

8 TECHNICAL ASSISTANCE

8.1 Technical Assistance for Operation and Management of C/D Centers

In the valley areas, marketing of fruits and vegetables has been carried out either by farmers themselves or through small intermediaries and any farmers organizations have no successful experiences in the operation of cooperative marketing to date. While the O&M of C/D centers will be entrusted to existing farmers organizations in the Initial Stage, these existing organizations also have not any remarkable experiences in agricultural marketing including cooperative collection and shipping of products. Accordingly, to ensure the successful O&M of C/D centers, the existing farmers organizations should be strengthened and amplified in terms of technical aspects on agricultural marketing by making efficient use of the pilot C/D center in San Isidro. Furthermore, the realization of the following technical assistance to the existing farmers organizations and the C/D center users cooperative to be established is highly desirable for the same purposes, particularly during the Preparatory and Initial Stage of C/D centers.

(1) Technical Assistance of Experienced Farmers Organizations such as CAISY

CAISY has a lot of experiences in organization and management of cooperative and cooperative marketing. The existing farmers organization and the C/D center users cooperatives should ask technical assistance to CAISY to transfer technical know-how for the organization and management of cooperative and the operation of cooperative marketing.

(2) Technical Assistance of Foreign Countries

In the Advanced Stage, the C/D centers will introduce the full-scale cooperative shipment and selling system to operate the centers more efficiently and effectively. However, no organizations or nobody in Santa Cruz have knowledge and experiences in the cooperative marketing system at present. It is strongly recommended, therefore, that the Project Office should ask technical assistance of developed countries to dispatch following advisors on agricultural marketing.

Technical Assistance Required for Management of C/D Centers

Advisor	Specialty	Number	Period
Short-term Advisor B	Cooperative C/D, Marketing	1	2000 - 1 year
Long-term Advisor D	Cooperative C/D, sales	1	2000 - 2005 5 years
Long-term Advisor E	Quality control/ standardization, Cooperative C/D accounting	1	2000 - 2002 2 years

Remark:

The necessary number of foreign technical advisors for the Project is 6 (A-F in the order of their scheduled assignment). Three of them (B, D & E) for the C/D centers are shown above.

8.2 NWM and Abasto Retail Market

The following describes technical assistance for training of principal members of relevant institutions of the Project, Management body staff for the NWM and Abasto Retail Market, and users of these markets.

- (1) Technical assistance by experts from the Prefecture, University, etc.

Technical assistance will be given by Prefecture staff or University lecturers with expertise and experience in fruit and vegetable marketing system.

- (2) Foreign assistance

Technical assistance by foreign technical advisors experienced in wholesale market law/regulation, institution and management/ operation of the market and overseas training are illustrated below.

**Technical assistance required for the management of
NWM and Abasto Retail Market**

Advisor	Specialty	Number	Period
Long-term Advisor A	Market law/regulation, institution, Cooperative C/D	1	1999 - 2000 2 years
Long-term Advisor C	Coordination, Market rationalization	1	2000 - 2004 4 years
Long-term Advisor F	Market management, operation/ maintenance	1	2001 - 2005 4 years

Remark:

The necessary number of foreign technical advisors for the Project is 6 (A-F in the order of their scheduled assignment). Three of them (A, C & F) for the NWM and Abasto Retail Market are shown above.

Overseas training

Training	Number	Period
Wholesale market law/regulation, institution, and market management/ operation	6	30 days

For schedule of technical assistance, please refer to Table 9-4.

8.3 Terms of Reference for the Foreign Technical Advisors

- (1) Advisor A. Long-term Technical Advisor at Preparation Stage: 2 years

Field of Specialty: Cooperative marketing, Market law/regulation and institution

- 1) Objective
 - a) Assistance and guidance in establishment of law/regulation and organization necessary for starting construction and operation of the Project.
 - b) Assistance in preparation of inaugurating operation of the C/D center Pilot Project.
- 2) TOR

Advice and assistance regarding the following.

 - a) Establishment of the Mixed Board Inception Committee: selection of representatives in the Inception Committee
 - b) Establishment of Mixed Board, Management Committee and Management Body: Formulation of organizations and their regulations

- c) Formulation of Wholesale Market Law and Retail Market Law
- d) Formulation of C/D center and Market management regulations
- e) Formulation of implementation plan of the Project
- f) Drafting request letter for technical assistance
- g) Implementation of initial institutional training program and trial collection and distribution at production site
- h) Implementation of training programs pertaining to Market law/regulation and institution
- i) Equitable selection of NWM participants and effective transfer

3) Position

Initially in the Project Office at the Prefecture and Municipal, then to be transferred via the Mixed Board Inception Committee to the Mixed Board

(2) Advisor B. Short-term Technical Advisor at Implementation Stage: 1 year

Field of Specialty: Cooperative marketing in the Pilot Project C/D center

1) Objective

Assistance in the management of the C/D center Pilot Project

2) TOR

Advice and assistance regarding the following.

- a) Implementation of institutional training
- b) Implementation of technology extension
- c) Implementation of trial collection and distribution
- d) Formulation of management regulations of the C/D center
- e) Producers' participation in the NWM

3) Position

Sub-project Office in the production area

(3) Advisor C. Long-term Technical Advisor at Implementation Stage: 4 years

Field of Specialty: Coordination/ rationalization of marketing

1) Objective

Coordination of relevant parties to promote the formulation of widespread fruit and vegetable marketing network.

2) TOR

- a) Advisor to the President of Management Committee. Coordination between Project Office No. 1 and Sub-project Office in the production area. Promotion of rationalization of marketing between production site and consumption site.

- b) Coordination among relevant agencies, experts, and between agencies and experts
- 3) Position
Mixed Board.
- (4) Advisor D. Long-term Technical Advisor at Implementation Stage: 5 years

Field of Specialty: Cooperative marketing

- 1) Objective
Guidance and management following the launching of the C/D center Pilot Project, to get the Project started in the right direction, to develop models of organization and management and cooperative sales system at the NWM applicable to the whole project in the production area
- 2) Terms of Reference
 - a) Guidance in C/D center management (cooperative marketing)
 - b) Implementation analysis of C/D center Pilot Project first year schedule (including sales plan at the NWM), financial scheme, Management Committee/ Body regulations, and C/D center management regulations; clarification of deterrence in project implementation procedure as well as its revision; and development of organizational/ management models through these advisory tasks
 - c) Assistance in training for application of above models of organization/ management to other areas
- 3) Position
Project Office No. 1 and Sub-project Office.
- (5) Advisor E. Long-term Technical Advisor at Implementation Stage: 2 years

Field of Specialty: Quality control/ standardization and collective marketing accounting

- 1) Objective
Assistance in technology extension program implementation, i.e., extension of product quality/ standards and cooperative marketing accounting system
- 2) Terms of Reference
Advice and assistance regarding the following.
 - a) Introduction of standardization, selection and packing technologies of products
 - b) Introduction of accounting system and training for cooperative marketing
- 3) Position
Project Office No. 1 and Sub-project Office
- (6) Advisor F. Long-term Technical Advisor at Implementation Stage: 4 years

Field of Specialty: Market management, operation/ maintenance

- 1) Objective
Assistance in functional management, operation/ maintenance of NWM and Abasto Market
- 2) Terms of Reference
Advice and assistance regarding the following.
 - a) Formulation of management, operation/ maintenance scheme of NWM and Abasto Market
 - b) Formulation of financial scheme of NWM and Abasto Market
 - c) Improvement of management through ongoing analysis of management, operation/ maintenance of NWM and Abasto Market
 - d) Reorganization of sales sections in Abasto Market
- 3) Position
Project Office No. 2

9 OVERALL IMPLEMENTATION PLAN

9.1 Preliminary Coordination Stage

Based on the results of this Study, the Project will be situated in the frameworks of national, prefectural and municipal plans (council approval), after which consensus building among relevant agencies and procedures for expenditure of the fiscal year will begin. In Santa Cruz Prefecture, the Department of Sustainable Development (or a newly established department responsible for the Project through reorganization of the Prefecture) and the Department of Economic Development will take primary responsibility for coordination with organizations in the Prefecture necessary for the Project implementation. In the Municipal of Santa Cruz, the City Planning Council and Secretariat of Public Works are chiefly in charge of coordination within the Municipal.

The Prefecture and Municipal of Santa Cruz will each set up an office for the Project implementation in order to satisfy necessary procedures for the establishment of the "Mixed Board Inception Committee". The two offices in the Prefecture and the Municipal are independent of one another at this stage though they are to hold regular meetings to promote understanding and conduct required undertakings. The Bolivian side is to proceed with request letters for technical assistance and funding to assist with the Project implementation.

Promptly after its establishment, the Office in the Prefecture will begin training for producers to organize themselves with mass guidance, one component of the whole training programme. This training will enable the next training programme and on-the-job or on-the-site training to be carried out as soon as the implementation stage begins. Simultaneously, producers will be instructed on gaining user qualification of the NWM and Abasto Market.

9.2 Preparatory Stage

The Mixed Board Inception Committee is responsible for drafting law/ regulations over the Mixed Board's objectives, functions, organizational structure and management. The Mixed Board will be set up through approval of both Prefectural and Municipal Councils. The Inception Committee is also in charge of transfer promotion including preliminary selection of qualified persons, in avoidance of serious troubles when the Mixed Board begins to conduct the actual transfer of wholesalers from the existing Abasto to NWM.

9.3 Implementation Stage

The Mixed Board will formulate and execute the Project implementation plan (objective, function, organizational structure, human resource allocation, budget allocation). The Mixed Board will have two Project Offices that are mainly responsible for the formulation of annual implementation scheme, human resource allocation, budget allocation and supervision of expenditure and supporting activities for individual project management in each site.

9.3.1 Implementation Plan of C/D Centers

(1) Organizational Set-up for Project Implementation

In this Project, a Project Office (Project Office No.1) will be established under Mixed Board, and further, Sub-Project Office is to be set up at the Pilot Project Site in San Isidro. The major functions of the sub-project office are: 1) to provide guidance and support for the development and operation of C/D centers and to monitor the same and 2) to provide institutional training and technical extension services in cooperation with CIAT and other related institutions. The project organizations should better be established in 1999 and be operated until 2008; by the time when the O&M of all the C/D centers will be handed over to Collection Center Users Cooperative. The proposed organizational set-up of the project office and the sub-project office and the estimated administration costs for the same are as shown in Table 9-1.

The development and operation of C/D centers under the Project are to be performed by several institutions. The overall organizational set-up for the development and operation of C/D centers are summarized as illustrated in Figure 9-1.

(2) Implementation Plan

The overall implementation plans which cover the development schedules of C/D centers, the implementation schedules for institutional training and technical extension programs and the schedules for the organizational set-up and indicate the related implementation agencies are formulated in accordance with the stage-wise development of C/D centers as shown in Tables 9-2 and 9-3.

The costs for the project implementation which should be accommodated in the annual budget of the project office include; 1) institutional training and technical extension programs costs, and 2) administration costs of the Project Offices. The overall costs for the period of 10 years from 1999 to 2008 are estimated at US\$ 2.1 million as shown in Table 9-5.

9.3.2 Implementation Plan for NWM and Abasto Market

(1) Organizational Set-up for Project Implementation

The development of the NWM shall be led by public agencies and management/ operation of the NWM shall be implemented by the management Committee composed of users' associations under the supervision of the Mixed Board at the initial stage (refer to Fig.9-2 for Project Implementation Process).

After an appropriate period of time, Mixed Board and Management Committee shall transfer management/ operation of the market to the Board of Directors of the management body established by the private organization (Wholesale Company).

(2) Relevant Institutions for the Project Implementation

1) Municipal Council

The Municipal Council is in charge of enactment of municipal ordinances/ resolutions relevant to the Project and approval of the project budget. Urban Planning Commission and Market Commission assist the Municipal Council as advisory commissions on the city planning/ construction and management/

operation of the market respectively.

2) **Municipal Government**

City Planning Council, Secretariat of Industry and Commerce, Dept. of Environment and Secretariat of Public Works in Municipal Government are responsible for the implementation of the Project. City Planning Council and Dept. of Environment take charge of the project site selection from the city planning point of view and environmental assessment of the project site. Secretariat of Public Works is in charge of developing infrastructure and public facilities as well as formation of the budget.

As for agencies directly related to the market, Secretariat of Industry and Commerce is responsible for the management/ operation of the market in the municipality, and will provide human/ technical assistance from the experience to the newly established Project Office No.2.

(3) **Overall Implementation Schedule of the Project**

The overall implementation schedule, which covers the construction of the NWM, reorganization of Abasto Market, implementation schemes for training and technical assistance, the schedule of organizational setup of related agencies and organizations, and management, operation/ maintenance are shown in Table 9-4. Major points of the schedule are as follows.

