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**Urban Wholesale
Marketplaces for
Fresh Produce in
Taiwan,
Hong Kong,
and Singapore:
Lessons Learned
and Potential
Applications
for Asia**

Technical Report No. 9



**Regional Agribusiness Project
7250 Woodmont Avenue, Suite 200, Bethesda, Maryland 20814**

DEVELOPMENT ALTERNATIVES, INC. • Abt Associates Inc. • Fintrac Inc. • Technical Assessment Systems, Inc. • DPRA Incorporated • IMCC • Land O'Lakes, Inc. • Postharvest Institute for Perishables • United Fresh Fruit and Vegetable Association • GIC Agricultural Group

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by

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PREFACE

This technical report is a publication of the Asia Regional Agribusiness Project (RAP) financed by the U.S. Agency for International Development. RAP, a \$5 million, four-year project, provides technical assistance to USAID Missions, their agribusiness projects, and their clients in South and Southeast Asia. RAP's objectives are to promote market transparency, marketing efficiency, and environmentally sustainable trade and cooperative venture development that raises employment and income levels in South and Southeast Asia. Its four technical areas of expertise are Market Information, Environmental and Food Safety, Trade and Investment Development, and Economic Analysis.

The fruit and vegetable sector of the Asian agricultural economy has grown and become an increasingly important source of food, employment, and export earnings. Unfortunately, most of the promotion of and fanfare over the expansion of the export component of horticultural supply has contributed to the neglect of the basics — performance of the local marketing system, especially the urban wholesale marketplaces.

The Market Information component of RAP has accepted responsibility to develop a dynamic and effective Research and Development (R&D) Program responsive to the problems facing several of the large urban wholesale marketplaces for fresh fruits and vegetables in capital cities in South and Southeast Asia. An important step in that R&D effort is the development of analytical materials that synthesize the lessons learned from more successful urban wholesale marketplaces in progressive cities in Asia, including Taipei, Hong Kong, and Singapore. These three cases provide this paper with insights and lessons about what has actually worked and not worked as well as the reasons why.

This paper also explores the lessons learned from world literature on this topic, and examines how to formulate an applied, progressive research and action agenda that recognizes the guiding role of planned market system improvements in the development of a dynamic agricultural sector. Based on this material, the reader will be better able to appreciate the fundamental role and problems of urban wholesale markets through which most Asian retailers and consumers receive their supplies of fruits and vegetables early each morning.

Urban officials, agricultural officers, infrastructure planners, marketing specialists, and others who are interested in knowing more about this R&D effort or in learning more about the specific experiences of wholesale market development in particular countries should refer to the reference materials and information resources in the publication, *Fresh Fruit and Vegetable Marketing: Updating the Urban Wholesale Marketplace in Asia*, by Merle Menegay, Bill Guyton, and Christine Estaque, RAP's Technical Report #3, December 1994.

RAP Technical Report #6, *Guidelines for the Diagnosis of Urban Wholesale Marketplaces for Fresh Fruits and Vegetables in South and Southeast Asia*, by William Guyton, Merle Menegay, and Christine Estaque, provides detailed guidelines for diagnosing major urban wholesale markets for fresh produce. The interested reader is also referred to the following RAP Technical Reports:

- *Wholesale Markets for Fresh Fruits and Vegetables in Hong Kong* by Dr. Mark Speece, Technical Report #4, December, 1994.
- *Wholesale Markets for Fresh Fruits and Vegetables in Taipei, Taiwan* by Hsing-yiu Chen, Jong Wen Wann, and Shu-hua Huang, Technical Report #5, March, 1995.

For texts on the nuts and bolts of the design, construction, and management of wholesale marketplaces, interested readers are referred to the following Food and Agriculture Organization publications: *Planning of Urban Wholesale Markets for Perishable Food*, H.J. Mittendorf, 1976; and *Wholesale Markets: Planning and Design Manual*, J.D. Tracey-White, 1991.

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EXECUTIVE SUMMARY

This paper is based upon case studies done by the Regional Agribusiness Project of the more successful urban wholesale markets for fresh fruit and vegetables in three prosperous Asian cities — Taipei, Hong Kong, and Singapore. The authors compare the economic settings, historical situations, and urban environments of Taiwan, Hong Kong, and Singapore, which serve as the context for discussing wholesale marketplace improvement programs in Asia. The paper accomplishes the following basic tasks:

- Presents an overview of the roles and realities of urban wholesale markets for fresh produce, especially in Asia;
- Provides a comparative assessment of the different settings, fruit and vegetable consumption patterns, wholesale marketplace characteristics, market management, and service provision in Taipei, Hong Kong, and Singapore;
- Distills from actual Asian experiences useful lessons learned in initiating, updating, designing, establishing, operating, and upgrading wholesale marketplaces for fruits and vegetables over the past quarter century, supplemented with other lessons learned that are relevant in the Asian context; and
- Proposes elements for an applied research and development agenda for upgrading urban wholesale markets in South and Southeast Asia.

As urban populations continue to expand rapidly in many Asian cities, urban food distribution systems struggle to keep pace. Problems related to urban density, trading practices, and facility operation and management challenge urban planners, engineers, and agricultural marketing specialists to devise workable wholesale market improvement programs. These programs must be tailored to each country urban market setting and they must be based on a thorough understanding of the particular urban food sources and distribution channels and practices in that setting.

Wholesale market planners need to be alert to several emerging features of produce marketing. Recent trends include stronger consumer preference for high-quality produce, demand for a greater range of produce choices, a growing apprehension of the negative health effects resulting from excess pesticide residues, a concern for food safety and packaging, and greater sensitivity to environmental issues. As more women work in Asian cities and face serious time constraints in shopping and food preparation, leading to greater consumption of meals prepared outside the home, fresh produce shopping and consumption patterns will change. Working women may prefer to shop at retail stores and supermarkets for fresh produce. On the other hand, an increasing proportion of produce, particularly vegetables, is bought in the form of already prepared food, and restaurants, kiosks, and other food preparers tend to procure fresh produce at wet markets, which are supplied by wholesale marketplaces.

Four key dimensions of urban wholesale marketplace improvement should be kept in mind when planning changes in urban market infrastructure:

- **The coordinating role of a wholesale marketplace within the current and emerging organization of the domestic marketing system;**

- **The contribution of particular wholesale marketplaces to important urban development goals**, such as reduced traffic congestion, improved waste management, increased employment opportunities, and the image of being a modern metropolis;
- **Quality and wholesomeness of the urban produce supply**, convincing urbanites that their fresh vegetables and fruits are hygienic and safe from excess pesticides and their living space is not being seriously contaminated or polluted (assuming that this is the case); and
- **Better integration of domestic and international supplies** of commodities by providing suitable facilities and support services for achieving market transparency and assurances of competitively priced, high-quality produce for consumers.

This paper examines key relationships among these four dimensions and how these factors affect the evolution of urban wholesale marketplaces in Asia. The paper then goes on to address marketplace site selection and design considerations, operational characteristics, market management and service provision, emerging urban food system organizational issues, and the implications of international trade in horticultural products for wholesale marketplace development in Taiwan, Hong Kong, and Singapore. Significant lessons learned from wholesale marketplace improvement efforts for these three case study cities and the broader literature are summarized into three groups:

- Lessons in motivating change (creating awareness and consensus for change);
- Lessons in planning, including the need for diagnostic assessments; and
- Lessons in implementation.

