include functions such as training, education and promotion aiming establishment of the modernized marketing systems. The size of facilities are required concerning increase the handling volume by 2010.

c) Project Site

There are two proposed sites for the new wholesale market in Biratnagar sub-metropolitan city. Haat Khola, one of the two proposed sites, is situated at the east of the city along the Rangeli Road and 1.8 km from the Malaya Road, the highway. It is divided into the northern and the southern parts by the Rangeli Road. This site is located in the shopping area that has easily access by users. Haat Khola is categorized as urban development area in the future city planning of Biratnagar issued by the Physical and Urban Development Department in 1997. The site is owned by Biratnagar Sub-Metropolitan City government. Its land is almost flat and has a quadrangular shape. Yet, flood-plane appears in the rainy season (June-September). Approximately 200 families have illegally settled in the site for over 30 years. Further, there are a primary school, a police station, a holly tree and a Hindu temple. In order to carry out this project, Biratnagar Sub-Metropolitan city needs to relocate some of settlers and construct a new toilet for the existing primary school. It is required because the area of the site is limited and it is physically impossible to build a new wholesale market without existing facilities being relocated.

The other site is located in the south of the city near the highway (Malaya Road). This site was handed over from the Jute Development Corporation to the Ministry of Agriculture and Cooperative, and the site is categorized as institutional area in the future city planning of Biratnagar. Regarding physical conditions of the site, the land is almost flat and has a rectangular shape. There is a small pond in the center of the site. There are approximately 70 families illegally settled in the western part and remaining sheds of the Jute Development Corporation in the southern part. Land of the Biratnagar Regional Food Laboratory and land managed by the Regional Livestock Directorate are located in the northern side of the site.

Refer to Fig 9-15 for Location Map of Biratnagar Site.

d) Natural Condition

(Climatic Condition)

According to Climate data of Nepal in 1996, mean daily air temperature varies from 15.8˚C (winter) to 29.˚C (summer). Mean annual humidity is from 63% to 83%. Annual rainfall of 2,676.5mm was recorded in 1998. Nepal has 2 seasons, dry season: October - May, rainy season: June - September.

(Earthquake)

According to Epicenter Map of Nepal Himalaya issued by Department Mines and Geology Ministry of Industry, serious earthquakes have not been recorded in Morang district that Biratnagar sub-metropolitan city belongs in.

(Geologic Condition)

Biratnagar belongs Terai plain that is covered with recent alluvium formation. According to the soil data of around the site and surveying the surface of the site, stiff clayey silt is appeared in top of formation around the area of both sites. However, on the depth of 5-6m from the grand level, it shows sufficient bearing

capacity for the construction building. From this point of view it seems to be not necessary preparing pile foundation for the construction building in both sites.

e) Building Regulation and Design Standard

Refer to Section 9.2.7, (1), 1), e).

f) Equipment, Construction Material/Machinery Procurement Condition

Refer to Section 9.2.7, (1), 1), f).

g) Infrastructure Condition

Present infrastructure condition about both sites are shown as follows;

Items	Site 1	Site 2
(1) Access Road	Pavement access road is connecting from the high way to this site. Road width is 7m. For there is heavy traffic on this road with vehicles, ricksya, caw carts and bicycles, big truck, trucks can not go through easily in the peak hour.	About 4m access road joins from high way to the site without pavement condition. In the rainy season, it is difficult that vehicles can not go through the access road.
(2) Electric / Telephone Maine Line	Electric and telephone main line is along the access road. Both lines will be drawn into the site easily.	Electric and telephone main line is drawn to neighbor site, Biratnagar Regional Food Laboratory. Both lines will be drawn into the site easily.
(3) Potable Water Maine Line	City water pipe is along the boundary line between access road and the site. Both of city water and well water will be able to use for.	City water pipe is not coming to this site. Mainly well water is used for around the site area.
(4) Wasted Water Treatment and Its Discharging System	No wasted water treatment system in this area. Almost waste water drains into the river directly. Covered drainage with concrete is along the Rangeli road.	No wasted water treatment system in this area. Almost waste water drains into the river directly. No drain facilities are there.
(5) Garbage Collection Service	Biratnagar municipality has garbage collection service. Only once per week some sweepers ordered by municipality clean the site. Dumping ground is located in the bank of Singhya River near the site.	There are garbage collection service with public and private. At present existing market association contract with government of municipality.

h) Facilities and Equipment Design

(Facilities and Equipment Elements)

Facilities and equipment elements of the New Wholesale Market are shown in Table 9-51.

(Required Floor Area and Design for Main Facilities)

i) Wholesale Market Building

The required number of wholesaler's stalls in the new wholesale market is estimated to be 26 stalls for vegetable, 6 stalls for fruits by 2010 as shown below.

In the existing market (Gudri market), wholesalers negotiate mutually for their trade and rent stalls for themselves. This traditional trading style will be adopted in designing of the new wholesale market. Therefore, each stall will be provided for each wholesaler.

[The required floor area of one stall for vegetable wholesaler]

The New Wholesale Market building consists of several stalls and platform as ①loading/unloading, grading and packing for products. The floor area of a stall for a vegetable wholesaler consists of ②storage, ③office and display space. The storage space is determined considering handling volume of commodities in one day and storage volume in unit floor area (ton/m^2) for commodity. Some furniture (desk, chair, bed, cabinet) will be installed in the office space. The display space is determined by the size of displayed sacks packed commodities and weighing machine for trading. The required total floor area (except for aisle) of each stall for a vegetable wholesaler is estimated to be 20.0 m^2 as shown in Table 9-52.

<u>The required floor area of storage for vegetable wholesaler (m^2):</u>

3.2 ton / 0.29 ton/ m^2 = 11.0 m^2

3.2 ton : Planned handling volume of one vegetable wholesaler in one day
= 30,000 ton / 360 days / 26 stalls

0.29 ton/ m^2 : Volume of sack with 2 stacks / Area of a sack packed potato
= (50kg x 2 stacks) / (0.5m x 0.7m)

Weight of a sack packed potato: 50kg

Size of a sack : W0.5m x L0.7m x H0.9m

[The required floor area of one stall for fruit wholesaler]

Fruits wholesale market building is designed same as vegetable wholesale market building that has function areas for ①loading/unloading, sorting and packing space, ②storage, ③office and display space. The floor area of one stall for a fruits wholesaler is determined using same way as the vegetable wholesale's stall with considering handling volume of commodities in one day. The required floor area (except for aisle) for one stall for a fruits wholesaler is estimated to be 15.9 m^2 as shown in Table 9-53.

[Estimation for the required floor area of fruit wholesaler's storage]

The marketing volume of fruit changes greatly because it is influenced by volume of seasonal products. Therefore the handling volume of one fruit wholesaler is given from the volume of peak season for estimation of the required floor area. In estimating the required floor area of storage, plastic crate that has a capacity of 25kg is used to calculate the storage volume in unit floor area (ton/m2) for convenience.

<u>The required floor area of storage for fruits wholesaler (m^2):</u>

1.86 ton / 0.135 ton/ m^2 / 2 layers = 6.9 m^2

1.86ton : Planned peak handling volume of one wholesaler (ton/day)

= The handling volume of one wholesaler (ton/day) x 200%

= 0.93 ton x 200%

0.135 ton/ m^2 : Storage volume in a unit floor area with plastic crate

= 0.025ton / 0.185 m^2

25kg : Capacity of one plastic crate

0.185 m^2 = Area of one plastic crate (0.514m x 0.36m)

ii) Administrative Office / Training Center Building

The Administrative Office / Training Center Building is planed as 2 stories building. Section of the administrative office is arranged in 2nd floor except for the reception/account office. Section of the training center included a small cold storage is arranged in first floor.

[Administrative Office]

The Administrative Office consists of office room, meeting room, manager's room and reception/account office.

The planned floor area is calculated by considering the number of staff and the use of each room. Following tables show proposed organization of the administrative office and the result of calculation for the floor area of each room (refer to Table 9-54 and 9-55)

[Training Center]

The Training Center consists of instructor's room, training room, exhibition/promotion room, cold storage, and storage. Assistant market manager of administrative section is responsible to the Training Center. Instructors will be recruited from the authority of the government or university. Therefore there are no permanent staff for the Training Center. Main users are farmer, trader, wholesaler and retailer as trainee from related organization with horticulture marketing.

The planned floor area is decided by considering the number of users, training program, installed equipment/furniture and the use of each room. Table 9-56 shows the result of calculation for the floor area of each room.

[Cold Storage]

Small cold storage is arranged to be faced exhibition/promotion room. The cold storage is prepared for following purposes;

- Explanation of suitable temperature and moisture for storage and duration.
- Explanation of operation and maintenance cost.
- Selection of suitable commodity for cold storage that can be economical viable paying various cost.

iii) Water Supply Facility

The city water supply service of Biratnagar is insecure, especially in dry season. Therefore both of city water and well water supply system are adopted in the New Wholesale Market with considering condition of water supply system in Nepal.

[Water reservoir tank and Elevated water tank]

Approximately 30 tons of water in one day is estimated to be used in the New Wholesale Market. Therefore capacity of the water reservoir tank is planned as half of one day's consumption. The elevated water tank (2 tons) that has consumption for 2 hours of a day is situated beside the water reservoir tank.

iv) Mechanical and Electrical Services Outlines

Refer to iv) Mechanical and Electrical Services Outlines of 1) New Wholesale Market in Kathmandu.

i) Layout Plan of the Facilities

Facilities layout is planned in consideration of the user's activity flow and the functional performance of facilities. Activity flow and circulation of vehicles (truck, rickshaw, taxi, bicycle, wholesaler, buyer, trader, labor, garbage collector, etc.) are made to define in relation to each facility for the effective utilization without any conflict.

The New Wholesale Market has 3 main zone: vegetable market zone, fruits market zone, administrative zone. There are adjacent lands, on the east of the Site 1 and the north- west of the Site 2, for the expansion area in the future.

To block direct sunshine, orientation of market buildings are to be on the east-west axis with length. In order to provide a cross-ventilation, market buildings should have two sufficient openings at opposite sides on the north and the south. Therefore, buildings are to be designed with one side corridor type.

The arrangement for the land from the Nepalese side is necessary in order to implement the plan.

