

## **4 CONSENSUS BUILDING ON OUTLINE OF THE PROJECT**

### **4.1 Explanation and Discussion with Related People**

#### **4.1.1 Government**

The Study Team submitted 20 copies (Spanish) of Interim Report to the Bolivian side on October 27, 1998. The signed minutes has following points:

- 1) The site to go under feasibility study for the NWM is UV189 in the City of Santa Cruz.
- 2) The site for the Pilot Project in the production area included in the Feasibility Study is located in the Province of Caballero.

#### **4.1.2 Farmers in Production Area**

Explanation meeting on the Interim Report in the production area was held at EMCA conference room in Comarapa, Caballero Province on October 29, 1998. The target group included representatives from farmers, local governments, and the sub-prefecture. Basic consensus was reached on the existing conditions and outline of the project discussed in IT/R.

#### **4.1.3 Wholesalers in Abasto Market**

- 1) First Meeting: on the Outline of the Project

The outline of the NWM Project was explained to the representatives of wholesalers' associations in Abasto Market, and comments were obtained on a later day from representatives of all associations including those absent.

- All basically agreed upon the outline of the Project.
- Though afraid of producers' exclusion from the Project, in principal, producers are included in the beneficiaries.
- Wholesaling is usually operated in a small scale.
- Fair price formation through adjustment of supply and demand is expected.
- The government's intervention in wholesale operation is renounced, yet paying justifiable rental fee is approved.
- When C/D Centers are established, farmers' lose opportunities for direct sales and individually-owned vehicles may lay idle owing to cooperative collection and distribution system.
- Inclusion of the Municipal Government, Prefecture, and every user in the operation of the NWM will make it difficult to reach consensus.
- The NWM may run the risk of being monopolized by wholesalers.
- If the Municipal takes responsibility for the management of the Market, operation organization and market use will be confused as presently seen in the existing Abasto Market.
- The sales section should be divided according to the products handled: potatoes, tomatoes/vegetables, plantains and other fruits).

- 2) Second Meeting: on the New Marketing System and Operation System
  - Basically agreed on the Project.
  - The Management Committee should include representatives of users.
  - The Management Committee may repeat the same fault as CRAMA has.
  
- 3) Third Meeting: on the Operation/Maintenance and Law/Institution of the NWM
  - The management of the Market should have the Municipal as supervisor, under which the Management Committee consisting of users' representatives will bear the principal responsibility.
  - In the long run, users' organization will form a Wholesale Company to operate the Market.
  - Any political interference should be avoided.
  - Inclusion of supermarkets is a point of consideration.
  - Whether the sales lots are sold or rented is a concerning matter (they will not be given out until some traders grow competent through rental system)
  - Market design considerations: Truck scale, refrigerator, quality inspection equipment, smallness of sales lot, and co-existence with the Farmers' Market (pros and cons).

#### **4.1.4 Supermarkets**

The existing Abasto Market has problems of confusion, expansion of retailers outside the market, and sanitary conditions. The supermarket association wishes to join gradually to the wholesale market as user if these problems are to be mitigated. The first step of participation will be as large-scale retailer in buying from wholesalers. If efficiency of this operation is confirmed, then a sales lot will be established in the market as collection depot. It is intended to make the marketing flow more efficient through step-by-step procedure as small-scale collection from farmers scattered in the Valley areas is inconvenient. Though dubious about ASOFRUT's capability in product collection, they expressed their willingness in cooperating in choice purchase (in which buyers have the choice of commodity and decision over the price) for our demonstration (and they did).

#### **4.1.5 Japanese Agricultural Cooperatives**

##### **(1) CAISY**

Explanation and discussion with CAISY, the Japanese agricultural cooperative in San Juan, took place on November 3 and December 4, 1998. CAISY owns storage facility for rice and egg, and has an established direct sales channel. Citrus fruits are sold in the market via intermediaries. Lately, citrus fruits division was set up in CAISY, through which CAISY intends to develop direct sales route from the cooperative. They accepted the plan outline and expressed their will to participate in the new market as wholesaler with two sales sections. One is for display and storage of rice and eggs, and the other for seasonal fruits (citrus fruits and papayas).

##### **(2) CAICO**

On December 4, 1998, the Colonia Okinawa Japanese agricultural cooperative CAICO was briefed on IT/R. Fruits and vegetables from the colony are sold in the Supermarket "Okinawa" owned by CAICO. In time, they intend to increase the fruit and vegetable

production to be marketed. The outline of NWM plan was agreed on, and they wish to have their sales section for vegetables and seasonal fruits.

#### **4.1.6 Discussion on Land Appropriation for the NWM (Refer to Fig. 4-1 and Table 4-1)**

At the official meeting held on October 30, Urban Planning Division (Plan Regulador) of the Municipal Government of Santa Cruz presented two potential sites in U.V.189 (Site A and Site B). From the Study Team's perspective, Site A on Route 4 seemed most appropriate for wholesale market use. However, the decision reached by the discussion between the Municipal and Prefecture (counterpart) was that Site A was unsuitable from the urban planning perspective (as the Route 4 is the only major road connecting the Valley areas and the City, anticipated disorderly development of stores around the market and traffic congestion caused by incoming and outgoing traffic of the market may dysfunction its utility), and environmental perspective (waste water disposal to the side ditch of Route 4, traffic accidents, etc.). For Site B, these issues have less impact since it is located off to the west of Route 4. Site B was thus assessed appropriate on the condition that accessibility to Route 4 to the market will be facilitated by construction of an access road.

As to Site B, the Study Team held frequent meetings with the Prefecture, Municipal Government, Urban Planning Committee and Market Committee, both of which are advisory bodies of Municipal Council, on land use conversion that is prerequisite of boring permission. As a result, on December 4, the Mayor officially requested acquisition of the NWM site to the Municipal Council. Subsequent to this, as the first move to land acquisition, land use conversion to the market construction and permission of boring survey were resolved.

Meanwhile, Urban Planning Division of the Municipal Government and the local consultant in charge of boring test began site survey to identify the boundary of Site B and points to bore. At this stage, it was found that the site held illegal housings and chicken farm though of marginal scale. Rise of protest against boring test by the occupants was anticipated and reconsideration was required. Urban Planning Division, though it was just before requesting the Council, examined alternative Site C, which shares basic conditions with Site B. Accordingly, the Council resolved affirmative with full assent in the form that the site may be replaced.

In the end, the Municipal Council issued an ordinance to secure Site C as the NWM site (December 8). Before this issue, the site was identified by the Urban Planning Division to be undesignated in the urban development plan, and is located in the neighboring section of U.V.189. The ordinance, henceforth, describes the site as a "neighboring section of U.V.189."

The process of site acquisition was arduous and time-consuming, yet on the other hand, it helped foster cooperative relations between the Prefecture and Municipal that were previously in conflict and lacking communication (for both government and council), as well as raise interest on the project among concerned parties.

The Minutes of Meeting on the Interim Report includes agreement upon U.V.189 to be the site of the NWM. However, as above mentioned, it was changed to the "ZAPU (neighboring section of U.V.189)" for reasons pertaining to urban development policies and urban development planning that are beyond the scope of this project. As such, the

Minutes of Meeting on the Progress Report (2) includes its procedure.

Site	General Outline
Site A :	This site is facing directly to Route 4, located on the northern side of this main road (UV189). Total land area is approx. 13.5 ha. There are many existing facilities (restaurant, small shops, automobile-workshop, high-grade country style residences, cereal silo, and wooden material storage, etc.) in this alternative.
Site B :	This site is located approx. 400m south- east of Route 4, next to the International School of Santa Cruz (UV189). It has private access road from Route 4, and is facing a projected branch road from Route 4. Its total land area is approx. 9 ha. Several row-grade residences, brick factory, shop, chicken farm facilities lie scattered.
Site C :	Site C is located approx. 1.4km south-east of Route 4 (ZAPU District-10, next to UV189). It has private access road from Route 4, and is facing a projected branch road from Route 4. Total land area is approx. 10.7 ha. Almost all land surface is covered by grass, it has also some undulation and height place at western end. This site is used for farmland partially, and small brick maker's facilities also exists in the site. At the north-western boundary there is land level difference of approx.1.5 m.

The outline of the process of site determination for the NWM is shown as follows.

- Oct. 30, 1998 DSD and Study Team requested the representative of City Mayor to authorize the project site of NWM. On the other hand, Plan Regulador showed/explained that they had 2 alternative sites (Site A and Site B) in UV189. Representative of city mayor agreed on the authorization of the project site, and referred the necessities of establishment of ordinance for change in land use and land expropriation in the project site. On this day the Prefect of Santa Cruz and Santa Cruz City Mayor approved officially that feasibility study for the NWM is to be conducted in UV189 of Santa Cruz as a part of minutes of meeting on the interim report for this study.
- Nov. 10, 1998 DSD and Study Team requested President of City Council to make arrangement of the legal procedure (change in land use or land expropriation) for the topographic, boring/soil, and water survey in the project sites. President of City Council requested DSD and Study Team the formal documents about specific site locations and recommendation on which site is preferred. At this time, Study Team had opinion that Site A is best place for NWM because it is facing directly to Route 4 therefore it is very convenient for market operation and for the user.
- Nov. 11, 1998 DSD sent a formal recommendation letter to the President of City Council. In this letter, Site B was recommended.
- Nov. 17, 1998 DSD requested Mayor Works Section of City Government specific data of Route 4's reform works and about on which project site is preferred considering the future traffic condition on Route 4.
- Nov. 23, 1998 DSD received formal letter from Public Work Section of City Government. This letter said Site B is preferable.
- Nov. 25, 1998 Plan Regulador, DSD and JICA Study Team confirmed that Site B is

more preferable than Site A for the NWM because of the predicted traffic jam caused by the high tonnage truck flow into/out of the site, and the illegal land occupation by street vendors around the site, and inflow of the waste water from NWM to the drainage ditch along route 4 in case of Site A. On the other hand, DSD, Plan Regulador, and Study Team confirmed also that it is necessary to construct the access road from Route 4 to the site by Bolivian side in case of Site B. Plan Regulador and DSD understood that it was necessary and urgent to obtain an Ordinance from City Council to initiate the legal procedure for land expropriation in order for the Study to proceed.

- Nov. 27, 1998 DSD and Study Team requested President and Market Commission of City Council for early authorization of Site B and establishment of necessary ordinances.
- Nov. 30, 1998 DSD and Study Team requested Urban Planning Commission of City Council for early authorization of site B and establishment of necessary ordinances.
- Dec. 1, 1998 JICA Santa Cruz Branch Office and Study Team strongly requested Prefect of Santa Cruz to make adequate arrangement for site's authorization and ordinance establishment. Prefect requested City Mayor and President of City Council for early site's authorization and ordinance establishment.
- Dec. 2, 1998 City Council confirmed that necessary legal procedure by City Mayor for the agreement between DSD and JICA S/W mission on December 4, 1997 was not finished. Therefore City Council could not carry out site authorization establishment on this day.
- Dec. 3, 1998 DSD, Plan Regulador and City Mayor's Advisor requested Study Team to accept new site C as a site for NWM considering predicted difficulties of land expropriation in Site B. Study Team agreed this request on the condition that city government construct the projected branch road from Route 4 and Ring Road 8th.
- Dec. 4, 1998 City Council authorized site C as a site of NWM. But regarding its detailed specific location, they entrusted Plan Regulador with its reconfirmation/making final determination by Dec. 8, 1998.
- Dec. 5, 1998 Plan Regulador confirmed that Site C is not located in UV189 but in ZAPU District-10, and made final decision that it was the site for the NWM.
- Dec. 7, 1998 Plan Regulador informed their above mentioned determination to DSD and City Council. Receiving this information, City Council amended the location of site for NWM, and they started the preparation for ordinance.
- Dec 8, 1998 City Council established the ordinance about the land expropriation and change in land use for Site C as a site for the NWM.

## 4.2 PCM Workshop

Three PCM Workshops were held targeting mainly the beneficiary groups including wholesalers, retailers, and producers of fruit and vegetables during the second field survey in the Prefecture of Santa Cruz. The Workshops were designed and conducted in collaboration with the counterpart members from the Prefecture Government of Santa Cruz. Representatives from the counterpart members attended the Workshops as observers. No representative from the Municipal Government showed up, although their participation in the Workshop with wholesalers held in the City of Santa Cruz was highly expected. The outline of the Workshops is briefed as below:

### (1) Purposes

The followings are the four major purposes that the Workshops, scheduled on the stage of the feasibility study, have been expected to contribute to:

- Clarification of actual needs, potentials, and constrains of the beneficiary groups in the current marketing and distribution system;
- Promotion of the beneficiaries' understanding about the entire scope and objectives of the proposed project as well as the importance of their active cooperation and participation;
- Clear grasp of general feelings among the beneficiaries including their expectation and anxiety about the proposed project and the main causes of the general feelings;
- Identification of potentials and constraints in organizing operational institutions for the proposed project.

All of the outputs of the Workshops are the actual voices from the beneficiaries; these are to be carefully reviewed and incorporated into the institutional and physical plan of the proposed project.

### (2) Date and Place

Among the three workshops, the first one was held in Comarapa and the other two were held in the City of Santa Cruz. The period of implementing one Workshop was reduced from "three days" to "one day" with taking it into consideration that everyday work was very important for all of the participants to earn their livings.

The first Workshop was held at the office of EMCA in Comarapa on November 26 (Th). Comarapa was chosen as the representative of the seven production centers located in the Valley area. Major reasons why Comarapa was selected are:

- it is one of the largest production centers of potatoes and onions;
- it has marketing potentials located halfway between two big markets: Cochabamba and Santa Cruz; and
- it has an established environment to accept the Workshop implementation due to the on-going KFW project.

The second Workshop as held with wholesalers in the Abasto Market at the conference room of Hotel Asturias in the City of Santa Cruz. The third one was also held at the conference room of Hotel Asturias targeting female wholesalers and retailers, most of whom are running small-scale businesses in the Abasto Market.

#### 4.2.1 Production Site Workshop (Comarapa)

##### (1) Participants

15 participants (13 men and 2 women) attended including the mayor of Comarapa, staff members from the Municipal Governments of Comarapa, EMCA, Sub-Prefecture and FAN, president and vice president of Mother's Club of Comarapa etc. Most of them are from farmers' families in Comarapa. Farmers from nearby production centers were also invited, however, they could not join due to the bad weather condition.

##### (2) Participation analysis (Fig. 4-2)

- a) Beneficiaries: Small-scale farmers, farmers' families, women and local community
- b) Potential opponents: Intermediaries, transporters, wholesalers/ retailers (producers were put at a disadvantage by being provided with informal credit or directly invested by them)
- c) Implementation agency: EMCA is given more credit, while ASOHRUT has little influence
- d) Farmers' organizations: Acknowledged as decision-maker and funding agency
- e) Willingness to pay: Depending on the credibility of the project and its effect, they are prepared to pay necessary cost

##### (3) Problem Analysis (Fig. 4-3)

- a) Core problem: Income discrepancy between large-scale and small-scale farmers
- b) Direct cause: Four important causes (low productivity, low price of products, high production cost, and high transportation cost)
- c) Paramount concern: Improvement of production technology
- d) Reasons for low product price: Lack of competition resulting in undermining producers' bargaining power, and lack of appropriate production planning. This is caused by various factors ranging from practical level to policy level.