One broad lesson is that **successful wholesale marketplace improvement requires cross-agency and cross-disciplinary (planner, engineer, economist) collaboration**. Agricultural marketing specialists need to play a more active role in the planning and implementation processes than they have in the past in many Asian countries. A second lesson is that **representatives of the private sector produce trading community and producers (or producer groups) need to be consulted about marketplace site, layout, stall size, cold storage, and other design issues, as well as have formal ways to provide feedback to marketplace management during implementation**.

A third broad lesson is that **effective wholesale marketplace improvement requires going beyond focusing on hardware issues alone**. Careful planning requires a food systems perspective using subsector and industry studies, where appropriate, and diagnostic assessments of the performance of existing wholesale marketplace facilities. In addition, planners need to think in 20-30-year time horizons, sequencing the addition of new or improved wholesale markets. Planners must recognize how urban produce distribution systems are evolving, and how periodic assessments can be carried out to update marketplace facilities continually before intractable problems emerge. Finally, **selecting a private sector or semi-private management company to run the market, monitor market operations, and respond flexibly to private traders, producer groups, municipal authorities, and agricultural sector concerns is strongly advised**.

In the concluding section, the paper lays out an applied research and action agenda. Key elements of an action agenda are listed below by action or intervention category:

ACTION AGENDA

Critical Initial Steps

- Design and undertake an effective method for forming a **regional, multisectoral task force**, consisting of regional institutions and donor agencies, to review applications for future *Marketplace Assessments* as the first step in marketplace updating.
- Propose that the **public agricultural agencies** establish a presence and **play a more vital role in the urban areas** of South and Southeast Asia rather than maintain the traditional image of having jurisdiction only within the rural areas.

Seminars, Workshops, and Training

- **Co-sponsor a regional seminar series** in South and Southeast Asia with the Asian Productivity Organization (APO), Food and Fertilizer Technology Center (FFTC), and/or ASEAN Food Handling Bureau (AFHB) titled *The Benefits and Prospects of Updating Urban Wholesale Marketplaces for Fresh Produce*.
- **Sponsor national workshops and seminars in several Asian countries and disseminate publications that stress the significant lessons learned** from past and ongoing wholesale marketplace improvement programs in other Asian countries.
- **Sponsor national workshops on urban marketplace improvement** that bring together influential local leaders from the horticulture and trading communities, as well as select municipal and national government agencies, to explore the need for change and options.
- **Develop support materials and propose a series of forums** in South and Southeast Asia for marketplace users to express their concerns, ideas, and support for updating the existing facilities and management practices of wholesale marketplaces.
- **Conduct observation trips to more successful Asian wholesale markets for key local leaders in RAP countries.** Lead teams of concerned public and private sector participants on observation tours to more successful marketplaces.

Case Studies, Monographs, and Training Materials

- **Commission brief case studies to document East Asian experiences** with the active involvement of their ministries of agriculture, especially agricultural marketing divisions, in the key decisions of how to improve and design urban wholesale marketplaces, to support legislation regarding agricultural marketing, and to respond to changing quarantine concerns.
- **Undertake additional wholesale market planning, design, and implementation case studies.** Detailed case studies will provide Asian planners with more valuable information on how to adapt generic guidelines to a particular set of local conditions.

- Propose a **collaborative "state of the art" document** with other institutions (such as the Food and Agriculture Organization, the Asian Development Bank, and the World Bank) that have extensive experience in infrastructure development to document their experiences and lessons learned.
- Based on the materials from the case studies and this analytical study, develop:
 - **Training materials** on how to update marketplaces for the use of municipal and agricultural officials;
 - Practical, low-cost, and timely **marketplace assessment methods** for preliminary decisions regarding what forms of marketplace updating are suited to the prevailing situation, resources, and needs of marketplace users, as well as compatible with the agenda of municipal authorities; and
 - **Presentation materials** for use in seminars, workshops, or conferences on this timely subject

Other Actions

- Propose to local (and national) governments and to trade associations that **wholesale marketplaces be used to monitor price movements and target traders, including importers and exporters, for training, extension, and produce inspection/testing.**
- **Improve collection and dissemination of wholesale market information at selected Asian wholesale marketplaces, where there is a rationale for improvement.**
- Since "a picture is worth a thousand words," **commission a slide series documenting actual cases of marketplace problems** along with alternative ways that other markets have resolved such problems.

RESEARCH AGENDA

Further applied research should support this action agenda — not compete with it for limited resources. Broad research questions include the **evolving role of wholesale marketplaces and supermarkets in large Asian cities**, as well as **how GATT implementation will affect the relative importance of terminal markets versus alternative produce marketing channels in key RAP countries in Asia.** The RAP team and associated consultants could also examine the following selected, specific research issues:

- Pesticide residues, consumer perceptions and concerns regarding pesticides, testing for pesticide residues, and how extension programs address this matter.
- The past, ongoing, and prospective roles of wholesale marketplaces as demonstration centers that work with traders, producers, and trader/producer groups.
- The role of wholesale markets in price formation and improving market transparency.

- Advantages and disadvantages of auction versus direct negotiation in wholesale markets.
- Tradeoffs regarding alternative uses of marketplace facilities during slack periods.

Terminal wholesale marketplaces will continue to play a pivotal role in urban Asian produce and food systems for many years to come. Supermarkets, supplied by alternative marketing channels, will not supplant wholesale marketplaces in the near to medium term. Hence, improving upon existing wholesale market facilities and carefully designing new facilities are likely to have a high payoff in improving the efficiency, effectiveness, and progressiveness of Asian urban food systems. Furthermore, improved wholesale marketplaces could play a key coordinating role in distributing produce imports and consolidating produce exports. Design and construction of better hardware (marketplace infrastructure) needs to be complemented by improved software — namely better marketplace management and services, targeted marketing extension, user-driven market information (where it meets a real need), and monitoring of produce quality relative to phytosanitary standards.

SECTION ONE

INTRODUCTION

The Asia Regional Agribusiness Project (RAP) recently commissioned three case studies of the more successful urban wholesale markets for fresh fruit and vegetables in the prosperous Asian cities of Taipei, Hong Kong, and Singapore.¹ These cases were selected for the practical insights and ideas that they could provide in outdated urban marketplaces of South and Southeast Asia today.

This synthesis paper builds on the review of those cases along with excerpts from the broader, diffuse world literature on the subject of wholesale market problems, planning, construction, management, and expansion. This paper accomplishes four basic tasks:

- Presents a brief overview of the roles and realities of urban wholesale markets for fresh produce, especially in Asia;
- Provides a comparative assessment of the different settings, fruit and vegetable consumption patterns, wholesale marketplace characteristics, market management, and service provision as noted in case studies of Taipei, Hong Kong, and Singapore;
- Distills from actual Asian experiences useful lessons learned in initiating, updating, designing, establishing, operating, and upgrading wholesale marketplaces for fruits and vegetables over the past quarter century, supplemented with other lessons learned that are relevant in the Asian context;
- Proposes elements for an applied research and development agenda for upgrading urban wholesale markets in South and Southeast Asia, with special attention to the:
 - Key concerns of urban officials, planners, agricultural marketing specialists, agricultural leaders, and analysts in countries served by RAP; and
 - Needs of traders, farmers, and consumers as provided by updated and improved marketing facilities and services.

This paper enters uncharted territory in its effort to build on key relationships between city revitalization, domestic supply patterns, emerging urban food system organization, and import/export trade in fresh produce, which, in the proper combination, can create substantial, sustainable benefits to both the urban consumer and rural farm community. Although this will not be an exhaustive treatment of all the considerations required for updating urban markets, it will provide the big picture and the often overlooked dimensions of urban wholesale market development that adversely affect many parts of today's Asia.

¹The case study for Singapore is unpublished.