(Site 1)

- Relocation or reconstruction of the existing toilet of primary school
- Relocation of illegal settlers
- Land preparation works

(Site 2)

- Dismantlement of existing sheds
- Cover the existing ponds
- Relocation of the fence of residence building for the Biratnagar Regional Food Laboratory
- Land preparation works

Layout plans of The New Wholesale Market (Site1 and Site2) are shown in Figure 9-16 and 9-17.

j) Building Structure

Usually in Nepal, most of the building adopts the reinforced concrete structure with local brick walls. From the observation about the foundation structure of facilities around the site, spread type foundation will be adopted for almost buildings.

The reinforced concrete structure with local brick walls and spread foundation can be adopted for the new wholesale market, the administrative office and the other buildings except for small buildings such as a guard box and a garbage stock shed.

k) Facility Plan

Drawing design of the New Wholesale Market building and the Administrative office / Training Center building is shown in Figures 9-18 to 9-20.

3) New Collection Center

To integrate horticultural marketing system in the Central and Eastern Region, the linkage between the new wholesale market and the new collection center is established.

a) Project site

Following 5 sites in Central Region and 4 sites in Eastern Region are proposed (refer to Table 9-57 and 9-58).

b) Project Components

Project component of standard type (30ton) for the Collection Center is shown in Table 9-59.

(Estimated floor area for the Pre-cooling Storage)

Two types of Pre-cooling storage are installed in the New Collection Center. One storage has capacity of 5 tons for potato seeds mainly. The floor area of 5 tons storage is calculated by considering the size and volume of a sack for packing potato. Another Pre-cooling facility has capacity of 10 tons for vegetable and fruits transported by farmers. The floor area of 10 tons Pre-cooling storage is determined from following items.

- Handling volume of commodities in one day

The 10 tons volume of vegetable and fruits is transported to the Pre-cooling storage by farmers.

- Capacity of a crate used for transportation and stocking

Two types of plastic crate, capacity of Model A 25kg and Model B 40kg with packing Tomato, are used for stocking.

- Size of the plastic crate and wooden pallet

Size of plastic crate : (Model A) 514Wmm x 360Lmm x 307Hmm,

(Model B) 650Wmm x 450Lmm x 315Hmm

Size of Wooden pallet : 1,100Wmm x 1,400Lmm x 150Hmm

- Stacking method of plastic crates on wooden pallet

In the case of using Model A, capacity of 24 crates to be loaded on a wooden pallet is estimated 600kg and put in order with 4 layers. In another case of Model B, capacity of 16 crates to be loaded on a wooden pallet is estimated 640kg..

- The required number of wooden pallets in the pre-cooling room.

The required number of wooden pallets in the pre-cooling storage is calculated with Model A crate.

10ton / 0.6ton = 16.66 = 17 pallets

- Width of aisle for coming and going trolley loaded wooden pallet.

Width of over 2.0m is required.

As the result of calculation, 17 pallets are arranged as Figure 9-20 shown below.

c) Layout Plan of Collection Center

Refer to Figure 9-21: Drawing of the Collection Center.

(2) Livestock Marketing System

For establishment of appropriate and efficient livestock distribution chain in the Central and the Eastern Region, the new Livestock markets, the Slaughterhouses and the Collection Center would be constructed as in the following project sites.

The project, the improvement of livestock markets, consists of mainly two parts: Improvement of cattle sheds and warehouse in relatively short term and education and training matters for personnel concerning to livestock marketing.

1) Project Site

There are livestock market and slaughter slab in Belbari of Morang District for Eastern Region and there are 2 livestock markets in Ramwapur, Mahadevstan and 2 slaughterhouse in Mahadevstan and Thankot in the Central Region (refer to Table 9-60).

2) Project Components

The Main Components is shown in Table 9-61.

(3) Fish Marketing System

For establishment of suitable and efficient fish distribution chain in the Central and Eastern Region, the New Collection/Packing Center and pilot fish ponds would be constructed in the project site in Sunsari District.

1) Project site

The project site is located in marginal agricultural land of Koshi Barrage and along East-West highway with good access to large fish markets. Koshi Tappu Wildlife Reserve is at the west side of the project site. There is residential area and forest covered area around the site.

The land condition of project site is supposed to be flat, suitable shape, good soil and sufficient area for the New Collection/packing Center.

2) Project Components

The Project Component is shown in Table 9-62.

(4) Sanitary Control System for Livestock Products

The Application for Japanese Grant Aid for "Strengthening of Food Quality Management System in Nepal" was made by Department of Food technology & Quality Control (DFTQC) of MoAC in July 2000.

Following the project for reconstruction of DFTQC building and equipment are proposed in the Application mentioned above.

1) Project site

The site locates Barbal Mahar in central of Kathmandu City and there are many institute buildings around the proposed site. The proposed site has existing buildings of DFTQC that changed name from Central Food Research Laboratory, and almost infrastructure already arranged in the site. In construction the new facilities for the project, some of existing buildings must be dismantled for construction of the new buildings.

2) Project Components

The project components are shown in Table 9-63.

10 PROJECT AND COST ESTIMATION

10.1 Project

Project cost estimation was conducted for only the recommended project components of Sector 1 and 2 of the Action Plan, namely, Integrated Horticulture Marketing System in the Central Region (Project 1) and Eastern Region (Project 2).

10.2 Condition for Cost Estimation

The project cost is to be calculated on the following conditions.

(1) The project cost was calculated as of December 1st, 2000.

(2) The unit prices are constant prices as of December 1st, 2000.

(3) The project cost was estimated in US Dollars. US$1 was equivalent to Rs. 73.95.

(4) Tax exemption was applied to all imported materials and equipment.

(5) The project cost was calculated based on the current local unit cost in Nepal, with the exception of the construction cost of the New Wholesale Market facilities and its equipment, and the Horticulture Collection Center facilities and equipment which was calculated based on overseas development assistance project that supplies high grade facilities.

10.3 Project Cost

The Project Cost for NWM in Site-1 was estimated without topographic survey of the site. The Study Team had confirmed, by measuring the site carefully, that the planned NWM was designed suitably and correctly. The topographic survey should be carried out for further refinement of the cost estimation.

Construction cost estimation for projects components are shown in Table 10-1 to 10-8.

11 PROJECT EVALUATION

11.1 Basic Concept of Project Evaluation

Economic and financial evaluations were done for the recommended projects of the Action Plan (Basic Plan). The objective of the economic analysis was to study and appraise the economic feasibility of the project components from the view point of Nepal's national economy. The financial evaluation appraised the financial feasibility of project implementation from the point of financial cost, revenue, operation, maintenance, and management structure. Options for feasible implementation were suggested in cases where evaluation results were not favourable.

1) Economic Evaluation: The purpose of this analysis was to investigate economic benefits and costs that will arise from the project implementation. An economic internal rate of return (EIRR) is used to appraise the feasibility of the project by comparing the case with the project and without the project implementation.

2) Financial Evaluation: The financial evaluation took account of the project's financial cost and revenue to derive the income statement table and funding source. The Financial Internal Rate of Return (FIRR) was then calculated to show the financial viability of the project.

However, the economic and financial evaluations conducted for the recommended Projects 1 and 2 components of the Integrated Horticulture Marketing System in the Central Region, and Eastern Region, did not take account of the unaccountable benefits from the demonstration and training components of the project which is expected to be substantial.

(1) Benefits

The benefits and beneficiaries of project components are described in Tables 11-1, 2, 3 and 4.

11.2 Economic and Financial Analysis

11.2.1 Assumptions for Calculation

(1) Physical Life, Depreciation and Maintenance of the Project

1) The physical life of the project components is shown in Table 11-5.

2) Straight line depreciation has been assumed with zero salvage value at the end.

3) The investment cost used to calculate the depreciation and maintenance cost was assumed to be 50% of the original investment cost to convert the international unit cost to local unit cost.

(2) Prices and Foreign Exchange Rate

1) All cost and prices are based on constant price of December, 2000.

2) Foreign exchange rates for December 2000 of Rs73.95 to a US dollar was used.

(3) Tax

Tax is excluded from all items.

(4) Interest

The investment cost is assumed to be at no interest.

(5) Training and Technical Assistance Cost

The cost for training and technical assistance is to be borne by the government or separate programme and not included in the financial evaluation which was prepared from the viewpoint of the management body of the Collection Centers (CC) and New Wholesale Market (NWM) facilities.

11.3 Evaluation of Integrated Marketing System in Central Region (Project 1)

11.3.1 Economic Evaluation

The objective of the economic analysis is to study and appraise the economic feasibility of the construction of the new wholesale market and its associated collection centers in the target year of 2015 from the view point of national economy. The purpose of this analysis is to investigate economic benefits and costs that will arise from this project. An economic internal rate of return (EIRR) is used to appraise the feasibility of the project by comparing the case with the project and without the project implementation.

(1) Economic Internal Rate of Return (EIRR)

1) The benefits of the NWM and CC are tabulated in Table 11-6.

2) Operation costs are tabulated in Table 11-7.

3) The result of economic internal rate of return calculation (refer to Table 11-8) shows an EIRR of 9.9%. The low EIRR does not fully reflect the economic benefits from the Pilot and education/ training activities project as the substantial benefits from the demonstration and training components of the project are not accounted for in the EIRR evaluation.

(2) Sensitivity Analysis

Sensitivity analysis for the project (refer to Table 11-9) was carried out to evaluate the extent of changes in the EIRR if key factors change within a reasonable range. The cases investigated were:

1) Case 1: Assumed an increase of investment cost.

2) Case 2: Assumed increase benefits due better operation/ management.

3) Case 3: Assumed investment cost reduced but with benefits remaining the same.

4) Case 4: Assumed benefits reduced due to problems of farmers' and traders awareness, institutional strengthening, facilities usage, management issues, technology transfer output, etc.

The key factors, their percentage changes and the results are shown below.

Case	Investment Cost	Benefits	EIRR
Base case	no change	no change	9.9%
Case 1	+ 10%	± 0%	8.7%
Case 2	± 0%	+ 10%	11.3%
Case 3	- 10%	± 0%	11.3%
Case 4	± 0%	- 10%	8.4%

The best case (Case 2 and 3) gave an EIRR of 11.3% and the worst case (Case 4) gave an EIRR of 8.4%. A reduction of benefits could be attributed to less than expected output from awareness building, facilities and equipment improvements, use of facilities, technology transfer, etc.