- Construction of the NWM will be divided into two phases
- Request letter on financial and technical assistance for foreign countries will be prepared and submitted within one month after receiving the Final Report
- Mixed Board and the Project Offices will be established before the end of 1999
- Annual budget will be prepared in the previous year
- Legal procedure for land acquisition of the NWM will be completed before the end of 1999
- Land acquisition will take place at the beginning of 2000
- Site preparation will be completed before the commencement of construction
- Management Committee will be organized by the end of 1999 for NWM, and by early 2000 for Abasto Market
- Management/ operation of the Market will soon be commenced after the completion of Phase I construction
- Training and technical assistance will be started at the same time as the launch of Inception Committee
- Technical assistance by foreign advisors will begin in 1999 as the Inception Committee is established and will end in 2005.

9.3.3 Examination of NWM Wholesalers' Section Rental Fee

(1) Rental Fee Set at Bs.25/section/day

As indicated in Table 9-6, the balance of NWM Management Body will be in red if depreciation cost is included. If not included, net benefit will be generated that makes the balance positive, and self-financed operation will be possible from the first year of its launch.

(2) Rental Fee Set to Cover Depreciation Cost

In order to cover the depreciation cost, wholesalers' section fee and truck fee must be raised, the former from Bs. 25/day to Bs.40/day, and the latter twice as much as the original. The income statement and cash flow of this case are shown in Table 9-7.

Financial analysis of transferred wholesalers' business in the case of rental fee covering the depreciation (Bs. 40/day) is illustrated below.

1) Handling volume of wholesalers transferred from Abasto to NWM

Year	Total Handling Volume of the Market (10 ³ t/year)			Handling Volume of Transferred Wholesalers (10 ³ t/year)		Average Handling Volume of a Transferred Wholesaler		
	Abasto	NWM	Total	Ratio(%)	Volume	Number	t/year /person	t/week /person
1998	258	-	258	61	157	88	1,784	34.4
2005	133	209	342	61	209	88	2,375	45.7

As seen above, the average handling volume of a transferred wholesaler is 34.4t/ week in 1998, and 45.7t/ week in 2005, i.e., a 33% increase.

2) Financial analysis of transferred wholesalers' business

In the financial analysis of the NWM, it was learned that the balance of wholesalers' business will be in negative if the rental fee is Bs. 25/ section/ day with depreciation cost considered. Bs. 40/ section/ day is accountable for covering depreciation cost and positive balance. Wholesalers' balance is considered with the assumption of wholesaler's average handling volume to be 46t/ week. The following briefly explains the result (for further reference, see Table A.2.6-2 in Annex 2).

Handling volume: 46t/ week
 Wholesalers' section rental fee: Case1 Bs. 25/ day = Bs. 9,125/ year
 Case 2 Bs. 40/ day = Bs. 14,600/ year

Unit: Bs.1000/yr

Item	Products Handled				
	Potato	Tomato	Onion	Banana	Citrus Fruit
Sales amount	3,258	2,045	1,219	718	1,678
Gross Revenue	149	251	286	60	59
Net Revenue					
Case 1	46	168	184	29	15
Case 2	35	152	173	18	4

Comparative analysis of wholesalers' and producers' income was conducted. According to the socio-economic survey result, small-, middle-, and large-scale producers' average annual incomes are, Bs. 24,251, Bs. 39,454, and Bs. 117,144, respectively.

- For wholesalers handling potatoes, annual net income is Bs. 46,000 in case 1 and Bs. 35,000 in case 2, approximately equivalent to that of middle-scale producers.
- Wholesalers handling tomatoes and onions have their average annual net income at Bs. 168,000, and Bs. 184,000 for respective products in case 1, and Bs. 152,000 and Bs. 173,000 in case 2, which, in other words, match that of large-scale producers in either case.
- As for banana wholesalers, annual net income is Bs. 29,000 at the level of small-scale producers in case 1, and slumps below in case 2 to Bs. 18,000.
- For citrus fruits wholesalers, case 1 annual net income is Bs. 15,000 and case 2 Bs. 4,000, both below the income of small-scale producers with case 2 being remarkably minimal.

3) Break-even point of wholesalers' business by the product

Break-even point of wholesalers' business in Case 2 (wholesalers' section rental fee at Bs. 40/ day) for major products is examined as follows (also refer to Table A.2.6-3 in Annex 2).

Product	Potato	Tomato	Onion	Banana	Citrus Fruit
Break-even point handling volume	21.0	10.2	6.7	28.4	41.0

unit: t/ week

Average handling volume for transferred wholesalers is 46t/ week.

For wholesaling of tomatoes and onions, the break-even points are low at 10t/ week and 7t/ week. There should not be any problem in business.

The break-even point of potato wholesale is high at 21t/ week, and with rather small net income, the business may face difficulty. However, current potato wholesalers in Abasto have intention to begin onion trading once they move to the NWM, which has not been possible for space restriction. This will help raise their income.

Wholesaling in bananas and citrus fruits have their break-even points higher than other products at 28t/ week and 41t/ week respectively. Considering that their net income is below the level of average small-scale producers, it seems difficult to keep the business profitable. As seen in Annex 2 Table A2.6-2, this is due to the fact that, for bananas and citrus fruits, wholesalers' section fee takes up more than 50% of the expenditure.

Citrus fruits are seasonal products, and the season runs only for 4 months a year. Thus it will be necessary to utilize the sections off-season in pursuit of more efficient business. Agricultural cooperatives in San Juan (CAISY) and Okinawa (CAICO), who express their will to participate in NWM, have plans

for off-season use of the section to display samples of or store rice and eggs, or to sell vegetables.

4) Conclusion

Market management, operation/ maintenance costs and depreciation cost are principally borne by market users (beneficiaries), which should be raised from rental fee of wholesalers' section.

Wholesalers' section rental fee set at Bs. 40/ day, transferred wholesalers' business will be financially viable, though some may have difficulty depending on the products handled.

Wholesale of tomatoes and onions will have no problems. Market information disclosure will realize reduction of losses caused by over-supply, and technology transfer at production site will promote quality improvement and standardization, which will bring additional profit to these wholesalers.

Potato wholesalers may have problems, though broadening handling commodities to include onions will compensate.

Bananas and citrus fruits need to be handled in the NWM considering their significant consumption volume and the range of products to be handled. Nonetheless, business in banana and citrus fruit wholesale will face prominent difficulties. Therefore it is required that rental fee for these two products be set lower than other products. Also, citrus fruits being seasonal products, off-season use of sections has to be taken into consideration, such as sales of flowers and vegetables.

Currently, banana and citrus fruit wholesalers in existing Abasto Market purchase their products once a week. Due to the long period to sell their products and poor handling, a portion of the products are wasted and thrown away. After these wholesalers are transferred to the NWM, their income may rise if the amount of products handled increase due to their efforts to improve their sales (greater efficiency) and reduce losses (from technology transfer on quality control).

The rental fee for the wholesalers' section is notably high considering the current standard, and requires consent of users. It is also necessary that the fee be set at the lower side initially though it may not be able to cover the depreciation cost, and be raised gradually after the market management and individual business become stable.

10 ENVIRONMENTAL EVALUATION AND MITIGATION MEASURES

10.1 Existing Environment Laws, Regulations and Standards

The Environment Law, Law No.1333 ("Ley del Medio Ambiente, Ley No. 1333") of 27 April, 1992 is of general nature and does not emphasize on any specific activities. Its objective is to protect and conserve the environment without affecting the development of the country and to seek the improvement of the quality of life of the population.

The law covers general disposition, the management of the environment and diverse environmental aspects including health and living environment. It covers renewable and non-renewable resources, environmental education, participation of populace as a security measure, administrative penalties are principally treated by the various sections of the law.

In addition to the law, there was a Supreme Decree No. 24176, which prescribed the regulations of the Environment Law. The regulation contains the technical and legal instruments to regulate the law considering the socio-economic, cultural, industrial and environmental components to ensure sustainable development.

The Vice-Minister of Environment ("Vice-Ministerio de Medio Ambiente") who reports to the Minister of Sustainable Development and Planning, is responsible for environmental planning and policy making in Bolivia.

The Environmental Law of Bolivia has called for the organizing of the Departmental Council for the Environment ("Consejos Departamentales del Medio Ambiente" - CODEMAs) to coordinate sustainable development activities in the departmental level. Presently, CODEMAs have been formed but are not functioning as yet.

For the organization chart of the concerned environment ministry and authority at the national and department level, refer to Figure 10-1.

10.2 Requirements for Environmental Impact Assessment (EIA) Study

10.2.1 National Level

According to Article 25 of the Environment Law, all works, public or private activities before its investment stage must be categorized into the following levels according to its environmental impact. The category levels are;

- I Requires an integrated EIA study.
- II Requires a specific EIA study.
- III Does not require specific EIA study but can be advised to revise its concept.
- IV Does not require EIA.

Category I and II requires EIA study to done by the promoter and to be presented to the competent Environment Authority for its review and approval (refer to Figure 10-2 for technical and administrative procedure for environmental impact evaluation).

10.2.2 Municipal Level

Municipal have their own ordinances to follow whenever project are located within municipal boundaries. At present, there is only one ordinance that has been approved with regards to environmental aspects, i.e., the ordinance governing the perforation of wells.

The Standards & Environment Secretariat (Secretaria de Normas y Medio Ambiente enforces the municipal laws and regulation pertaining to the environment.

An independent approved environment consultant will need to be appointed by the promoter of the Project to complete the Environmental Index ("Ficha Ambiental") by a Computerized Environment Impact Evaluation Procedure ("Procedimientos Computarizados para la Evaluacion de Impactos Ambientales", PCEIA).

This "Ficha Ambiental" will then be evaluated by the municipality for initial categorizing according to their guidelines. Their evaluation / categorization will then be submitted to the Prefecture and then subsequently to the Ministry level for approval of the classification of the project. If the project has been classified as Category I or II, an Environmental Impact Assessment study will need to be done.

If the project site is bordering another municipality, a transectorial agreement will need to be made between the municipalities to coordinate the environmental approval process and the subsequent monitoring and evaluation during the implementation stage.

10.3 Environmental Findings of Study Area / Sites

10.3.1 Production Area

Location	Environmental Findings	Possible Impacts of Collection/Distribution Center
Samaipata	There is an existing building (2 units) on the site which is presently used as a food storage warehouse by Program País. It is located along Route 4. There is no apparent environmental problems or pollution as there is presently no economic activities on the site.	- Increase in vehicle traffic & noise - Increase in waste discharge (both solid and liquid waste) - Secondary impact on value of land (including surrounding land) - Social impact on beneficiaries
Mairana	The land is generally flat and is used for cattle & farming. Surrounding area is residential and farmland. It is located beside Route 4. There is no apparent environmental problems or pollution as there is minimum economic activities on or near the site.	- ditto -
Pampa Grande	The land has a slight slope along Route 4. The surrounding area is cattle and farm area. There is no apparent environmental problems or pollution as there is minimum economic activities on or near the site.	- ditto -

San Isidro	The land is flat with facilities (6 units) already built on the site. The facilities are unused. Nearby is a football playing field and residences. There is no apparent environmental problems or pollution as there is minimum economic activities on or near the site.	- ditto -
Comarapa	The site is flat with existing facilities (2 units - one was abandoned during construction, the other is a guard post) built on it. Surrounding area is residential and farm land. There is no apparent environmental problems or pollution as there is minimum economic activities on or near the site.	- ditto -
Saipina	The site is flat with a nearby cemetery. There is no apparent environmental problems or pollution as there is minimum economic activities on or near the site.	- ditto -
Vallegrande	The site has a moderate slope. Nearby is a stadium, small airport and residential area. There is no apparent environmental problems or pollution as there is minimum economic activities on or near the site.	- ditto -

Initial environmental examination of 2 scenarios were prepared. Case 1 represent the rehabilitation of existing facilities on the site for use as the Collection Center, and Case 2 represent construction of a new Collection Center facilities on the site (see Table 10-1).

There are no environmental constrains in any of the sites. Negative impacts of the Collection Distribution center are expected to be increase traffic noise and dust, and increase in solid and liquid waste discharge. The traffic noise and dust is of temporary nature and not expected to be a major issue in the remote setting. The solid and liquid waste discharge will have to handled by facility design and arranging with the municipality for rubbish collection services to the sites.

Positive impacts will be social impact on the beneficiaries and secondary impact on the value of land surrounding the project sites. Project management and operation will need to consider the equitability of benefit redistribution among the beneficiaries.

10.3.2 Abasto Market

The present Abasto Market is located within ring road no.3. The limited land area, close proximity to the city, and increasing economic activity of the market has created an unfavourable environment in terms of traffic congestion, noise, waste disposal problems, bad odour, pollution of the drainage canals, and unhygienic conditions.

1) Liquid Waste Disposal

Liquid waste from the market is discharged into the drainage canals surrounding the Abasto Market. There is no treatment of the waste before discharge into the canals. The open drainage canals emit foul odor and rubbish are thrown into it. The canals discharge into Pirai river. Future plans to

address this problem may be to connect the sewage to existing city network or to incorporate a treatment facility within the market.

2) Noise Pollution

As for the noise of the market, there has not been any complains about noise of Abasto Market unlike the Los Pozos market. This is because of the open space design of Abasto Market unlike Los Pozos which is of a close nature whereby the noise is "trapped" and also the close proximity of residential houses. It is estimated that Abasto may have noise level of about 65 db whereas Los Pozos may be 80 ~90 db.