##### (4) Discussion on the Plan Outline of the Project

Discussion was held over the plan outline (PDM) (Fig. 4-4) proposed in the Interim Report (Fig. 4-5). The following shows a brief outline.

- a) Agreement on the plan concept: On the point that for successful implementation of the project, especially the participation and acceptance of beneficiaries is important.
- b) Social issues: Poverty of small-scale producers, who are mostly indigenous population, low literacy rate of female indigenous population dwelling in the mountains away from city center.
- c) Issues pertaining to organization of farmers: Farmers have particular skepticism toward group activities from past experiences that only a handful

benefit from such activities. In addition, convention has it that economic activities are conducted individually. Nonetheless, participants think that in order to promote competitiveness and advance benefit in agricultural marketing, it is effective to organize farmers.

The below matrix indicates reflection of the outcome of discussion to the outline of the Project.

Items	Confirmation of the Outline of the Project	Addition to the Outline of the Project
<b>1 Super Goal</b>		
(1) Major production area development		—
(2) Production technology transfer		—
<b>2 Overall Goal</b>		
Agricultural income increase through production planning and cooperative C/D		—
<b>3 Project Purpose</b>		
C/D center establishment		—
<b>4 Outputs</b>		
(1) C/D center facilities		—
(2) Cooperative C/D system		—
(3) Improved quality of agricultural products		—
<b>5 Inputs</b>		
(1) Land		—
(2) Construction equipment and materials		—
(3) Initial investment for construction (by FDC)		—
(4) Operation cost of C/D center (from collecting user fee)		—
(5) Technical advisors of _Institution _Production technology _Marketing _Post-harvest		—
<b>6 Activities</b>		
(1) Facility construction		Technology transfer to low-literacy rate groups
(2) Collaboration with the NWM in Santa Cruz (possible qualification of C/D center users as wholesalers, etc.)		—
(3) Farmers' associations establishment (gradual establishment from the Pilot project)		—
(4) Technology transfer in C/D (gradual extension from the Pilot project)		—
(5) Production technology extension		—
(6) Extension of harvesting, post-harvesting, and packing technology		—
(7) Pilot project implementation		—
<b>7 Preconditions</b>		
Gradual establishment of farmers' understanding and acceptance		—

#### 4.2.2 Consumption Site Workshop 1 (Wholesalers)

##### (1) Participants

9 participants (9 men and no women) from one cooperative and four associations of wholesalers and one farmers' union. They are the representatives from Cooperativa 2 de Junio, 19 de Marzo, ACPAMA, ASPROA, AIPPA, and FSUTCSC.



(2) Participation Analysis (Fig. 4-6)

That beneficiaries should be restricted to wholesalers was particularly stressed, due to their unfavorable experience with CRAMA, the Abasto Market management committee. Beneficiaries were further divided into two groups: direct beneficiaries (wholesalers) and indirect beneficiaries (farmers). Discussion on the plan outline enhanced participants' understanding. Need of the collection/ distribution center development for promotion of marketing was recognized. Deriving from their experience in Abasto Market, incapability of the Municipal Government on the management was pointed out, though its position as implementing agency of the new market, in charge of regulation making and its supervision, was also acknowledged.

(3) Problem Analysis (Fig. 4-7)

- a) Participants particularly stressed lack of management capacity of CRAMA. Wholesalers were never invited to meetings of CRAMA. Therefore every decision regarding the market management had been made without taking users' needs into account.
- b) The flow of fund and fee collection system is not transparent.

(4) Discussion on the Plan Outline of the Project (Fig. 4-8 for PDM, Fig. 4-9 for discussion)

The following shows a brief outline.

- a) Basically agreed upon
- b) Plan must obtain the approval of market users and neighboring residents.
- c) Project implementation is not attainable unless conflict between the Prefecture and Municipal Government is reconciled and cooperation between the two formed.
- d) Institutional strengthening in the NWM is questionable.
- e) Plan concept, including that the management committee will be in charge of the new market management under the supervision of the Municipal Government, was consented.
- f) The Prefecture is placed as the supervising agency of the project.
- g) Management committee: Basically consists of representatives of users (wholesalers and producers). As many as 30 wholesalers' organizations are found in Abasto Market. Instead of delegating one from each organization, they should be grouped into about 7 organizations in choosing representatives.

The below matrix indicates reflection of the outcome of discussion to the outline of the Project.

Items	Confirmation of the Outline of the Project	Addition to the Outline of the Project
<b>1 Overall Goal</b>		
(1)	Improvement of the fruit and vegetable marketing system	—
(2)	Proper pricing (price information disclosure)	—
<b>2 Project Purpose</b>		
	Development of efficient wholesale market system	—
<b>3 Outputs</b>		
(1)	NWM	—
(2)	Detaching wholesale function from Abasto Market	—
(3)	Institutional strengthening for wholesale market management (new establishment of law/ regulation and management organizations)	—
<b>4 Inputs</b>		
(1)	Land (land use designation at the periphery of S.C. City)	—
(2)	Construction equipment and materials	—
(3)	Initial investment for construction (Prefecture and Municipal responsible for procurement)	—
(4)	Operation cost (User charge and subsidy on account of Prefecture and Municipal)	—
(5)	Technical advisors of _Law/ institution _Market management _Marketing	—
<b>5 Activities</b>		
(1)	Facility construction	—
(2)	Deciphering roles of each market	—
(3)	Development of regulations (by municipal ordinance)	—
(4)	Establishment of management organizations (Management Committee, Management Body, and Users' organization)	Currently fragmented users' organizations should be reorganized into 7 organizations, representatives of which will be included in the Management Committee
(5)	Establishment of management rules	—
(6)	Technology transfer on market management	—
<b>6 Preconditions</b>		
(1)	Acceptance of Market users (Consensus on use and management methods)	—
(2)	Acceptance of inhabitants (consideration of equity)	—
(3)	Cooperation between Prefecture and Municipal (implementation scheme)	—

#### 4.2.3 Consumption Site Workshop 2 (Female Wholesalers/ Retailers)

##### (1) Participants

17 participants (no men and 17 women) from one cooperative and four associations of wholesalers and retailers.

##### (2) Participation Analysis (Fig. 4-10)

- a) Beneficiaries: Many target groups (as plan outline sets forth improvement of institutions as well as facilities of the NWM)
- b) Potential opponents: Supermarkets, street vendors, traders' associations (as well as named for beneficiary, especially due to conflict between associations

over sales space)

- c) Unification of associations was stressed, for settling intra- and inter-organizational conflicts)
  - d) Skepticism towards governmental agencies was voiced, and technology transfer and supervision by JICA for the management system to be established was requested.
- (3) Problem Analysis (Fig. 4-11)
- a) Core issue in management: Lack of supervision over market activities, limited public service by the Municipal Government
  - b) Problem of facilities: No roof. Limited sales space. Distribution of space is not organized. Limited space of parking.
  - c) Poor sanitary conditions (from women's point of view): Inefficient garbage collection system, shortage of toilets, inaccessibility to potable water, lack of nursery, inefficient security system
- (4) Discussion on the Plan Outline of the Project (Fig. 4-12 for PDM, Fig. 4-13 for discussion)

The following shows a brief outline.

- a) Core interest was on improvement of existing Abasto Market rather than on the NWM.
- b) It is much expected that improvement of Abasto Market would be planned and implemented after wholesale function is transferred to the new market.
- c) Technology transfer is much desired regarding institutional strengthening for management/ operation of the market.

The below matrix indicates reflection of the outcome of discussion to the outline of the Project.

Items	Confirmation of the Outline of the Project	Addition to the Outline of the Project
<b>1 Overall Goal</b>		
(1)	Improvement of the fruit and vegetable marketing system	—
(2)	Proper pricing (price information disclosure)	—
<b>2 Project Purpose</b>		
	Development of efficient wholesale market system	—
<b>3 Outputs</b>		
(1)	NWM	—
(2)	Renovated Abasto Market	The project office of Santa Cruz City will supervise both the NWM and Abasto Market
(3)	Detaching wholesale function from Abasto Market	—
(4)	Institutional strengthening for wholesale market management	—
<b>4 Inputs</b>		
(1)	Land (land use designation at the periphery of S.C. City)	—
(2)	Construction equipment and materials	—
(3)	Initial investment for construction (Prefecture and Municipal responsible for procurement)	—
(4)	Operation cost (User charge and subsidy on account of Prefecture and Municipal)	—
(5)	Technical advisors of _Law/institution _Market management _Marketing	—
<b>5 Activities</b>		
(1)	Facility construction	Facility design considers access to toilet, nursery and water
(2)	Renovation of Abasto Market	The project office of Santa Cruz City will supervise both the NWM and Abasto Market
(3)	Deciphering roles of each market	—
(4)	Development of regulations (by municipal ordinance)	—
(5)	Establishment of management organizations (Management Committee, Management Body, and Users' organization)	—
(6)	Establishment of management rules	—
(7)	Technology transfer on market management	—
<b>6 Preconditions</b>		
(1)	Acceptance of Market users (Consensus on use and management methods)	—
(2)	Acceptance of inhabitants (consideration of equity)	—
(3)	Cooperation between Prefecture and Municipal (implementation scheme)	—

#### 4.3. Demonstration of Cooperative Collection and Shipment

##### (1) Objectives

The demonstration of cooperative collection and shipment of vegetables and some shipment trials were carried out at San Isidro collection area by utilizing the existing PETHOSAM collection facility from November 30 to December 1, 1998.

##### (2) Trial Components

The trial components implemented during the demonstration include trials on 1) re-selection & grading, 2) packing methods and 3) destination market (supermarkets,

Hipermaxi and Hamacas).

(3) Target Commodities

Target commodities for demonstration include tomato, cucumber and long beans.

(4) Results of Demonstration

1) Collection

The collection of commodities delayed because of the delay of harvesting due to rather heavy rain. Delivery of commodities was made by a tractor or by a truck. Total collection volume was 7t (below the target amount of 10t).

2) Selection and Grading

Tomato

Selection/grading: Re-selection and grading of products selected by producers into 2 grade (Excellent class and Class P) and cleaning by cloth

Packing: Packing using paper as cushion

Cucumber

Selection/grading: Washing and selection of products in accordance with standard demanded by Hipermaxi

Packing: Pacing in plastic bags after drying as commonly practiced

Long Beans

Selection/grading: Selection of products in accordance with standard demanded by Hipermaxi

Packing: Packing in bags as commonly practiced

3) Shipment

The shipment of collected products to Abasto Market took about 6 hours by trucks.

4) Selling at Abasto Market

Tomato

Because of the over supply trend of tomato from the last week, market prices of tomato were low and the receipt of the commodity collected under the demonstration was rejected by all the 3 candidate wholesalers who agreed to buy the commodity at the negotiation prior to the demonstration. Accordingly, the commodity was sold by producers by themselves to other wholesalers. The selling prices were in the range of Bs.5 - 8/box (20kg) (Prices at the end of November were Bs.14 - 19/box). The price differences were due to differences in maturity and less matured products were preferred by the market at the time of delivery due to over supply trend of the products.

Cucumber and Long Beans

The commodities were delivered to 5 intermediaries as previously arranged. The commodities were delivered to the intermediaries without price negotiation and prices were determined after delivery of commodities to retailers.

5) Selling to Supermarket

Some specially selected commodities for trial purposes were sold to Hipermaxi and Hamacas. Selling prices of tomato were Bs. 15 - 20/box and substantially higher than the same in Abasto due primarily to differences in quality.

(5) Evaluation

The experiences obtained from the demonstration indicate that prior to the start of the Pilot Project in San Isidro there exist strong needs for: 1) intensive guidance to producers, 2) establishment of close business relation with wholesalers, 3) continuous implementation of trial collection and shipment operated by ASOFRUT and producers and 4) strengthening of management capability of ASOFRUT.

1) Collection and Shipment

- Harvesting timing of tomatoes should be adjusted so as to ship less matured products to market as the market Abasto) prefers less matured ones to matured ones, especially when the supply trend of the products is high in the market.
- Selection for cucumber should better be introduced to exclude large size products from marketing (to Abasto).
- Scheduled collection times should be observed for ensuring the early arrival at the destination market and the early delivery of products.
- Cooperative selection at a collection and distribution center should be based on the actual market demand for grading and quality.
- The technical possibility for the introduction of the cooperative collection and shipment was identified through the demonstration. However, the stage-wise introduction of the same will be practical.
- No. of participants should be increased in the continuous trial shipment following to the demonstration through guidance and dissemination of the cooperative collection and shipment system to producers.

2) Delivery and Selling Prices

- Close relation and communication with certain wholesalers or buyers should be maintained through the continuous transaction in order to avoid failure in delivery of products.
- The advantage of early arrival to market in transaction is commonly experienced, especially when products are under over supply in the market.
- Selling prices to the supermarkets were substantially higher than those in Abasto. However, it does not mean that there is an immediate possibility to have marketing channel to supermarkets.

3) Evaluation Meeting (with participants and the Study Team)

- Current market prices of tomatoes are low both at Santa Cruz and Cochabamba markets. The low prices in Abasto Market are largely attributed to over supply of the products from the Valley areas.
- Market information should be collected in advance to collection and shipment.
- Close business relation with buyers at destination markets should better be established in order to ensure the delivery of products even at the time of

over supply of them.

- Cooperative collection and shipment on trial bases is to be continuously implemented in cooperation with ASOFRUT.
- Although the market prices to supermarket were substantially higher than those to wholesalers, the first step to be taken by the proposed collection and distribution center will be to obtain good reputation for products shipped through the center in the destination market.

#### 4.4. Study Tour

##### (1) Objectives and Schedule

Aiming at providing representatives of producers and local government with opportunities to learn importance of cooperative and management system of agriculture cooperative, the Study Tour to the established agricultural cooperatives, CAISY (Cooperativa Agropecuaria Integral San Juan Yapacani Ltda.), were carried out under the full support and cooperation of CAISY in 3 days from December 9th to 11th, 1998, attended by 15 representatives from the Valley areas.

##### (2) CAISY

CAISY with 115 members was initially established as a voluntary organization in 1957 and obtained legal status in 1971. The major economic activities of CAISY include; 1) extraction and marketing of soybean oil, 2) milling and marketing of rice, 3) production of poultry feeds from maize, 4) collection and marketing of eggs, 5) supply of farm inputs and machinery repair services and 6) saving and credit. In addition, they have research division which engage in selection of promising varieties, production of macadamia nut seedling and other experimental activities.