(3) Benefits Distribution

The benefits distribution with and without project analysis, showed that 40% of the benefits are distributed to the farmers in the 5 CC in the production areas and 60% to the users of the NWM, Kalimati and other wholesale markets in the consumption area. Thus, the major economic benefit contribution is therefore from the NWM for the Project 1. The benefits will accrue to the farmers in the production pocket (PP) coverage areas of the CC. The equitable distribution of benefits to the users of the NWM will depend on the establishment of the auction system and open market price mechanism.

11.3.2 Financial Evaluation

(1) Revenue of NWM and CC

The revenue of the NWM and 5 CC are shown in Table 11-10.

(2) Results of Financial Evaluation

The income and cash flow of the NWM and 5 CC are shown in Table 11-11. From the table, the income before depreciation and maintenance is in the black and is about US$600,000 annually. The income before depreciation and maintenance from the NWM alone total about US$200,000 (refer to Table 11-12), whereas for each CC is about US$78,000 (refer to Table 11-13). These income will be enough for the operation, management and maintenance of the NWM and CC if depreciation is excluded.

(3) Sensitivity Analysis

Sensitivity analysis for the project (refer to Table 11-14) was carried out to evaluate the extent of changes in the FIRR if key factors change within a reasonable range. The key factors, their percentage changes and the results are shown below.

Case	Investment Cost	Revenue	FIRR
Base case	no change	no change	-3.0%
Case 1	+ 10%	± 0%	-4.0%
Case 2	± 0%	+ 10%	-2.0%
Case 3	- 10%	± 0%	-1.8%
Case 4	- 20%	- 10%	-0.9%

In all the above cases, it is not financially viable for the project to be financed by loan as the revenue from the project will not be sufficient to cover the loan interest payment nor the depreciation. With the exclusion of the pilot project which should be taken up by the government as a separate technology transfer project, the financial viability of the project will be further improved.

11.4 Evaluation of Integrated Marketing System in Eastern Region (Project 2)

11.4.1 Economic Evaluation

(1) Economic Internal Rate of Return (EIRR)

1) The physical life, depreciation and maintenance of the project components is shown in Table 11-15.

2) The benefits of the NWM and CC are tabulated in Table 11-16

3) The operation costs are tabulated in Table 11-17.

4) The result of economic internal rate of return calculation (refer to Table 11-18) shows an EIRR of 3.9%. The EIRR analysis did not include the unaccountable benefits from the demonstration and training components of the project which is expected to be substantial thus contributing to a greater economic benefits from the project.

(2) Sensitivity Analysis

The difference cases for sensitivity analysis are the same conditions as those of the Central Region.

Sensitivity analysis for the project (refer to Table 11-19) showing key factors, their percentage changes and the results are shown below.

Case	Investment Cost	Benefits	EIRR
Base case	no change	no change	3.9%
Case 1	+ 10%	± 0%	2.7%
Case 2	± 0%	+ 10%	5.4%
Case 3	- 10%	± 0%	5.1%
Case 4	± 0%	- 10%	2.2%

In the case of project cost increase or benefit decrease, or where project cost increase with benefit decrease, it is shown to be economically viable. However, due to the small

handling volume of Eastern Region compared with the Central Region, the project in the Eastern Region should be of a limited scope to improve the local market and not introduce modernized marketing system; the CC for export should be a priority.

(3) Benefits Distribution

The economic benefits of the project is distributed 65% to the 4 CC in the production areas and 35% to the NWM in the consumption area. The major economic benefit contribution is therefore from the activities of the CC in the Project 2. The promotion of export from the Eastern Region should be stressed with the establishment of the CC which will effectively contributed to the farmers' benefit.

11.4.2 Financial Evaluation

(1) Revenue of NWM and CC

The revenue of the NWM and 4 CC are shown in Table 11-20.

(2) Results of Financial Evaluation

The income and cash flow of the NWM and 4 CC are shown in Table 11-21. From the table, the income before depreciation and maintenance is in the black and is about US$360,000 annually. The income before depreciation and maintenance from the NWM alone total about US$20,000 (refer to Table 11-22), whereas for each CC is about US$78,000 (refer to Table 11-13). These income will be enough for the operation, management and maintenance of the NWM and CC if depreciation is excluded.

(3) Sensitivity Analysis

Sensitivity analysis for the project (refer to Table 11-23) showing key factors, their percentage changes and the results are shown below.

Case	Investment Cost	Revenue	FIRR
Base case	no change	no change	-1.6%
Case 1	+ 10%	± 0%	-2.8%
Case 2	± 0%	+ 10%	-0.3%
Case 3	- 10%	± 0%	-0.2%
Case 4	- 20%	- 10%	+1.4%

The best case (Case 4) gave an FIRR of +1.4% and the worst case (Case 1) gave an FIRR of –2.8%. A reduction of 20% investment cost in Case 4 can be considered as excluding the pre-cooling facilities at the 4 collection centers.

12 ENVIRONMENT IMPACT ASSESSMENT

12.1 Responsible Agency for Environment

Name	Responsibilities
Environment Conservation Committee, House of Representatives	Monitoring of HMGN activities on environment and policy directives to the government on the environmental issues.
National Planning Commission Secretariat	Integration of environmental aspects in development plan, and advice.
Environment Protection Council (EPC)	Policy directives and suggestions to the government and inter-agency coordination.
Ministry of Population and Environment (MOPE)	Formulation and implementation of policy, plan and programmes, survey, study and research, focal point and coordination of national and international organisations, pollution control, environmental conservation and balance, monitoring and evaluation, and human resource development.
Ministry of Agriculture and Cooperatives (MoAC)	Research on agriculture chemistry and soil, development of agricultural technologies and agri-inputs, compost and chemical fertiliser, standardisation and quality control of breeds, animal and plant quarantine.
Ministry of Forest and Soil Conservation (MFSC)	Land use, utilisation, conservation and promotion of forest and forest products, natural environmental conservation and balanced, soil conservation and watershed management.
Ministry of Water Resources	Flood control and water resource utilisation.

Source: MOPE, 2000

12.2 Environmental Legislation

- Local Self-Governance Act, 1998
- Environment Protection Rules, 1997
- Environment Protection Act, 1996
- Forest Act, 1992
- Water Resources Act, 1992
- Electricity Act, 1992
- Vehicle and Transport Management Act, 1992
- Industrial Enterprises Act, 1992
- Pesticide Act, 1991
- Labour Act, 1991
- Solid Waste (Management and Resource Mobilisation) Act, 1986
- Water and Soil Conservation Act, 1982
- King Mahendra Trust for Nature Conservation Act, 1982
- Tourism Act, 1978
- National Parks and Wildlife Conservation Act, 1973

The law and regulations that dictate the requirement and process of the Initial Environmental Examination and Environmental Impact Assessment are the Environmental Protection Act (EPA) and Environmental Protection Rules (EPR).

The EPA and EPR environmental legislation emphasises environment conservation and management through internalisation of the environmental assessment system, pollution-control and prevention, conservation of natural heritage sites, operation of environmental funds, additional incentives to minimise pollution, and compensation for environmental damages. Emphasis has also been laid on carrying out environmental impact assessment of the prescribed development projects and programs. The MOPE reserves the right to accept or reject environmental impact assessment reports of the prescribed proposal whereas the concerned ministries could approve the initial environmental examination reports.

12.3 Requirement for IEE or EIA in Environmental Protection Act, 1997

In Chapter 2, Rule 3:

Initial environmental examination or environmental impact assessment to be made: a proponent shall be required to carry out the initial environmental examination of the proposal mentioned in Schedule 1 and environmental impact assessment of the proposals mentioned in Schedule 2.

Schedule 1 list the types of sectoral activities which will require IEE. The sectors mentioned are Forest Sector, Industrial Sector, Mining Sector, Road Sector, Water Resources and Energy Sector, Tourism Sector, Drinking Water, Agricultural Sector and others.

In the Agricultural Sector, the activities that this Project may be concerned with are:

- Clearing national forest not more than 1 ha (hill) and 5 ha (Terai) for agricultural purposes
- Construction of 1 ~ 5 km agricultural roads
- Construction activities for farming 2000 ~ 5000 domestic fowls
- Construction activities for farming 100 ~ 500 cattle
- Construction activities for farming 1000 ~ 5000 small cattle (sheep & goats)
- Establishment of agricultural wholesale markets in urban areas.
- Commercial fish farming in an area more than 1 ha

Other than the list of activities mentioned in Schedule 1 and below the standards of those activities listed in Schedule 2, operation of any planning, project or programme of any development work, physical activities or change in land use with a cost of Rs 10 ~ 100 million will require IEE.

In Schedule 2, for the agricultural sector, EIA is required for:

- Clearing national forest of more than 1 ha (hill) and 5 ha (Terai) for agricultural purposes
- Construction of more than 1 ~ 5 km agricultural roads
- Construction activities for farming of more than 5000 domestic fowls
- Construction activities for farming of more than 500 cattle
- Construction activities for farming of more than 5000 small cattle (sheep & goats)
- Urbanisation plan in cultivable lands

Other than the list of activities mentioned in Schedule 2 and below the standards of those activities listed in Schedule 1, operation of any planning, project or programme of any development work, physical activities or change in land use with a cost of more than Rs 100 million will require EIA.

Rule 5:

Approval of work for initial environmental examination or environmental impact assessment to be made: (1) in cases where the proposal requires initial environmental examination, the proponent shall prepare a work Schedule in the format as indicated the Schedule 3 for a report relating to such proposal, and shall have it approved by the concern body.

For activities of the project proposal that require only an IEE report, the MoAC will grant the approval of the proposal, and shall forward the proposal along with its opinion to the MOPE and subsequently to the Department of Commerce and Industry.

Rule 7:

Report of the initial environmental examination and environmental impact assessment to be prepared:

(1) The proponent shall, on the basis of the approved work schedule pursuant to Rule 5, prepared the report of initial environmental examination in the format as indicated in Schedule 5, and report of environmental impact assessments in the format as indicated in Schedule 6.