SECTION TWO

ROLES AND REALITIES OF URBAN WHOLESALE MARKETPLACES FOR FRESH FRUITS AND VEGETABLES

THE EVOLVING ROLE OF WHOLESALE MARKETPLACES IN URBAN ASIAN FOOD SYSTEMS

Historically, the main role of an urban wholesale marketplace was to receive, break down, and distribute to retailers or consumers the deliveries of vegetables, fruits, and other agricultural produce from nearby fields. Over time, as populations increased and urban lands were converted to nonagricultural uses, the shipments increased in size because sent from more distant supply areas on large trucks. Streets along which trade originally took place became overcongested and gave way to structures within which trade could be conducted without the adverse affects of weather.

Thus, sheltered, open-sided facilities (wet markets) developed where numerous sellers and buyers could come together at a specified time each morning to exchange money for goods. Because this service evolved from the earliest times in a city's life and growth, the facilities were usually located near the retailers and their customers who were found in the central city area. However, while city populations increased, centrally located businesses thrived, and nearby towns became absorbed within the city boundaries, the wholesale facilities were often left largely untouched.

When new facilities were constructed, whether within the city or at an outlying area — termed a satellite market — they gradually became overcrowded. Retailers vied with wholesalers for scarce space within which to do business and to keep pace with the growing demand for fresh produce. Market fees were often held stable or low to encourage entry of new traders, yet this practice resulted in insufficient funds to manage the market, repair it, and dispose of increased piles of refuse. The cycle continued — the volume of goods steadily increased as did the number of traders, the amount of garbage generated, the management responsibilities, the accelerated deterioration of overcrowded facilities and services, and so on. In response to this common situation, municipal governments and agricultural marketing organizations in several countries improved facilities — at least for the medium term — and also improved the marketplace management approach. As noted above, the RAP project has documented three such cases — Taipei, Hong Kong, and Singapore.

Today, in most Asian countries, large wholesale marketplaces in the national capital serve as the coordinating center for the flow of money, product, and information for the fresh fruit and vegetable subsectors. Common problems experienced by several of these wholesale markets include severe traffic congestion, operating budget deficits, outdated and dilapidated facilities, ineffective garbage disposal, and inadequate services to traders and farmers. As urban populations grow, available space diminishes, innovative forms of food retailing arise, and consumers become more sophisticated, additional problems occur such as how to modify traditional food distribution systems; how to address consumer concerns over excess pesticide residues; how to accommodate an increased variety of products from both domestic and foreign origins (which will be accelerated by the General Agreement on Tariffs and Trade or GATT); and how to manage more sophisticated service requirements for public officials, producers, and traders.

Traditionally, large-scale traders in urban wholesale marketplaces distribute most of the fresh fruit and vegetables shipped from production areas and between large urban centers. In the city, their clientele

consists of retailers in the wet markets, vendors, hotels, restaurants, and institutions such as company cafeterias, military establishments, schools, and hospitals. Today, the largest share of fruits and vegetables is still sold in the wet markets where most lower- and middle-income households shop on a regular basis and wealthier households send their household staff to purchase the best, freshest quality.

A relatively new trend in produce marketing is for supermarket chains to purchase the bulk of their main produce items directly from suppliers in major production areas or from importers, and to purchase only small quantities of miscellaneous items from the terminal markets. By making procurement contracts with their main suppliers, those chains bypass middlemen in the wholesale markets and reduce costs. Higher-income households, especially those with smaller families or both parents working, are the main shoppers for fresh produce in the supermarkets.

PROBLEMS FACING TERMINAL PRODUCE MARKETS TODAY

In this section, we look at the roles, realities, and problems of urban wholesale markets related to these newer forms of retailing fresh produce that bypass those markets. In the past, although governments often recognized the marginal performance and deteriorating situation in their urban wholesale marketplaces, they assumed that the emergence of new forms of retailing food, such as supermarkets, hypermarkets, and night markets, would eliminate or at least alleviate most marketing problems for fresh produce in the near future, because these retail outlets procured most of their fresh fruits and vegetables directly from supply areas. Therefore, given that expectation, many Asian governments tended to underestimate the long-term benefits associated with updating, renovating, or adding to the urban wholesale marketplaces.

However, high-volume sales of fresh produce in supermarkets is still a likely scenario for the distant future rather than the reality of the near future, at least for most of South and Southeast Asia. Today, most urban or suburban households in that region do not have access to nor can they afford supermarkets. Thus, rather than ignore that reality, the need is urgent to focus improvements on the performance of wholesale marketplaces, which supply vendors, small retail shops, restaurants, and others distributed throughout the city to meet the present needs of *all* urban consumers for less expensive, healthy, and widely varying types of fresh produce.

Terminal markets for fresh fruits and vegetables in Asian national capitals are experiencing, and in turn creating, many problems for food distribution. Large cities experience both unique and common problems in their market facilities where perishable fruits and vegetables are distributed each morning. The common problems can be classified as:

- Urban, density-related problems, such as severe traffic congestion near the markets, large amounts of waste products rapidly filling landfills (garbage disposal problems), operating costs that exceed market revenues, and dilapidated appearance plus strong odors creating bad public images;
- Trading-related problems, such as periodic substantial spoilage and loss of revenue for traders given market gluts, high marketing costs caused by uncompetitive trading practices, and multiple layers of traders; and
- Facility/management-related problems, such as commodity losses or damage during unloading/loading because of insufficient space, poor layout, and/or improper handling and/or

packaging practices, lack of adequate shelter from rain and sun light, inefficient management practices (such as little arbitration for disputes), reduced earnings of traders within markets because of part-time traders selling at reduced prices outside the facility, and insufficient cold storage space.

Other problems with wholesale marketing may be unique to only one or two particular countries. Such problems are often based on the structure of the country's particular produce marketing system, degree of dependency on imported produce, and rate of urban growth. For instance, urban wholesale marketplaces in both Singapore and Hong Kong experience special problems because of their year-round dependence on large-scale imports. Singapore's vegetables are sourced mainly from neighboring Malaysia and Indonesia whereas fruits arrive from several international suppliers. Singapore also supports an active reexport industry, largely orchestrated from its Pasir Panjang market facility. Until 1974, the government maintained a very low profile, using mostly indirect means to monitor the marketing system with minimal interference and almost no tariffs, no regular price monitoring, and no enforcement of strict grades and standards.

On the other hand, Hong Kong supports production of Western types of several leafy vegetables that are marketed through its public sector Vegetable Marketing Organization (VMO). Other major marketplaces are the Cheung Sha Wan (CSW) market in Kowloon and the Western market on Hong Kong Island. Domestic supply is balanced with daily, large-scale imports of fruits and vegetables arriving from China, the United States, and other countries in container vessels, cargo ships, and airplanes. Reported periodic oversupplies of certain commodities cause substantial losses to individual importers struggling to anticipate daily arrivals.

In contrast with Hong Kong and Singapore, Taiwan and Korea experience special problems resulting from their former policies that protected domestic agricultural production, largely by excluding imports of many commodities. These countries have traditionally organized and operated their urban wholesale facilities to service primarily the marketing needs of local farmers and their associations and, secondarily, the concerns and choices of consumers. Given the recent GATT negotiations, however, the increasing prominence of imports in competition with local products may create forces for change in the organization, operation, or scope of those markets. Wholesale marketplaces will have to accommodate greater imports in addition to domestic produce.