##### (3) Evaluation

The Study Tour was performed successfully than expected under the full support and cooperation of CAISY and it appeared that the attitudes of all the participants have become more serious toward the development of C/D center and the introduction of cooperative marketing system. The results of the evaluation session are summarized as follows;

- 13 among 15 participants expressed that the Study Tour was "very useful" to promote C/D center and farmers organization.
- 13 participants answered that the subject on "operation of CAISY" was most useful among programs.
- Most interested program by participants is "collection & marketing system of CAISY" followed by "background & history of CAISY".
- 12 participants reported that the period of study is adequate.
- 10 participants (8 are representatives of farmers) have a opinion that the similar study tour to advanced areas to be carried out by farmers own expenses. While, 5 participants suggested such tour to be by government support.
- The experiences of CAISY in organization and management of cooperative

are to be transferred to the member of ASOFRUT.

- The Valley areas has to have farmers organized in cooperative system to eliminate intermediaries. Traditional marketing system has to be improved. However, because of the Bolivian cultural background, such improvement will take a long time. Dissemination & guidance to farmers will be essential for them to understand.



## **5 FACILITY AND EQUIPMENT DESIGN**

### **5.1 Production Area**

#### **5.1.1 Project Sites**

7 proposed sites in Samaipata, Mairana, Pampa Grande, San Isidro, Comarapa, Saipina, and Vallegrande located in the Valley areas in Santa Cruz Prefecture.

#### **5.1.2 Natural Condition**

##### **(1) Climatic Condition**

In Samaipata, Mairana and Pampa Grande, mean and minimum air temperature are 21.6 °C and 15.2 °C respectively, and annual rainfalls are from 588 mm to 850 mm. In Comarapa, San Isidro and Saipina, mean and minimum air temperature is 18.9 °C and 11.9 °C respectively, and annual rainfalls are from 385 mm to 552 mm. In Vallegrande, mean and minimum air temperature are 17.8 °C and 11.7 °C respectively, and annual rainfall of 530 mm is recorded (refer to "Climatic Condition" of "Features of Major Production Areas").

Regarding mean wind velocity and humidity, 3.7 m/s (NE) and 71 % are recorded in Vallegrande.

##### **(2) Earthquake**

In 1998 large scale earthquake occurred in Aiquile in Cochabamba Prefecture. According to the local geotechnic surveyors, Saipina and Vallegrande are located in seismic zone, but there is no earthquake record in 7 target areas in Valley areas.

##### **(3) Geotechnic Condition**

Facilities of the product collection and distribution center in the Valley areas is comparatively light-weighted. Therefore it is supposedly possible to adopt the spread type foundation for almost all of C/D Center considering the neighboring existing buildings' foundations. But there are not outstanding buildings/residences around the proposed site in Pampa Grande and Saipina. Therefore boring tests are carried out in these 2 sites. General characteristics of geotechnic condition of these 2 sites are shown below.

###### **1) Pampa Grande**

In the project site of Pampa Grande sandy material (up to 5.5 m) and clayey sand/muddy clay (from 5.6 to 10.0 m) were found out. N value of standard penetration test was more than 25 (from 2.5 m to 6.5m) and 50 (from 7.5 m to 10 m). Bearing capacity of 11 ton/m<sup>2</sup> was confirmed at -1.0 m level. Spread type foundation is recommended for C/D Center in this site.

###### **2) Saipina**

In the project site of Saipina, sandy slime (up to 1.7 m) and big stone layers (from 1.7 m to 10.0 m) were found out. From 1.7m level N value of standard penetration test was more than 65. Bearing capacity of 11t/ m<sup>2</sup> was confirmed at -1.0 m level. Spread type foundation is recommended for the products

collection/distribution center facilities in these sites.

### 5.1.3 Building Regulation, Design Standard

#### (1) Building Regulation

For building design, "Codigo de Urbanismo y Obras" (Code of City Planning and its works: compiled by Architect Association of Bolivia) is used dominantly in the urban/non-urban area in Santa Cruz Prefecture. It does not include the building structural standards and building equipment standards, and it mainly mentions about the zone definitions and building/city-infrastructure regulations only from the city planning viewpoint. But it includes many technical recommendations for typical buildings and rooms (e.g. ventilation/lighting, locations of emergency stairs, basic fire-fighting disposition, exit ways, etc.), therefore facilities design mentioned later was planned in accordance with this Code.

#### (2) Design Standard

As above, design standard for building material, structure and equipment does not exist in Bolivia. Regarding the structural standard, US standard (ACI) and German standard (DIN) are utilized. On the other hand, electric equipment standard of US (NEC, AWG) and Brazil (ABNT) are dominantly used in Bolivia. Facilities design mentioned later was planned in accordance with US standard.

### 5.1.4 Infrastructure Condition

Refer to ANNEX 1 - 4.2.2.

### 5.1.5 Equipment, Construction Material/ Machinery Procurement Condition

#### (1) Equipment Procurement Condition

Handling tools, telephone/fax and computer are procured in Bolivia easily. Truck-scale, refrigerator machine, high pressure water cleaner, and inspection apparatus are imported from foreign countries.

Equipment Items	Origin
Truck-scale	Brazil, Argentina and Chile
High pressure water cleaner	Brazil, Argentina and Chile
Inspection apparatus	Germany
Refrigerator machine	Brazil, Argentina, Chile, Japan, and U.S.A

Regarding the refrigerator if necessary, machinery itself are imported from Brazil, Argentina, Chile, Japan, and U.S.A, but it is possible to purchase the chamber material in Santa Cruz.

#### (2) Construction Material Procurement Condition

Current condition of construction material procurement is summarized below. Recent price escalation of building materials is estimated general average 5% in 2 - 3 years (all construction materials are sold in US\$). Price of gravel/sand shows rising-up tendency due to the fuel price escalation. Steel and cement show price down tendency, and import materials are considered stable.

1) Fundamental construction materials

Material Items	Procured from/in
cement	Bolivia
gravel/sand	Bolivia
ready mixed concrete	Bolivia
steel bar / steel frames	Brazil, Argentina, and Chile
aluminum products (aluminum sash-windows / roof material)	Brazil, Argentina, and Chile

Regarding the quarry of gravel/sand, there are several quarry between Santa Cruz City and La Guardia City and Yapacani.

2) Metal materials

Material Items	Procured from/in
hardware for doors/windows	Bolivia
plumbing products	Bolivia
steel roof material (incl. 3D-truss)	Bolivia

3) Wooden material

Domestic wooden materials are utilized for doors/windows/furniture.

4) Building Equipment

Material Items	Procured from/in
air conditioning	Bolivia
central control type air conditioning	Brazil, Argentine, and Chile
generator	Bolivia
electricity panel	Bolivia

5) Plumbing material

Material Items	Procured from/in
steel/PVC pipes	Bolivia

6) Concrete Piles

All of the concrete piles are produced by the concrete products companies after customers' offers.

(3) Construction Equipment Procurement Condition

Concrete mixer trucks and large type crane (movable) are dominantly used in Santa Cruz, but there are some difficulties for the procurement of pile driving machine because construction works with piling are not so many in this city.

### 5.1.6 Facilities and Equipment Design

(1) Facilities and equipment elements

Taking the target sites characteristics into consideration, it is necessary to prepare the following facilities and equipment elements for the Products Collection / Distribution Center.

1) Mairana, Pampa Grande, Comarapa, Saipina and Vallegrande

a) Facilities:

- Platform for products unloading, sorting, stocking, loading and

- box/basket stocking
- Covering shell for platform
- Administration office
- Small meeting room
- Equipment / tools storage
- Public W.C.
- Garbage collection yard
- Fence, Gate
- Electricity, potable water, drainage line, pit latrine and wasted water tank

b) Equipment:

- Pick-up type truck and motorcycle
- Computer, telephone/fax

2) Samaipata and San Isidro

In Samaipata and San Isidro it is possible to re-use the existing facilities (storage) for the Products Collection and Distribution Center. But the existing storage building in Samaipata does not have a function of large scale unloading and loading, therefore it is necessary to prepare new platform / entrances of products and to adjust the floor level between this platform and existing storage. On the other hand, existing storage building in San Isidro had been designed to have a function of products unloading / loading, but it is not sufficient. Therefore it is also necessary to new platform / entrance of products for the existing storage building in San Isidro.

Required reform works for facilities and required equipment are shown as follows.

a) Reform works for Facilities:

- Rehabilitation for the wall of existing storage building to prepare new entrances for products transportation works
- New platform for products unloading/loading
- Level adjusting works between existing storage floor and new platform mentioned above (only for Samaipata)
- New canopy for the platform
- Miscellaneous repair work for other existing facilities to utilize them as a administration office and/or storage.
- Land cut works for the truck berth (only for San Isidro)
- New garbage collection yard
- Gate

b) Equipment:

- Pick-up type truck and motorcycle
- Computer, telephone/fax

(2) Required Facilities Scale

Facilities scales of the Products Collection and Distribution Center in each target area were calculated considering the following items (Refer to Table 5-1).

- 1) Total floor area of platform for products unloading, sorting, stocking, loading

and box/basket stocking

Total floor area of platform is calculated by summing up following items.

- a) Required floor area for products stocking calculated by “Peak handling volume per day of fruits and vegetables in 2005 (150% of planned average handling volume per day in a peak season in 5th year of operation)” and “Products stockable volume in one square meter ( $t/m^2$ ) for each item of packed products”
  - b) Stocking area for box and basket that is required for peak handling volume per day mentioned above (tomato-box, lettuce/pimento- basket, citrus/other fruits-box).
  - c) Required floor area for products sorting works calculated by “Peak handling volume per day in 2005” mentioned above and “Working capacity per man per day”
  - d) Products unloading/loading area that is balanced with “Required floor area for products stocking”
- 2) Required floor area for platform

Required floor areas for platform in each target area are shown as follows (Refer to Table 5-1).

It is supposedly suitable for this facilities planning to use a module of 7.5 m width / 15 m length (herein after “platform unit” : Refer to (4)-Building Structure), therefore required numbers of platform units are also shown below.

REQUIRED FLOOR AREA FOR PRODUCTS COLLECTION AND DISTRIBUTION CENTER (SUMMARIZED TABLE)

Production Area		Planned handling volume			Sorting	Stocking	Loading	Box/Basket	Total platform area	
		Peak season collection volume (ton/month) A	Planned average handling volume (ton/day) C=A/B	Peak handling volume (ton/day) D=C*1.5	Required sorting area (m <sup>2</sup> )	Required stocking area (m <sup>2</sup> )	Required unloading / loading area (m <sup>2</sup> )	Box/basket stocking area (m <sup>2</sup> )	Total floor area of platform Q	Required no. of platform unit R=Q/112.5m <sup>2</sup>
Samaipata	Feb.	910	30.33	45.50	72.80	127.00	34.29	21.27	255.36	-
Mairana	Nov	840	28.00	42.00	57.60	193.25	52.18	49.66	352.69	3.14
P. Grande	Oct.	1,440	48.00	72.00	95.20	378.33	102.15	52.86	628.54	5.59
Comarapa	Nov	880	29.33	44.00	66.40	171.82	46.39	21.05	305.66	2.72
San Isidro	Nov	1,540	51.33	77.00	123.20	219.75	59.33	10.63	412.92	-
Saipuna	Sept	1,480	49.33	74.00	118.40	207.25	55.96	26.31	407.91	3.63
Vallegrande	Mar	1,280	42.67	64.00	76.00	172.50	46.58	39.18	334.25	2.97

3) Other facilities elements

It is necessary to install minimum scale of administration office (accommodation capacity: supervisor 2 persons), meeting room (accommodation capacity: 18 persons), storage (accommodation capacity : 2 motorcycles and other equipments).

### (3) Layout Plan of the Facilities

Following items were considered to make the layout plan of Products Collection and Distribution Center,

- 1) Smooth circulation of vehicle from/to neighboring local trunk road

Wide approach road from local trunk road to the site and wide gate were prepared for smooth circulation.

- 2) Smooth circulation of vehicles and pedestrians within the site

In case of newly constructed C/D Center, C/D Center building with incidental facilities is located in the center of the site, and internal road (vehicle road) is prepared around the building. Anti-clockwise vehicle circulation was planned in this internal road. Basically, all of the small trucks for unloading work parks at the "truck berth for unloading" allocated at the backyard of C/D Center building. All of the high-tonnage trucks park at the "truck berth for loading" allocated in front of the building.

### (4) Building Structure

In Valley areas, "steel bar lattice framed roof with concrete post" is dominantly used for the large scale facilities such as gymnasium building of schools. To prepare a large space, this structure is light-weighted as well as low cost. This structure can be adopted for newly constructed Products Collection and Distribution Center. In actual facilities planning shown later, a module of 7.5 m width / 15 m length (herein after "platform unit") was used for facilities planning considering a width of 2 high tonnage trucks and a span length that can be constructed by "steel bar lattice framed roof" without difficulty. Reinforced concrete structure can be also adopted for the incidental facilities (administration office, meeting room and storage) and platform.

Regarding the design loads, wind velocity of 30 m/s is used for the calculation of wind load. On the other hand, earthquake load is not taken in account considering the existing buildings condition.

### (5) Facilities plan

Facilities scale (number of stories, total floor area), type of foundation, type of structure, and special equipment are shown in Table A.4.1-4 in ANNEX 4. Layout plans of Products Collection and Distribution Center in each target area are shown in Fig. A.4.1-3 to A.4.1-7 and Fig. A.4.1-10 to A.4.1-13 in ANNEX 4. Typical plan, elevation and section of newly constructed C/D Center are shown in Fig. A.4.1-8 and A.4.1-9 in ANNEX 4.

## 5.2 NWM in Consumption Area

### 5.2.1 Project Sites

Project site for the NWM is located at aprox. 8 km south-west from Santa Cruz City Center and approx. 1.4 km south-east of Route 4 and approx. 500 m south-west of Ring Road 8th (ZAPU District-10, next to UV189). Private road is used to approach from Route 4 to the site, and it is facing a projected road from Route 4. Incidentally, Santa Cruz City is now engaged in the improvement work of Route 4, and they started this

works partially from the beginning of this year (1998). This improvement work includes i) total 6 vehicle lanes, ii) bicycle lane, iii) pedestrian way, iv) safety zone in center line, v) rain drainage along both road sides, vi) road lighting, and vii) interchanges. Regarding the existing condition of Route 4, it has asphalt concrete pavement, but only 2 vehicle lanes. Ring Road 8th is not paved yet.

Total land area of the site is approx. 10.7 ha. Almost all land surface is covered by grass. This site is used for farmland partially, and small brick maker's facilities also exist in the site.

The site can be divided into 2 areas (lower part and higher part) considering its land surface level. Approx. 69 % of the site in the north-eastern part has almost flat land surface with small undulation, but there is a height part (approx. 13 % of the site) with level difference of 5.5 m in the south-western end of the site. Approx. 18 % of the site is slope surface. Along the north-western boundary there is land level difference of approx. 1.5 m.