(2) Whilst preparing the report, the proponent shall, in the cases of initial environmental examination affix a notice in the concerned Village Development Committee or Municipality, Office of the District Development Committee, school, hospital and health post requesting the Village Development Committee or Municipality and District Development Committee or concerned individuals or institutions to offer their written opinions and suggestions within 15 days with regard to the possible impact of the implementation of the proposal on the environment where the proposal is to be implemented and prepare a deed of public enquiry (Muchulka) of that deed. The said 15 days' notice shall be published in a national level daily newspaper. After the publication of such notice, the opinions and suggestions so received relating to that shall also be included in the report.

Provided that, whilst preparing the report of environmental impact assessment, the proponent shall organise a public hearing about the proposal at the area of Village Development Committee or Municipality where the proposal is to be implemented and collect opinions and suggestions.

With reference to the Fig. 12-1, at the stage of this Progress Report, steps 1 to 3 was completed. After the Work Schedule (Schedule 3 of EPR) of the Master Plan proposals was approved of by MoAC, the IEE was completed in Japan after the Master Plan proposals were further clarified.

12.4 IEE Approval Process within MoAC

IEE and EIA reports relating to the agricultural sector are submitted to the Women Farmer Development Division (WFDD) in the MoAC. This division has been assigned

the responsibility of approving IEE or EIA reports. To facilitate the review of these reports, a core committee of 13 persons from various agricultural specialities / division has been formed. The members of this committee are:

1. Joint Secretary, who is the coordinator of this committee
2. Chief of Plant Protection Division
3. Chief of Rabies/ Disease Control & Public Health Protection Division (from DOLS)
4. Horticulture Development Division Officer (Fruit Development Division)
5. Chief of Soil Testing & Services Section
6. Member of Cotton Development Programme
7. Animal Development Officer (General section from DOLS)
8. Animal Development Officer (Dairy Production section from DOLS)
9. Animal Development Officer (Pasture & Fodder Development section from DOLS)
10. Animal Development Officer (Small Animal Development section from DOLS)
11. Food Research Officer (Central Food Research Laboratory)
12. Agriculture Economist (Planning Division)
13. Horticulture Development Officer (WFDD)

Depending on the contents of the IEE or EIA report, relevant persons in the committee will be called upon to review, comment and approve the report. After approval of the report, the approval together with the report will be forwarded to the MOPE and Department of Commerce and Industry for their information and action.

12.5 Environmental Issues

(1) Kalimati Wholesale Market

1) Solid Waste Collection in Kalimati Wholesale Market

The market management committee has its own tipper truck (capacity 4.5 m3, about 10 t) for rubbish/ solid waste transport to the dump site. Last year the solid waste used to be collected by the staff of the market management committee, and transported to the municipal land fill site at Gokarna. For the use of the municipal land fill at Gokarna, the Kalimati market management committee had to pay NRs400 per truck load of solid waste.

At the end of last year, the Kalimati market management committee contracted the collection of the market solid waste to a contractor. The contractor provides the labour and small tools to collect the waste and loads it into the tipper truck. The Kalimati market management committee has also contracted with “Center for Prosperity Infrastructure” (CeoProInn) located in Teku to handle their waste. CeoProInn then converts the organic waste to compost at their site after separating the organic and inorganic matters. For this service, Kalimati market management committee pays NRs300 per truck to CeoProInn.

The number of truck trips per month during the lean season (Nov ~ Feb) is 20 trucks per month whereas in the peak season (Apr ~ Aug) it is about 60 trucks per month. The total truck trips for the whole year was about 380 trucks or about 3800 t which is about 3% of the total handling volume of Kalimati Market. Almost all the solid waste from the market is organic. The low percentage of solid waste from the market could be attributable to the scavenging that can be seen at the market.

2) Traffic Congestion

The location of Kalimati, Tukucha, and Harsha wholesale markets within the inside of the ring road in the central part of the Kathmandu city means that the trucks bringing produce to these wholesale markets contribute to the already congested urban roads. The redistribution/ transport of the produce from these wholesale markets to the other retail markets by the tempos, small trucks, cars, rickshaws, etc further add to the traffic congestion of the urban areas. Other than Kalimati, the other wholesale markets in Kathmandu are not design to handle the traffic associated with wholesale and distribution activities. Their locations in restricted high density central urban areas does not allow the operation of efficient wholesale markets and greatly impact on the traffic congestion of the area.

3) Water Supply in Kalimati Wholesale Market

The municipality supplies water to the market at 2 tap locations. The municipal water supply is inadequate for the market needs which has necessitated the digging of their own well and construction of an elevated water tank.

Before the availability of their underground water, the market had to import water by water tankers (capacity 10,000 l per tanker). They imported about 20 to 25 tankers per month, costing Rs. 110 per tanker.

The elevated water tank has a capacity of 80,000 l. It has installed a water treatment plant to treat the underground water pumped up from their well of about 100m depth. The ice plant will use the treated water from this water tank.

4) Sewage System in Kalimati Wholesale Market

The sewage system in the market is connected to the municipal's system. The fee for this service is 50% of the water bill.

5) Observations / comments:

The "Center for Prosperity Infrastructure" has indicated that they will no longer be able to provide the land fill for the market use. As such, the Kalimati market will have to find another place for their rubbish disposal.

With only one tipper truck for their rubbish collection, any break down of this vehicle will mean that rubbish will pile up in the market. A one or two days repair time for this vehicle will not affect the market adversely, but a longer repair time will definitely pose a sanitary problem for the market.

A long term solution for the solid waste disposal of the market will have to look at the availability of a land fill site for their waste and also an alternative means of waste transport should their tipper truck break down.

(2) Biratnagar Gudri Traditional Wholesale Market

1) Solid Waste Collection

The solid waste of the wholesale market is collected by a private company, BMC Americorp, which has contracted with the municipality to collect rubbish from core areas (16 of the 22 wards) of the municipality. The company provides rubbish

collection service 7 times / week to the market area at a rate of NR 75 per stall per month. This rate is fixed by the municipality. For a service of 2 times / week, the rate is NR 20. The company also has a management contract to sweep daily 14 km of the main roads in the municipality. It has 25 workers and 3 trucks.

2) Traffic Congestion

The location of Gudri wholesale market in the center of the city area intermingled with the retail market greatly affects the traffic congestion in the urban area. To ease the traffic congestion, the stop-gap measure to restrict the Gudri's wholesale traffic to only the early morning before the start of retail activities, makes wholesale activities inefficient and inconvenient. The narrow streets in and around Gudri wholesale market area get very congested during market hours and movement of produce to and fro is difficult and time consuming.

3) Water Supply

There is no municipality main pipe water supply to the market. Water for market use is from hand pumps located at a few locations.

4) Sewage System

There is no centralise sewage system in Biratnagar. As such, the market stalls have their own independent septic tanks.

5) Market Access Condition

The road in the market is not paved. It is muddy when it rains which makes access in the market difficult for pedestrians, rickshas and trucks. Due to the narrow streets, wholesale activities are confined to the early morning to facilitate movement of produce before the start of retail activities.

(3) Collection Centers

1) Solid Waste Collection

None of the collection centers visited have any rubbish bins for rubbish. Rubbish is accumulated at a few locations throughout the market and is later collected by the workers for disposal elsewhere. The management system of rubbish collection at Nawalpur and Dhalkebar is not functioning properly due to political interference. A rubbish collection fee of about NR 2 is charged to the stall owners or traders using the market. However, this fee collection is not managed by the Market Management Board and accountability of the amount collected is a problem.

2) Water Supply

Water for the collection centers is from tube wells located in the compound.

3) Toilet

Toilets are provided for all newly constructed collection centers. They have their own septic tanks.

(4) Production Area Living Condition

Sanitation and living environment at the production areas are generally good. For those households that can afford it or have the resources, their preference is to install biogas plant to provide methane gas for cooking. This will eliminate the time consuming task of collecting firewood for cooking and smoke from wood fire thus improving the living conditions inside house.

Water is generally available close-by to the houses. Mainly, the sources tapped for public water supply are tube wells, rivers and springs. A large proportion (59%) of rural households were found dependent on tube well or well for drinking water. Some households are able to afford to dig their own tube well and have also installed an electric motor (if electricity is available in the community) to pump the water to their overhead water tank to feed water directly into the house. About 27% of rural households have water supply piped into their houses. Some communities have a communal water system whereby water is supplied to a communal tank. The users draw water from this communal tank and if their house is downhill from this tank, water hose could be connected to this tank leading to their individual houses.

The average size of housing plot, dwelling area and living area is consistently higher in Terai, Eastern Development Region, urban area and those belonging to non poor households as compared with those in the Mountain, Far Western Development Region, rural area and poor households.

According to the National Household Survey of 1995/6, about 14% of households in the country had access to electricity, out of which about 9% are in the rural areas. The Nepal Living Standard Survey (1996) shows that only about 18% of rural households have toilet facilities compared with about 67% in the urban areas. The total percentage of households with toilet facilities in Nepal was about 22% which indicate a severe sanitation problem, especially so in the rural areas.

About 90% of all households in Nepal do not have facilities to dispose of liquid waste. About 3 % have underground drainage facilities (i.e. 34% of urban households) and 5% with open drain facilities which is considered bad from environment and sanitation view point. In the rural households, about 5% have open drain linkage for liquid waste disposal and less than 1% with soak pit. With the overwhelming majority without disposal facilities, the environmental and health hazards are high.

(5) Street Haat Bazaar

The periodic weekly markets or haat bazaars are located on the streets and are generally not in specifically constructed market facilities. These haat bazaars are often located near highly populated areas or near public transport terminals for easy access by consumers resulting in traffic congestion and difficult access.

Without proper facilities or management of the haat bazaar, solid wastes from the market are thrown haphazardly on the streets creating an unhygienic environment. The agriculture produce are often displayed on the ground, in the open without shade resulting in poor quality and high loss.

(6) Agriculture Chemical Inputs

Use of chemical fertilisers have progressively increase after the 1980s from about 7 kg / ha/ yr to 25 kg/ ha/ yr in 1992/93. Similarly, pesticide use is also increasing. It was estimated that in commercial farming, the national average consumption rate of pesticides was 650 g/ ha. In 1997, the Pesticide Registration Office at Department of Agriculture estimated that about 60 metric tons of pesticides have been imported to Nepal.