3) Solid Waste Disposal

The rubbish collection system for the city has been privatized. The contract to collect rubbish up to Ring Road No.5 (R5) is awarded to CLISA for a 5 years period. Outside R5, there are 8 micro-enterprises contractors that are collecting rubbish.

Within Ring Road No.1, rubbish is collected 7 days/week. From R1 to R2, rubbish is collected Mondays ~ Saturday. In the northern areas of R2 ~ R5, rubbish is collected Mon, Wed & Friday. In the southern areas of R2 ~ R5, rubbish is collected Tue, Thu & Sat. For the markets, rubbish collection is everyday, 7 days/week.

The landfill for the rubbish is located 18 km SE. It has a life up till 2002. However, this landfill will have a longer life if the city practices recycling and composting, which Municipal Urban Sanitary Department (Empresa Municipal De Limpieza Urbano, "EMDELU") intends to promote next year. Presently, 65% of the rubbish collected is organic waste.

EMDELU intends to introduce a tax of Bs.0.5 per trader (gremialistas) / day to secure funds to clean the market more effectively. With this fund, continuous cleaning of the market (including public toilets) will be possible throughout the day, with nighttime washing and disinfecting to get rid of rodents & insects. A dedicated fenced rubbish area will be built to ensure cleanliness and prevent scavenging of the rubbish.

An initial environmental examination of Abasto Market considering the impact of relocating the wholesale function of the market to the NWM was done (see Table 10-2).

Impact of relocating the wholesale function will be mainly in the improvement of the environment, reduction of traffic congestion and noise, and socio - economic in nature. With the relocation of wholesale activities, alternative use of car park space and wholesale space in the market could be explored. The lost of employment and changes to the marketing system / lifestyle associated with the relocation of wholesale activities from Abasto could be made up by alternative employment in the retail sector that will inevitably fill the void left by this relocation. The social impact will need to be equitably apportioned by designing the form of management and operational form of Abasto Market after the relocation of wholesale function.

10.3.3 NWM

The initial environmental examination of the project for the NWM was done by completing the check-sheet using the criteria contained in the regulations pertaining to the Environmental Law.

Impact during implementation and construction will be temporary in nature such as constructional noise, dust, traffic, etc. Liquid waste treatment will have a major impact on the environment and must be incorporated into the design of the facilities. Solid waste collection by the municipality is necessary for the project to ensure sanitary environment. Operational noise from vehicle traffic could be minimized by appropriate design of the facilities and control of surrounding development so as not to encroach too close to the NWM in the future. The management and operation setup of the NWM will need to be designed ensure equitable redistribution of wealth and cost amongst the beneficiaries.

10.4 Significant Impact Evaluation

10.4.1 Consumption Site

(1) Abasto Market - Relocation of Wholesale function

<u>Significant Impact On</u> Employment	<u>By</u> alternative activities (+ve), reduced wholesale activities (-ve)
Physiological System Lifestyle	vehicle movement alternative activities in place of wholesale activities

1) Employment

With the relocation of the wholesale function, activities and persons that will be affected are:

Porters: The employment of porters to carry wholesale products from outside to inside the market and also within the market itself will be affected. Some of these porters will follow the wholesalers to the NWM. Others that remain at Abasto will see a drop in their income as there will be more competition to carry the retail and consumer products.

New Retailers & Intermediaries: New retailers and intermediaries will be able to operate at Abasto Market as there will be more space for retail activities with the transfer of the wholesale function to the NWM.

Car Park Attendant: With reduced truck traffic to Abasto after the relocation, car park attendants will suffer a lost in their income.

2) Physiological System

After the wholesale function is removed, the market will function more orderly due to reorganization of sales sections and vehicle circulation realizing ease of access for retailers and consumers. Impact of this reduction of large scale trucks will be less congestion on the road around Abasto Market, more efficient flow of traffic, goods and people, less noise, dust and traffic accidents.

3) Life-style

Impact on life-style will be associated with the changes due to the relocation of the wholesale function. Everyone that uses Abasto Market will be affected in one way or other. Porters may need to relocate to the NWM or suffer a loss of income if they remain in Abasto Market. Retailers and intermediaries that rely on the wholesalers for their products will need to commute to the NWM to purchase their products for subsequent sale at Abasto or other markets. Wholesalers will have to sell or rent out their lot in the market or convert the space for retail activities. Producer / Transporters will have to unload their products at Abasto or the NWM depending on their point of sale. Consumers will enjoy better shopping access at the Abasto Market.

4) Classification of Impacts and Countermeasures

For classification of impacts and countermeasures to lessen, mitigate or compensate for these impacts, refer to Table 10-2.

(2) NWM

<u>Significant Impact On</u>	<u>By</u>
Suspended solids	sewage treatment
BODs	sewage treatment
Dissolved Oxygen	sewage treatment
Dissolved Solids	sewage treatment
Fecal coliform	sewage treatment
Employment	construction activities, marketing activities, surrounding activities, training, closure (-ve)
Scenery	landscaping
Physiological System	vehicle movement
Communal necessity	sale of products, education/training
Lifestyle	education/training

1) Existing Site Condition

The site for the NWM is located next to UV189 in an undulating plot of land about 10 Ha. There are 2 existing brick factory on the site which will have to be relocated elsewhere. There are no other existing uses or activities on the site and no apparent pollution problems. Pipe water and electricity supply is available nearby. There are low bushes and some trees on the site which will have to be removed during the land preparation during the construction of the building and facilities.

2) Sewage / Waste treatment

Suspended solids, BODs, dissolved oxygen, dissolved solids, and fecal coliform are the major pollutants that will have to be treated by the waste treatment facility of the project. The table listed below from the environment regulations Annex A Table A-1 stipulates the values of the maximum discharge to receiving medium (generally a river).

Table A-1 from Annex A -

□ Parameter	Unit	Class "C"
pH		6 ~ 9
Temperature	°C	± 3°C of medium
Total Suspended Solid	mg/l	<50 ~ <1
Fecal Coliform (NMP/100ml)	N/100ml	<5000 & <1000 in 80% of samples
Oil & Grease	mg/l	0.3
BODs	mg/l	<20
COD	mg/l	<40
Chloride	mg/l	400 c. Cl
Ammonium	mg/l	2 c. NH ₃
Total Nitrogen	mg/l	12 c. N
Sulphur	mg/l	0.5

Class C is the recommended class for intensive agriculture activities. The other parameters listed in the Table A-1 are heavy metals and other compounds which are not applicable considering the waste contents of the NWM. The waste treatment facility is expected to meet or exceed the quality of permissible limits so pollution of the site due to these expected major pollutants will not occur.

3) Water Supply and Quality

Analysis of the potable water supply near the site of the NWM revealed that the water quality from the tap is good and without any faecal coliform contamination. The residual chlorine level is acceptable. Water requirements for the operation of the NWM is expected to be 140 cu.m per day. This will be met by the piped water supply with no need to exploit ground water resources. The water supply capacity to the area will be enough for the NWM without impacting on the other water users in the area.

4) Employment

During the construction stage, skilled and unskilled workers will be needed. There are not many local inhabitants in and around the site so the labour for the construction activities will have to come from elsewhere. As the site is within easy access from the city, the labour force is not expected to need accommodation within the site and therefore is not expected to create a problem with the local populace.

Other activities associated with the NWM will also create new jobs and opportunities. In the unlikely event of closure of the NWM, people working in the Market will lose their jobs.

5) Scenery

The project's building and facilities will impact on the existing farmland / rural scenery. The low buildings height will be of minimal impact on the landscape. Planting of trees and landscaping works in the project will further minimize the visual impact of the project.

6) Physiological System

The traffic of the NWM is expected to consist of the trucks, vans or jeeps carrying products into and outside the market, public transport vehicles (buses and taxis) used by the users, and private vehicles. This traffic is not expected to affect the local residents as a new access road specifically to the NWM will be built. This traffic will however change the traffic flow pattern around the area and new traffic controls (traffic lights, overpass, etc.) must be considered by the urban planning authorities for smooth integration of this NWM traffic into the main road traffic along Ring Road No.8 and Route 4.

7) Communal necessity

Wholesale marketing system will be changed and made more efficient with the operation of the NWM which will subsequently impact on the retail marketing system.

The NWM will also have a training component that will address the needs of the users and beneficiaries.

8) Lifestyle

Wholesalers, porters, transporters, producers and intermediaries that relocate from Abasto Market will see a change in their life-style and opportunities due to the more efficient wholesale function and change of marketing system. The more efficient system will create other opportunities in terms of alternative use of their free time (other employment or recreation). Changes in the marketing system will create new opportunities for other people to participate in the market thus creating new jobs in the market proper and surrounding area.

9) Classification of Impacts and Countermeasures

For classification of impacts and countermeasures to lessen, mitigate or compensate for these impacts, refer to Table 10-2.

10.4.2 Production site

(1) Collection and Distribution Center (Rehabilitation or new construction)

<u>Impact On</u>	<u>By</u>
Employment	construction activities, marketing activities, surrounding activities, training, closure (-ve)
Scenery	landscaping
Physiological System	vehicle movement
Communal necessity	sale of products, education/training
Lifestyle	education/training

1) Employment

The rehabilitation construction activities will create employment for the local population. Although temporary in its impact, these employment will help boost the local economy. In the case of new construction, the impact will be greater as the work force will be larger and construction term will be longer.

The operation of the Collection and Distribution Center will also create new jobs and opportunities in the surrounding areas.

The training component of the Center will benefit the users and especially impact on the production and commercialization know-how.

In the unlikely event of closure, people associated with the Center will lose their jobs.

2) Water Supply and Quality

Water analysis of two sites in the production area, i.e., at Saipina and Pampa Grande was undertaken to assess the quality of the water supply. At both sites, water from the tap was of better quality than nearby river water which had higher suspended solids and coliform content. Residual chlorine in the tap water supply was not acceptable and it is recommended that chlorination of the water supply be undertaken in the Collection and Distribution centers.

3) Scenery

In the case of rehabilitation of existing buildings and facilities, there will be no new impact on the scenery. New Collection and Distribution Centers will impact on the existing farmland / rural scenery. The impact will be minimal as the building and facilities will be small scale and low in height. Planting of trees and landscaping works in the project will further minimize the visual impact of the project.

4) Physiological System

Traffic associated with the Collection and Distribution Centers will impact on the area but the low numbers and frequency of traffic is not expected to create any new traffic control requirements or safety hazard. The impact from the traffic will be noise and dust but these impacts will be of temporary nature and of short frequency / time.

5) Communal Necessity

The Center will change and improve the marketing system of the products from the production area to Santa Cruz city.

The Center's training component will address the needs of the users and beneficiaries especially in the field of marketing, production and commercialization.

6) Lifestyle

The change in the marketing system will impact on the life-style of the producers as they will no longer have to accompany their products to Santa Cruz city to engage in sales. This free time can then be used for other activities such as house repairs, farming, taking care of family or recreation.

7) Classification of Impacts and Countermeasures

For classification of impacts and countermeasures to lessen, mitigate or compensate for these impacts, refer to Table 10-1.

10.4.3 Classification of the Integrated Market Network System Project

Taking the above environmental evaluation into consideration and the incorporation into the design of both the physical facilities and operation / management setup, to mitigate the environmental impacts, classification of the project into level III is reasonable.

11 COST ESTIMATION

11.1 Condition for Cost Estimation

Project cost estimation was carried out under the following conditions:

- 1) Project costs were calculated as of November, 1998.
- 2) Unit prices are constant prices as of November, 1998.
- 3) Cost was estimated in US Dollars. Exchange rate of Bs.5.62 to 1US\$ was used to convert to local currency.
- 4) Tax exemption is applied to all imported material and equipment.
- 5) Project cost was calculated based on the current local unit cost in Bolivia except the construction cost of the NWM facilities.
- 6) The construction cost of NWM facilities was calculated based on the unit cost of overseas development assistance project that supplies high grade facilities
- 7) Construction period for each phase of construction was assumed to be one year from the time of contract signing.

The project costs of the Collection and Distribution centers and the NWM are shown below and details in Tables 11-1 and 11-2.