### **5.2.2 Natural Condition**

#### **(1) Climatic Condition**

Mean air temperature varies from 20 °C (winter) to 27 °C (summer). Annual rainfall of 1,160 mm is recorded (dry season: April - September, rainy season: October - March). Mean annual humidity is from 60 % to 70 %. Wind direction is constantly NW, and mean wind velocity is 6.0 m/s.

#### **(2) Earthquake**

Earthquakes were recorded in Lapaz, Sucre and Cochabamba in mountainous district, but there is no earthquake record in and around Santa Cruz City.

#### **(3) Geotechnic Condition**

We have already shown in 5.2.1 that the site can be divided into 2 areas (lower part and higher part) considering its land surface level. Geotechnical characteristics is different between lower part and higher part in the site, but totally, both parts have relatively normal bearing capacity.

In the lower part, there is clay layer of 1.3 - 1.7m thickness near the ground surface, but almost all layers below this clay layer (-2m to -10m) were sand layers. N value of the standard penetration test was 5 -10 in the clay layer, and 20 -30 in the sand layers. Bearing capacities of 6.0t/ m<sup>2</sup> to 12.0 ton/ m<sup>2</sup> are confirmed at -1.0m level.

In the higher part of the site, oozy sand or clayey layers are found from 0 m to approx. 5.5 m, and N value of the standard penetration test were lower than 10 from 0 m to 8.5 m. Bearing capacities of 5.0/ m<sup>2</sup> to 12.0 ton/ m<sup>2</sup> are confirmed at -1.0m level.

Basically there's no problem for building construction in this project site. However, it is necessary to carry out approx. 2 meters height of filling-up works to prevent a large amount of rain water inflow because the ground level of the lower part is the lowest in and around the project site.

### 5.2.3 City Planning, Building Regulation, Design Standard

Refer to 5.1.3.

### 5.2.4 Infrastructure Condition

Project site has not public road from Route 4 and Ring Road 8th, but it has only private road to approach from Route 4, and is not equipped with electric/telephone and potable water main line. And also, this district is outside the sewage service area.

#### (1) Access Road

Project site has not public road from Route 4 and Ring Road 8th, but it has only private road to approach from Route 4.

It is necessary to construct the access roads from Route 4 or Ring Road 8th. Especially, construction of the access road from Ring Road 8th to the project site is an urgent matter for the construction work of NWM and initial stage of market operation. The reason of above mentioned thing is that access from the project site to Ring Road 8th is only about 500m and it is comparatively easy to construct as a part of urban development work by the City Government.

#### (2) Electric/Telephone Main Line

Project site is not equipped with electric/telephone main line, but electric main line of CRE (24.9 KV) and telephone main line of COTAS are located along Ring Road 8th. Therefore it has no problem to get electricity of 380 V (3 phase) and 220 V (single phase) and telephone line by setting the extension line from main line along Ring Road 8th (approx. 500 m). It is expected that required electricity will be approx. 400 KVA, and more than 25 telephone lines will be required.

#### (3) Potable Water Main Line

COSPAIL, potable water cooperative that covers this area, had already installed the potable water main line at 60 m out of the north-western boundary of the project site. It is possible to take potable water from this main line by extension work. Required potable water will be approx. 140 m<sup>3</sup>/day.

#### (4) Wasted Water Treatment and Its Discharging System

Sewage service is limited within the Ring Road 2nd in Santa Cruz City, therefore the district to where the project site belongs is not equipped with sewage line. Therefore it is necessary to prepare a discharging system of treated water, e.g. installation of a new sewage pipe-line from the project site to Pirai River (approx. 5 km distance) or a large scale seepage area in the project site, as well as wasted water treatment system that handles approx. 140 m<sup>3</sup>/day of wasted water. Any way, new sewage pipe-line is strongly required as a discharging system.

#### (5) Garbage Collection Service

Private micro-enterprise of garbage collection service is now carrying out the collection works every day near the project site, and an agreement that the project site will be included in the coverage area of this micro-enterprise had been already established between this micro-enterprise and Santa Cruz City.



(6) New Public Bus Route

Route 4 is one of the main route of public bus service in Santa Cruz City, and there are a few branch routes on Ring Road 8th. Therefore it is necessary to prepare a new public bus route for market users from Route 4 via Ring Road 8th. It is necessary to prepare the bus lane in the project site to locate the bus stop at the nearest point of the marketing hall considering users' convenience.

**5.2.5 Equipment, Construction Material/Machinery Procurement Condition**

Refer to 5.1.5.

**5.2.6 Facilities and Equipment Design**

(1) Facilities and equipment elements

Facilities and equipment elements of the NWM are shown as follows.

Table Facilities and Equipment Element for New Wholesale Market

Item	Function					Remarks
	A	B	C	D	E	
<b>Facilities</b>						
Marketing hall		○				equipped with products handling tool, balance and high pressure water cleaner
Administration office						
Management committee office		○			○	equipped with telephone/fax and computer
Associates office		○				equipped with telephone/fax and computer
Canteen				○		
Shops				○		
Elevated water tank			○			equipped with underground reservoir tank
Electric power station			○			receiving pannel, transformer and distribution pannel
Public W.C.				○		
Guard box			○			
Wasted water treatment plant / seepage pit			○			
Truck berth / Taxi parking	○					
Garbage collection yard			○			
Seepage pits/area for treated water			○			incl. treated water supply pipe line
Street lights			○			
Fence and Gate			○			
<b>Equipment</b>						
Products handling tool		○				
Communication equipment - telephone/fax			○			
Management tools - computer, etc.			○			
Measurement tools						
Truck scale			○			
Balance			○			
Apparatus for quality control			○			
High pressure water cleaner			○			

Remarks : Alphabet of A to E in this Table mean following functions.

A = Distribution, B = Supporting, C = Utility, D = Service, E = Education

(2) Required floor area for main facilities

1) Marketing Hall

Marketing hall has to accept 2 different types of products. One is large amount of fruits and vegetables that is already reserved by the specific wholesalers, and the other is relatively small amount of fruits and vegetables that is not

reserved but procured by many wholesalers. In NWM, total handling volumes of former and latter are estimated to be 62 % and 38 %.

In the Abasto Market, high tonnage trucks stay in the market for long hours, and the area around the trucks is used as a selling space. This condition makes the facilities utility efficiency lower. In case of comprehensive wholesale market in San Paulo, accessibilities to each facility are secured for trucks of producers and buyers, therefore there is no problem like as Abasto Market. In case of Nakaorosi system in Japan, large amount of products is transported speedily to retailers.

Taking these typical examples in Brazil and Japan into consideration and pay attention to the construction cost saving, 2 types of marketing hall were prepared to accept 2 different types of products mentioned above.

Marketing hall - 1: Marketing hall that is equipped with wholesalers' sections. All of the associates possess their own sections in this marketing hall, and all of the products reserved by specific wholesalers is delivered directly to their wholesalers sections. Therefore trucks for unloading and loading have access directly to the wholesalers sections.

Marketing hall - 2: Marketing hall that accepts the non reserved products. All of the non reserved products is gathered here temporally, and wholesalers purchase necessary amount of products after the direct negotiation with producers.

Calculation method for the required scale of marketing hall is shown as follows (Refer to Table A5-2).

a) Items considered for facilities scale determination

Facilities scale of marketing hall - 1 is determined considering the following items.

- Peak handling volume per day of fruits and vegetables (potato, onion, banana, citrus and tomato) in 2005 (150% of average handling volume per day)
- Tonnage stockable in one square meter for each item of packed fruits and vegetables ( $t/m^2$ )
- Required floor area for products stocking  
Required floor area for products stocking is calculated by dividing above mentioned "peak handling volume per day in 2005" by "tonnage stockable in one square meter".
- Required floor area for tomato/citrus box stocking  
It is necessary to prepare box stocking space needed for average handling volume per day of tomato and citrus. 50 % of required floor area needed for average handling volume of tomato and citrus is prepared for this box stocking space.
- Required number of wholesalers section  
Required number of "wholesalers section" mentioned above is calculated taking above mentioned "Required floor area for products stocking", "Required floor area for tomato/citrus box stocking" and "floor area

available for products stocking in one wholesalers section" mentioned in next page into account.

- Future expansion area is calculated dependent upon the peak handling volume per day in 2010.

Facilities scale of marketing hall - 2 is determined considering the following items.

- Handling volume in marketing hall - 2 is estimated to be 38% of total handling volume per year of NWM. Its details are 22 x 10<sup>3</sup>t/year of potato, 34 x 10<sup>3</sup>t/year of tomato, 21 x 10<sup>3</sup>t/year of other vegetables (onion), 15 x 10<sup>3</sup>t/year of fruits (citrus) in 2005. Banana is not included here.
- Peak handling volume per day of fruits and vegetables mentioned above in 2005 (150% of average handling volume per day)
- Products stocking volume in unit floor area (t/m<sup>2</sup>) for each item of packed fruits and vegetables.
- Required floor area for products stocking  
Required floor area for products stocking is calculated dividing above mentioned "peak handling volume per day in 2005" by "products stocking volume in unit floor area".
- Required total floor area for marketing hall - 2  
Required total floor area is determined considering the required floor area for products stocking mentioned above, passage space within the grouped product (approx. 33% of "required floor area for products stocking" mentioned above) and central passage.
- Future expansion area is not considered because handling volume of "non reserved products" is estimated to be reduced in 2010.

b) Wholesalers section

- Dimension of wholesaler's section was determined to be 3m<sup>width</sup> x 5m<sup>length</sup> (15 m<sup>2</sup>: 5-6 ton storage capacity) per one section considering the smallness of existing wholesalers section (3m<sup>width</sup> x 4m<sup>length</sup>) in Abasto Market and the minimum handling volume for a qualified wholesaler in NWM being approximately 5 ton per day. Partition of each section is designed to be movable, therefore, wholesalers who need several sections can use the sections without inner partitions.
- Floor area available for products stocking is estimated to be 75% of the floor area of wholesalers' section, i.e. 11.25 m<sup>2</sup> per one wholesalers section.

c) Required number of wholesalers section in marketing hall - 1

- Required number of wholesalers section in marketing hall - 1 was estimated to be 188 sections in 2005 and 224 sections in 2010 (Refer to Table 5-2 also)
- Layout of sections

Taking the facilities layout into consideration, marketing hall - 1 was divided into 4 units. Therefore one units of marketing hall - 1 was designed to have 56 wholesalers section (224 section / 4 =56 section). Actually 3 units (168 wholesalers sections) and one irregular small unit (20 wholesalers sections) of marketing hall - 1 were prepared, and future extension space for 36 sections

was also prepared.

REQUIRED FLOOR AREA FOR MARKETING HALL - 1

Target year	Handling Volume				Products stocking area		Units required no. of wholesalers section K=J/11.25 m <sup>2</sup>	
	Planned handling volume in New Wholesale Market (ton/year)	Products items and their planned handling volume in New Wholesale Market		Planned average handling volume (ton/day) : A	peak handling volume (ton/day) : B = A x 150%	tonnage stockable in 1 m <sup>2</sup> (ton/m <sup>2</sup> ) : C		required stocking area (m <sup>2</sup> ) : J=D/C
		Item	volume (ton/year)					
2005	239,000	Potato / Onion	116,000	317.81	476.71	0.5	953.42	
		Banana	29,000	79.45	119.18	0.4	297.95	
		Fruits (Citrus) - (Fruits box)	38,000	104.11	156.16	0.6	260.27	
		Tomato - (Tomato box)	56,000	153.42	230.14	0.6	383.56	
								127.85
		Total	239,000	654.79	982.19		2,109.82	187.54
2010	284,000	Potato / Onion	136,000	372.60	558.90	0.5	1,117.81	
		Banana	35,000	95.89	143.84	0.4	359.59	
		Fruits (Citrus) - (Fruits box)	48,000	131.51	197.26	0.6	328.77	
		Tomato - (Tomato box)	65,000	178.08	267.12	0.6	445.21	
								148.40
		Total	284,000		1,167.12		2,509.36	223.05

Remark : 1. Wholesalers unit 3 m x 5 m (floor area : 15m<sup>2</sup>). 75% of floor area (11.25m<sup>2</sup>) is available for products stocking.  
 2. 1 cluster of wholesalers unit : 56 units  
 2005 : 56 units/cluster x 3 cluster + 20 units = 188 units  
 2010 : 56 units/cluster x 4 cluster = 224 units

d) Required total floor area for marketing hall - 2

- Required floor area for products stocking in marketing hall - 2 was estimated to be 689.05 m<sup>2</sup> as shown below.
- Passage space within the grouped product: 227.39 m<sup>2</sup>
- Dimension of facilities

Taking above mentioned floor areas and central passage of 5 meters width into consideration, approx. 15m width x 90m length of space is necessary for the marketing hall - 2.

REQUIRED FLOOR AREA FOR MARKETING HALL - 2

Target year	Handling Volume				Products stocking area		
	Planned handling volume in Marketing Hall - 2 (ton/year)	Products items and their planned handling volume in Marketing Hall - 2		Planned average handling volume (ton/day) : A	peak handling volume (ton/day) : B = A x 150%	tonnage stockable in 1 m <sup>2</sup> (ton/m <sup>2</sup> ) : C	required stocking area (m <sup>2</sup> ) : J=B/C
		Item	volume (ton/year)				
2005	92,000	Potato / Onion	43,000	117.81	176.71	0.5	353.42
		Banana	0	0.00	0.00	0.4	0.00
		Fruits (Citrus)	15,000	41.10	61.64	0.6	102.74
		Tomato	34,000	93.15	139.73	0.6	232.88
		Total	92,000	252.05	378.08		689.04

2) Administration office

Management committee office and association office are located in this administration office building.

a) Management committee office

Management committee office has 2 divisions and six sections (refer to

Chapter 6, 6.3.1 (2)), therefore necessary rooms have to be prepared for these divisions and sections.

[Main rooms needed for the office]

Manager room, office room with storage and locker room, convention hall, laboratory, First Aid room and W.C.

b) Association office

[Members in the association office]

Representatives of approx. 8 associations will use this association office. Therefore large office room is used by approx. 8 persons divided by low partition etc.

[Main rooms needed for the office]

Office room with storage and locker room and W.C.

3) Elevated water tank

Approx. 140 t/day of city water is estimated to be used in the NWM as shown below. Therefore elevated water tank that has capacity of one day's consumption is prepared with underground reservoir tank.

REQUIRED POTABLE WATER VOLUME IN NEW WHOLESALE MARKET

1. Unloading truck drivers and assistants :	250.00 persons/day	Temporary occupants
2. Loading taxi driver	150.00 persons/day	Temporary occupants
3. Market users (retailers)	3,000.00 persons/day	Temporary occupants
Total number of temporary occupants :	3,400.00 persons/day	
Required potable water volume for temporary occupants :	17.00 ton/day	
4. Wholesalers / Workers in NWM / Administration		
(1) Total number of wholesalers incl. assistants :	300.00 persons/day	Permanent occupants
(2) Workers :	500.00 persons/day	Permanent occupants
(3) Administration office	24.00 persons/day	Permanent occupants
5. Canteen / Shops	34.00 persons/day	Permanent occupants
6. Guardsman / Watchman	24.00 persons/day	Permanent occupants
Total number of permanent occupants	882.00 persons/day	
Required potable water volume for permanent occupants :	97.02 ton/day	
7. Required potable water volume for floor washing :		
Assumption : market hall floor washing of 1 time per week (6,700 m <sup>2</sup> x 0.02 ton/m <sup>2</sup> / 7)	20.00 ton/day	
8 Total Required Potable Water Volume	134.02 ton/day	

4) Electric power station

Electric power station is equipped with following equipment.