To regulate the increasing use of chemical inputs, the Pesticide Act (1991) and Pesticides Rules (1993) were introduced. Also, Integrated Pest Management (IPM) method has been introduced in order to minimise the impacts of the agricultural environment from the chemical inputs.

There is no domestic production of fertiliser in Nepal. As such, all fertilisers are imported. Until 1996/97, Agriculture Input Corporation (AIC) had a monopoly over fertiliser import, including fertilisers received as aid, grant or purchased under loan. Recently, HMGN has introduced a policy to involve the private sector in supplying fertilisers.

Misuse or overuse of chemical inputs / pesticides could lead to pollution and health risk. Pesticide residues have been detected in rice, wheat and pulse grains in godowns and even in milk. The extend of the environment problems associated with the use or overuse of chemical inputs is difficult to assess as there are no published data.

(7) Animal Slaughter

The traditional practice of slaughtering livestock beside the rivers in the early mornings creates a river pollution problem as the washing water, some blood and unwanted animal parts are disposed off into the river. The unhygienic environment where the animals are slaughtered poses a health risk and high contamination risk of the meat. Proper control and monitoring of these slaughtering areas should be implemented to minimise potential health problems or risk of epidemic from contaminated meat.

12.6 IEE Process of Master Plan

The IEE Work Schedule 3 for the below project recommendations of the Master Plan were completed;

- Development of the Integrated Horticulture Marketing System in the Central and Eastern Region
- Construction of slaughter slabs for livestock
- Construction of livestock markets
- Fish Marketing Network Development Project

After completion of IEE Schedule 3 of the recommended project component and approved at the Interim Report stage, Schedule 5 was completed for only the recommended project components below, i.e.

- Integrated Horticulture Marketing System in Central Region
- Integrated Horticulture Marketing System in Eastern Region

Referring to Fig 12-1 Methodology for IEE/ EIA, steps completed during Phase 2 stage in Nepal were; 5. Finding of Significant Impacts, 6. Investigation Items/ Impacts for Action Plan, 7. Consideration Of Action Plan's Components/ Activities / Alternatives, and 8. Preliminary Schedule 5.

Steps 9 and 10 of Fig 12-1 were completed in Japan after further consideration of alternatives and finalisation of project components, activities and its management and operation. For subsequent implementation of the project, the Nepalese side will have to put an announcement in a national level daily newspaper and also a notice in the municipality or District Development Committee to solicit written opinions or comments with 15 days. After the publication of such notice, the opinions and suggestions so received relating to that shall also be included in the IEE or EIA report. This report will then be reviewed and approved by Women Farmer Development Division (WFDD) in the MoAC in the case of IEE report. If EIA is required, the EIA report will also have to be reviewed and approved by MOPE.

12.7 Weaknesses

12.7.1 Solid waste collection system in Kathmandu

The long term landfill site for the solid waste of Kathmandu needs to be determined in order that the rubbish collection system of the urban area can be implemented smoothly. At the present moment, with the closure of the previous landfill site at Gokarna, the use of temporary land fill sites around the urban areas is only a temporary solution. These temporary measures have met with resistance and protest from local residents in the area used for dumping the rubbish.

The uncertainty of land fill site has affected the Kalimati Wholesale Market solid waste disposal. Their arrangement with CeProInn a private company that provided the area for composting of the market's organic waste has been temporarily terminated during the rainy season as the company had indicated that they will not be able to conduct composting activities on their site during the rainy season.

The uncertainty of where to dispose off the Kalimati market's solid waste will affect the market operations. Should the municipality or their private contractor (like CeProInn) refuse or are unable to handle their waste, the solid waste will invariably pile up in the market and disrupt their operations.

Also with only one tipper truck for Kalimati market rubbish collection, any break down of this vehicle will mean that rubbish will pile up in the market. A long term solution for the solid waste disposal of the market will have to look at an alternative means of waste transport should their tipper truck break down and a more reliable disposal arrangement with the municipality or their private contractor.

The other organisation involved in the recycling of waste in Kathmandu in WEPCO, a non-profit organization established in 1992. Its goal is to enable the people of Kathmandu Valley to have a clean and healthy environment through the initiatives of local women. WEPCO's rubbish contractors pick up the sorted organic rubbish from households in Ward No. 1, 2 and 10 in Lalitpur municipality and brings it to their site at Dhokadol for composting. As there is no shelter for their compost heaps, activities ceases during the rainy season. Limited land availability for their composting yard limits

the amount of waste they can handle and their low lying land near the Bagmati river is subjected to flooding during the heavy rains of the wet season.

12.7.2 Sanitation at Collection Centers

None of the collection centers visited have any rubbish bins for rubbish. As such, the users have no choice but to throw the rubbish anywhere they can thus contributing to the unsanitary conditions at these collection centers. The unpaved access also contributes to muddy, difficult and unsanitary conditions. The management system for rubbish collection at Nawalpur and Dhalkebar is not functioning properly due to political interference. This fee collection is not managed by the Market Management Committee and accountability of the amount collected is a problem.

12.7.3 Sanitation at Production Areas / Community

Although the sanitation and living environment at the production areas are generally good, public awareness on hygiene, sanitation and environmental issues need to be improved. Their needs for firewood for cooking which impact on the depletion of forest resources could be alleviated with the introduction of biogas plant in requisite conditions (availability of livestock dung, water, right temperature). The other priority needs are construction of toilets, water supply and improvement in their living conditions.

12.7.4 Traffic congestion at markets and central urban areas

The location of existing established wholesale markets in the central parts of the cities of Kathmandu and Biratnagar does not allow efficient and smooth operation of the markets. The restricted urban space in and surrounding the markets does not allow expansion of the markets' facilities nor allow smooth traffic flow for incoming and outgoing traffic. With the increasing number of vehicles and traffic congestion especially in the urban centers, the future operation of these wholesale markets will face increasing difficulties in terms of access and expansion. The continued operation of these markets will exasperate the already bad traffic congestion in the urban cities.

12.8 Assessment of Significant Impact from IEE

From the completed Schedule 5, the significant impacts identified were further analysed below.

12.8.1 Integrated Marketing System in Central Region

(1) Impact on Wholesale activities

With the construction of the new wholesale market, the marketing system and distribution in Kathmandu will change. The new wholesale market is expected to encourage new wholesalers and traders participation and to handle the surplus volume that Kalimati market cannot handle due to full capacity in the near future. The Harsha, Tukucha and other street market's traders are expected to relocate to the new wholesale market as their present market locations are on a lease basis and temporary in nature.

(2) Job creation

With the construction of a new wholesale market, activities and persons that will be affected are:

Farmers/ Women Groups: Opportunities will be created for farmers and / or women groups to be involved in the marketing of the produce at the new wholesale market due to incentives to these groups to get involved in the marketing.

Wholesalers & Traders: New wholesalers and traders will be able to operate at the new wholesale market. Some wholesalers from the existing Kalimati, Harsha, Tukucha and other temporary markets have indicated that they are willing to relocate to the new wholesale markets when it is completed.

Porters: New jobs for porters will be created at the new wholesale market. Some porters will follow the wholesalers to the new wholesale market when they relocate from Kalimati, Harsha, Tukucha or other temporary markets.

Market management: Other jobs that will be created with the new market will be the administrative staffs of the market management committee, maintenance staffs, guardmen etc.

(3) Impact on Traffic movement

Traffic movement to the existing markets will change due to the location of the new wholesale market outside the ring road thus leading to more efficient traffic flow and reduce time loss due to congestion and city entry restriction in peak times.

The new wholesale market will affect the traffic movement in the area of the project site. Trucks carrying the agriculture produce to the new market will increase the amount of traffic in the area especially in the early morning as this is the peak time for the arrival of the trucks. Increase in traffic associated with the market like tempos, rickshaws, vans and cars will also affect the project site. However congestion is not expected on the access roads leading to the market as the traffic to the market will be parked and contained within the market site proper and no parking along the access roads to be allowed.

(4) Impact of the Collection Centers

New collection centers that will have linkage with the new wholesale market will bring new opportunities to the farmers in those areas covered by the collection centers. There will be added incentive to improve and increase their production, quality control, post production handling, etc.

The new marketing opportunities to the new wholesale market will increase their income and create job opportunities in the collection centers. The difficult marketing methods previously of walking to the nearest town or collection points which involved time consuming physically demanding walks carrying their heavy produce will change. They will instead, with the construction of the new collection centers, only have to bring their produce to these nearby collection centers, thus freeing them from the burden of having to transport their produce long distances and time spent selling their produce at the towns or collection points.

The collection and marketing at these collection centers will thus free the farmers and women groups to have more time for production, communities and household/ family activities.

The proposed storage and cold storage facilities at the collection centers will aid the farmers to store their produce and to overcome the need for immediate sales of the produce for fear of spoilage leading to a drop in the sales price.

(5) Waste Disposal Impact

Solid waste from Kalimati Wholesale Market is presently transported by their own trucks to either the municipal transfer station in Teku or to the composting site of Center for Prosperity Infrastructure (CeProIn).. For this activity, Kalimati's MMC pays CeProIn Rs450 per truck trip. This is the same amount that they pay to Kathmandu Municipality to handle their solid waste when CeProIn cannot accept their solid waste. After receiving the solid waste which is dumped at their site in Teku, CeProIn then have to sort the waste into organic matter, paper, glass, etc. The organic matter is then piled up in a heap to make compost.

The solid waste collection in the new wholesale market will encourage users to sort the solid waste into organic and non-organic waste. This will facilitate the effective recycling of the waste; organic waste will be turned into compost, paper, plastics, glass will be recycled. Separate coloured bins and containers will be provided throughout the market for sorting of the solid waste. Market management committee must conduct sustained awareness building programmes to inform users about the reduction of waste and recycling activities. With these activities, it is envisaged that the majority of solid waste from the market will be recycled and only a very small portion of the waste will be generated.

This waste collection system to be promoted in the new wholesale market will serve as a model for other markets and communities on how to manage their waste. The success of the waste disposal of the new market will reduce the burden on the Lalitpur municipality's land fill and help the organisations involved with solid waste recycling such as WEPCO to promote awareness and recycling activities.