Project Cost for Collection and Distribution Center

No.	Items	San Isidro Total (US\$)	Samaipata Total (US\$)	Valle Grande Total (US\$)	Saipina Total (US\$)	Mairana Total (US\$)	Pm. Grande Total (US\$)	Comarapa Total (US\$)	Grand Total (US\$)
1	Building Construction Cost								
(1)	Building Reform Works - Direct Construction Cost	27,043	25,291	0	0	0	0	0	52,334
(2)	Building Works - Direct Construction Cost	0	0	226,761	270,636	270,636	358,386	226,761	1,353,180
(3)	External Works	34,980	17,000	35,570	38,410	38,410	65,620	35,570	265,560
(4)	Main Line of Infrastructure in the Site	0	0	12,550	35,550	18,600	12,550	12,550	91,800
(5)	Total Direct Construction Cost	62,023	42,291	274,881	344,596	327,646	436,556	274,881	1,762,874
(6)	Overhead and Profit	23,569	16,071	104,455	130,946	124,505	165,891	104,455	669,892
(7)	Consulting service fee	3,101	2,115	13,744	17,230	16,382	21,828	13,744	88,144
(8)	Grand Total Cost for Building Construction	88,692	60,476	393,080	492,772	468,534	624,275	393,080	2,520,909
2	Equipment Procurement Cost	49,350	40,950	49,350	49,350	37,800	49,350	40,950	317,100
	Financial Cost - Grand Total (US\$)	138,042	101,426	442,430	542,122	506,334	673,625	434,030	2,838,009
	Economic Cost - Grand Total (US\$)	125,799	92,883	392,808	479,760	447,673	595,804	384,632	2,519,359

Remark:

1. Land acquisition for projected city roads, access road to projected road, and project site is not included in the project cost estimate

Project Cost for New Wholesale Market

No.	Items	Phase-1 (US\$)	Phase-2 (US\$)	Total (US\$)
1	Land Preparation Cost	1,456,591	0	1,456,591
2	Infrastructure Extension Cost	738,844	0	738,844
3	Building Construction Cost			
(1)	Building Works - Direct Construction Cost			
F-1	Marketing Hall			
	Marketing Hall - 1	1,027,680	3,083,040	4,110,720
	Marketing Hall - 2	0	1,618,596	1,618,596
F-2	Administration Office	1,148,832	0	1,148,832
F-3	Canteen	507,225	0	507,225
F-4	Shops	240,472	0	240,472
F-5	Electric Power Station	336,189	0	336,189
F-6	City Water Reservoir / Elevated Water Tank	285,184	0	285,184
-	Others	923,847	221,515	1,145,362
-	Sub-total	4,469,429	4,923,151	9,392,580
(2)	External Works	940,440	1,091,770	2,032,210
(3)	Main Line of Infrastructure in the Site	697,473	264,260	961,733
(4)	Special Equipment	78,454	48,229	126,683
(5)	Engineer/Supervisor Dispatch	4,350	10,150	14,500
(6)	Total Cost	6,190,146	6,337,559	12,527,706
(7)	Overhead and Profit	1,343,262	1,375,250	2,718,512
(8)	Consulting service fee	619,015	633,756	1,252,771
(9)	Grand Total Cost for Building Construction	8,152,423	8,346,566	16,498,988
Grand Total Cost (US\$)		10,347,857	8,346,566	18,694,423

Remarks: Land acquisition costs for projected city roads, access road to projected city road, and project site for New Wholesale Market are omitted in this table.

11.2 Benefit Calculation

11.2.1 Gross Benefit and Benefit by Target Group

Items of gross benefit, system of basic unit setup for scale/ price/ cost have been identified. Also, benefit distribution system by target group has been examined. Difference in benefit by changes in activities and target group is described below.

Consumption Area

Item / Target Group	Without Project		With NWM Project
	Retail Function	Wholesale Function	
Congestion outside Abasto Market due to increase in truck traffic/ market handling volume			
• Producers / Intermediaries	<ul style="list-style-type: none"> - longer loading & unloading time due to congestion - increase use of porter to unload as trucks are increasingly parked outside 		<p>With the removal of the wholesale function from Abasto Market, traffic load and congestion will decrease. The NWM will have enough space and car park to accommodate the wholesale traffic for efficient unloading & loading and movement of products.</p> <ul style="list-style-type: none"> - Benefit of space availability at any time for transporter - Benefit of immediate unloading for transporter / Producers / Intermediaries - Benefit of time saving from lack of traffic jam
• Transporter	<p>The truck traffic will increase with the increase in market volume handled by the Abasto Market affecting:</p> <ul style="list-style-type: none"> - loss of time due to selling from truck - loss of time due to congestion and traffic jam - increase use of parking space outside market - increase congestion and traffic jam 		
Space congestion inside Abasto Market			
• Producers / Intermediaries	<ul style="list-style-type: none"> - loss of time trying to sell products due to lack of space inside Abasto Market - additional porter cost to transport products into Abasto Market from truck parked outside - loss of time selling products from truck 		<ul style="list-style-type: none"> - Benefit of space inside market for unloading - Benefit of cheaper porter cost - Benefit of immediate unloading / sales
• Transporter	<ul style="list-style-type: none"> - long waiting time for trucks to enter Abasto Market - loss of time selling products from truck inside Abasto Market 		
Wholesalers		Abasto Market cannot accommodate any increase in number of wholesalers. Inefficient and time consuming wholesale activities will get worse.	<ul style="list-style-type: none"> - The NWM will be able to accommodate increasing number of wholesalers interested to participate leading to increase wholesale volume and activities. - Efficient wholesaling function will be possible with the project.
Retailers	Abasto Market cannot accommodate any increase in number of retailers		<ul style="list-style-type: none"> - At Abasto Market, number of retailers may increase as wholesaler function is resulting in more space for retail activities there. - Additional cost for retailers to go to NWM to buy products for sale at Abasto
Porter	<ul style="list-style-type: none"> - Congestion in market creates bad working condition and restricts product movement. - number of porter in the market unlikely to increase due to congestion. 		<ul style="list-style-type: none"> - loss of jobs in Abasto with wholesale function relocation to new market - improvement in work condition with less congestion - possibility of increase in number of porters in both NWM and Abasto.
Consumers	Consumers will find it increasingly difficult to access Abasto Market due to the congestion and traffic jam.		<ul style="list-style-type: none"> - Traffic and congestion will be reduced with the removal of wholesale function from Abasto Market.

Production Area

Item / Target Group	Without Project		With Collection / Distribution Centers Project
	Retail Function	Wholesale Function	
Production	Production volume will remain the same.		With technical assistance and guidance, production volume will increase.
Commercialization	Commercialization rate will remain the same.		With the operation of C/D centers enabling better marketing opportunities and timing, commercialization rate will increase.
Information system	Information system does not exist.		The project will introduce an information system to inform the farmers on the market prices of produce.
Marketing system	Marketing system will remain the same, i.e. using small trucks with inefficient transport volume.		With the collection centers, a more efficient transport system will be introduced with subsequent time and cost savings.
Producer / Intermediary	<ul style="list-style-type: none"> - Income will remain stable as production and commercialization increase potential not realized - Time lost following products to consumption area to sell products - lack of price information to decide market destination and timing to sell product 		<ul style="list-style-type: none"> - increase in income due to increase in production and commercialization volume through training / technical assistance. - alternative use of free time - better business decision on when and where to sell product - additional time and cost incurred to use collection center
Transporter	- transport using small trucks to pick up products for sale at consumption area will remain largely unchanged due to stable production volume.		- more efficient transport with use of center

Especially for small-scale producers in the Valley areas, establishment of the organized collection/ distribution system plays a key role in the extent of benefit they may gain in use of the NWM.

- 1) Without organized collection/ distribution: Accessibility to price information from the NWM and alleviation of congestion within the market will reduce market loss (degradation of commodity value and time loss). The actual income is expected to increase.
- 2) With organized collection/ distribution: In addition to the above 1), benefit from direct sales by gaining wholesaler's qualification is expected. In consequence, for producers in the Valley areas, the effect of comprehensive marketing improvement including the production area and consumption area is maximized with organized collection/ distribution.

Users of the NWM apart from producers of the Valley areas will benefit from effects described in 1). It is also applied to the retailers and intermediaries of Abasto Market.

Analysis of the positive and negative impacts of the project on each of the target groups together with development policies to achieve the desired impacts are shown in Table 11-3.

11.2.2 Benefit Items

With the implementation of the project, it is envisaged that there will be time / cost saving benefits in the following items (see Table 11-4).

(1) City Entry Time Restriction

Trucks over 10t will be able to enter the NWM at any time without having to wait for nighttime to enter the city limit to get to Abasto Market due to traffic restriction. The time restriction to enter means that trucks have to wait and / or time their departure to arrive at Abasto Market at night. Based on traffic survey data at Abasto Market, the annual benefit of entry at anytime to NWM will be US\$91,772 in 2002 and US\$121,140 in 2010.

(2) Space Restriction Inside Abasto Market

There are times when parking space inside Abasto Market is not available to trucks arriving at the market. As such, these trucks are forced to wait outside the market with their products until parking space is available inside Abasto Market. Based on survey data, 36 trucks per day wait an average of 9 hrs outside before finding space inside Abasto Market. 35% of these trucks parked outside will also engage in selling product from the truck.

The present marketing system at Abasto Market allows some selling of products directly from the trucks. This type of selling method means that the trucks and the producers/intermediaries are obliged to stay at market for the period of time it takes to sell all the products, generally not more than 3 days. The average time taken to sell product from the truck is 19 hours.

The NWM will do away with this selling method resulting in benefits from time saving for transporters, reduce porters handling cost to bring product into market from truck, and time saving for producers/ intermediaries. The annual benefit of immediate entry into the NWM to unload will be US\$858,990 in 2002 and US\$1,133,866 in 2010.

(3) Selling from truck outside Abasto Market

Some trucks that cannot get into Abasto Market are compelled to sell their product from the truck while parked outside the market. Survey data shows 14 trucks per day are selling from trucks and they take an average of 12 hours to finish selling. The NWM will do away with this selling method resulting in benefits from time saving for transporters, reduce handling cost of porters to bring product into market from truck, and time saving for producers/ intermediaries. The annual benefit from this item will be US\$628,570 in 2002 and US\$829,713 in 2010.

(4) Reduction of Quality Loss (Value Loss) for Tomato

It is envisaged that with the Project's information network, over-supply conditions for tomatoes will be lessen. At present, over-supply condition leads to excess / unsold tomatoes being thrown away in the trash or experiencing a sharp price reduction. With better information on prices and supply condition with the Project implementation, it is assumed that the producers will be able to somewhat control / adjust the shipping of the tomatoes to the market until such time as the over-supply condition reduces and prices improves. Currently over-supply condition leading to products being thrown away is observed 2 times in a month. It is assumed that adjusted harvesting based upon marketing

information will at least ensure the sale of tomato at Bs.1 / kg. This will result in benefits of US\$19,790 in 2002 and US\$25,745 in 2010.

(5) Consumer Time Saving

Due to the congestion at Abasto Market, consumers lose time when visiting the market to buy their daily necessities. From the household survey of the Master plan, 25% of households in Santa Cruz city go 1 to 3 times per week to Abasto Market. With the relief of congestion by transferring the wholesale function to the NWM, it is estimated that consumers will save 10 minutes each per visit resulting in benefits of US\$145,144 in 2002 and US\$240,383 in 2010.

(6) Production Increase

With the implementation of the technical and institutional guidance on cooperative marketing system, improvement in the production technology and crop production planning, the production volume is estimated to increase by about 10% per year in the project area after a time lag for the benefit to accrue. It is estimated that with operation of the Collection and Distribution centers at San Isidro in 2001, Samaipata, Vallegrande and Saipina in 2003, Mairana, Pampa Grande, and Comarapa in 2004, total benefits from the all centers' production increase will be US\$1,623,559 in 2010 based on the assumption that the increase in production volume is multiplied by 70% of net producers' price. 30% of the net producers' price will be additional cost of increase production.

(7) Commercialization Rate Increase

Increase in commercialization rate is expected from better handling, packing, reduce losses, opportunity and the right time to market the products with the operation of the Collection and Distribution centers. Benefits from commercialization rate increase of all 7 Collection and Distribution centers will be US\$469,290 in 2010 based on the assumption that the increase in commercialization volume is multiplied by 50% of net producers' price. The remaining 50% of the net producers' price will be additional cost associated with increased commercialization.

(8) Cost of Transport

With the Collection & Distribution Center, more efficient marketing and transport system to bring products to the consumption area will be introduced to reduce the number of truck trips, empty ratio of trucks and the need for producers to follow the products to market. The benefits of this will be offset by additional cost of transport associated with bringing the products to the Collection and Distribution centers from the farms. It is assumed that the benefits will equal the additional cost.

(9) Indirect Benefits of Project

Indirect benefits of the projects are;

1) Effective land use of the existing Abasto Market

Wholesale function when transferred from Abasto Market to the NWM will create more space for other activities. These areas can now be more effectively used for retail activities and more streamline market operations. This will provide increased opportunities for direct retail activities by farmers and small

traders in the informal sector.

The alleviation of the chaotic marketing activities and overcrowding at the existing Abasto Market will raise the efficiency of the marketing activities of small women traders who have traditionally conducted small transactions there.

2) Effective land use of the existing parking areas around Abasto Market

Reduction of wholesale traffic vehicles to Abasto will eliminate the need for parking area around Abasto Market. These areas could then be used for other activities more appropriate to the general characteristics of the area.

3) Social / Environment impact on existing market Abasto Market

Transfer of the wholesale activities from Abasto Market will have social impact on retailers or intermediaries that depend on these activities. These impact may be positive or negative depending on the affected party. Also, Abasto Market is expected to have a positive impact from the viewpoint of improved sanitary environment.

4) Spin-off economic activities around NWM

The introduction of the NWM will encourage other economic activities in the surrounding areas such as transport services, restaurants, ware-house, sundry stores, etc. These spin-off activities will create more job opportunities for the inhabitants.