- Transformer
  - primary: 24.9 KV
  - secondary: 380 V
  - 220 V
  - capacity: 400 KVA 3-phase
  - 380 V 50 KVA 3-phase
  - 220 V 350 KVA 3-phase
- Receiving panel to the above mentioned transformer

- Distribution panel (approx. 15 terminal)

Therefore electric power station is equipped with power station room that accommodates above mentioned equipment as well as telephone exchange room, control room and generator room (generator itself is included in future plan).

5) Waste Water Treatment Plant and Seepage Area

Compact type plant that has treating capacity of approx. 140 ton/day with primary sedimentation tank, aeration tank, secondary sedimentation tank, and chlorinating tank is adopted for the wasted water treatment.

Regarding the discharging system of treated water from treatment plant, installation of new sewage pipe-line from the project site to Pirai River (approx. 5 km north of the project site) is the best. However, the sewage pipe-line will have to be equipped with pump stations at several points in this case. Furthermore, it is necessary to prepare a large scale sewage development plan considering that this sewage pipe-line will be used also by neighboring districts because its total pipe-line length is so long (approx. 5 km). Therefore it will supposedly take long time to make its preparation and coordination. Taking above mentioned condition into consideration, seepage system dominantly used in Santa Cruz City was adopted here, and this system have to be changed to the sewage pipe-line in the near future. Approx. 1.4 ha of seepage area for treated water was planed within the project site. According to the result of boring test, the land of project site is estimated to have enough water permeability if the clay layer near the land surface (approx. 1.5m thickness) is cut-off because almost all layers under this clay layer are sand layers. But it is necessary to confirm actual water permeability by permeability test in the detailed study before implementation works.

6) Truck Berth and Taxi Berth

Truck berths are prepared in front of each wholesalers sections (marketing hall - 1) and both side of the marketing hall - 2. Trucks for unloading and taxis for loading will park at this truck berths in the designated time respectively. Additional taxi parkings are prepared near the administration office. Planned units number of truck berth and taxi parking are shown as follows.

- Truck berth in front of the marketing hall - 1: total 132 units
- Truck berth at the marketing hall - 2: total 40 units
- Additional taxi parking total 77 units

7) Open Space for Farmers Market

Open space that is used only for the farmers market is not constructed in the project site. Following instructions will be given to the producers who intend to sell their products directly to retailers and general consumers.

- To use private farmers markets
- To use Abasto Market
- To use future extension space in the project site of NWM
- To use some part of NWM within the designated time.

(3) Facilities Layout Plan

1) Land Use of the Project Site

It was already explained that the project site is divided into 2 part (higher part with slope and lower flat part) in 5.2.1. It is necessary to prepare large scale flat land for the marketing halls and truck berths, therefore lower of the project site was determined to be utilized for all of the facilities. Higher part of the site can be used for the future extension space (Refer to Fig. 5-1).

2) Access Road from Projected City Roads to the Site

Project site is facing directly to the project city road from Route 4 (herein after Projected City Road A) at the western end of itself, and another projected city road from Ring Road 8<sup>th</sup> (herein after Projected City Road B) exits at approx. 160m north-west of the north-western boundary. Considering the vehicle circulation especially from Ring Road 8<sup>th</sup>, it is supposedly necessary to prepare access roads both from Projected City Road A and B to the project site. Therefore access road from Projected City Road A was planed along the north-western boundary within the site, and this access road was bent approx. 90 degrees and extended to Projected City Road B (Refer to Fig. 5-1).

3) Zoning

Location of all of the facilities in the project site was determined considering the following zoning (Refer to Fig. 5-1).

Zone-1: Zone for almost all of the facilities that have the function of supporting, utility, service and education. Area along the access road within the project site was allocated for this Zone.

Zone-2: Zone for the facilities that have the function of distribution (marketing hall, truck berth and taxi parking). Almost all of lower part of the central area of the project site was allocated for this Zone. Planed pavement surface level of Zone-1 and Zone-2 is 0.5 m higher than the access road within the project site.

Zone-3: Zone for the seepage/drying pond for treated water. Area surrounding Zone-1 and Zone-2 is allocated for this Zone. Planed land surface level of this Zone is original level and approx. 1.5 m lower than the access road within the project site.

4) Circulation (Refer to Fig. 5-2)

a) Circulation on the projected city road and access road in the project site.

Projected city road from Ring Road 8<sup>th</sup> and approx. 100 m of Projected city road from Route 4 connected with the project site will be supposedly constructed at first. These projected city roads and access road in and out of the project site compose one kind of "rotary", and smooth vehicle circulation is secured by this rotary.

b) Circulation of auto-bus

Bus lane and bus berth is secured between access road and Zone-1. Users who use public bus access to marketing halls from bus-stop here through slope

way.

c) Circulation of trucks and taxis for unloading/loading

Internal road is planned around Zone-2 (outer internal road), and between each marketing halls (inner internal roads). All of the trucks and taxis for unloading/loading can enter the outer internal road at the western end gate, and get out from the eastern end gate. All of the vehicles have to take anti-clockwise direction in the outer internal road. In the inner internal roads, all of the vehicles have to take north-western direction (one way). In the outer internal road between Zone-1 and Zone-2, 2 way traffic is permitted.

All of the trucks and taxis can access directly to specific sections and withdraw from these sections speedy.

5) Facilities layout plan

Taking the above mentioned concept of land use, access road, zoning and circulation into consideration, actual layout plan was made for the NWM facilities. Layout plan is shown in Fig. 5-3.

(4) Building structure

In Santa Cruz City, large scale roof framed by steel space truss structure (3D truss structure is used for large buildings such as private super-market (e.g. Hipermaxi), public retail market (Barrio Lindo market: now under construction), and railroad station (new station). On the other hand, reinforced concrete (herein after RC) structure with hollowed brick walls is used dominantly for small or medium scale buildings.

Above mentioned 3D truss structure can be adopted for the marketing - 1 and 2. RC structure with hollowed brick wall can be also adopted for small/medium scale buildings such as administration office, canteen/shops, electric power station and etc.

Regarding the building foundations, shallow spread type foundation was adopted for light weighted small scale facilities (canteen, shops, electric power station, public W.C. and etc.). There are 2 alternatives for the foundation of large scale facilities (marketing hall, administration office, elevated water tank). One is deep spread type foundation of 4 meters depth (up to sand layer), and the other is friction type pile of 8 meters length. Friction type pile was adopted here considering its comparative economical cost.

Regarding the design loads, wind velocity of 30 m/s is used for the calculation of wind load. On the other hand, earthquake load is not taken in account considering the existing buildings condition.

(5) Facilities plan

Facilities scale (number of stories, total floor area), type of foundation and type of structure of all the facilities are shown in Table A.4.2-2 in ANNEX 4. Plans and elevations of main facilities are shown in Fig. A.4.2-14 to A.4.2-19 in ANNEX 4.



### 5.2.7 Construction Works Schedule

#### (1) Preparation work and phasing

There is rainy season from November to March, but it is possible to carry out construction works throughout the year considering its moderate climate in Santa Cruz.

Before actual construction works, it is necessary to carry out the preparation work shown as follows.

- Construction of access roads (projected city roads and access road in the project site: include rain drainage ditch)
- trees and bush cutting in the project site
- Land cut-off work in the project site (clay layer in the water seepage pond)
- Sand filling / compaction and leveling work in the project site
- Extension work of electricity, telephone and potable water main line

Construction work schedule of NWM facilities are divided into 2 phases. In the phase-1 stage, minimum facilities needed to market operation (almost all facilities except some of marketing hall - 1, some of equipment, and whole of marketing hall - 2) will be constructed. In the phase-2 stage, construction works of the rest of the facilities will be carried out.

Construction Schedule for New Wholesale Market

Project Items	Preparation Stage	Construction Stage	
		Phase-1	Phase-2
1 Land Acquisition	○		
2 Land Preparation (Tree Cutting / Land Cut-off/ Soil Filling)	○		
3 Infrastructure Extension outside the Site			
(1) Electric Main Line	○		
(2) Telephone Main Line	○		
(3) Potable Water Main Line	○		
(4) Access roads (projected city road)	○		
(5) Access road to Site	○		
(6) Rain drainage ditch	○		
4 Building Construction			
(1) Building Works			
F-1 Marketing Hall			
Marketing Hall - 1		○	○
Marketing Hall - 2			○
F-2 Administration Office		○	
F-3 Canteen		○	
F-4 Shops		○	
F-5 Electric Power Station		○	
F-6 City Water Reservoir / Elevated Water Tank		○	
F-7 Public W.C.		○	○
F-8 Wasted Water Treatment / Seepage Pit		○	
F-9 Garbage Collection Yard		○	○
F-10 Guard Box		○	
(2) External Works		○	○
(3) Main Line of Infrastructure in the Site		○	○
(4) Equipment Supply		○	○

Remarks : Sewage line with pump-stations from project site to Pirai River is not included in this table.

**(2) Work Schedule**

It is estimated that total 30 months is necessary for whole of the construction works of the marketing facilities including the preparation works. Construction work schedule is shown in Table 5-3 and Fig. 5-4.

## **6 OPERATION AND MANAGEMENT PLAN**

### **6.1 Implementation Scheme of Related Organizations**

#### **(1) Implementation Scheme of the Target Projects**

##### **1) National Level Coordination**

The Ministry of Agriculture, Cattle and Rural Development will be responsible for monitoring the preparation, construction and management of Project (establishment of C/D centers, NWM and improvement of existing Abasto Market), as well as coordination among relevant agencies for fund arrangement and technical assistance.

##### **2) Regional Level Coordination**

Concerning the construction and management of the Project, the "Mixed Board" is to be established, comprised of representatives of the Prefecture of Santa Cruz, Municipal of Santa Cruz, 7 municipalities of the Valley areas, and 7 users' organizations in Abasto Market. This body carries out establishment of implementation system and relevant rules/ regulations for construction and management, as well as training, request for technical assistance and financial arrangement in pursuit of efficient and effective project implementation. Also, the Board is to supervise the Project throughout the term of construction and management.

The Mixed Board will contain two project offices within its organization, which primarily undertakes forming annual implementation plan, human resource management, budget allocation, supervising expenditure, along with supporting activities for project management of each site. The two project offices are; one for C/D center management (Project Office No.1), and the other for the NWM and Abasto Market (Project Office No.2).

##### **a) Project Office No.1**

In production area, sub-project office will be set-up in San Isidro under Project Office No.1. Steering Committees will be organized in major production areas under this sub-project office. Technology developed by the Pilot Project on management/ operation shall be transferred to the C/D centers established in each site.

Functions of the Project Office No.1 are as follows:

- Support for the formulation of development plans of C/D center in each municipality.
- Support for the provision of development funds of C/D center.
- Establishment of Steering Committee and preparation of rules/ regulations for the committee.
- Support for the establishment of Management Body, preparation of rules/ regulations for the Management Body and management/ operation, method of management and operation/ maintenance.

- Formulation of annual project plan.
- Preparation of annual budget plan and supervision of execution of budget.
- Formulation and implementation of educational program for organization and development of technology.

b) Project Office No.2

Project Office No.2 shall prepare the necessary draft of municipal ordinance/ resolution for Management Committee, Management Body and management/ operation of the markets (NWM and Abasto Retail Market).

This draft municipal ordinance/ resolution shall be enacted through the examination by the Municipal Council. NWM and Abasto Retail Market shall be managed and operated based upon this ordinance/ resolution.

Functions of the Project Office No.2 are as follows:

NWM

- Establishment of Management Committee
- Preparation and implementation of rules/ regulations for the Management Committee and the Management Body
- Preparation and implementation of rules/ regulations for management and operation/ maintenance
- Preparation of criteria for qualification of wholesalers and promotion of their movement from ex-Abasto Market to NWM
- Formulation and implementation of annual project plan
- Preparation of annual budget plan and supervision of execution of budget
- Formulation and implementation of training and technical assistance program; content of training and technical assistance shall be marketing system (transaction system in the NWM), law/ regulations (wholesale market law prescribed by municipal ordinance/ resolution) and rules/ regulations of management and operation/ maintenance.
- Land acquisition
- Land preparation
- Confirmation of users for wholesale sections; the facilities and equipment in NWM should be constructed and provided stage wise in accordance with the number of qualified wholesalers and their transfer schedules. Therefore, confirmation of participants should be done at the design stage of NWM. Stage wise construction of the facilities and provision of the equipment are as follows.
  - Phase 1 Project
    - Administration building for management and operation/ maintenance, technology transfer and marketing information system, and a portion of the market facilities and equipment shall be constructed or provided.

- Phase 2 Project

Construction and provision of the remaining facilities and equipment shall be done in phase 2.

#### Abasto Retail Market

- Establishment of Management Committee
- Preparation and implementation of rules/ regulations for the Management Committee and the Management Body
- Preparation and implementation of rules/ regulations for management and operation/ maintenance
- Formulation of rearrangement plan of sales sections in the Abasto Retail Market
- Formulation of environmental development plan in surrounding areas of the Abasto Retail Market; entering of large trucks and sales on the road and in surrounding areas shall be regulated
- Publication of marketing information
- Formulation and implementation of annual project plan
- Preparation of annual budget plan and supervision of execution of budget
- Formulation and implementation of training and technical assistance program

#### (2) Institutional Assistance with Training and Technology Transfer

The result obtained from PCM workshops, Demonstration and Study Tour conducted in Phase II was that producer's willingness was cultivated for voluntary participation in the project. Still more, the producers have become inclined to spontaneously act in correspondence to transformation of fruit and vegetable marketing system. The results of these three methods conducted for the purpose of instructing producers are given prominent recognition, and the following institutional arrangements are suggested in respect to training and technology transfer to ensue.

Top-down training or technology transfer will not be applied, instead, it is intended that producers and traders themselves take part in the target project and pursue outcome of training and technology assistance through actual activities of marketing improvement.

- 1) Process 1: Farmers will be prioritized in allocation of sales lot in the NWM as they establish the collaborative collection and distribution system using the collection center.
- 2) Process 2: The result of training at the collection center will be assessed through the monitoring of performance at the sales section in the wholesale market, which will be fed back to the farmers' association.
- 3) Process 3: The above result will be evaluated by the management committees of the collection center and wholesale market, which at the end will be compiled by the assigned divisions in the Prefecture and Municipal.