Socio-Economy Significant Impact	By
Wholesale activities	Change of wholesale activities location
Job creation	Additional marketing & distribution activities
Cultural & Physical Significant Impact	
Traffic movement	Vehicle movement
Marketing system	New marketing channel and linkages with collection centers
Waste disposal	Solid waste disposal system

12.8.2 Integrated Marketing System in Eastern Region

(1) Impact on wholesale / retail activities

The existing wholesale market at Gudri which is located in the center of the city, is congested due to the limited space, narrow streets and the fact that it also serves as a retail market for the Biratnagar population. The wholesale market functions only in the early morning up till 8 am. After this time, retail activities makes wholesale function difficult as consumers crowd the market. Trucks will not be able to enter during this time; only small push carts or trishaw can be used for transporting goods to and from the market.

With the new wholesale market at Haat Kola, the majority of wholesale function will be transferred from Gudri to this new market. This will reduce the congestion at Gudri and substantial improve the sanitary condition, vehicle and people movement and retail activity at Gudri. In the long term, Biratnagar municipality's plan to turn Gudri into a modern commercial area can be more easily realised with the Haat Kola market in existence so that any remaining retail function can eventually be completely transferred to other market sites.

(2) Impact on Haat Kola Site's Residents

The site identified for the new wholesale/ retail market belongs to the municipality and divided by the road into Ward 10 and 11. There are unauthorised houses on the site estimated around 40~50 houses in Ward 10, 130~150 houses in Ward 11, with about 300 families in total. According to the Principal of the primary school located on the site, about 30 ~ 40 percent of the people living on the site are from India. Major economic activities of the inhabitants living on the site include operating tea shops, grocery/ sundry shops, meat shops, foundry, rickshaw operators, etc.

The public primary school on the site was established in 1956. At its peak, it accommodated about 1,400 students. However, it now has 275 students and 8 teachers from Primary 1 to Primary 5. 30% of the students are from the Haat Kola site itself. About 60% of the students are girls. The school has 9 rooms, no electricity, no telephone. It is located in Ward 11. A separate external toilet building was built by UNICEF 5 years ago. Water is from ground water by a hand-pump from a depth of about 20 m.

About 6 years ago, the Municipality had prepared a piece of land on the east side of the Singhiya River for relocation of the unauthorised inhabitants on the site. Unfortunately, the relocation exercise was not successful as there were no actions taken to fence off the site or to demolish the unauthorised houses. Inhabitants who received land on the new relocation site were known to have rented the land out to other settlers.

The municipality at that time had allocated Rs2,000,000 for the relocation. There was Rs1,000,000 remaining of the original budget as the relocation was never completed. Budget can again be allocated for the relocation but concerted effort must be implemented if the municipality wants to move the unauthorised inhabitants to the alternative site.

In the short term, the construction of the new wholesale market at Haat Kola will require that some houses along the main road and some houses in the south of the site be

demolished to make way for the new market (see attached figure of the new market). The primary school's external toilet will need to be relocated to within their allocated site which will be fenced off from the new wholesale market. The school kids will then no longer need to waste their time cleaning up the site after the weekly bazaar but will have a reduced playground.

The inhabitants of the demolished unauthorised houses will need to be relocated to alternative site prepared by the municipality. This significant social impact will need to be investigated in more detail before implementation of the project to identify the exact number of people involved and countermeasures required to lessen, mitigate or compensate the impact. This significant social impact will need to be incorporated into the EIA to be conducted before the implementation of this project in Haat Kola.

(3) Job creation

With the construction of a new wholesale market, activities and persons that will be affected are:

Farmers/ Women Groups: Opportunities will be created for farmers and / or women groups to be involved in the marketing of the produce at the new wholesale market due to incentives to these groups to get involved in the marketing.

Wholesalers & Traders: New wholesalers and traders will be able to operate at the new wholesale market. Some wholesalers and retailers may relocate from the existing Gudri market to the new wholesale markets

Porters: New jobs for porters will be created at the new wholesale/ retail market. Some porters will follow the wholesalers to the new wholesale market when they relocate from Gudri market.

Market management: Other jobs that will be created with the new market will be the administrative staffs of the market management committee, maintenance staffs, guardmen etc.

(4) Impact on Traffic movement

Traffic movement to the existing Gudri market will change due to the new wholesale market located outside the town main central area thus leading to more efficient traffic flow and reduce time loss due to congestion and entry restriction during peak times of retail activities in Gudri market.

The new wholesale market will affect the traffic movement in the area of the Haat Kola. Trucks carrying the agriculture produce to the new market will increase the amount of traffic in the area especially in the early morning as this is the peak time for the arrival of the trucks. Increase in traffic associated with the market mainly rickshaws, vans and cars will also affect the project site. However congestion is not expected on the main access roads leading to the market as the traffic to the market will be parked and contained within the market site proper and no parking along the access roads to be allowed.

(5) Impact of the Collection Centers

New collection centers that will have linkage with the new wholesale market will bring new opportunities to the farmers in those areas covered by the collection centers. There

will be added incentive to improve and increase their production, quality control, post production handling, etc.

The new marketing opportunities to the new wholesale/ retail market will increase their income and create job opportunities in the collection centers. The difficult marketing methods previously of walking to the nearest town or collection points which involved time consuming physically demanding walks carrying their heavy produce will change. They will instead, with the construction of the new collection centers, only have to bring their produce to these nearby collection centers, thus freeing them from the burden of having to transport their produce long distances and time spent selling their produce at the towns or collection points.

The collection and marketing at these collection centers will thus free the farmers and women groups to have more time for production, communities and household/ family activities.

The proposed storage and cold storage facilities at the collection centers will aid the farmers to store their produce and to overcome the need for immediate sales of the produce for fear of spoilage leading to a drop in the sales price.

(6) Waste Disposal Impact

The solid waste collection in the new wholesale market will encourage users to sort the solid waste into organic and non-organic waste. This will facilitate the effective recycling of the waste; organic waste will be turned into compost, paper, plastics, glass will be recycled. Separate coloured bins and containers will be provided throughout the market for sorting of the solid waste. MMC must conduct sustained awareness building programmes to inform users about the reduction of waste and recycling activities. With these activities, it is envisaged that the majority of solid waste from the market will be recycled and only a very small portion of the waste will proceed to the municipal landfill.

This waste collection system to be promoted in the new wholesale market will serve as a model for other markets and communities on how to manage their waste. The success of the waste disposal of the new market will reduce the burden on the Biratnagar municipality's land fill and help BMC Americorp, the private organisations contracted by the municipality to handle their solid waste, to promote awareness and recycling activities.

Socio-Economic Significant Impact	By
Wholesale activities	Change of wholesale activities location
Job creation	Additional marketing & distribution activities
Demolition of some houses	Significant negative impact on affected residents
Cultural & Physical Significant Impact	
Traffic movement	Vehicle movement
Marketing system	New marketing channel and linkages with collection centers
Waste disposal	Solid waste disposal system

12.9 Scoping Items of EIA

The significant negative impact identified in the IEE for the project components that require further studies and to conduct an EIA will need to be undertaken by the Nepalese side as agreed in the Minutes of Meeting of the Scope of Work. The recommended scoping items for subsequent EIA are as follows:

12.9.1 Demolition of some houses and relocation of the residents from Haat Kola

The negative social impact from demolition of some houses on Haat Kola project site could not be avoided even with a redesign of market layout. The impact was minimised as far as possible with the design of the market avoiding most of the unauthorised houses and the primary school on the site. Before implementation of the project on Haat Kola site, it is recommended that the following EIA scoping items be conducted.

(1) Political Scoping

The political will and consensus of the Biratnagar Sub-Metropolitan municipality to proceed with the construction of the new wholesale market at the Haat Kola project has to be confirmed together with the availability of funds for relocation of affected residents to an alternative site.

(2) Social Scoping

The number of affected residents are to be confirmed together with their consensus for relocation to an alternative housing site to be provided by the municipality.

13 IMPLEMENTATION PROGRAM

13.1 Technology Transfer

To address the weaknesses and development issues of the agricultural marketing system, and taking the output from the participatory approach workshops, the education and training plan was prepared as shown in the following Table 13-1.

Technology transfer will be implemented through trainers training for Government officers, MMC members of CC, representatives of farmers and women at NWM and CC. Training for modernization of agricultural marketing system will also be conducted in foreign countries for MMC members of CC, representatives of farmers/women's organizations. Target groups will be executive bodies such as MoAC, NAMB, MDC, MMC, DFTQC, user and community groups, and beneficiaries such as MMC, local governments, farmers, women groups, traders and other related groups.

13.1.1 Horticulture Production and Post Harvest System

(1) Contents of technology transfer

1) Knowledge and demonstration test on agricultural marketing system
2) Planned production system to meet market demand and needs
3) Quality control and stable collection method
4) Establishment of marketing system at the production area through organizing of farmers and women
5) Use and management of CC
6) Participation in marketing activities at the wholesale market
7) Management ability to use micro credit system

(2) Method of technology transfer

1) Trainers training: sustainable training of Government officers, MMC members of CC, representatives of farmers and women at NWM and CC
2) Training for modernization of agricultural marketing system: training at the foreign countries for MMC members of CC, representatives of farmers/women's organizations

13.1.2 Horticulture Marketing System

(1) Contents of technology transfer

1) Research and acquisition of marketing know-how
2) Development of data base at various stages of marketing
3) Consciousness of farmers, traders and consumers on quality and price

4) Open marketing system and pricing mechanism including auction system

5) Use and management of WM

6) Development of the related industries and their management technology

7) Modernization technology of marketing system

(2) Method of technology transfer

1) Policy level: Regular meeting among high officials at the Marketing Board

2) Market level : for representatives of MMC and persons concerned

3) OJT: Use , management and market information system of NWM

4) Modernization of agricultural marketing system : including foreign training

13.1.3 Livestock Marketing System and Sanitary Control System of Livestock Products

(1) Contents of Technology Transfer

1) Livestock market: market management, O & M, market information system, etc.