OPPORTUNITIES FOR CHANGING THE ROLE OF WHOLESALE MARKETPLACES

Marketing experts have suggested useful changes in the design, organization, and operations of wholesale marketplaces for fresh produce that address several of the problems mentioned above. However, few provide practical and continuous guidance on how to work closely with a country's leaders, market managers, and funding sources to tailor facilities' organization, operations, and trading practices to emerging changes in the traditional food distribution systems and the international trade environment.

National food distribution systems evolve in many different ways and with varying degrees of change — this evolution is inhibited or accelerated by a country's economic growth and government policies. Changes may include the emergence of supermarkets and hypermarkets and formation of alternative marketing channels, particularly for imports and exports, which tend to bypass urban terminal markets. Also, as economies improve, a substantial increase in the consumption of fresh fruits and vegetables has been commonly observed, unless inhibited by trade policies. Both cases suggest that

professional guidance is needed for public sector services in their support of wholesale marketplace improvements and the urban infrastructure planning process.

Other recent trends noted in Asian food distribution systems, which provide both opportunities and challenges, include:

- Stronger preference for high-quality produce characteristics such as new flavors, freshness, consistent size, improved packaging, and spotless appearance;
- Demand for more choices than have historically been available, which trading patterns have influenced;
- A gradual, growing apprehension of the negative health effects resulting from excess pesticide residues, and a concern for food safety and packaging; and
- Stronger emphasis on environmental issues, including recycling of packaging material and proper disposal of urban wastes.

ANALYZING WHOLESALE MARKETPLACES

Urban Marketplaces and the Food Distribution System

As urbanization proceeds at a rapid pace in Asia, and as consumer incomes, preferences, and purchasing patterns change, it is useful to think about wholesale marketplace improvements in the broader context of emerging urban food distribution systems. Terminal wholesale markets are physical facilities that receive produce shipments from domestic suppliers and importers and break these into smaller lots for retailing or sale to institutional buyers. These marketplaces are near the end point of one domestic-cum-international marketing channel; supermarkets with their wholesale distribution centers represent another produce marketing channel.

The role of the urban wholesale marketplace is changing and will continue to change. In analyzing the process and attempting to forecast future changes, it is useful to think about wholesale marketplace improvement with reference to the following four dimensions or factors:

- The coordinating role of a wholesale marketplace within the current and emerging marketing organization of the domestic marketing system;
- The contribution of particular wholesale marketplaces to important urban development goals, such as reduced traffic congestion, improved waste management, increased employment opportunities, and the image of being a modern metropolis;
- Quality and wholesomeness of the urban produce supply, convincing urbanites that their fresh vegetables and fruits are hygienic and safe from excess pesticides and their living space is not being seriously contaminated or polluted (assuming that this is the case); and
- Better integration of domestic and international supplies of commodities by providing suitable facilities and support services for achieving market transparency and assurances of competitively priced, high-quality produce for consumers.

Although managers of most urban wholesale market facilities strive to achieve these four dimensions, they encounter serious problems or constraints in attaining them.

The **coordinating role** of a wholesale marketplace within the current and emerging organization of the domestic marketing system refers to how effectively the wholesale marketplace coordinates domestic supplies of produce from multiple shippers with demand, as well as conveys key market information and quality signals to participants. Several types of marketing participants contribute supply in various forms to end-users, including everything from the farmers' procurement of agricultural inputs to consumers' access to fresh vegetables every morning.

The coordinating role also includes how participants are organized into alternative marketing channels that use different types of physical facilities. For instance, the nature of some marketing channels is changing as more consumers buy their fresh produce at supermarkets rather than from sidewalk vendors, from retailers in the traditional wet markets found in most cities, or at night markets that have become a favorite shopping place for fresh fruits in some Asian cities. Also, processors may compete with retailers in purchasing raw materials from urban wholesale markets, as in some Indonesian cities such as Jakarta. In contrast, Taiwanese processors make contracts for fresh vegetables directly with groups of growers near the rural processing facilities. These few examples illustrate the diversity of marketing systems found in Asian countries and point to the need for alternative ways in which the wholesale facilities need to accommodate varied marketing arrangements.

Whenever wholesale facilities are located within large urban areas, several problems arise because **urban planning goals** are often undermined by the conditions surrounding the market. Common examples include increased traffic congestion as commuters attempt to drive downtown to work but are encumbered by large trucks arriving, leaving, or parking in the limited space near the market; land values in the city center increase as does the tax base paid by large businesses preferring such central locations, yet revenues from the market facilities barely cover costs while marketplaces occupy substantial land area; and dilapidated and odoriferous conditions of the facility counter the city's image as a modern and progressive urban center.

Safety and environmental issues relating to the quality and wholesomeness of the urban food supply also tend to surface as consumer groups, newspapers, or public health organizations raise consumer apprehensions of excess pesticide residues on fresh produce, drainage of rotting materials fills local sewers or produce wastes drain into local rivers, and urban land fills are quickly filled with wastes from such market facilities. These are real concerns that are sometimes overlooked but must be addressed.

Improved **integration of domestic and international produce supplies** has become increasingly necessary as imports of fresh fruits become a common phenomenon in most Asian cities, because of increased consumer incomes and interest in purchasing a wider variety of commodities often not locally grown. Also, several Asian countries have supported increased exports or reexports as an effective way to increase farm incomes or trader revenue. However, the marketing channels for such trade usually bypass the urban wholesale facilities that often performed a coordinating role for balancing demand and supply conditions and that served as a point where widely known market prices were determined. Whenever those market prices exceeded the revenues earned from exporting, large amounts of produce would be diverted into these domestic markets. And whenever abundant supplies of high-quality, local fruits reached these markets, they substituted for much of the high-cost imports, thus causing periodic losses for importers.

A detailed discussion of evaluating marketplace performance — with reference to the four dimensions outlined above — is found in the discussion of Key Performance Criteria for planning, Section Five.

The Wholesale Market Facility

A basic principle for evaluating a marketplace facility is that planners and analysts need to think in terms of facilities, services, and management style as tailor-made to suit the distinctive features of a particular situation rather than a broad, all-inclusive set of rules or guidelines. The basics of business management should also guide a marketplace evaluation.

Initiating change within any given marketplace involves at least three steps:

- Creating awareness and support for needed changes;
- Planning for improvements and funding them; and
- Implementing changes, routinizing operations and management practices, and responding flexibly to problems as they arise.

In evaluating the performance of urban wholesale marketplaces, the analyst needs to assess marketplace efficiency and its adequacy and effectiveness as perceived by users. Objective measures of marketplace performance might include:

- The volume of throughput per square meter (which can be compared across markets).
- Revenue per square meter generated by sales.
- The degree of price/supply volatility.
- Cold storage capacity relative to traders' (users') needs and total space in the marketplace.
- Time required to park and unload trucks; move produce to transaction sites, cold storage, or stalls; transact business; and leave the marketplace.

Options for improving marketplace performance may be limited by several factors. Alternative sites for expanded facilities may not be readily available or, if available, not convenient to sellers and buyers. When the cost of acquiring land for a new wholesale marketplace is prohibitive (including land purchase cost, compensation paid to land owners for land improvements, protracted delays because of legal battles and difficulties in obtaining title), planners may opt for renovating and expanding an existing facility. This option is, however, costly and disruptive to ongoing wholesale trade. In addition to considering the tradeoff between building a new facility and renovating an old one, marketplace improvement planners are often constrained by investment capital and the rates that they can charge users for improved facilities.

Another factor complicating planning is forecasting how urban food distribution systems will evolve and whether the volume of produce handled by wholesale marketplaces will continue to expand, remain about the same, or decline relative to other marketing channels and facilities (for example, retail chains or full-service wholesalers serving voluntary chains). Although many planners of wholesale

marketplace facilities failed to anticipate the rapid expansion of many Asian urban cities and the rate at which "new" marketplace facilities would become obsolete during the 1970s and 1980s, there is a very real risk that planners will approve construction of larger marketplaces than necessary, based on extrapolation of past trends, without fully anticipating how urban food distribution systems may be transformed by alternative marketing channels and participants.