- 4) Process 4: This evaluation report will be distributed to all producers of the Department of Santa Cruz, through the Prefecture aiming for raising their awareness.
- 5) Process 5: The Ministry of Agriculture, Cattle and Rural Development is responsible for disseminating throughout the country the technology transfer result in Santa Cruz Prefecture as a national model.

## **6.2 Operation/ Management System and Implementation Scheme of the C/D Centers**

In accordance with the proposed stage-wise introduction of the products collection and distribution system in Section 3.2.1, the operation and management (O&M) system of C/D centers is proposed to be established in two stages, O&M system for the Initial Stage and the same for the Advanced Stage; as substantial time required for organizing users group of a C/D center for O&M by beneficiaries and lack of manpower resources for O&M within producers and in order to ensure successful initial operation of a C/D center. The proposed operation and management (O&M) system of C/D centers and the organization set-up for the same are discussed in the following sections.

### **6.2.1 Proposed Operation and Management System in Initial Stage**

Initial Stage for about 5 years after the start of operation of a C/D center, the O&M of the center is entrusted to existing farmers organizations such as ASOFRUT and EMCA under the contract between the municipal government and the organizations (the management body). The overall organization set-up for the O&M of the centers covering all the major producing areas formulated on the basis of the discussion with the representatives of municipal government, farmers organizations and related institutions is shown in Figure A.1.5-3 of Annex 1.

The major functions and activities of the institutions composing organizational set-up are as follows;

- The management body shall fulfill the functions of the C/D center under the guidance and support of the Sub-Project Office, Management Committee (Steering Committee) and municipal government and related institutions providing institutional and technical guidance (CIAT, CAISY, CAICO). In addition, the management shall perform general managerial functions including preparation and submission of an annual operation plan, an annual performance report and basic data for prescription of users fees.
- The Municipal Government through the Management Committee and under the support of the Sub-Project Office prepare the guidelines for the O&M of the C/D center, establish the official regulations for users.
- The Municipal Government as well as the management body shall give guidance to the users on the following points:

- a) C/D center will rarely have functions for controlling price fluctuations caused by over supply of products,
- b) The more farmers use the center, the more benefit will be realized, and
- c) Improvement of products' quality as well as production technology of all the users is essential for successful O&M of C/D centers.

During the Initial Stage, the Sub-Project Office, municipal government and the management body should promote the establishment of users cooperative through intensive guidance to users as the institutional training plans proposed in Section 6. When the users establish a new users' organization with legal personality, the management body shall hand over the O&M of the C/D center to the new users' organization with the concurrence of the Municipal Government and the O&M of the same moves to the Advanced Stage.

### **6.2.2 Proposed Operation and Management System in Advanced Stage**

In the Advanced Stage after terminating the Initial Stage, the O&M of the C/D centers is executed by a farmers organization itself established newly and all the functions and activities related with the O&M of the centers including institutional training and technical extension are to be performed by the organization. Accordingly, it is recommended that the C/D center should be leased to the organization with concessionary terms.

#### **(1) Organization of Collection Center Users Cooperative**

While a farmers organization having the status of a juridical person can be organized in accordance with either the Cooperative Law or the Civil Code, it is recommended that the organization should be organized as a service cooperative of "Collection Center Users Cooperative(tentative name)" under the Cooperative Law because the principal activities of the subject cooperative are the O&M of a C/D center. In accordance with the Cooperative Law, the following procedures are requisite for the establishment of the Collection Center Users Cooperative;

- General assembly of the promoters (Not less than 10 persons);
- Record of the general assembly signed by the attendants and certified by a notary public, etc.;
- Text of the by-laws.

For the authorization and legal registration, the cooperative is to be qualified by the National Council of Cooperative through the social-economic studies on the conditions, possibilities, working fields and operation plans of the cooperative. The management of the cooperative is performed by the general assembly of the members, the board of directors, the manager and the committee stipulated by-laws.

#### **(2) Proposed Operation and Management System in Advanced Stage**

In the Advanced Stage, the O&M of the C/D centers are executed by the management body established within the Cooperative. It is recommended that the economic activities of the cooperative must strictly be limited to the operation of the C/D center only as shown in the Table. Other economic activities such as purchasing and credit should be considered after setting the operation of C/D center on its right path. While the C/D center is for the members of the cooperative, the utilization of non-members should be allowed to certain extent.

### **6.3 Operation and Management Plan of the NWM**

#### **6.3.1 Law/ Regulation and Organizational Setup for the NWM**

Neither Santa Cruz City nor the Republic of Bolivia holds wholesale market law. Only Municipal Market Law is found in Municipal Ordinance as for market regulations. Regarding management/operation of the market, municipal government manages and operates the municipal market based upon this ordinance. The Municipal Government should enact a NWM law/regulation as an ordinance formed in cooperation with the wholesale market users and set up a new organization on management and operation of the NWM in order to keep it from falling into the same disorder as seen in the existing Abasto Market. The proposed rules/regulations of the Market have been agreed by the representations of users' associations and Prefecture/Municipal Governments at workshops. The rules/ regulations are shown in Table 6-1.

##### **(1) Law/Regulation**

The following items should be included in the new law/regulation in order to successfully implement the Project.

##### **1) Management Organization**

Management Committee, Management Body, and Operation/Maintenance Organization (users' organization).

##### **2) Management**

Kinds of commodities traded, qualification and registration of users, transaction system, tariff (fee) system, operation days and hours, standard of product packing, collection/publication of marketing information, monitoring of selling section use, facility use, and prohibition/penalties.

##### **3) Operation and Maintenance**

Security control, price/weight control, control of entrance/circulation/ parking of vehicles, mediation of conflicts, sanitary control and garbage collection.

##### **(2) Management Organization**

As to management organization, the following three options are taken into consideration. The Study Team has evaluated and discussed the three options in several meetings with the representatives of relevant government agencies and users' organizations. The progress of the evaluation and discussions are described below.

##### **1) Three Options of Management Organization**

##### **a) Option 1: Municipal Government Takes the Initiative**

The Municipal Government shall own the premise, the facilities shall be built with the fund procured by the Prefecture and Municipal Government as development investment fund from their own capital and domestic and international sources. The management and operation of the Market should promote equitable economic activities without being driven by political motivation and interest. Also, the Management Committee composed of representatives of users' associations and observers (Prefecture and Municipal)



should be established to take up advisory role on market operation.

b) Option 2: Public Corporation Takes the Initiative

The public corporation will be 100% funded by local governments (Prefecture and Municipal), CAO/ ASOFRUT, producers' organizations and users. Its advisory committee will also function as management committee to recommend the president of the corporation, to be consulted over management and operation policies and to audit its account.

c) Private Sector takes the Initiative

The premise and basic infrastructure is owned by the Municipal. The Municipal Government will discuss with private organization(s) in order to transfer its management to the management body established by the private organization(s) after an appropriate period of time. In such a case, it is possible that the private organization(s) monopolize the market management or exclude small-scale producers in pursuit of economic profit of a specific interest group. Therefore, the representatives from the public (Prefecture, Municipal Government) should be included as a member of the Management Committee in order to hold fairness.

Characteristics of the three options for management/operation of the NWM are shown in Table 6-2.

2) Selection of Best Management Organization

The best management organization was selected through evaluation of characteristics of the three options by using evaluation criteria and discussing with the representatives of Prefecture/ Municipal Government as well as users' organizations at workshops.

a) Evaluation criteria

i) Construction aspect

- Availability of provision for construction fund
- Possibility of repayment of fund
- Management/supervision for construction period

ii) Management/operation aspect

- Possibility to build up management and operation system
- Competence of management and operation
- Provision of operation fund
- Securing of human resources
- Efficiency of management/operation
- Securing of equitable use
- Promotion of marketing industries

iii) Environmental control

b) Best Management Organization

The evaluation of three options is shown in Table 6-3.

Marketing of fruits and vegetables is a commercial activity. Therefore, option 3 that private sector takes the initiative is the best one in order to draw out the vitality in private sector and promote private commercial activities. However, currently the commercial activities by private sector in Bolivia are small scales and have no powers. It is necessary to support and guide for private sector by public organizations. Because wholesalers who will be users of NWM face the difficulties to provide a construction fund, repay the loan with high interest and bear depreciation cost because of small scales at present. And also, regarding management organization and operation/ maintenance of the market, it will be difficult and take a long time to solve mutual distrusts and conflicts among existing users' organizations and to build one organization immediately.

On the other hand, option 2 that public corporations take the initiative will need a long time for legal procedure to establish corporation and provision of the construction fund. Public corporation must repay the loan with interest of construction fund, and be burdened with depreciation cost. Consequently, its business will be difficult. In case of option 1 that municipal government takes the initiative, municipal government should provide construction fund, and repay the loan with interest. Therefore, management and business of the market will be not difficult if municipal government will be burdened with depreciation cost.

As above-mentioned, in case of option 1 that municipal government takes the initiative, the provision of construction fund and management/ business of the market will be less difficult comparing with the other two options. However, it will have possibility of political influence and its staff are not competent in a commercial business. The following plan should be selected as a best plan taking into consideration about these points. In initial stage, option 1 that municipal government takes the initiative was selected. The management committee that its members should be composed of users in a central core depend upon the consensus of participants through workshops, should be established and actually manage/ operate the market under the Mixed Board. Management Committee should be participated by representatives of the prefecture and municipal government of the Mixed Board as observers in order to monitor and supervise for the fair management/ operation. Then, after an appropriate period of time, finally Mixed Board and Management Committee will transfer only management/ operation of the market to users' organization (wholesale company) through legal procedure same as the form of management/ operation of option 3.

3) Management Organizations

Thus the following organizations are proposed as management organizations for the NWM.

a) Management Committee

- Members of the Committee

- Representatives from users' associations who engage in wholesale business
- Representatives from other users such as transporters, producers, retailers as associate members
- Representatives of the Prefecture and Municipal Government from Mixed Board as observers for their supervising role

- Functions

- Preparation of the regulations of Management Body
- Allocation of the staff of the Management Body
- Appointment of the manager of Management Body
- Implementation and supervision of the regulations of management and operation/ maintenance
- Examination and approval of the management and operation/ maintenance plan
- Examination and approval of the yearly financial plan

b) Management Body

Management Body is placed under the Management Committee. This organization has two divisions and six sections under the manager and shall be actually in charge of management and operation/ maintenance. The functions of these sections are as follows.

- Administration division

- Security and vehicle control section: security control inside the market, control of entrance/ circulating/ parking vehicles and truck scale control.
- Finance and accounting section: In charge of finance and accounting, collection of various fees of the market, preparation of yearly financial plan
- Personal and register section: Personal affairs, registration of users, general affairs
- Operation/ maintenance section: Sanitary control, cleaning, garbage treatment, maintenance

- Marketing division

- Information section: Collection, processing and publication of marketing informations
- Monitoring section: Monitoring of proper use of the wholesale sections, price and weight control of products

Management Body will employ the permanent staff of 8 persons including the manager and 11 part-time staff, requiring total of 19 personnel (see Fig. 6-2).

### 6.3.2 Proposed plan of Management and Operation/ Maintenance of the NWM

#### (1) Management system

##### 1) Initial stage

The Municipal Government shall be the implementation agency for the construction of the NWM. Initially, after the completion of the NWM construction, the Mixed Board (Project Office No.2) shall supervise the overall management/ operation and the Management Committee composed of representatives of users' associations and observers (Prefecture, and Municipal Government) shall actually manage, operate and decide all important matters on the Market. At this time, the entrust contract on management and operation of the market shall be signed. The Municipal Government of Santa Cruz shall own the land and construct the facilities by the fund provided from domestic and foreign sources by the Prefecture and the Municipal Government.

The management and operation of the market should promote efficient utilization of the market and equitable economic activities without being driven by political motivation and interest.

The approval of the Mixed Board is necessary for making rules/ regulations of the market, income statement and provision of fund through examination of the Management Committee.

The wholesalers' sections shall be rented to users. After one year of monitoring sales sections use, users with good utilization will have an opportunity to rent another section for business expansion.

In order to make the NWM attractive to all users, the NWM should be able to provide equal opportunity and steady supply and trading volume of various products.

##### 2) Final Stage

The Wholesale Company will be organized and established by users. The Municipal Government and Management Committee will transfer the supervision and management/operation functions to the Board of Directors of the Wholesale Company through legal procedure. As such, representatives of public agencies (the Prefecture and Municipal) shall be included as observers of the Board so as to avoid monopolization of the Market or exclusion of small-scale producers in pursuit of economic profit by a specific interest group.

#### (2) Maintenance Scheme

The Management Committee and Users' Organization will maintain the Market according to regulations of the Market under the supervision of the Mixed Board.

(3) Management and Operation/ Maintenance System

Management and operation/ maintenance system are shown in Table 6-4.

The Municipal Government shall implement the rehabilitation of basic infrastructure and facilities depend upon the request from the Management Committee and the Mixed Board. Regarding rules/ regulations of the Market, products traded, qualification of wholesalers, transaction system, tariff system and operation days and times shall be decided by the Management Committee depend upon the request from users, but the examination of the Mixed Board shall be necessary. The Management Committee shall carry out monitoring of utilization of wholesalers' sections, collection and publication of marketing informations and price and weight control, etc.

The Management Committee shall implement security control inside the market, price and weight control and circulating vehicle control, mediation of conflicts and garbage treatment cooperating with the Users' Organizations.

(4) Form of Market Use

Forms of the NWM use are described as below.

Stage 1: Incoming trucks to the NWM receive the admission card at the entrance.

Stage 2

- Route 1: Incoming trucks will directly unload their commodity in Wholesalers' section (Market Hall-1), as suppliers (producers/ intermediaries) have had prior arrangements with wholesalers over incoming volume and price, and either of the following three methods of trading would be followed.

- Trading method 1 (Contract): The wholesaler contracts with the supplier before harvest, to purchase the product at an agreed price.
- Trading method 2 (Consignment): The wholesaler is consigned to sell the product by the supplier, payment settlement for the product will be done on the same day when the products are sold minus the commission charges for the consignment.
- Trading method 3: (Purchase): The wholesaler purchase the product outright, payment takes place on the spot or at the end of the day.

- Route 2: This is the case in which no prior arrangement between the supplier and wholesaler takes place before shipment. The incoming truck would unload in Market Hall-2 before the Market opens, and supplier would carry the load to Market Hall-1 for wholesaling. Buyers in this case are wholesalers of the Market and retailers of other markets. The account is settled on-the-spot and by cash.