Due to assistance from private firms, NGOs, and donor countries, farmers will not be limited to using the improved Abasto market, but will be able to participate in wholesale activities and to sell their products to wholesalers at the NWM, and thereby are given increased opportunities to raise their income.

5) Reduce traffic congestion around Abasto Market

The NWM will divert the wholesale traffic from the Abasto Market thus reducing traffic congestion and improving traffic flow in the area.

(10) Indirect Benefits to New Target Groups

In conjunction with the improvements to the traditional marketing system, new benefits will also be created for new target groups not utilizing the existing Abasto Market. The agricultural cooperatives of the lowlands (CAISY, CAICO) that wish to utilize the NWM, the Supermarket Association, and new farmer groups who wish to organize in order to participate in wholesale activities are just some of the new target groups pinpointed.

Summary of Total Benefit Distribution by Target Group (2010)

	Producer /	Intermediary	Transporter	Wholesaler	Consumer	Total Benefits
1 City Entry Time Restriction	+	+	+			
	\$20,190		\$100,950			\$121,140
2 Space Restriction Inside Abasto Market	+	+	+			
	\$84,984		\$1,048,882			\$1,133,866
3 Selling from truck outside Abasto Market	+	+	+	+		
	\$320,927		\$313,099	195,687		\$829,713
4 Reduction of Quality Loss for tomato	+					
	\$25,745					\$25,745
5 Consumer time savings					+	
					\$240,383	\$240,383
6 Production Increase	+					
	\$1,623,559					\$1,623,559
7 Commercialization Rate Increase	+					
	\$469,290					\$469,290
Total Benefits (US\$)		\$2,544,695	\$1,462,931	\$195,687	\$240,383	\$4,443,696
(%)		57	33	4	5	100

Remark:

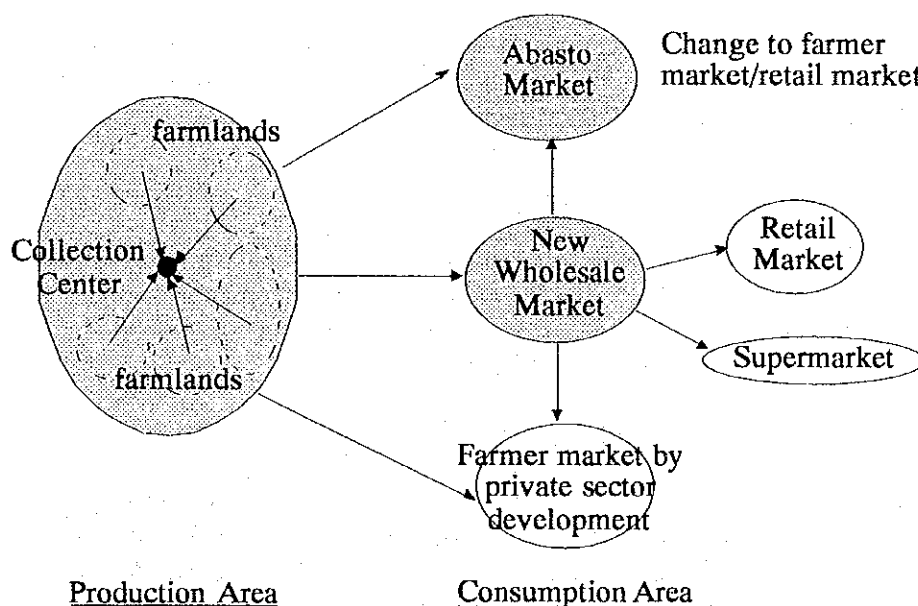
- Wholesalers' additional benefit from NWM that is not reflected in the above table, will be time savings from more efficient marketing and movement of products. This time savings may be used by the wholesalers for other income generating activities thus increasing their income.
- Benefit not reflected in the above table is that the NWM will also provide opportunity for new wholesalers to participate, not only those transferred from Abasto Market.
- Indirect benefit to retailers not reflected in the above table, will be more retailing space/activities at Abasto after wholesale function removed to NWM.

12 PROJECT EVALUATION

The evaluation of the project which comprised the integrated marketing network system, will consider the 3 project scenarios based on the existing situation without the project both in the production area and consumption area.

Case	Without Collection Center	With Collection Center
Without Wholesale Market	Base (Existing trend)	Scenario I
With Wholesale Market	Scenario II	Scenario III

Project: Integrated Market Network System



Remark: The shaded areas in the figure represent the Project's components.

Project feasibility is examined according to the above 3 scenarios through economic and financial analyses. In economic evaluation, viability is evaluated from the point of view of value added to national economy arising from the Project. In financial evaluation, it was examined whether the management body of each scenario is capable of financially sound management.

The Economic Internal Rate of Return (EIRR) was used as the measure for project economic evaluation, whereas the Financial Internal Rate of Return (FIRR) was used as the measure for project financial evaluation.

12.1 Assumptions for Calculation

(1) Physical Life, Depreciation and Maintenance of the Project

The physical life of the project components is shown in Table 12-1. Straight line depreciation has been assumed with zero salvage value at the end. The investment cost

used to calculate the depreciation and maintenance cost was assumed to be 65% of the original investment cost to convert the international unit cost to local unit cost.

(2) Prices and Foreign Exchange Rate

All cost and prices are based on constant price of November, 1998. Foreign exchange rates for November 1998 of Bs.5.62 to a US dollar was used.

(3) Tax

Tax is excluded from all items.

(4) Interest

The investment cost is assumed to be at no interest.

(5) Training and Technical Assistance Cost

The cost for training and technical assistance is to be borne by the government and not included in the financial evaluation which was prepared from the viewpoint of the management body of the C/D centers and NWM facilities.

12.2 Economic Evaluation of Scenario I

If the Collection and Distribution centers were implemented without the NWM, the economic benefits of the centers will be slightly reduced as the commercialization and marketing advantage of the NWM will not be realized. The absence of the NWM is estimated to reduce the commercialization benefit by 50%.

12.2.1 Economic Cost of Scenario I

The economic analysis will use economic / social cost obtained by multiplying the financial cost / market prices with the conversion ratios provided by Vice-Ministry of Public Investment and External Finance under the Ministry of Finance listed below. These ratios must be applied to all public sector projects to evaluate their socio-economic performance.

Ratios of Price Adjustment for Socio-Economic Evaluation of Investment Projects

	<u>Item</u>	<u>Conversion Ratio</u>
1.	Foreign exchange premium	1.16
2.	Urban Labour	0.23
3.	Rural Labour	0.64
4.	Semi-skilled Labour	0.43
5.	Skilled Labour	0.44
6.	Foreign Labour	0.99
7.	Social Discount Rate	12.07%

The economic cost of the project component after applying the appropriate conversion ratio is shown in Table 11.1.

12.2.2 Results of Economic Evaluation of Scenario I

(1) Economic Internal Rate of Return (EIRR)

The EIRR obtained was 9.7% (see Table 12-2). For the initial 9 years, the net benefit is negative until benefits from increased commercialization rate and production begin to offset the cost.

(2) Sensitivity Analysis

Sensitivity analysis for the project was carried out to evaluate the extent of changes in the EIRR if key factors change within a reasonable range. The key factors, their percentage changes and the results are shown below.

Case	Investment Cost	Revenue	EIRR
Base case	no change	no change	9.7%
Case 1	+ 10%	± 0%	9.0%
Case 2	± 0%	+ 10%	11.7%
Case 3	- 10%	± 0%	10.4%
Case 4	± 0%	- 10%	7.4%

The best case (Case 2) gave an EIRR of 11.7% and the worst case (Case 4) gave an EIRR of 7.4%. The change in benefit of ±10% can be considered as changes in prices of the products or as changes in the volume of production / commercialization. Any delay in the realization of production increase (due to bad weather, delay in extension service, technology transfer, etc.) will further reduce the EIRR.

(3) Benefits Distribution

The economic benefits of production increase will be enjoyed by the producers at the 6th year of operation of the C/D centers. The economic benefits of commercialization increase will be realized from the 5th year of operation. In 2010, economic benefits from production and commercialization increase will be US\$1,623,559 and US\$234,645 respectively. 100% of these benefits accrue to the producers.

12.3 Financial Evaluation of Scenario I

The financial evaluation of Scenario I is to study and appraise the financial feasibility of the Collection and Distribution centers without the NWM. The financial evaluation took account of the financial cost and revenue to derive the income statement table. The Financial Internal Rate of Return (FIRR) was then calculated to show the financial viability of the project.

12.3.1 Financial Cost of Scenario I

(1) Investment Cost

The investment cost and its detail components are shown in Table 11-1.

(2) Operation Cost

The annual operation costs of the Collection and Distribution centers are shown in Table 9-5 for the income statement and cash flow for all 7 Collection and Distribution centers.

12.3.2 Revenue of Scenario I

The revenue of the Collection and Distribution centers will be from the user fee charged to the users (see Table 12-4).

12.3.3 Results of Financial Evaluation of Scenario I

(1) Financial Internal Rate of Return (FIRR)

If the project in this scenario is financed with own equity and loan, the FIRR obtained would be -2.2% (see Table 12-3). The revenue from the user fees will offset the cost after 5 years of operation.

(2) Sensitivity Analysis

The key factors, their percentage changes and the results are shown below.

Case	Investment Cost	Revenue	FIRR
Base case	no change	no change	-2.2%
Case 1	+ 10%	± 0%	-3.1%
Case 2	± 0%	+ 10%	-1.2%
Case 3	- 10%	± 0%	-1.2%
Case 4	± 0%	- 10%	-3.2%

12.4 Economic Evaluation of Scenario II

12.4.1 Economic Cost of Scenario II

The economic cost of the project component of Scenario II after applying the appropriate conversion ratio is shown in Table 11-2.

12.4.2 Results of Economic Evaluation of Scenario II

(1) Economic Internal Rate of Return (EIRR)

The EIRR obtained was 11.8% (see Table 12-2) based on the benefit items of city entry time restriction, space restriction at Abasto Market, selling from trucks, and consumer time saving. The economic cost of investment includes the Bolivian side obligation for land preparation and infrastructure extension, construction cost of the NWM and equipment supply.

(2) Sensitivity Analysis

The key factors and their percentages were considered and the results are shown below.

Case	Investment Cost	Benefit	EIRR
Base case	no change	no change	11.8%
Case 1	+ 10%	± 0%	10.5%
Case 2	± 0%	+ 10%	13.4%
Case 3	- 10%	± 0%	13.5%
Case 4	± 0%	- 10%	10.2%

The changes of the key factors in the 4 cases above showed that the EIRR in the worst case is 10.2% and in the best case is 13.5%. The NWM is thus economically feasible and justifiable, especially in the event the investment cost is reduced or when benefits are increased. A 10% increase or decrease of investment / benefit changes the EIRR about the same percentage.

(3) Benefits Distribution

The economic benefits of the NWM will be from; i) opportunity time cost saving of the producer/intermediary and transporter from city entry time restriction, ii) opportunity time cost saving of the producer/intermediary and transporter from space restriction inside Abasto Market, iii) opportunity time cost saving of the producer/intermediary, wholesaler and transporter from selling from truck outside Abasto Market, and iv) opportunity time cost saving of the consumer visiting Abasto Market. In 2010, economic benefits from these items for producer/intermediary, transporter, wholesaler and consumer will be US\$426,101, US\$1,462,931, US\$195,687, and US\$240,383 respectively. Expressed in percentage, about 18% of economic benefits accrue to producers/ intermediaries, 63% to transporters, 9% to wholesalers, and 10% to consumers. Other benefits to that were not accounted for in the above benefit calculations are; 1) wholesalers' time savings from more efficient marketing and movement of products. This time savings may be used by the wholesalers for other income generating activities thus increasing their income, 2) opportunity for new wholesalers to participate, not only those transferred from Abasto Market, 3) Indirect benefit to retailers will be more retailing space/ activities at Abasto Market after wholesale function removed to NWM.

12.5 Financial Evaluation of Scenario II

12.5.1 Financial Cost of Scenario II

(1) Investment Cost

The investment cost and its detail components are shown in Table 11-2.

(2) Operation Cost

The annual operation costs are shown in Table 12-5. The annual personnel cost are estimated based on the number of personnel proposed for the organization structure. Personnel cost, number of staff members and their status, together with the electricity, water, and tel/fax charges to operate the NWM.

12.5.2 Revenue of Scenario II

It is assumed that the NWM is operated in its entirety by one enterprise. All the revenue generated from the NWM's activities therefore accrue to this enterprise. Revenue will be

from the income wholesale activities and entering truck charge. Net income from wholesale is sales amount minus purchasing fee and other cost items (such as labor, packing, fixed cost assuming that the wholesalers are salaried employees). The net income from the wholesale activities is expected to be US\$1,574,000 in 2005, and US\$1,890,000 in 2010 (refer to Table A.2.4-26 in Annex 2).

Truck entering the NWM will be charged according to their tonnage. The charge will be Bs.10 for 20 t truck, Bs.5 for 10 t truck, Bs.3 for 5 t truck, and Bs.1 for jeeps. Income from this charge will be US\$24,815 in 2005, and US\$30,198 in 2010 based on projected truck numbers into the NWM. Please refer to Table 12-6 for income statement and cash flow.