Nevertheless, urban wholesale marketplaces will continue to play an important role in produce distribution in large Asian cities. It is important to recognize that substantial time lags in improving major infrastructure facilities can occur between the time that overcrowding has become a serious problem and new facilities are in place. If the planning and design work for new or improved facilities are not well under way before overcrowding becomes severe, marketplace improvement will be reactive and typically inadequate.

SECTION THREE

COMPARATIVE ANALYSIS OF THE SETTINGS AND SITUATIONS IN TAIWAN, HONG KONG, AND SINGAPORE

Misleading answers often occur to those trying to answer the question, "Why are some marketplaces so much more modern or up-to-date than others?" This happens because the questioners are not familiar with the setting and situations to which each marketplace has been tailored. For example, Taiwan is a very small island with an historically strong agricultural base and a traditional preference for food self-sufficiency and substantial agricultural exports. Furthermore, its capital city of Taipei is a moderately sized Asian city on this densely populated land. In contrast, Hong Kong and Singapore are very small city-states with densely populated land and scarcely any agricultural production base; hence, they are dependent on fresh fruit and vegetable imports from other countries.

Given such differences, one would expect not only substantially different types of modern market facilities but also varied visions of future improvements or updating. Government funds pay for facilities but what dictates the nature, appropriateness, and progressiveness of updated facilities in each case? This section examines the settings and situations in those three cases to answer that query. Table 3-1 summarizes several key economic indicators and horticultural consumption levels of the three case study countries. Table 3-2 provides more detailed statistics on fruit and vegetable production, trade, and per capita supply.

These three cases represent high-income countries by both Asian and international standards. Per capita incomes in Taiwan (\$10,212), Hong Kong (\$15,360), and Singapore (\$15,730) are well above those in the Philippines (\$770), Indonesia (\$670), Sri Lanka (\$540), India (\$310), Bangladesh (\$220), and Nepal (\$170).² Given high rates of growth in disposable incomes, consumers in the three cases have purchased large quantities of fruits and vegetables, particularly fresh produce. Domestic rice consumption has declined over the past two decades, as consumers have substituted fresh fruits and vegetables and meat for the basic starchy staple.³ Vegetable consumption per capita peaked in Taiwan during the 1979-80 and 1984-85 periods, dropping slightly more than 10 percent to the 1991-92 period.⁴ Vegetable consumption per capita has reached a plateau in Hong Kong since the early to mid-1980s, varying less than 5 percent over the 1981-93 period. In contrast, fruit consumption per capita expanded steadily in all three countries, increasing 46 percent from 1980-82 to 1989-91 in Taiwan and 36 percent from 1981 to 1993 in Hong Kong. Fruit consumption actually surpasses vegetable consumption in both Hong Kong and Singapore, as shown in Table 3-2.

² These are 1992 per capita income figures from the *World Development Report 1994*, World Bank, 1994.

³ Domestic rice supply available for consumption declined from 100.8 kilograms per capita in Taiwan in 1980 to 63.4 kilograms in 1992 (Hsing-yiu et al., 1994).

⁴ The discussion in text equates fruit and vegetable consumption with supply per capita. The only data available are estimates of supply. Actual consumption may be somewhat lower because of produce spoilage and other factors.

TABLE 3-1

BASIC CHARACTERISTICS OF THE THREE CASE STUDY COUNTRIES, 1993

Characteristic	Taiwan	Hong Kong	Singapore
Population	2.6 mill. (Taipei only) 20.9 mill. (Taiwan)	5.8 mill.	2.8 mill.
Land Area	36,000 sq. km.	approx. 1,000 sq. km.	approx. 1,000 sq. km.
Key Geographic Characteristics	Island with Taipei 20-25 km. from port of Keelung, via road and rail.	Ocean port; access to mainland China by river, rail and road.	Ocean port; access to Malaysia by road & rail & to Borneo by sea.
Per Capita Income (1992)	\$10,202	\$15,360	\$15,730
Income Growth Rate, 1980-92	6.3%	5.5%	5.3%
Est. Vegetable Supply Per Capita	136.9 kg.	94.7 kg.	95.1 kg.
Imports as % Vegetable Supply	7%	84%	98%
Estimated Fruit Supply Per Capita	130.7 kg.	102.4 kg.	118.4 kg.
Imports as % Fruit Supply	12%	99%	almost 100%

Note: Consumption and import estimates are for fresh and processed fruits and vegetables.

Note: The discussion in text equates fruit and vegetable consumption with supply per capita. The only data available are estimates of supply. Actual consumption may be somewhat lower because of produce spoilage and other factors.

COMPARISON OF THE THREE CASE STUDY COUNTRIES

Taiwan is very different from Hong Kong and Singapore because it meets much of its produce needs through domestic production while the latter two import most of their vegetables and virtually all of their fruit. Taiwanese vegetable production dropped 17 percent from its peak year for area harvested and output (3,416,000 metric tons in 1983) to 1992, when 2,840,000 metric tons were produced; production is expected to continue declining over the next decade. Fruit production expanded 46 percent to 2,551,000 metric tons over that same period. Fruit tree hectareage has expanded as Taiwanese farmers replace cultivation of lower-value staple crops and vegetables with high-value horticultural products for the domestic market and for export. Taiwan's overall agricultural trade deficit has increased since 1970, with the import value of fruit exceeding export value beginning in about 1988. Net value of fresh and processed vegetable exports is still positive but declining, whereas net volume is already negative.

TABLE 3-2

VEGETABLE AND FRUIT PRODUCTION, TRADE AND SUPPLY ESTIMATES, 1993
(per capita figures in kg./annum; all others in metric tons)

	Taiwan		Hong Kong		Singapore	
	MT (or kg.)	%	MT (or kg.)	%	MT (or kg.)	%
Population	20,944,000		5,834,800		2,818,200	
Vegetable Production	2,840,000	99%	91,000	16%	4,800	2%
Vegetable Imports	197,366		511,200		391,494	
Vegetable Exports	169,721		49,900		128,300	
Est. Net Imports (Exports)	27,645	1%	461,300	84%	263,194	98%
Domestic Vegetable Supply	2,867,645	100%	552,300	100%	267,994	100%
Per Capita Vegetable Supply	136.9		94.7		95.1	
Fruit Production	2,551,000	93%	4,200	1%	17	0%
Fruit Imports	334,616		685,300		419,820	
Fruit Exports	147,511		92,000		86,132	
Est. Net Imports (Exports)	187,105	7%	593,300	99%	333,688	100%
Domestic Fruit Supply	2,738,105	100%	597,500	100%	333,705	100%
Per Capita Fruit Supply	130.7		102.4		118.4	
Total Per Capita Supply, Fruits and Vegetables	267.7		197.1		213.5	

- Notes: a) Taiwan trade data for fresh and processed fruits and vegetables.
 b) Hong Kong trade data are for fresh and frozen vegetables and fresh fruit.
 c) Singapore trade data are for fresh and dried vegetables and fruit.
 d) Exports from Hong Kong and Singapore are largely, if not entirely, re-exports.