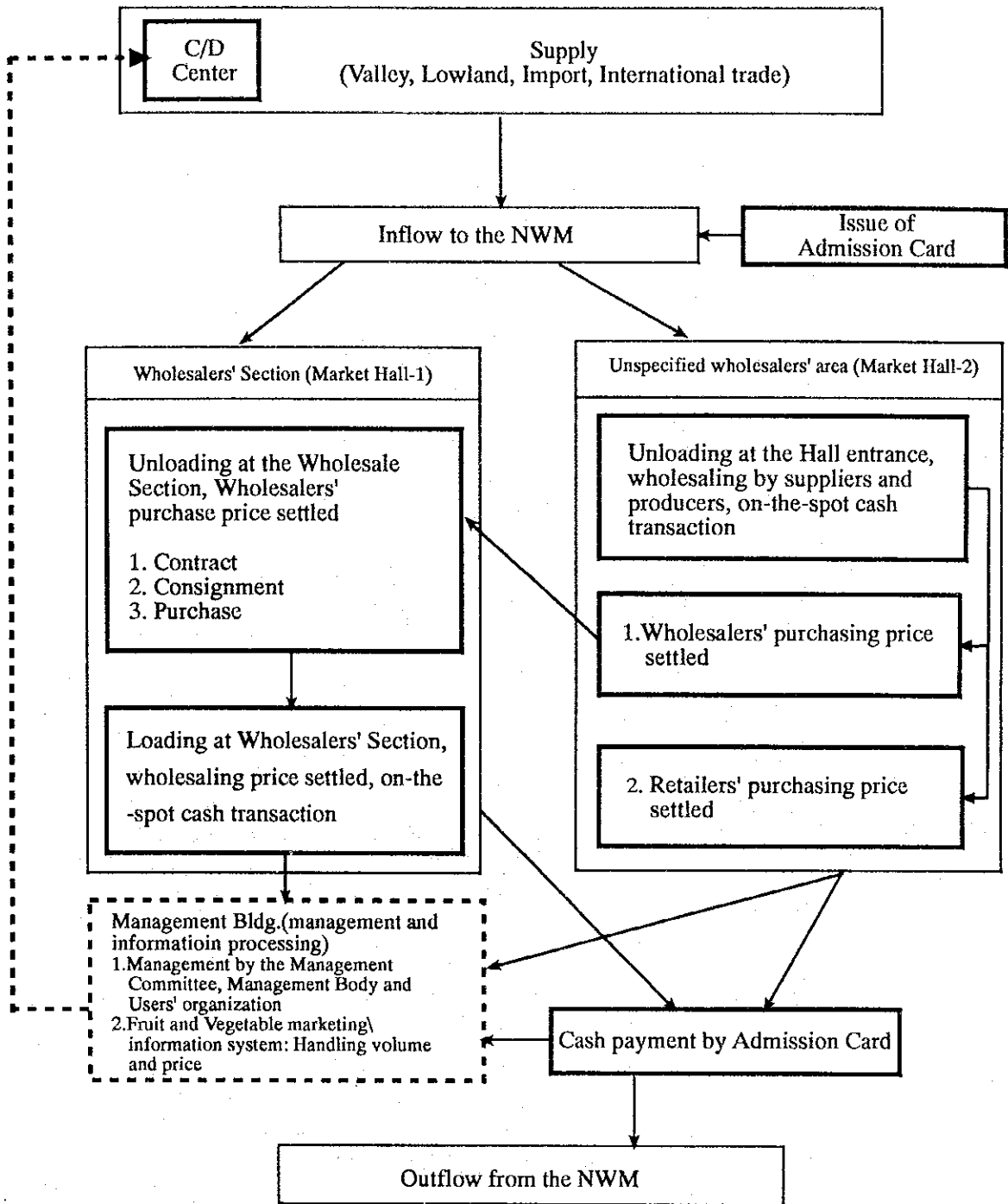
Stage 3: In Market Hall-1, wholesalers would sell products directly unloaded to their section and/ or purchased at Market Hall-2 to retailers. Payment is on-the-spot and by cash.

Stage 4: Entered/ parked trucks are all supposed to present the admission card at the management office, and pay the fee indicated on the card to exit.

Stage 5: The incoming volumes, trading prices, and collected fee are all recorded at both the operation office of the administration building and information center, for publication at any time. Producers will be provided with marketing information (price, inflow

volume) at the production site through C/D center or farmers' cooperative. Farmers' association (C/D center users' group or farmers' cooperative) will base their decision on collection and distribution of products on this information.

The form of market use is shown in the figure on the next page.



Legend:  
 ----- Marketing information flow

**Forms of Use and Trade for TargetProject (NWM & C/D Center)**

The following table is the summary of trading forms and operation/ maintenance activities by time period of the market schedule.

Place	Inflow handling, unloading, and purchasing hours 18:00-7:00	Wholesale hours 7:30-12:30	Cleaning hours 12:30-18:00
Market Hall-1 (Wholesalers' section)	<p>(1) Product/vehicle flow</p> <ul style="list-style-type: none"> <li>Product buyers are fixed</li> <li>Incoming trucks are checked of its carrying volume by product at the truck scale.</li> <li>Incoming trucks park at the truck berth in front of the Wholesalers' section to unload before 7:00 without waiting.</li> <li>Unloaded trucks leave immediately or park at the truck berth.</li> <li>All product carrying trucks leave by 7:30.</li> </ul> <p>(2) Trading method</p> <ul style="list-style-type: none"> <li>Face-to-face transaction and on-the-spot cash payment. If the account cannot be settled by 7:00, it should be settled by 12:30.</li> <li>Producers can obtain information of incoming volume and price of the previous day before shipment, to enable better shipment arrangement and price negotiation.</li> </ul> <p>(3) Cleaning</p> <ul style="list-style-type: none"> <li>Wholesalers clean the front areas of their section from 7:00-7:30</li> </ul>	<p>(1) Product/vehicle flow</p> <ul style="list-style-type: none"> <li>Retailers of Municipal Markets come by bus or taxi.</li> <li>Retailers purchase at the Wholesalers' section. The sections are located according to the product for the buyers to be able to easily compare the price and quality.</li> <li>Retailers form a group to use intra-market taxi and directly load their purchased products at the truck berth in front of the Wholesalers' section and exit. Alternatively, individual retailers may use a cart to carry their purchase to the bus stop.</li> </ul> <p>(2) Trading method</p> <ul style="list-style-type: none"> <li>Face-to-face and cash-on-the-spot transaction.</li> <li>Retailers can obtain wholesale price of the previous day at the bulletin board in the Market for reference.</li> </ul>	<p>(1) Cleaning</p> <ul style="list-style-type: none"> <li>Wholesalers clean the front areas of their section.</li> </ul>
Market Hall-2 (Unspecified wholesalers' area)	<p>(1) Product/vehicle flow</p> <ul style="list-style-type: none"> <li>Products buyers are unspecified.</li> <li>Incoming trucks are checked of its carrying volume by product at the truck scale</li> <li>Incoming trucks park at the truck berth in front of the Wholesalers' section to unload and display by 7:00 without waiting.</li> <li>Unloaded trucks leave immediately or park at the truck berth.</li> <li>All product carrying trucks leave by 7:30.</li> <li>Wholesalers purchase at the Hall, carry products to the Wholesalers' section by cart or intra-market taxi.</li> </ul> <p>(2) Trading method</p> <ul style="list-style-type: none"> <li>Face-to-face, cash-on-the-spot transaction</li> <li>Producers can obtain information of incoming volume and price of the previous day before shipment, to enable better shipment arrangement and price negotiation.</li> </ul> <p>(3) Cleaning</p> <ul style="list-style-type: none"> <li>Producers clean the front areas of the Hall from 7:00-7:30.</li> </ul>	<p>(1) Product/vehicle flow</p> <ul style="list-style-type: none"> <li>Producer/ intermediary acts as wholesalers during this period.</li> <li>Buyers are wholesalers of the Wholesalers' section and retailers. Wholesalers during this period act as intermediaries.</li> <li>The wholesaler purchase products from the producer/wholesaler as intermediary, to sell to retailers in the Wholesalers' section after carrying by cart or intra-market taxi.</li> <li>Retailers transport the purchased products by taxi or bus.</li> </ul> <p>(2) Trading method</p> <ul style="list-style-type: none"> <li>Face-to-face, cash-on-the-spot transaction</li> </ul>	<p>(1) Cleaning</p> <ul style="list-style-type: none"> <li>Producer/ intermediary clean the Hall.</li> </ul>



Administration Building (Management Body)	(1)	Information collection • Staff record incoming volume (with truck scale) and price by product.	(1)	Information collection and compilation • Staff compile incoming volume and wholesalers' purchasing price on the computer. • Staff collect wholesale price by product.	(1)	Information processing • Compiled information is processed on the computer to be sent to qualified people in the market, mass media, and those who pay for the information. The data is also posted on the bulletin board within the Market.
	(2)	The Management Body is in charge of control of security, price/weight and circulation/ parking of vehicles.	(2)	The Management Body is in charge of control of security, price/weight and circulation/ parking of vehicles.	(2)	Garbage collection • Garbage is collected from each hall and brought to the garbage collection yard.
			(3)	The Management Body monitors effective use of the Wholesalers' section.	(3)	Cleaning of inside the Market including toilets.

#### 6.4 Law/ Regulation and Organization Setup for Abasto Market

Regarding the law/ regulation of municipal market in Bolivia, each city possesses its own Municipal Ordinance resolutions on the market. Each municipal government manages and operates the market depending upon these resolutions. These resolutions enforce the rules/ regulations on tariff of sales section and not the comprehensive rules/ regulations on management and operations of the market.

The existing operation of the Abasto Market is in chaos and conflicts because the major seven users' associations in the market control, manage and operate their respective areas and there is no one unified organization to manage and operate the market. After introduction of the NWM, the existing Abasto Market shall be changed to retail market. The new rules/ regulations of the Abasto Market shall be enacted based upon the municipal ordinance with the consensus of the users in the Abasto Market in order to formulate orderly and efficient market.

##### (1) Law/ Regulation

The following items shall be included in the new law/ regulation of the market.

##### Management operation/ maintenance organization

Management Committee, Management Body, and Users Organization should be established.

##### Management

To clarify and control the following items; kind of product traded, registration of users (retailers), transaction system, tariff system, operation days and hours, collection and publications of marketing information, utilization rules of selling sections, control of sales on the road around the market, rules of facility use, prohibition/ penalties and control of entrance of large scale trucks.

##### Operation/ maintenance system

The following items should be effected; security control, price/ weight control, control of entrance/ circulation/ parking of vehicles, mediation of conflicts, sanitary control, garbage treatment and cleaning.

(2) Management Organization

1) Management Committee

Members of the Committee

- Representatives of registered association of retailers and farmers/intermediaries who directly sell to consumer, and unregistered private groups.
- Representatives of the Prefecture and Municipal Government from Mixed Board as observers for their supervising role.

Functions

- Preparation of the regulations of the Management Body
- Allocation of the staff of Management Body
- Appointment of the manager to the Management Body
- Implementation and supervision of the regulations of management and operation/ maintenance
- Examination and approval of the management and operation/ maintenance plan
- Examination and approval of the yearly financial plan

2) Management Body

Management Body is placed under the Management Committee. The manager of this Management Body has six sections under him;

- Security and vehicle control section: security control inside the market, control of entrance/ circulating/ parking vehicles
- Finance and accounting section: In charge of finance and accounting, collection of various fees of the market and preparation of yearly financing plan
- Personnel and Registration section: Personnel management and registration of retailers
- Operation/ maintenance section: Sanitary control, cleaning and garbage treatment
- Marketing Information section: Distribution of wholesale information (prices and inflow volume).
- Monitoring section: Monitoring of proper use of the selling sections and price/ weight control

Management Body will employ the permanent staff of 8 persons including the manager and 4 part-time staff, requiring a total of 12 personnel (see Fig. 6-3).

## **7 PROPOSED TRAINING PLANS**

### **7.1 Proposed Plans for Institutional Training and Technical Extension in Major Producing Areas**

#### **7.1.1 Proposed Approaches for Formulation of Strengthening Plans**

The provision of intensive institutional training and technical extension to farmers and other related personnel is essential for the introduction and establishment of cooperative collection and distribution system in the major producing areas. The proposed approaches for the strengthening of institutional training and technical extension are as follows;

- Institutional training and technical extension should be provided under the project by prefecture government including CIAT, municipal government, ASOFRUT and NGO including CAISY and through foreign technical assistance, if any,
- A task force team for training and extension should be organized by the project (prefecture government), municipal government and related institutions in each major producing areas and training and extension should be provided to related farmers and personnel prior to the establishment of a products collection and distribution center,
- After the establishment of the center, training and extension should be intensified by placing the center as a central place for the provision of such services,
- Institutional training and technical extension programs should cover aspects of production technologies, quality controls, grading and standardization, cooperative marketing system, market information and demand, institutional strengthening and farmers organization. Institutional training and technical extension should better be executed by placing emphasis on practical training including on-the-job training.
- Effective use of the proposed Pilot Project in San Isidro for on-the-job training of candidate management staff of other C/D centers and of farmers in other major producing areas.
- Technical assistance of a foreign country or countries should better be sought to ensure early realization of the fruits of the proposed strengthening plans.

#### **7.1.2 Proposed Plans for Institutional Training and Technical Extension**

##### **(1) Proposed Plans for Institutional Training**

Aiming at realization of effective and efficient use of C/D centers from the initial sage of operation, the institutional training programs are planned to be held prior to the development of a C/D center and to be implemented in three stages in accordance with the development stage of the center; Preparatory Stage for 1.5 to 2 years prior to the development of the center, Initial Stage for the period of about five yeas after the same and Advanced Stage from 6th year on after the development. The outlines of the programs are as follows;

1) Institutional Training Programs in Preparatory Stage

The institutional training programs in the Preparatory Stage consist of the following three programs.

a) General Training Programs/Mass Guidance

Objectives

To disseminate necessity of C/D center and merit of its use and to promote effective and efficient use of it through positive participation of vegetables and fruits producers.

Target Groups

All vegetables and fruits producers in target areas of C/D centers

Subjects of Training

- Necessity of C/D center and the merit of its use.
- Function of C/D center and its operation methods.
- Relation between NWM and C/D center.
- Necessity of Collection Center Users Cooperative.

Methods of Training

- Preparation and distribution of leaflets etc.
- Explanation meetings and workshops to OTBs concerned.
- Study tours to advanced agricultural marketing area including the Pilot Project in San Isidro.

b) Training Programs

Objectives

To train advanced farmers who will become key personnel to organize and develop Collection Center Users Cooperative.

Target Groups

Advanced producers of vegetables and fruits nominated by OTBs concerned.

Subjects of Training

- Related matters of C/D center; necessity and merit of center, functions, etc.
- Related matters of cooperative shipping and selling; concept of cooperative, cooperative's law, legal procedures for establishing cooperative, budget & accounting of cooperative, right & duty of members.
- Related matters of cooperative shipping and selling, concept & merits of cooperative shipping & selling, procedures & rules, accounting system etc..

Methods of Training

- Lecture and practical exercise.
- Study tours to advanced agricultural marketing area including the Pilot Project in San Isidro.

c) On-The-Job Training at Pilot Project

As the availability of manpower resources having experiences in marketing of vegetable and fruits is limited, the recruiting of management staff for C/D centers will be the urgent requirements of the proposed management organization (ASOHFRUT etc.). Accordingly, during the Preparatory Stage prior to the development of C/D centers, on-the-job training at the Pilot Project in San Isidro of candidate management staff for C/D centers in other major producing areas is programmed as follows;

Objects

To recruit management staff of C/D centers.