12.5.3 Results of Financial Evaluation of Scenario II

(1) Financial Internal Rate of Return (FIRR)

If the project in this scenario is financed with own equity and loan, the FIRR obtained would be 7.7% (see Table 12-3) without taking account of the Bolivian side investment for land preparation and infrastructure extension. The construction of the project is assumed to be in 2 phases over a span of 2 years.

(2) Sensitivity Analysis

The key factors, their percentage changes and the results are shown below.

Case	Investment Cost	Revenue	FIRR
Base case	no change	no change	7.7%
Case 1	+ 10%	± 0%	6.6%
Case 2	± 0%	+ 10%	8.9%
Case 3	- 10%	± 0%	9.0%
Case 4	± 0%	- 10%	6.5%

The analysis shows that in the best scenario case, the FIRR is 9%.

12.6 Economic Evaluation of Scenario III

Scenario III covers the case of implementing the Collection and Distribution centers in conjunction with implementing the NWM.

12.6.1 Economic Cost of Scenario III

The economic cost of Scenario III is the sum of the economic cost of Scenario I and II (Table 11-1 and 11-2).

12.6.2 Results of Economic Evaluation of Scenario III

(1) Economic Internal Rate of Return (EIRR)

The EIRR for 7 Collection and Distribution centers and the NWM taken together was 12.6% (see Table 12-2).

(2) Sensitivity Analysis

The key factors, their percentage changes and the results are shown below.

Case	Investment Cost	Benefit	EIRR
Base case	no change	no change	12.6%
Case 1	+ 10%	± 0%	11.0%
Case 2	± 0%	+ 10%	14.2%
Case 3	- 10%	± 0%	14.4%
Case 4	± 0%	- 10%	10.9%

The best case (Case 2) gave an EIRR of 14.4% and the worst case (Case 4) gave an EIRR of 10.9%.

12.7 Financial Evaluation of Scenario III

12.7.1 Financial Cost of Scenario III

(1) Investment Cost

The investment cost and its detail components are shown in Tables 11-1 and 11-2.

(2) Operation Cost

The annual operation costs and income statement of all Collection and Distribution centers and NWM are shown in Table 12-7.

12.7.2 Revenue of Scenario III

The revenue of the Collection and Distribution centers and NWM will be from the user fee charged to the users of the C/D centers, truck charge, and net income of the wholesalers (see Table 12-7).

12.7.3 Results of Financial Evaluation of Scenario III

(1) Financial Internal Rate of Return (FIRR)

If the project in this scenario is financed with own equity and loan, the FIRR obtained would be 6.6% (see Table 12-3).

(2) Sensitivity Analysis

The key factors, their percentage changes and the results are shown below.

Case	Investment Cost	Revenue	FIRR
Base case	no change	no change	6.5%
Case 1	+ 10%	± 0%	5.5%
Case 2	± 0%	+ 10%	7.7%
Case 3	- 10%	± 0%	7.8%
Case 4	± 0%	- 10%	5.4%

12.8 Conditions for Self-financing Operation & Management

12.8.1 C/D Centers Operation

From the result of the financial evaluation of Scenario I (see Table 12-4), the net income is negative for the first 7 years of operation if depreciation is included. If the depreciation is excluded, the net income flow will be positive after the first 4 years. As such, for self-financing operation of the C/D centers, the management bodies will need to procure funds to cover the initial short-fall of income. The loan amount for each of the center is small (from US\$10,000 to US\$50,000) and the expected revenue from user fee will be able to cover the loan repayment without any problems.

12.8.2 Development, Management and Operation of a Privatized Wholesaler Section

This additional option assumes that the basic infrastructure and facilities of the NWM are built and operated by the government / public body; the private sector will build and operate the wholesalers' section.

It is assumed that the cost of construction of the wholesalers' section (Market Hall No.1) in this option will be half of that estimated by the Study, i.e. US\$2.7m as local contractors will be employed for the construction based on local standards. Consequently, the depreciation and maintenance cost of the facility will be reduced accordingly. However, the personnel cost to operate the wholesalers' section will remain the same.

In this option, the private developers will either rent out the market hall lots or sell them. In either case, it is envisaged that the tenants will have to pay for the use of the water, electricity, telephone, etc.

In the case of rental of market lots (assume 188 lots available), for the private wholesalers' section to be financially viable, it is estimated that the tenants will have to pay about Bs.50 per day as rental charges. This charge is double that in the case of operation by the Management Body / public sector in Scenario II. Trucks entering will also have to pay double the amount of charge. This revenue assumption will then give an FIRR of over 15.4% (see Table 12-8) which will then make it feasible for the private developer to borrow from the banks to finance the construction and operation of the private market hall.

In the case of sale of market lots, revenue from this sale will need to cover the construction cost. The lots will have to be sold at US\$14,500 per lot just to cover the construction cost without making a profit. In addition, the owners of the lots will have to pay additional charges to the private management body to cover operation, management, depreciation and loan repayment expenses. These additional charges total about US\$800,000 per year or US\$4,000 per lot per year.

In both the above cases (rental or sale), privatizing the wholesalers' section will make the rest of the NWM financially unviable as the revenue from the rental charges of the wholesalers' section will be forgone to the private developer. Only revenue from incoming truck charge, which is only about 10% compared to the revenue from the rental charges of the wholesalers' section, will accrue to the NWM public sector management body. This revenue alone will not be sufficient to meet the operation / management cash

flow of the NWM, therefore yearly operation subsidy from the government will be required.

12.9 Overall Evaluation

An evaluation of three possible scenarios for the Project have been prepared – a project limited to establishing the Collection and Distribution Centers, a project limited to establishing a NWM, and a project concerned with establishing Collection and Distribution centers and a NWM.

- a) Economic evaluation: In the case of a project limited to establishing solely Collection and Distribution Centers, the EIRR is 9.7 percent, 11.8 percent for a project limited to constructing a NWM, and 12.6 percent for a project concerned with establishing both Collection and Distribution Centers and a NWM. According to the results of a sensitivity analysis, a 10% increase or decrease of investment / benefits changes the EIRR about the same percentage.
- b) Financial evaluation: In the case of a project limited to establishing solely Collection and Distribution Centers, the FIRR is -2.2 percent, 7.7 percent for a project limited to constructing a NWM, and 6.6 percent for a project concerned with establishing both Collection and Distribution Centers and a NWM.

If the NWM is to be privatized, the following two scenario cases are presented below.

- Private sector participation from the initial start of the Project: The wholesalers' section of the market halls are constructed by Santa Cruz city or by a private developer at the same cost as constructing a local retail market. These wholesalers' section are then sold to users. It will be necessary to introduce a system of subsidies to cover a portion of the construction costs, in order to enable users to make a profit. In this case, all other publicly owned facilities within the NWM will be constructed and operated by the municipal government. However, revenue generated by the wholesalers' section operations will go to the private sector and only entrance fees collected from trucks (which are nominal) will accrue to the public sector. As a result, the municipal government will be responsible for raising the depreciation and operating costs.

- Privatization after a specified period of time: The initial investment costs will be dependent on financial assistance from the department and municipal governments and donor countries. The municipal government will be responsible for carrying out technology transfer activities with the aim of establishing a wholesale company. Following the establishment of a financial base, it will be possible for the operating costs of the entire market and a segment of the depreciation costs (of the wholesalers' section only) to be paid by the wholesale company from the revenue generated.

- c) Other benefits: Effective use of the site previously used for wholesale activities within the existing Abasto Market, the parking lot surrounding Abasto Market, alleviation of environmental problems in the surrounding areas of the market, and active commercial activity in the surrounding areas of the NWM are some

of the anticipated additional indirect benefits.

13 FINANCING

13.1 Construction Fund

(1) NWM

Construction funds will be provided by the Prefecture, Municipal or outside sources.

- 1) Funds provided solely by the Prefecture and Municipal: Purchase cost of the lot, preparation costs of the lot, installation of infrastructure of the market and its surrounding areas
- 2) Funds obtained under the responsibility of the Prefecture and Municipal: Market facility construction costs, procurement cost of equipment, access road construction costs, and re-investment cost.

On above fund arrangement, plan formulation, budget allocation, and budget implementation procedure to be undertaken by each agency were confirmed.

Privatized wholesalers' section

As noted in the financial analysis, a financially viable privatized wholesalers' section would be difficult to implement as the rental charges or sale prices of the market lots that will need to be imposed are exorbitant by present standard. Also, operation of the rest of the NWM will be difficult without the revenue from the rental of the wholesalers' section.

Privatizing option of the wholesalers' section will require subsidy from the government to assist the wholesalers to offset the high rental and / or sale price. Also, subsidy will be required for the operation / management expenses of the NWM.

(2) Collection & Distribution Center

Construction funds for the Collection and Distribution Center is envisaged to come from FDC or foreign donor. In the case of funds from FDC, FDC will fund 85%, Municipal should provide 10%, and the beneficiary community should provide 5% either in funds or labour / material. If the beneficiary community is not able to cover this 5% of their fund obligation, the Municipal will have to assume responsibility of this 5%.

13.2 Management / Operation Fund

(1) Distribution of funding responsibility for operation cost, training and technical assistance cost

As was described in the previous section, the initial investment will be borne by the Municipal, Prefecture and responsible municipalities out of their own fund or by procuring from outside sources. Regarding operation cost, training/ technical assistance cost of the C/D Centers, NWM and Abasto Market, the following measures should be taken.

- 1) The operation cost of the Mixed Board and affiliated Project Offices/ Sub-Project Office to be established for the Project implementation will be borne by the Prefecture and Municipal.

- 2) Subsidies of the Prefecture and Municipal are requisite for the training/technical assistance cost.
- 3) The cost of facility operation other than mentioned in 1) and 2) is basically users' responsibility, though appropriate favorable treatment is strongly recommended (e.g., mediation of low-interest credit by the Prefecture and Municipal, loan provision by the Prefecture and Municipal through their own use of low-interest credit, etc.).

(2) NWM

The Prefecture and Municipal will be responsible for the initial start-up operating funds whereas the Management Body is to procure funds for operation while receiving the above mentioned favorable treatment, under the supervision of the NWM Management Committee. Personnel costs, facility maintenance costs and depreciation cost will be covered by the management body utilizing fees collected from market users.

In all four PCM workshops (1 with producers, 2 with wholesalers and 1 with female traders), it was pointed out that the utmost issue in the project management is skepticism against intervention by the Management Committee, operation body and public agencies. Participants agreed to pay the fee once such distrust is overcome.

For the sound and reliable procurement of operation fund and management of the NWM, transparency and accountability of financial system (regular report to the Management Committee and disclosure to users) is requisite.

Instead of the present system of incorporating operational fund accrued from users into the Prefecture and Municipal budget, a system to feed it back to the project operation fund needs to be established.

Eventually, users' associations are to be unified into one "wholesale enterprise" in the course of privatization. That taken into consideration, the suggested financing system of the operational body has to be established shortly.

(3) C/D Centers

The operation of all the C/D Centers in the initial years will suffer deficits in "Users fees collected from users- Operation Costs" due to the limitation of the collection volumes in the years (Annex 1 5.3.2 and Table A.1.5-9). The municipal governments who are the responsible agency for the operation of the centers will have to supply loan to the centers to cover the operation deficits in the initial years from own financial resources or by obtaining low cost external funds. The C/D Centers are to repay the debts when they generate enough surplus from the operation as shown in Table A.1.5-9. With such support, the management body of the center will establish the operation and financial system soundly managed with the users fees collected from users of the center.

14 CONCLUSION AND RECOMMENDATION

14.1 Conclusion

The Project is to develop a wide-range fruit and vegetable marketing system centered around the Department of Santa Cruz, which will enable generation of proper benefit to small-scale producers and all traders with sufficient economic effect to the national economy. The new marketing system of fruits and vegetables to be developed in place of the traditional marketing system will set the Collection and Distribution Centers in the major production area and the NWM in the consumption area as the target Project (core). This target Project will be managed and used mainly by relevant municipalities, supporting organizations and users under the decentralization policy. Sufficient preparation and technology transfer is necessary in preventing confusion of management after the new Project is established, as seen in the existing Abasto Market. A gradual implementation is important for facility/ equipment installation of the Project, to avoid anticipated friction and damage in case of rapid transformation of the marketing system.

14.2 Recommendations

(1) Incorporation into National, Prefectural and Municipal Plans

The Project should be incorporated in the National Agricultural Development Plan, and plans at the Prefectural and Municipal levels currently being developed.

(2) Law/ institution and management

It is preferable if the municipal takes the initiative in developing the management scheme of C/D Centers and the NWM through effective application of producers' organizations or supporting bodies. After the completion of the facilities, actual operation will be undertaken by organizations that users are primarily responsible for, and political intervention should be avoided at all cost. Each facility in the production and consumption areas will have a management committee consisting of representatives of users as an upper body, with an affiliated operation body. The operation body is expected to maintain the function of the whole facility running, for which the establishment of self-management by users is an important issue.