In sharp contrast to Taiwan, **Hong Kong** meets most of its vegetable consumption requirements (84 percent) and virtually all of its fruit requirements (> 99 percent) through imports. Local production of vegetables declined 48 percent from 1981 (176,000 metric tons) to 1993 (91,000 metric tons), as did coverage of consumption through local production (38 percent in 1981 to 16 percent in 1993). However, depending on the transition in 1997, its position within China will mean former imports from the Peoples Republic of China will be recorded as domestic production, the implications of which are uncertain at this time.

Even more pronounced than in Hong Kong, **Singapore** relies almost completely on imports to meet fresh produce requirements. Although no estimates are available for the proportion of fruits and vegetables passing through Pasir Panjang Wholesale Market, it appears that these proportions are low relative to Taipei. Supermarkets are a much larger retail outlet for fresh produce in Singapore than in either Taipei or Hong Kong, which may be related to significant procurement of fruits and vegetables by retail chains directly from importers. Some of the larger-volume, better-capitalized wholesale traders operate from shops or cold stores located outside of the wholesale market. At the time Pasir Panjang was opened in 1984, wholesale traders of fruits operating from fixed, covered locations were not required to move, and several did not. Also, in recent years there are indications that the northeastern Housing Estates have been supplied directly by importers.

COMMON PATTERNS

In all three cities, consumers' incomes have not only increased, but their leisure time has declined. Younger women work outside the home and have limited time for shopping, and yet have higher disposable income. As a result, they prefer quality fresh produce that is conveniently and attractively presented. Purchasing fresh fruits and vegetables at the lowest price possible, which used to be the driving consideration in produce buying, is being supplanted by purchasing prepackaged and high-value produce on the best terms possible, except for the many price conscious consumers shopping in Hong Kong. The newer generation of high-income consumers seems to be more concerned about saving time than about prices. Increasingly, prosperous and busy urban consumers will pay well for greater value added in the form of convenience in shopping (1-2 trips to the supermarket per week instead of daily trips to a retail produce stall) and in processing and packaging produce (precut fresh vegetables, ready for cooking; attractively packed fruits and vegetables), as well as consistently high quality at competitive prices (as opposed to appealing to the most price conscious consumers through the lowest prices possible).

Such impending changes may benefit Southeast Asian countries and other suppliers who can ship semi-processed, well-packaged produce in reliable shipments and at attractive prices. Increasing incomes and decreasing leisure time will also work to the advantage of supermarkets, stimulating their emergence. Another trend that could counter the aforementioned trends is more frequent meals away from home in restaurants, fast-food establishments, and kiosks, as well as from street vendors. The large number of small food service proprietors may continue to prefer buying fresh produce daily at wet markets. Their procurement patterns will depend upon the relative prices, quality, and freshness of unprocessed fresh produce in "wet" markets and semi-processed produce in more conveniently located retail stores.

As more women join the work force, eating in restaurants and other establishments outside the home (more precisely, the apartment) has expanded. In Hong Kong, it is estimated that half of the meals and fresh produce is consumed outside the home. In 1987-88 in Singapore, 45.7 percent of average monthly household food expenditure went for "cooked food," which includes food and drinks bought

from hawker stalls, meals and drinks taken at restaurants and coffee houses, and fast food. The approximate proportion of expenditure spent on food prepared outside the home or apartment in Taipei is likely to approach the levels of Hong Kong and Singapore. Hence, much of the fresh produce consumed as cooked or prepared food is procured by restaurants, and fast food and vending establishments. As a result, it is important to understand the procurement patterns of these establishments as well as of consumers relative to the wholesale marketplaces.

CHANGING ENVIRONMENTS AND FUTURE PROSPECTS

The wholesale marketplaces in Taipei, Hong Kong, and Singapore have responded to changes in urban produce marketing volume and patterns in a somewhat reactive but generally acceptable mode. Expanding urban populations, demand for fresh fruits and vegetables, and produce throughput threaten to make existing facilities obsolete, and planning for expansion or replacement is urgently needed. The Taipei wholesale market in particular, built more than 20 years ago, is in serious need of upgrading and expansion or replacement.

Although a knee-jerk reaction might be to initiate a crash wholesale marketplace expansion or new building program, the evolution of wholesale marketing needs to be carefully examined, along with produce imports and exports that affect (pass through or do not pass through) the operation and throughput of wholesale marketplaces. In the three case study cities, funding for wholesale marketplace improvement has not been a major constraint in the past. Purchase of accessible, usable land for marketplace development has become increasingly problematic, however. Wholesale market designs in the past have been space-intensive, as marketplaces cover hectares of land that have a high opportunity cost. As land becomes more costly and less available, there may be opportunities for marketplace design innovations that make better use of vertical as opposed to purely horizontal space. Given the high volumes of produce that flow through such markets, this clearly poses a major challenge. Alternatively, the development of multiple satellite wholesale marketplaces, each serving different sections of a city, is a possible solution that has already been tried in some of Asia's super-cities.

Changing policy environments will bring change in urban marketing of fresh produce, particularly in Hong Kong and Taiwan. Hong Kong's 1997 integration into mainland China may improve the access of Chinese producers to the Hong Kong market, but it may limit somewhat the access of non-Chinese produce. Yet, Hong Kong consumers have become increasingly sophisticated and will probably avoid Chinese produce with excess pesticide residues. Clearly, some anticipate dialogue and compromise among Hong Kong municipal authorities, Chinese producer representatives, and Chinese government authorities to resolve future potential concerns.

The signing of the GATT agreement will further open the Taiwan market to foreign supplies of high-quality commodities at competitive prices. This will reinforce the expected decline in Taiwan's vegetable production. Furthermore, the Taiwan production strategy of substituting high-value fruit production, destined for the export market, for lower-value vegetable production for the domestic market may be affected by increased international competition in high-end markets such as Japan.

Although Taiwan may become more of an open market, supplied increasingly by foreign countries, Singapore is more likely to manage produce trade to strengthen trading ties with Indonesia. Produce imports for reexport will continue to play an important role in the produce industry of Singapore, but Singapore's produce exporters will face stiffer international competition post-GATT. Exactly how this will affect the organization of wholesale marketing and marketplaces is unknown but will require careful monitoring.

SECTION FOUR

COMPARISON OF THREE URBAN WHOLESALE MARKETPLACES

This section presents a comparison of the design, management, and provision of services of the urban wholesale marketplaces as outlined in the case studies of Taipei, Hong Kong, and Singapore. Comparisons are made on the following points:

- Site selection and design of urban wholesale markets;
- Management of the wholesale markets and service provision;
- Emerging organization of urban wholesale and retail food distribution; and
- Imports and exports of fruits and vegetables for each wholesale market and coordinating role played by these markets.

SITE SELECTION AND DESIGN CONSIDERATIONS

The proverbial question in densely populated, highly congested urban areas of Asia is where to locate a new wholesale market.⁵ Available sites are scarce or nonexistent, owned by private parties who do not wish to sell, zoned for other purposes, or remote. Distant sites do not entice wholesale traders, who do not wish to leave a well-located, albeit congested current site for a new site that is neither close to their clientele, the retailers, nor accessible or convenient to cheap public transport for buyers. Table 4-1 summarizes key characteristics of these wholesale markets.

Taipei

The site selected for the major wholesale market for fruits, vegetables, and fish, constructed in 1972-73, was originally zoned for construction of an abattoir and a livestock market. Because an abattoir had been constructed at another location, it was relatively easy and straightforward to amend the city master plan to make the same 68,810 square meter site available for another, yet similar use. Municipal government purchase of the land was not simple, however, because several landlords had to be compensated for the land, standing crops, and existing structures. The landlords were compelled to sell the land at well below its market price; because of their resistance to sell, it took nearly two years for the municipal government to acquire land title.