2) Slaughter slab: Technology transfer on hygienic meat production, use and management of facilities and equipment, consumers needs

3) Sanitary control of livestock products: knowledge for policy making and technology, research and test technology development of research staff, knowledge on meat quality / influence to health / sanitary protection

(2) Method of Technology Transfer

1) Livestock market: Technology transfer to personnel concerned to LMMC (Livestock Market Management Committee), government and local government officials (DLS, DLSO, VDC, DDC, Municipality), wholesalers/traders, representative of farmer's groups and meat sellers. Regional Training Centers of DLS in each Region will be suitable for the venue. Lecturers will be selected from experts of donor country, TLDP, NGO and domestic consulting engineers etc. It will be recommendable that basically key persons in each agency should be trained first of all and then those persons trained will transfer technologies on the management of organization and operation and maintenance etc. to other general personnel.

2) Slaughter slab: Technology transfer to the officials of Animal Quarantine Section of DLS, Regional Animal Diseases laboratory, DLSO, Quarantine Check Posts and manager of slaughterhouse and meat sellers

They will be expected to be a key person to transfer technology to other personnel. Lecturers will be selected from experts of donor country, TLDP, NGO and domestic consulting engineers etc. TLDP has started training course for meat sellers on how to produce hygienic meat by transferring technology

on slaughtering and processing meats and it is considered effective to make use of “know how” of TLDP.

Technology transfer on processing meat should be provided not only to manager class but also working staff in plant. Particularly, since working staff in the slaughterhouse at Kathmandu must be used to equipment and facilities, it is recommendable to carry out training for working staff before the operation of the plant and for that purpose articles on prior training for working staff should be prescribed on the contract with the provider of facility and equipment. In particular, working staff at Katmandu slaughterhouse should be trained not only for hygienic meat production but also for the technology of cutting by meat section in order to meet demand from restaurants and star hotels.

3) Sanitary control of livestock products: technology transfer to research staff, meat processors and consumers

4) Training in the foreign countries on the modernized marketing system

13.1.4 Fish Marketing System

(1) Contents of Technology Transfer

Fishermen organization method, cooperative activities for aqua culture development technology, planned production and effective farm management system, marketing promotion technology, fisheries statistics.

(2) Method of Technology Transfer

OJT by professional knowledge on marketing, training in India, test operation at the pilot project.

13.1.5 Law, Institution and Organization

(1) Contents of training

1) Law and institution on market management system : establishment of MMC, participation of private sectors through farmers organization/market management, market management regulation, formulation of consensus on marketing system

2) Market management system of WM and CC: management knowledge and know-how on ①marketing route, ②transaction system, ③pricing mechanism, ④licensing system, ⑤quality control system, ⑥market information system, ⑦garbage control system, ⑧security control system, ⑨financial management system, ⑩education and training system

3) Marketing modernization approach: pilot operation of quality improvement system of domestic products and auction system, test operation of micro credit system

(2) Method of Technology Transfer

1) Law and institution on market management system: consensus development among persons concerned through high official meeting like the Marketing Board (policy making and monitoring at the various levels of marketing , such as “Nepal Agricultural Marketing Board” or Steering Committee, “Market Development Committee”, MMC of WM and CC)

2) Market management system of WM and CC: training of the representatives of MMC members, farmers organizations and traders associations at the WM and, knowledge of marketing management in the surrounded countries such as India , Bhutan, China,, Bangladesh, etc.

3) Marketing modernization approach: Pilot operation at the NWM or CC.

13.2 Implementation Program

(1) Short term program

1) Development Goals

Development goals for this Action Plan is to contribute to the national economic development by ①the establishment of effective marketing system and promotion of modernization for all marketing stages of agricultural products such as production, post harvest, transport, wholesaling/retailing, domestic consumption and external trade and ②to increase income of farmers, women and traders involved in marketing activities and redistributed income more to the poverty group

2) Development Concept

a) Establishment of marketing policy

National Market Management Board will be organized under MoAC and has role of preparation and monitoring of national marketing policy as adhoc basis. This board will prepare legal, institutional and organizational development of the new marketing system and physical infrastructure.

b) Establishment of commercial zones

Administrative Region is the existing commercial zone based upon the origin and destination pattern. The new wholesale market (NWM) in the Kathmandu Metropolitan area and Biratnagar city will be the regional base of agricultural marketing in Central and Eastern Regions during the short period. Regional agricultural marketing system will be established from the production pockets (PP) to the NWM, covering the marketing route from PP to the collection points (CP), from collection points to the collection centers, collection centers to the NWM. This regional marketing system will be expanded as the nationwide marketing system in the long run.

c) External trade of agricultural products

The imported agricultural products will be transported and traded at the NWM through the phyto-sanitary inspection procedure. The exported

agricultural products will be collected at the collection centers by way of CP from PP and directly exported from CC to the foreign markets mainly in India, Bangladesh, Tibet and Butane. There is only a limited portion of the exported products to the other countries in a short period . During this period, test trial for the expansion and diversification of export will be expanded for long term development .

d) Integration and establishment of simple marketing structure of the wholesale activities

The integrated NWM of agricultural products will be proposed in Kathmandu Metropolitan area (KMA) and Biratnagar city. NWM In KMA will include the modernized function of Kalimati wholesale market, wholesale function of Harsha fruits market, Tukucha markets and the other mixed markets. The function of Kalimati wholesale market will be transferred to a multipurpose urban retail market because of being located at the urban center of Metropolitan area. In Biratnagar, NWM will function as real wholesale market in the future while it will also contribute to work as retail market once or twice a week in the short period. After establishment of NWM, the existing traditional wholesale market will be transferred to the other purpose of urban use.

e) Management system

NWM/CC will be managed and operated by the representatives of users (beneficiaries). For this purpose, Market Management Committee(MMC) will be organized by bottom-up method supported by the government.

Major functions of NWM and CC are as follows:

- Collection, sorting, grading, packing and transport of the agricultural products will be strengthened and modernized
- Open and fair pricing mechanism will be established through the introduction of the open transaction system like auction system and marketing information system.
- Farmers organization will be supported through more involvement of farmers groups in marketing activities and establishment of effective market infrastructure and institutions.
- Legal support will contribute to establish the orderly controlled NWM/CC through reorganizing of management committee, licensing system and the other regulation.
- Financial conditions of WM/CC will be significantly improved by introduction of the new fee collection system.

f) Research and test operation by the Pilot Project

- Horticulture products: Pilot project will be established in NWM for sales promotion of the high quality products and export promotion.

- Livestock and livestock products: Model projects of NWM/CC for live animals , of the slaughter slab and of sanitary control promotion of livestock products will be proposed for demonstration of the improved livestock marketing system
- Fish : Small scale community project will be proposed for marketing /processing technology transfer to the small scale fish farmers and women.

g) Education and training

All of the target groups of agricultural marketing system, like farmers/women, traders, management organization of the existing WM/CC and government officers, have less knowledge and experience on the effective marketing system. For the solution, sustainable education/ training system should be introduced and fund arrangement for training will be proposed in a long term basis.

(2) Mid and Long Term Plan

1) Development goals

- Improvement of the food security by encouraging the domestic supply
- Increase of farmers' income
- Encouragement of employment opportunity for beneficiaries
- Poverty alleviation

2) Basic principles for the development

- Promotion of commercialization
- Identification of commercial zones and establishment of the effective marketing system within the commercial zones and of inter-linkages among zones
- Strengthening of institution and organization
- Improvement of international competitiveness

3) Sector Development

a) Horticulture Marketing System

- Horticulture Production and Post Harvest System: Horticulture production improvement program, Post harvest handling facilities improvement program, Export promotion program
- Horticulture Marketing and Distribution System: Production system, Post-harvest handling system, Marketing and distribution system, Institution / organization and management system, Market infrastructure and O&M system of the facilities/equipment, Marketing information system,

b) Livestock Marketing System

- Production System
- Marketing and Distribution System
- Institution/Organization and Management System
- Marketing Infrastructure and O & M System of the Facilitates/ Equipment
- Market Information System

c) Sanitary Control of Livestock Products

- Strengthening application system of the Law and Regulation
- Establishment of the slaughtering slabs
- Extension of food sanitary control technology

d) Fish Marketing System

- Fish Production Programme
- Marketing and Distribution Programme
- Post-harvest Handling Programme
- Fisheries Institutions Programme

e) Market Management System

- Laws And Regulations of Market Management System
- Institution And Organization For Market Management System

4) Master Plan by Region

a) Eastern Region

i) Horticulture Marketing System

A wholesale market in Biratnagar will be established to act as a regional model of commercialization of high quality products from the hill areas with effective linkage to the collection points and centers.

ii) Livestock Marketing System

This region is important as a supply area of goats from India through 4 animal quarantine check posts. The activities of these check posts should be reinforced as well as the Belbari livestock market.

iii) Fish Marketing System

A sustainable and efficient fish distribution chain through improvement of marketing facilities and trading system is proposed for this region. Small scale fish processing project is proposed for the Sapta Khoshi area.

b) Central Region

i) Horticulture Marketing System

A new wholesale market for the Kathmandu valley, collection centers in the hill areas, and strengthening of the extension services for high quality horticulture products are proposed for this region.

ii) Livestock Marketing System

For the Kathmandu valley, small-scale slaughter house to improve sanitary meat supply and improvement of selected livestock markets are proposed.

iii) Fish Marketing System

A new fish wholesale market in addition to establishing a sustainable and efficient fish distribution chain through improvement of marketing facilities and trading system is proposed for this region.

c) Western Region

i) Horticulture Marketing System

Effective use by the MMC of the existing wholesale market at Pokhara as a regional center of marketing together with greater farmers' participatory approach is recommended for this region.

ii) Livestock Marketing System

Slaughter slab for sanitary meat supply.

iii) Fish Marketing System

Integrated fish marketing in rural community project and small scale fish processing project.

d) Mid-Western Region

i) Horticulture Marketing System

Upgrading of the collection center as a model of commercialization of high quality vegetable products in the hill area is recommended for this region.

ii) Livestock Marketing System

Strengthening of major livestock market and collection center in Banke and Bardiya.

iii) Fish Marketing System

The integrated fish farming in rural community project.

e) Far-Western Region

i) Horticulture Marketing System

Technical support for extension of the high quality and off-season products for export to India is recommended for this region.

ii) Livestock Marketing System

Effective operation of seasonal livestock market during the cultivation period of paddy due to the remoteness of the region to major markets.

iii) Fish Marketing System

The integrated fish farming in rural community project.