As to the NWM, Wholesale Market Law is required. It appears difficult to newly issue such a law, from the perspectives of existing legal system and historical process of agricultural market formulation. An ordinance by the Municipal of Santa Cruz regarding management system and method is more practicable.

(3) Training and technical assistance

From the initial stage of preparing for the Project implementation to the completion of construction and launching operation, training and technology transfer to government personnel and users is necessary through domestic/ international support.

(4) Implementation system

At the national level, mainly the Ministry of Agriculture, Cattle and Rural Development is to arrange with relevant institutions. At the local level, the Mixed Board should be

established within the Prefectural Government. The Board is composed of representatives from the Prefecture, Municipal and users. Project Office should be established under this Board for administering the Project implementation.

(5) Implementation plan

1) Preliminary Coordination Stage

Based on the results of the Study, discussion among Santa Cruz Prefecture, Santa Cruz Municipal, and relevant municipalities will define the Project's place in the upper scheme of each municipal authority (regional development plan). At the same time, it is required to commence necessary procedures for funding and technical assistance for the Project implementation.

2) Preparatory Stage

Inception Committee for drafting the legal handling in establishing Mixed Board, responsible for the implementation of the Project, will be set up. Training and technical assistance for relevant personnel on Project implementation will begin.

3) Implementation Stage

Mixed Board will be established via aforementioned legal procedure as an implementation agency of the Project, to administer the whole Project from its launching. Management over implementation includes establishment of Management Committee, Management Body, and management regulations, enforcement of the regulations for each project. The following items require early arrangement.

- C/D center: Establishment of Pilot Project
- NWM: Assisting transfer of wholesalers, appropriation of site for the NWM construction, land preparation work, etc.
- Abasto Market: Arrangement for rehabilitation of Abasto Market into an efficient retail market.
- Proceeding training programs and technical assistance programs from preparatory stage.

(6) Financing

1) Construction Fund

- C/D Center: FDC and other outside funds would be main sources.
- NWM: Prefecture and Municipal are responsible for fund procurement.
 - Fund for the investment by the Prefecture and Municipal: Land acquisition cost, land consolidation cost, surrounding infrastructure development cost.
 - Fund for the investment by the Prefecture, Municipal: Construction cost, equipment installation cost, access road construction and its maintenance cost (the fund distribution depends on the amount accrued

from each agency)

2) Operation Fund

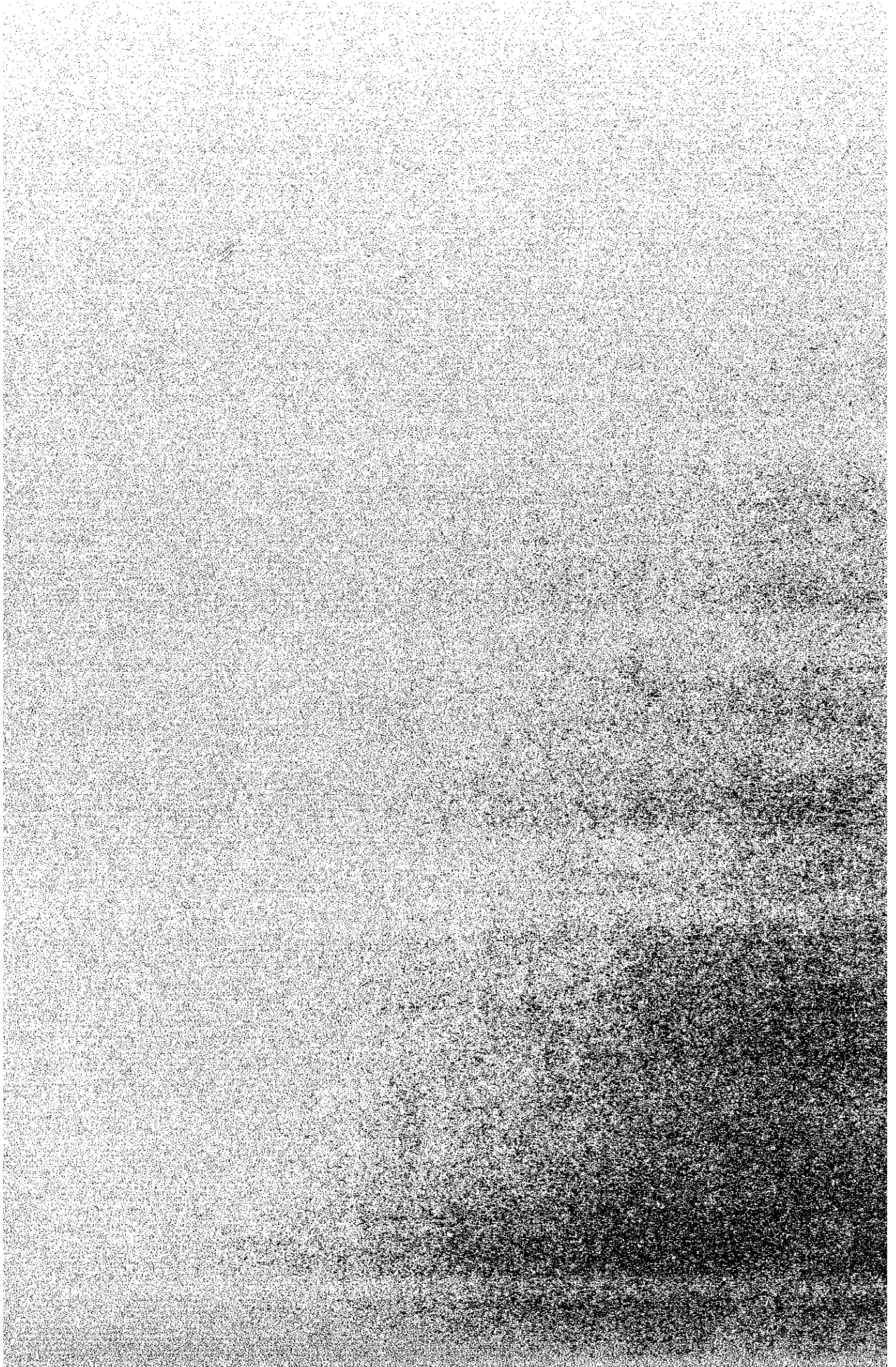
- C/D Center: The initial stages of the operation of the Collection and Distribution Center may need Prefecture's support such as mediation of low-interest loan or provision of credit through its own use of low-interest loan. The Management Body is expected to establish financial system feasible with fee collected from users.
- NWM: For the initial operational fund, the Management Body must be responsible while receiving support of Prefecture and Municipal such as mediation of low-interest loan or provision of credit through their own use of low-interest loan. The Management Body is expected to finance personnel salary for operation cost and maintenance cost by fee collection from users. For the sound and reliable procurement of operation fund and management of the NWM, transparency and accountability of financial system (regular report to the Management Committee and disclosure to users) is requisite.

(7) Relevant Infrastructure Installation and Environment

- Considering that a residential area may be developed around the target area, necessary water supply line should be secured.
- In accordance with the urban development plan, the Municipal Government of Santa Cruz should install accessing roads to the NWM and relevant infrastructure for sewage system, garbage disposal, etc.
- Increasing fruit and vegetable production in the Valley areas depends much on the progress of the irrigation schemes. Promotion of irrigation schemes is crucial.

*Feasibility Study
for the Improvement of Agricultural
Marketing System
in
Santa Cruz*

FIGURES



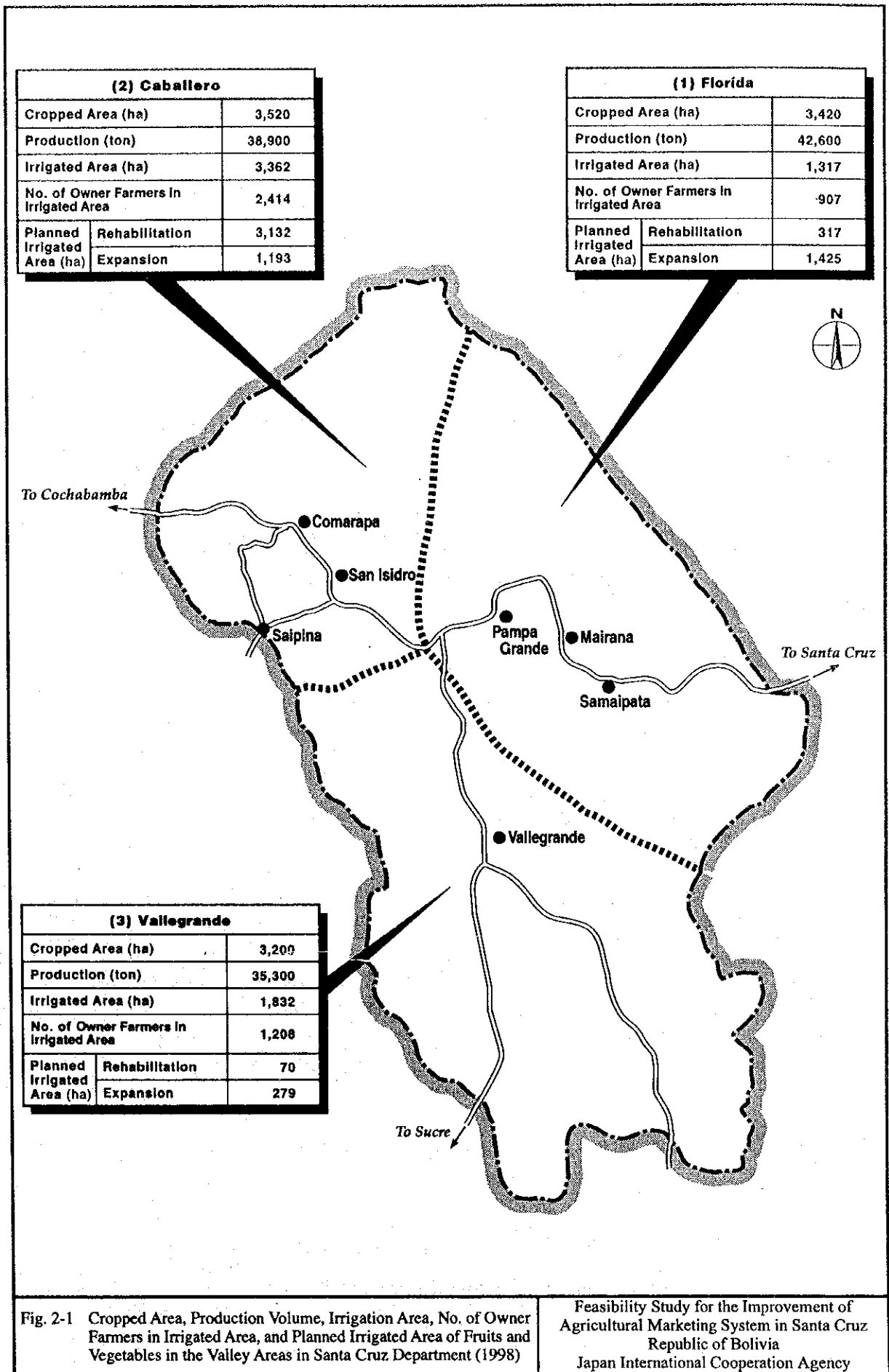


Fig. 2-1 Cropped Area, Production Volume, Irrigation Area, No. of Owner Farmers in Irrigated Area, and Planned Irrigated Area of Fruits and Vegetables in the Valley Areas in Santa Cruz Department (1998)

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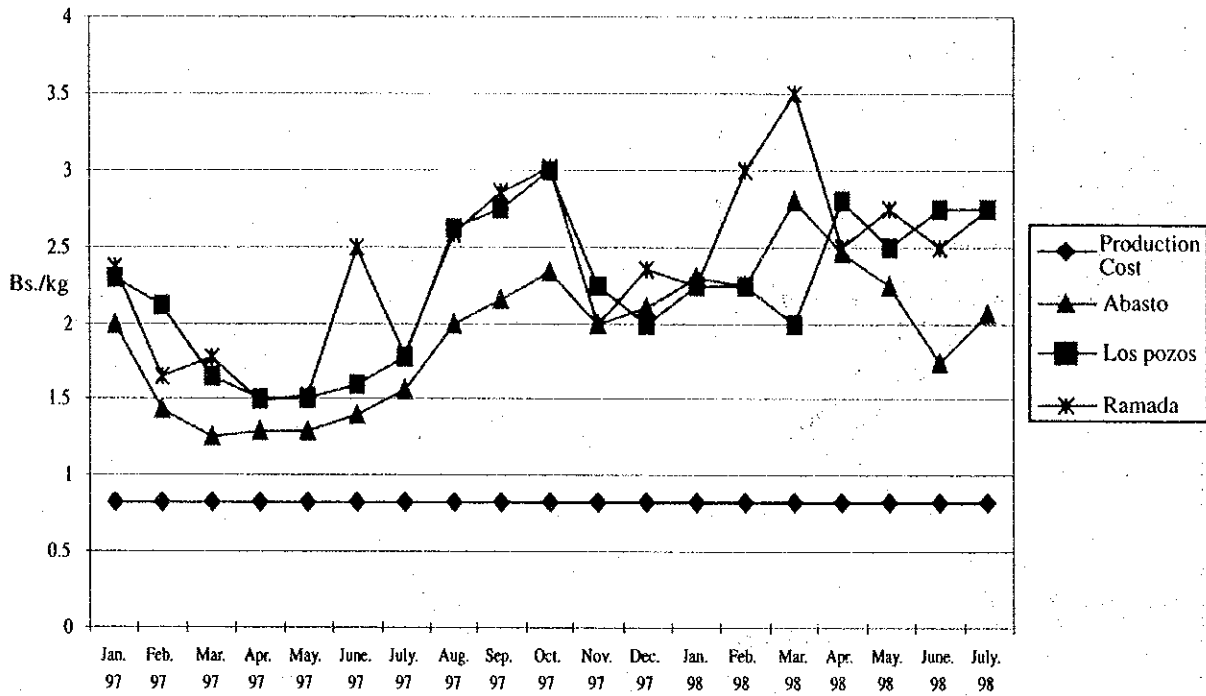