Target Groups

Candidates for management staff of C/D centers.

Subjects & Method of Training

All aspects of operation & management of C/D center through on-the-job training at the Pilot Project for the period of 6 months to 1 year.

2) Institutional Training Programs in Initial Stage

In addition to the promotion of the establishment of Collection Center Users Cooperative through guidance and training, the recruitment of management staff of the Cooperative is the primary objective of the institutional training in the Initial Stage. The institutional training in the Stage for about 5 years after the development of a C/D center is programmed to be implemented as one of main functions of the C/D center as follows;

a) Mass Guidance

Continuation of mass guidance program to all potential users of a C/D center on need basis.

b) Short Training Programs

Continuation of training programs for advanced farmers on need basis.

c) Recruiting Management Staff of Cooperative

Objectives

To train management staff of Cooperative in operation and management of the organization.

Subject of Training

- Operation and management of cooperative.
- Budget and accounting system of cooperative.
- Operation and management of C/D center.

Method of Training

Training shall be implemented as practically as possible and key staff of the cooperative or candidates for the same should engage in operation of C/D center for a half year or longer together with the management staff of the center before handing over of the management of it in the Advanced Stage.

- Lecture and practical exercises.
- On-the-job training in C/D center.

3) Institutional Training Programs in Advanced Stage

The institutional training program in the Advanced Stage will be held on need basis and should be as follows.

Objectives

To operate and manage C/D center smoothly by the Collection Center Users Cooperative itself and to introduce a full-scale cooperative shipping and selling system as early as possible.

Target Groups

Members and staff of the Collection Center Users Cooperative

Subjects of Training

- Full-scale cooperative shipping and selling system and its merit.
- Procedures and rules for full-scale cooperative shipping and selling.
- Accounting system for full-scale cooperative shipping and selling.
- Recording and book keeping system by using computer.

Methods of Training

- Lecture and practical exercise.

- Study tours to advanced agricultural marketing area.

## (2) Proposed Plans for Technical Extension

The proposed programs include preliminary survey, verification trial, demonstration plot, staff training, farmer training, mass guidance, study tour and periodical and day-to-day guidance and trials by the management of C/D center. The outlines of major programs are as follows;

### 1) Preliminary Survey

Preliminary survey is to identify constraints for vegetable and fruit production and experimental needs for the same in the subject major producing areas and to be carried out prior to the development of C/D center by CIAT. The findings of the survey are to be used for the review of the overall implementation schedules proposed under the present study.

### 2) Verification Trial

#### Objectives

To test adaptability of recommended technologies to site specific conditions in the subject major producing areas. Findings of the trials are demonstrated to farmers at demonstration plots.

#### Subjects of Trial

Trial elements will include variety, seed quality, fertilization, plant protection, crop rotation etc.

#### Methods & Extension Components

The trials are to be carried out in farmers fields. During the trials, farmers field days are to be held to explain and disseminate recommended technologies by inviting representative farmers in the surroundings.

### 3) Demonstration Plot

#### Objectives

Demonstration of recommended technologies/farming practices in fields operated by farmers themselves under the guidance and support of extension personnel.

#### Subjects of Demonstration

Technologies/farming practices will be packaged ones or element such as variety, qualified seed and fertilization. Demonstration of cropping pattern is also an essential practices to be demonstrated.

#### Methods & Extension Components

Demonstration plots are to be operated by farmers themselves under the guidance and support of extension personnel. During the demonstration, farmers field days are to be held to explain and disseminate recommended technologies by inviting representative farmers in the surroundings.

### 4) Staff Training (Induction Training)

#### Objectives

Training of extension personnel prior to assignment.

#### Target Groups

Extension personnel assigned at C/D center & candidate for the same. Other personnel engaged in extension services in major producing areas.

#### Subjects of Training

- Farming technologies, post-harvest & marketing technologies
- Group dynamics & extension methods
- Marketing system, production planning etc.

#### Methods of Training

The program will consist of lecture and discussion in class and field training and is to be held at RRC. However, as the number of extension personnel is limited at the initial stage of the development of C/D centers, the practical induction training of extension personnel will have to be carried out through intensive on-the-job training by RRC.

### 5) Staff Training (Refresher Training)

#### Objectives

Refresher training of extension personnel assigned at C/D centers.

#### Target Groups

Extension personnel assigned at C/D center and other personnel engaged in extension services in major producing areas.

#### Subjects of Training (on need basis)

- Farming technologies, post-harvest & marketing technologies
- Group dynamics & extension methods
- Marketing system, production planning etc.

#### Methods of Training

The program will consist of lecture and discussion in class and field training and is to be held at RRC. However, as the number of extension personnel is limited at the initial stage of the development of C/D centers, the practical induction training of extension personnel will have to be carried out through intensive on-the-job training by RRC.

### 6) Farmers Training

#### Objectives

Aiming at recruiting farmers in major producing areas who are expected to become leading farmers and cores in field extension activities in the areas.

#### Target Groups

Candidates for leading farmers in target areas of C/D centers.

#### Subjects of Training

- Farming technologies, post-harvest & marketing technologies
- Group dynamics
- Marketing system, production planning etc.

#### Methods of Training

The program will consist of lecture and discussion in class and field practical training including visit to fields of advanced farmers and verification trials and demonstration plots under operation, if any. For farmer training, 2 types of training program, short course of 1 day and normal course 3 days, are proposed. In the former, training on specific issues will be held and in the latter more general training will be carried out.

## **7.1.3 Proposed Organizational Set-up and Implementation Schedules for Institutional Training and Technical Extension**

### (1) Proposed Organizational Set-up

The proposed system for the implementation of institutional training consists of 1) implementation of the institutional training programs in the Preparatory Stage for 1.5 to 2 years prior to the development of C/D center by the project office and 2) the programs in the Initial Stage and Advanced Stage by the C/D center. The proposed system for the implementation of technical extension programs consists of 1) experimental, training and survey activities by CIAT, 2) field extension activities primarily by extension personnel

and 3) guidance and trials on marketing aspects by the Project and the management of C/D center.

The experimental activities, training/recruiting of extension personnel and farmers technical training are to be covered by 4 Regional Research Center (RRC) of CIAT under the contract with the project office(prefecture government). The target major producing areas by individual RRCs is proposed as follows;

**Target Major Producing Areas by RRC**

RRC	Target Major Producing Areas
RRC Samaipata	Samaipata area
RRC Mairana	Mairana area
RRC San Isidro	Pampa Grande, San Isidro, Comarapa & Saipina area
RRC Vallegrande	Vallegrande area

As the coverage areas of RRC San Isidro and Vallegrande are substantially large, the strengthening of technical/research staff will be required in the centers. The number of new research staff required will be 2 for San Isidro and 1 for Vallegrande.

The field extension activities should be by extension personnel recruited newly for the purposes and should be executed under the guidance of CIAT. The guidance and trials on marketing aspects prior to development of C/D center should be by the project office and after the development by the management of C/D center in cooperation with ASOFRUT, CAISY, EMCA, CIAT and other related institutions.

(2) Proposed Implementation Schedules

The proposed implementation schedules for the institutional training and technical extension programs are illustrated in Table 7-1. Among the proposed programs, some institutional training programs, preliminary survey and induction training of extension personnel should be implemented prior to the development of C/D center. The proposed schedules of technical extension programs are to be reviewed based on the findings of the preliminary survey and the annual programs are to be updated through the annual review of the program schedule.

**7.1.4 Estimated Costs for Institutional Training and Technical Extension**

The costs required for the proposed institutional training and technical extension include: 1) program costs under institutional training and technical extension and 2) personnel expenses for extension personnel and, 3) personnel expenses for new research staff and administration costs of CIAT. The overall costs of the programs for the period of 10 years from 1999 to 2008 is estimated at about US\$ 1 million.

The programs by CIAT from the beginning to the 5th year after the start of operation of C/D centers should be implemented under the financial support of the Project, while the same from the 6th year should be implemented as the activities of CIAT himself. The program costs for field extension activities for the initial 4 to 6 years until the operation of C/D centers generate sufficient surplus to cover the costs are to be born by the project. However, from the 6th year after the start of operation of C/D center or when the operation of C/D generate sufficient surplus, the program costs are to be expended from



operation of C/D generate sufficient surplus, the program costs are to be expended from the operation costs of the center. The costs for guidance and trials on marketing aspects by the management of C/D center are to be expended from the operation costs of the center from the beginning. The proposed financial arrangement for the implementation of the institutional training and technical extension programs are as follows;

**Proposed Financial Arrangement for Institutional Training & Technical Extension**

Programs	Development Stages	Financial Sources
Institutional Training	In Preparatory Stage	Under the project budget
	In Initial & Advanced Stage	Operation costs of C/D center
Extension Programs by CIAT	For initial 6 years	Under the project budget
	From the 7th year	Implemented as CIAT activities
Field Extension Programs	For initial 4 to 6 years	Under the project budget
	After initial years	Operation costs of C/D center
Guidance/Trials on Marketing Aspects	After initial years	Operation costs of C/D center

Assuming the said financial arrangement for the implementation of institutional training and technical extension programs, the overall budget requirements by the project for the implementation of the programs for the period of 1999 to 2008 are estimated as shown in the following table.

**Estimated Overall Programs Costs To Be Borne by Project**

Programs	Estimated Costs(US\$ 1,000)
Institutional Training Programs	234.9
Technical Extension Programs	615.4
<b>Total</b>	<b>850.3</b>

**7.2 Operation of the NWM and Abasto Market**

(1) Objective

The provision of intensive training and technical assistance for related government staff and users is essential for the introduction and establishment of the NWM. Because there is no wholesale market for fruits and vegetables in Bolivia, its instruction, management and operation/ maintenance system has not yet been developed. The objectives of the plan are to provide efficient and effective training and technical assistance on the management and operation/ maintenance system to the people related to the NWM and Abasto Market.

(2) Target

The target of training will be divided into three groups; major members of relevant organizations, members of management organizations of the NWM/ Abasto Market, and market users.

a) Group A

- Prefecture and Municipal staff relevant to the Project
- Members of the Mixed Board
- Members and sub-members of the NWM Management Committee
- Members of Abasto Market Management Committee
- Managers of NWM and Abasto Market

- b) Group B
  - Staff of NWM and Abasto Market management organizations
- c) Group C
  - Market users, i.e., wholesalers, retailers, producers and transporters

(3) Training Components

The training must involve not only the product marketing aspect but technical aspects of law/ regulation/ institution, and management/ operation/ maintenance of wholesale and retail markets. The following are the components.

- 1) Product Marketing
  - Existing product marketing system in Santa Cruz Department
  - Product marketing system in advanced countries
  - New product marketing system to be established in Santa Cruz Department
- 2) Law/ Regulation and Institution
  - Existing draft laws/ regulations of wholesale market and Abasto market
  - Product marketing laws/ regulations of advanced countries
  - Draft laws/ regulations of the NWM and Abasto Market

Management organizations of the market

- Management Committee, Management Body, Users' Organization

Market regulations

- Products handled
- Qualification of wholesalers
- Transaction rules
- Fee system, fee collection system and accounting system
- Opening days/ hours of the market
- Standardization of packing
- Collection and disclosure of marketing information
- Monitoring of the wholesalers' section use
- Regulations of facility use
- Penalty

Operation/ maintenance regulations

- Operation and maintenance of basic infrastructure and market facilities
- Control of circulation/ parking of entering vehicles
- Control of price/ weight
- Security control
- Mediation of conflicts, sanitary control and garbage collection

3) Management, Operation/ Maintenance

Management method

- Encouragement of compliance to and revision of set handling products
- Implementation of screening qualified wholesalers
- Encouragement of compliance to transaction rules
- Compliance to and revision of fee system, fee collection system and accounting system
- Setting packing standard and its enhancement
- Collection and disclosure of marketing information

- Monitoring and improvement of wholesalers' section use and its revocation
- Other regulations and their application

Operation/ maintenance method

- Operation/ maintenance of basic infrastructure and market facilities
- Control of circulation/ parking of entering vehicles
- Price and weight control
- Security control
- Mediation of conflicts, sanitary control, garbage collection and cleaning

(4) Training Method

- Workshop and on-the-job training
- Visiting other markets in Bolivia
- Training in advanced marketing countries

(5) The following table summarizes training components, methods and period

Training Components	Target	NWM		
		Pre-construction	Construction	Operation
Components	Group A NWM Abasto	- Product marketing - Market law/ regulation/ institution - Management, O/M system of similar markets in Bolivia - Management, O/M system of markets in advanced countries	- Market law/ regulation and their application	- Market management, O/M
	Group B NWM Abasto	- Product marketing - Management, O/M system of similar markets in Bolivia - Market law/ regulation/ institution - System and method of market management and O/M	- Product marketing - Management, O/M system of similar markets in Bolivia - Market law/ regulation/ institution - System and method of market management and O/M	- Method of market management and O/M
	Group C NWM Abasto	- Organizing small-scale traders and producers	- Market law/ regulation/ institution - System and method of market management and O/M	- Method of market management and O/M
Training Method	Group A NWM Abasto	- Workshop - Visit to similar markets in Bolivia - Training in advanced countries	- Workshop	- Workshop
	Group B NWM Abasto	- Workshop - Visit to similar markets in Bolivia	- Workshop - Visit to similar markets in Bolivia	- Workshop and OJT
	Group C NWM Abasto	- Workshop	- Workshop - Distribution of textbooks	- Workshop and OJT - Distribution of textbooks
Technical Assistance (lecturer)		- Domestic experts - Foreign technical advisor	- Domestic experts - Foreign technical advisor	- Foreign technical advisor

(6) Institutional Setup and Implementation Schedule

1) Institutional Setup

The Mixed Board and affiliated Project Offices are responsible for implementing training and technical assistance. Training and technical assistance programme will be formulated based on the Final Report, and will

be carried out after the establishment of Mixed Board with its approval.

2) Implementation Schedule

Table 9-4 shows the implementation schedule of training on product marketing, market law/ regulation/ institution and management/ operation/ maintenance.

Regarding training on product marketing, Group A trainees will have experts and university lecturers on Santa Cruz Department product marketing, after which these trainees will be responsible for training Group B.

As for law/ regulation/ institution and management/ operation/ maintenance, technical advisors from advanced countries will train Group A, while Group B trainees will be lectured by Group A trainees.

(7) Cost

The cost for training and technical assistance from 1999 to 2005 will be as below.

		Unit: US\$
Programme		Cost
1. Training and lecture in Bolivia		
(1)	Workshop handouts and lecturer payment	8,280
(2)	Study trip to Cochabamba	6,000
Sub-total		14,280
2. Training in and technical advisor dispatch from MERCOSUR countries		
(1)	Technical advisor dispatch	2,163,600
(2)	Training in MERCOSUR countries	22,800
(3)	Study trip to MERCOSUR countries	9,000
Sub-total		2,195,400
Total		2,209,680