As background, some information on the operational characteristics of the three wholesale marketplaces is provided in Table 4-2.

⁵ The population densities in Taiwan, Hong Kong, and Singapore are among the highest in the world at 576, 5,800, and 2,800 people per square kilometer, respectively.

TABLE 4-1

MARKETPLACE SITE AND DESIGN CHARACTERISTICS

Characteristics	Taipei	Hong Kong	Singapore
Number of Wholesale Marketplaces for Fresh Produce	Two: major market in SW Taipei and smaller market in central city.	Seven: focus on CSW and Western markets.	One current market at Pasir Panjang. Group of importers & wholesalers funding wholesale complex at Pandan Loop.
Planning & Opening Dates for Most Recent Markets	Planning of first market: 1968-1972. Opening: 12/1974. Opening of second market: 9/85.	Planning: 1970s/1980s. Opening of temp. mkts. in 1978. CSW: Phase I, late 1993. Western: Ph. I, 1991; Ph. II in 3/94.	Planning: early 1980s. Construction: 4/81 to 12/83. Opening: 1984 at Pasir Panjang.
Sources of Feasibility Study	No feasibility study as such. Architectural firm did design.	Department of Agriculture, Market Development Division	Housing Development Board (using 1976 FAO guidelines)
Source of Funds for Land and Construction	Taipei Municipal government.	Hong Kong gov't. Rents set to recover costs of construction only (no interest).	Singapore government
Costs for Land and Facilities	Land: NT\$ 21.9 million Construction: NT\$ 66.7 million	CSW: \$HK 585 million Western: \$HK 220 million	SD 88 million (excluding land cost)
Market Location	Southwest corner of Taipei (Wanhua). 2nd market in Chungshan in central city.	CSW: Kowloon waterfront. Western: Hong Kong Island waterfront.	Built on a large plot of reclaimed land off the West Coast Highway, near the port
Land Area for Market (ha.)	5.5 ha. total area; 0.98 ha. for vegetables; 0.87 ha. for fruit; 0.9 ha. for auction hall.	CSW: 10.5 ha. total; 4-5 ha. for vegetables. Western: 4.2 ha.; 2.35 ha. for F&V.	2.28 ha. for vegetables. 1.33 ha. for fruits. 1.13 ha. for dried goods.
Volume Throughput per Market (mt)	1st Market: 311,515 mt of vegetables and 207,845 mt of fruit in 1993. 2nd Market: 60,805 mt of vegetables & 42,877 mt of fruit in 1993.	CSW: 144,228 mt of vegetables in 1992. Western: 126,550 MT of fruits in 1992.	Approx. 80% of vegetables or 214,400 mt. in 1993. Approx. 50% of fruit or 166,850 mt. in 1993.
Cold Storage	Traders can rent up to 17.85 sq. ft. of refrigerated space, which is too limited.	Electrical outlet in each stall; stall occupant owns refrigeration unit.	476 coldrooms in common area; in-shop coldrooms discouraged yet increasing.

Notes: 1) Ownership of the Taipei Agricultural Products Marketing Corporation includes the Taipei Municipal Government (24 percent), the Taiwan Provincial Government (24 percent), related farmers' associations (26 percent), and fruit marketing cooperatives, shippers, and wholesalers of the market (26 percent).

2) Volume throughput in Singapore does not include unrecorded imports from Indonesia.

TABLE 4-2
OPERATIONAL CHARACTERISTICS OF THE
CASE STUDY WHOLESALE MARKETPLACES

Operational Characteristics	Taipei	Hong Kong	Singapore
Management Responsibility	Semi-private: Taipei Agricultural Products Marketing Corporation.	Public: Market Management Division of the Agriculture and Fisheries Department.	Semi-private: EM Services Pte Ltd. replaced the Housing Development Board as of early 1990.
Stalls or Traders per Market (Number)	634 vegetable wholesalers; 451 fruit wholesalers in markets #1 and #2.	CSW: 236 stalls for vegetables. Western: 207 stalls for vegetables; 132 for fruits.	Vegetables-115 shops, 284 stalls; fruits-72 shops, 22 stalls; dried goods-54 shops, 48 stalls.
Main Types of Transactions	Daily auction for most deliveries. Peri-urban produce sold with direct negotiations.	Direct, private negotiation	Direct negotiations for produce sold on consignment; fixed price sales & forward contracting; auctions for Malaysian produce.
Peak Trading Hours	Auction from 3:30-6:30 AM.	4:00 - 7:00/8:00 AM	Malaysian vegetables: morning auction. Much of fruit & vegetable negotiations from 7:00 PM to 7:00 AM. (night mkt.). Fruits: no peak period.

Note: There are 155 fruit and 525 vegetable retailers or institutional buyers who participate in the auction but do not resell the commodity in the Taipei market.

A local architectural firm undertook the design and layout of the Taipei wholesale market, seeking to make optimum use of the scarcest and costliest resource, the land. The designers evaluated wholesale markets in Japan, presumably in the Tokyo area, assessing their strengths and weaknesses. Although minimal research and preparatory studies were conducted in the planning and design stages for this marketplace, ideas were solicited from several local academicians, agriculturalists, and marketing specialists. Basic ideas, such as those regarding the appropriate size and number of stalls, were reportedly based on the conditions prevailing in the old Central Market rather than dictated by expected future changes.

During the 1973-75 transition period from the old Central Market to the new facility, there was a 54 percent increase in vegetable throughput and the addition of about 167,324 metric tons of fruit throughput that was previously traded outside of any wholesale facility. Ten years later the demand for new facilities had grown so strong that another facility was constructed. And yet, even after 18 years, annual throughput of fruits and vegetables continued to grow until the original major facility handled 34 percent above the 388,514 metric tons of 1975. Over the 20-year period from 1973 to 1993, the transacted volume of throughput had increased by more than 333 percent from the old Central Market

level of 143,807 metric tons to 623,042 metric tons (both fruits and vegetables) within the two Taipei markets. This amount was well beyond the original design capacity of the two marketplaces.

Today, overcrowding has become the norm, and many traders clamor for relocation. Unfortunately, no single, sufficiently large site has been found that is agreeable to all the parties concerned. It is reported that local financing should not be the major problem, given available municipal funds. However, given the larger number of parties with vested interests in the current way of doing things in Taipei, it has become very difficult to gain a consensus and act decisively to expropriate land the way this was done for other marketplaces. Meanwhile, some local experts suggest that the operational efficiency of the existing market facilities could be improved through technical innovations, sample or mechanized auctions, computerized processing of transaction data, consolidation of arrivals into larger lots, and different trading periods for vegetables versus fruits. Currently, this and related issues remain under discussion.

Hong Kong

As Hong Kong became one of the most densely populated urban agglomerations in the world, complaints about overly congested unofficial markets along city streets arose. The two types of responses were the Vegetable Marketing Organization (VMO), founded by the government to market local vegetables, and two temporary wholesale markets set up in 1978 — the CSW market in Kowloon and Western market on Hong Kong Island.

Recently Hong Kong planners visited other urban wholesale markets in Asia, and foreign consultants were asked to evaluate the planning process for new facilities to house the two temporary markets. Hong Kong did not copy other models or follow guidelines too closely. The RAP case study (Speece, 1994) concluded that, "Overall, the markets ended up being very much the result of locally-oriented, local planning."

The CSW site was changed several times, because it conflicted with other reclamation projects, including the new airport in Kowloon. Its current site in Kowloon was built and managed by the government but is used by private traders who handle imported vegetables from many countries, including China. When its second phase of construction is completed in 1997, it will house the traders from the main wholesale fruit market (Yaumatai). Western market handles mostly fruits for the island's retailers but will soon include a vegetable component.