Fig. 2-2 Monthly Change of Wholesale Price of Potato

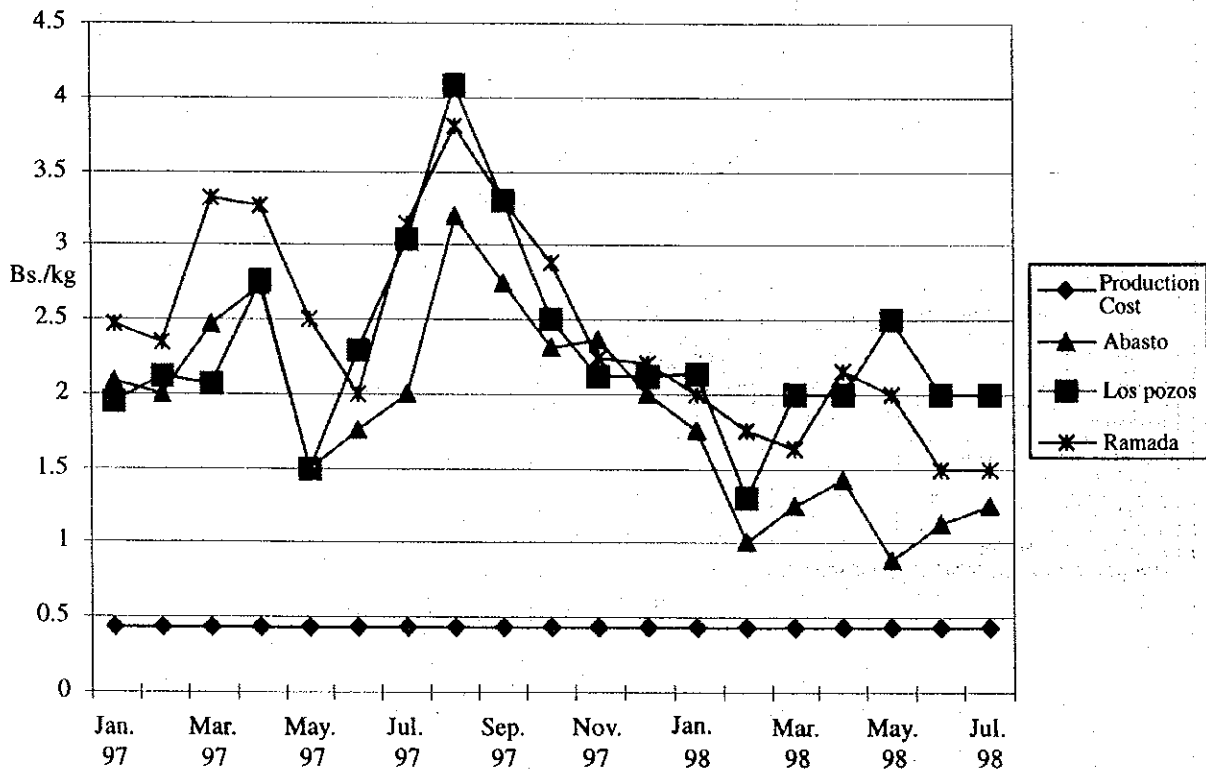


Fig. 2-3 Monthly Change of Wholesale Price of Tomato

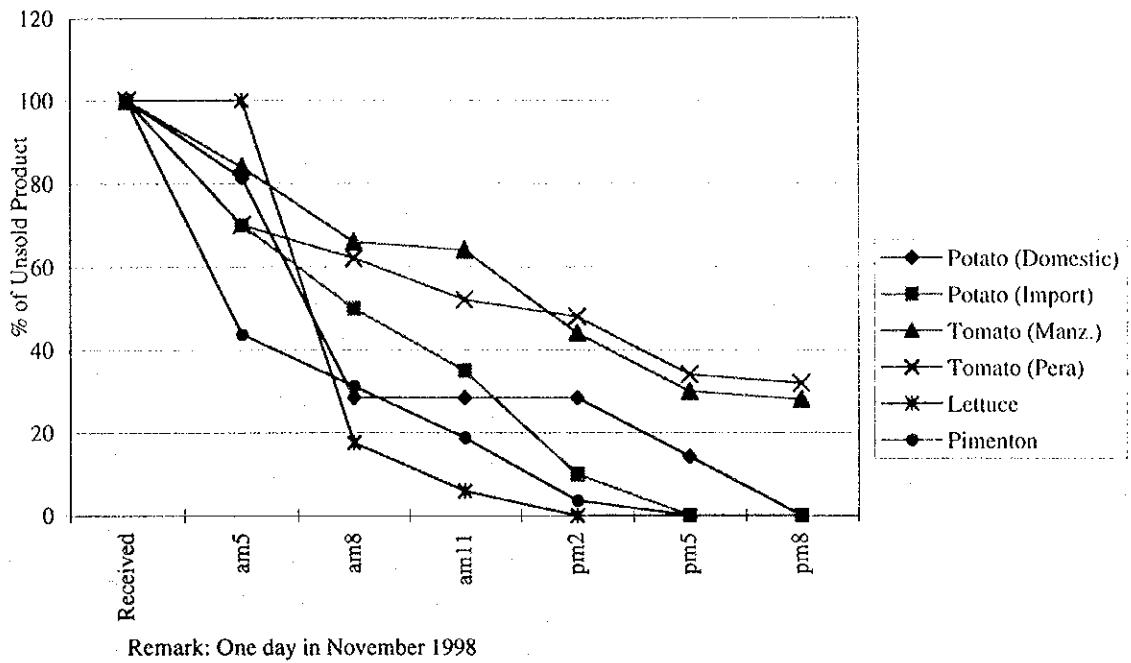


Fig.2-4 Changes in Product Sales Ratio in One Day at Abasto Market

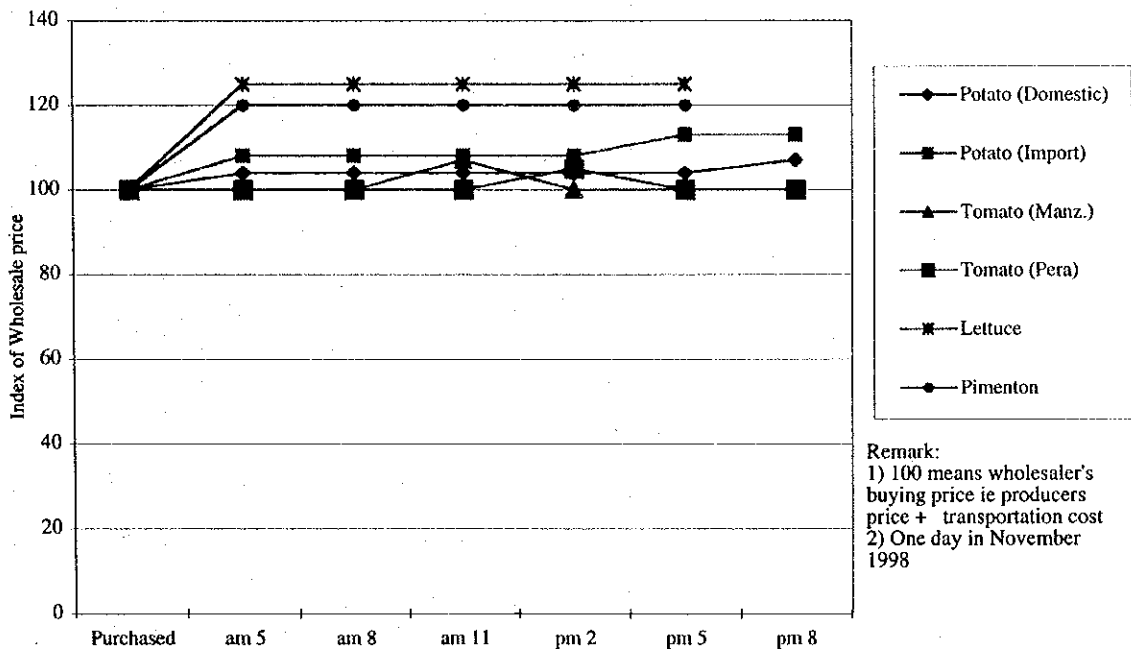


Fig. 2-5 Changes in Wholesale Price in One Day at Abasto Market

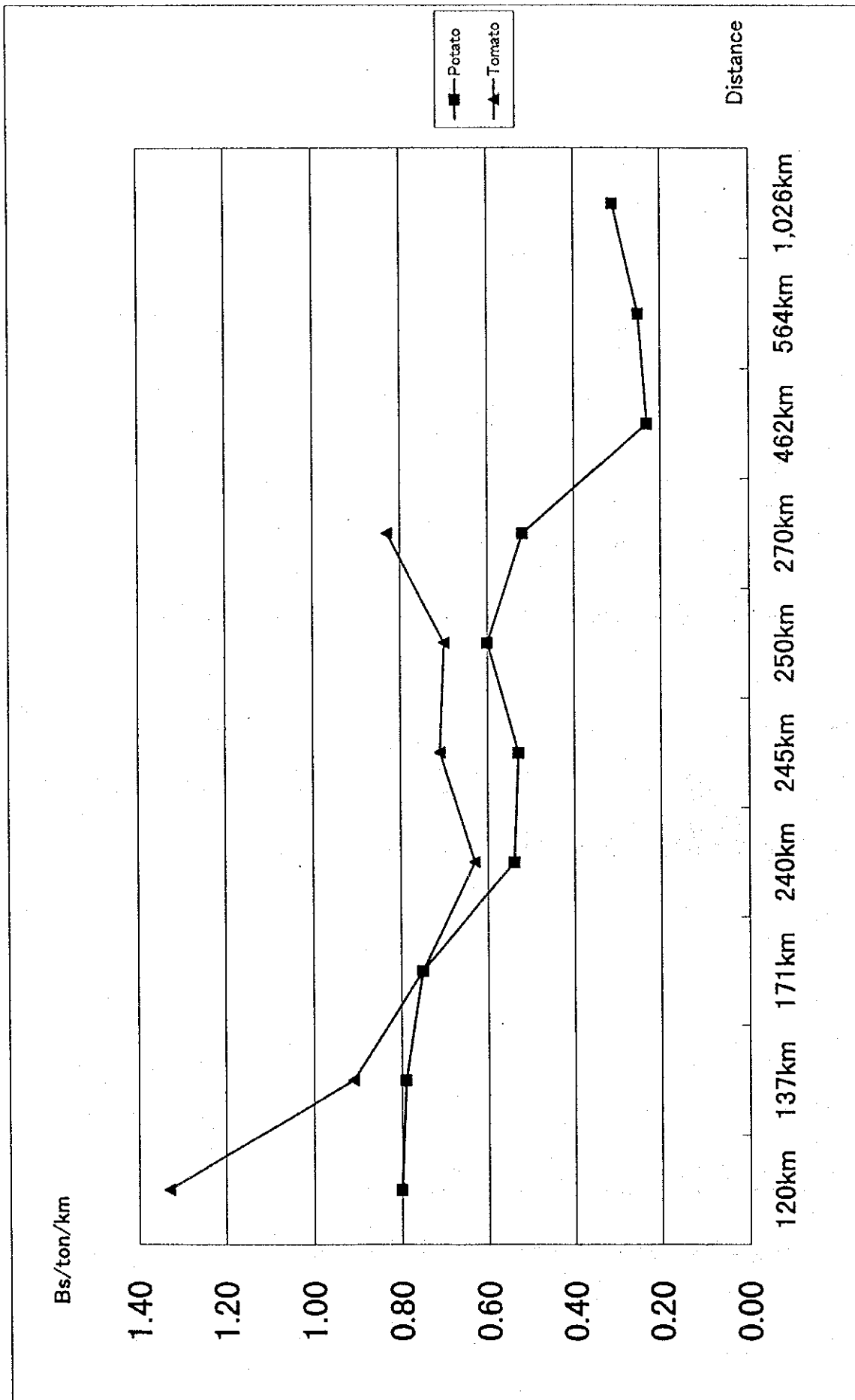


Fig. 2-6 Transportation Cost by Distance