14 CONCLUSION AND RECOMMENDATIONS

14.1 Conclusion

(1) Master Plan

A. Development goals

- Improvement of the food security by encouraging the domestic supply
- Increase of farmers' income
- Encouragement of employment opportunity for beneficiaries
- Poverty alleviation

B. Basic principles for the development

- Promotion of commercialization
- Identification of commercial zones and establishment of the effective marketing system within the commercial zones and of inter-linkages among zones
- Strengthening of institution and organization
- Improvement of international competitiveness

(2) Action Plan for the Short Term Projects

1) Development Goals

Development goals for this Action Plan is to contribute to the national economic development by ①the establishment of effective marketing system and promotion of modernization for all marketing stages of agricultural products such as production, post harvest, transport, wholesaling/retailing, domestic consumption and external trade and ②to increase income of farmers, women and traders involved in marketing activities and redistributed income more to the poverty group

2) Development Concept

a) Establishment of marketing policy

National Market Management Board will be organized under MoAC and has role of preparation and monitoring of national marketing policy as adhoc basis. This board will prepare legal, institutional and organizational development of the new marketing system and physical infrastructure.

b) Establishment of commercial zones

Administrative Region is the existing commercial zone based upon the origin and destination pattern. The new wholesale market (NWM) in the Kathmandu Metropolitan area and Biratnagar city will be the regional base of agricultural marketing in Central and Eastern Regions during the short period.

Regional agricultural marketing system will be established from the production pockets (PP) to the NWM, covering the marketing rout from PP to the collection points (CP), from collection points to the collection centers, collection centers to the NWM. This regional marketing system will be expanded as the nationwide marketing system in the long run.

c) External trade of agricultural products

The imported agricultural products will be transported and traded at the NWM through the phyto-sanitary inspection procedure. The exported agricultural products will be collected at the collection centers by way of CP from PP and directly exported from CC to the foreign markets mainly in India, Bangladesh, Tibet and Butane. There is only a limited portion of the exported products to the other countries in a short period . During this period, test trial for the expansion and diversification of export will be expanded for long term development .

d) Integration and establishment of simple marketing structure of the wholesale activities

The integrated NWM of agricultural products will be proposed in Kathmandu Metropolitan area (KMA) and Biratnagar city. NWM In KMA will include the modernized function of Kalimati wholesale market, wholesale function of Harsha fruits market , Tukucha markets and the other mixed markets. The function of Kalimati wholesale market will be transferred to a multipurpose urban retail market because of being located at the urban center of Metropolitan area. In Biratnagar, NWM will function as real wholesale market in the future while it will also contribute to work as retail market once or twice a week in the short period. After establishment of NWM, the existing traditional wholesale market will be transferred to the other purpose of urban use.

e) Management system

NWM/CC will be managed and operated by the representatives of users (beneficiaries). For this purpose, Market Management Committee (MMC) will be organized by bottom-up method supported by the government.

Major functions of NWM and CC are as follows:

- Collection, sorting, grading, packing and transport of the agricultural products will be strengthened and modernized
- Open and fair pricing mechanism will be established through the introduction of the open transaction system like auction system and marketing information system.
- Farmers organization will be supported through more involvement of farmers groups in marketing activities and establishment of effective market infrastructure and institutions.

- Legal support will contribute to establish the orderly controlled NWM/CC through reorganizing of management committee, licensing system and the other regulation.
- Financial conditions of WM/CC will be significantly improved by introduction of the new fee collection system.

f) Research and test operation by the Pilot Project

- Horticulture products: Pilot project will be established in NWM for sales promotion of the high quality products and export promotion.
- Livestock and livestock products: Model projects of NWM/CC for live animals, of the slaughter slab and of sanitary control promotion of livestock products will be proposed for demonstration of the improved livestock marketing system
- Fish: Small scale community project will be proposed for marketing /processing technology transfer to the small scale fish farmers and women.

g) Education and training

All of the target groups of agricultural marketing system, like farmers/women, traders, management organization of the existing WM/CC and government officers, have less knowledge and experience on the effective marketing system. For the solution, sustainable education/ training system should be introduced and fund arrangement for training will be proposed in a long term basis.

(3) Technology Transfer

Technology transfer will be implemented through trainers training for Government officers, MMC members of CC, representatives of farmers and women at NWM and CC and training for modernization of agricultural marketing system will also be conducted at the foreign countries for MMC members of CC, representatives of farmers/women's organizations. Contents of technology transfer are as follows:

1) Horticulture Production and Post Harvest System

a) Knowledge and demonstration test on agricultural marketing system

b) Planned production system to meet market demand and needs

c) Quality control and stable collection method

d) Establishment of marketing system at the production area through organizing of farmers and women

e) Use and management f CC

f) Participation in marketing activities at the wholesale market

g) management ability to use micro credit system

2) Horticulture Marketing System

a) Research and acquisition of marketing know-how

b) Development of data base at various stages of marketing

c) Consciousness of farmers, traders and consumers on quality and price

d) Open marketing system and pricing mechanism including auction system

e) Use and management of WM

f) Development of the related industries and their management technology

g) Modernization technology of marketing system

3) Livestock Marketing System and Sanitary Control System of Livestock Products

a) Livestock market: market management, O & M, market information system, etc.

b) Slaughter slab: Technology transfer on hygienic meat production, use and management of facilities and equipment, consumers needs

c) Sanitary control of livestock products: knowledge for policy making and technology, research and test technology development of research staff, knowledge on meat quality / influence to health / sanitary protection

4) Fish Marketing System

Fishermen organization method, cooperative activities for aqua culture development technology, planned production and effective farm management system, marketing promotion technology, fisheries statistics

5) Law, Institution and Organization

a) Law and institution on market management system: establishment of MMC, participation of private sectors through farmers organization/market management, market management regulation, formulation of consensus on marketing system

b) Market management system of WM and CC: management knowledge and know-how on ①marketing route, ②transaction system, ③pricing mechanism, ④licensing system, ⑤quality control system, ⑥market information system, ⑦garbage control system, ⑧security control system, ⑨financial management system, ⑩education and training system

c) Marketing modernization approach: pilot operation of quality improvement system of domestic products and auction system, test operation of micro credit system

(4) Evaluation

1) Evaluation of Integrated Marketing System in Central Region

a) Economic Evaluation

- The result of economic internal rate of return calculation shows an EIRR of 9.9% The low EIRR does not fully reflect the economic benefits from the Pilot and education/ training activities project as the substantial benefits from the demonstration and training components of the project are not accounted for in the EIRR evaluation.

- Benefits Distribution

  The benefits distribution with and without project analysis, showed that 40% of the benefits are distributed to the farmers in the 5 CC in the production areas and 60% to the users of the NWM, Kalimati and other wholesale markets in the consumption area. Thus, the major economic benefit contribution is therefore from the NWM for the Project 1. The benefits will accrue to the farmers in the production pocket (PP) coverage areas of the CC. The equitable distribution of benefits to the users of the NWM will depend on the establishment of the auction system and open market price mechanism.

b) Financial Evaluation

The income before depreciation without interest is in the black. Revenue from market management will be enough for the operation, management and maintenance of the NWM and CC if depreciation is excluded.

It is not financially viable for the project to be financed by loan as the revenue from the project will not be sufficient to cover the loan interest payment nor the depreciation. With the exclusion of the pilot project which should be taken up by the government as a separate technology transfer project, the financial viability of the project will be further improved.

2) Evaluation of Integrated Marketing System in Eastern Region

a) Economic Evaluation

- The result of economic internal rate of return calculation shows an EIRR of 3.9%. The EIRR analysis did not include the unaccountable benefits from the demonstration and training components of the project which is expected to be substantial thus contributing to a greater economic benefits from the project.

  In the case of project cost increase or benefit decrease, or where project cost increase with benefit decrease, it is shown to be economically viable. However, due to the small handling volume of Eastern Region compared with the Central Region, the project in the Eastern Region should be of a limited scope to improve the local market and not introduce modernized marketing system; the CC for export should be a priority.

- Benefits Distribution

  The economic benefits of the project is distributed 65% to the 4 CC in the production areas and 35% to the NWM in the consumption area. The major economic benefit contribution is therefore from the activities of the CC in the Project 2. The promotion of export from the Eastern Region

should be stressed with the establishment of the CC which will effectively contributed to the farmers' benefit.

b) Financial Evaluation

The income before depreciation and maintenance is in the black. Revenue will be enough for the operation, management and maintenance of the NWM and CC if depreciation is excluded without interest.

14.2 Recommendation

(1) Establishment of an Apex body, Nepal Agricultural Marketing Board, under MoAC to establish consensus among persons concerned on agricultural marketing system, provide policy guidance and national overview. However, it would be more pragmatic strategy to begin with a Steering Committee rather than NAMB in the immediate run and to gradually evolve into a full fledged Apex body in the long run.

(2) Establishment of Market Management Committee and market management regulation by participatory approach of beneficiaries.

(3) Immediate implementation of the integrated regional agricultural network system: Establishment of the New Wholesale Market and the model collection centers in Central and Eastern Regions.

1) Project 1 (Central Region): NWM in Kathmandu Metropolitan Area with CC in production areas.

2) Project 2 (Eastern Region): NWM in Biratnagar Sub-Metropolitan City with CC in production areas.

(4) Promotion of the projects in the other regional development plans for 3 western regions by a phase-wise approach to achieve the functional integration of the national agricultural marketing system.

1) Western Region: Effective use by MMC of the existing markets at Pokhara, sanitary control through slaughter slab, and fish marketing system by rural community.

2) Mid-Western Region: Upgrading of CC and promotion of high quality products at hill areas, strengthening of livestock markets and CC, integrated fish marketing.

3) Far Western Region: Export promotion to India, seasonal livestock market promotion, and development of rural community fisheries projects.

(5) Promotion of the proposed projects through the arrangement of financial resources and technology transfer.

(6) Environment assessment: NWM/CC and the other proposed projects should be established to reduce negative environmental impacts caused by garbage, traffic congestion, transfer of the traditional land use and slaughtering of livestock.