Both markets are adjacent to the waterfront, allowing for delivery of produce by river boat from mainland China. This helps to reduce the volume of fruits and vegetables traveling overland and hence urban traffic congestion. The docking piers are somewhat underused during certain times of the day at CSW, which led market authorities to permit use of the piers for other purposes during slack periods.

CSW throughput of vegetables was 144,000 metric tons in 1992. Western market throughput of fruits was 134,622 metric tons in 1993 with an estimated 400 metric tons/day of vegetables expected during 1994. Since these are new facilities, it is too early to determine the degree of change from the former marketing patterns.

Singapore

The Pasir Panjang wholesale market site was chosen to be outside of the most congested downtown area and some distance from the airport. This led to some complaints by importers, but the site appears to have been well chosen. The market is near the port, which is convenient for delivery of containers of imported fruit. Also, it is readily accessible from the airport for shipment by air. However, since Pasir Panjang is far from the Housing Estates toward the northern part of the island, there is some wholesaling done off the back of trucks coming from Malaysia in the estates.

Since it began operations in 1984, this wholesale market has gained many new residents and gradually become overcrowded in certain sections, while underused in other sections. Expansion onto an adjacent plot of land is desirable but not feasible given potential competing land use issues, including possible inclusion in the expanding container port. Also, the location of the cold storage units within the marketplace is disadvantageous to fruit wholesalers and is reportedly causing unnecessary internal traffic congestion.

In the meantime, 16 wholesale traders, who were not relocated to Pasir Panjang, and an agribusiness conglomerate in Singapore have invested in a new wholesale trading and cold storage site for those traders only. Thus, solutions to the market conditions noted above, such as the new, privately owned trading and cold storage site or direct delivery of imported fruits and vegetables to privately owned wholesale depots serving supermarkets, have been emerging. Reconfiguration of the existing market at Pasir Panjang is also feasible but a costly alternative — it will cost more than SD 5.25 million.

MARKET MANAGEMENT AND PROVISION OF SERVICES

Effective management of wholesale markets is a critical factor in market success. The market management organization must decide which of the following functions should be done and how: transport to, within, and from the market; traffic and parking (trucks as well as cars) management; cold storage rooms; waste management and sanitation, fee collection; allocation of stall space; and collection and dissemination of market information. Table 4-3 describes briefly what marketing services the different markets provide. Since the case studies did not give in-depth treatment to each function, this comparison only highlights the main points.

TABLE 4-3

CASE STUDY WHOLESALE MARKET MANAGEMENT AND SERVICE PROVISION

Market/Service	Taipei	Hong Kong	Singapore
Overall Market Management Responsibility	Semi-Private: Taipei Agricultural Products Marketing Corporation.	Government: Market Management Division (MMD) of Agriculture & Fisheries Department.	Semi-Private: EM Services Pte Ltd. as of 1990.
Market Participant Feedback Mechanism	Representatives of farmer associations & coop suppliers and shippers who coordinate arrivals.	Management advisory committee: 1st/2nd wholesalers, transporters, service subcontractors.	Informal feedback through association leadership.
Fee/Rent Collection	TAPMC staff collects a percentage of the transaction value, not rents.	Rents set to recover operating and construction costs. MMD staff collects rents.	Accounts assistant of EM Services collects rents.
Market Information Services	Volume/price data collected, computer-processed & announced daily by noon, using electronic displays. On-line service being designed.	No services provided, except in VMO's market.	No services provided.
Access via Public Transport	Access good but produce volume is so high that market participants must coordinate arrivals through careful scheduling.	CSW is off major routes and on reclaimed land. CSW has problems with access to public transport, but it can be reached by water & road. Western is accessible by water.	Good access but intra-mkt. roads & passageways are narrow. Most traders use own vehicles. Near seaport, facilitating container delivery.
Loading/Unloading/Intra-Market Transport	Only registered delivery workers of TAPMC allowed to move produce between auction floors & assembly stalls. Traders judge their performance to be poor.	Manual labor predominates; increasing use of electric-powered forklifts & carts for larger loads.	122 bays. Limited bays at coldroom complex, causing congestion. Manual labor shortage leading to further mechanization.
Waste Management	Contracted out to private firm by TAPMC (at cost of NT \$13 million a year).	Close government oversight of private subcontractor.	Subcontracted private firm provides 7 self-contained, portable refuse compactors. Packaging materials recycled.
Parking Situation	Overcrowded parking spaces during peak periods.	Adequate, with slight delay in getting space. Waterfront piers for ships from China.	Parking inadequate; expansion planned. Too few loading bays.
Security/Enforcement of Rules	No observations.	Good services at CSW; reportedly needs improvement at Western.	No services provided. Management without authority to issue fines.

General Observations About Service Provision

Services appear to be well provided *within the limitations of the increasingly taxed physical facilities*. Note that difficulty of access, space limitations for parking and loading or unloading bays, and intra-market congestion increase over time as the number of users and the volume of produce handled daily outstrip the capacity of the wholesale market facility. The older the facility, the more these problems arise. Improved market management, including careful scheduling of produce arrivals, widened passageways, and reconfiguration of parking space, loading bays, and cold storage can help to accommodate greater produce volume more efficiently. These temporary measures are necessary and important, but should probably be regarded only as stop-gaps, improving operation of a wholesale market over 5-10 years, but not accommodating longer-term future growth.

Limited Period of Market Usefulness and the Need for Planning

Among the three urban markets studied, the old Taipei markets (with the main market opened in December 1974) are the most strained at present, while the new CSW and Western markets of Hong Kong (opened in late 1993 and 1991/94) are too new for a confirmation of operational efficiency. The Pasir Panjang Market of Singapore, opened in 1984 and operational for 10 years, is showing signs of strain. Costly remodeling and upgrades are planned for the next year or so for that market.

From these admittedly limited observations, it would appear that large urban wholesale marketplaces in densely populated Asian cities can be considered adequate for their first 10 years, but outmoded within 15 years unless major renovation or upgrading of existing facilities or construction of new facilities are undertaken. Given rapid urbanization and the enduring predominance of wet markets in Asian cities, such relatively rapid obsolescence of these market facilities is not surprising.

One way to lengthen the useful life cycle for Asian wholesale markets is to identify multiple wholesale market sites, as was done for Seoul, Korea (see Bai-Yung Sung, 1981 and 1985). Identifying one principal wholesale market site and expecting most produce (both domestic and imported) to pass through one facility seems short-sighted. Increasing urban congestion and transport time between locations, as well as urban sprawl in Asia, call for multiple markets that serve one or more adjacent urban zones.

Other alternatives noted in these case studies included groups of wholesale traders/importers who agree to construct their own wholesale/cold storage facilities, thus bypassing the increasingly congested wholesale markets. A group of large-volume wholesale traders is constructing its own cold storage and wholesale facility at the Pandan Loop in Singapore, with significant financial support from a food industry conglomerate. Another option could be supermarket chains financing construction of their own distribution warehouse with one section for receiving and repackaging local and imported fresh produce. Over the next 10 to 20 years, these alternative models may become increasingly commonplace in East Asia.

Prior to the opening of the new market in Taiwan, the critical impetus was the national market plans that required a certain type of terminal market to achieve the desired results at the farm level. However, in the cases of Singapore and Hong Kong, congestion of old central market sites and waste accumulation had reached crisis levels, which provided a major impetus to relocate wholesale trading activities. Although human nature may suggest a short time horizon and not to plan 20-30 years ahead, an important objective of the three case studies and this paper is to encourage long-range planning with funds earmarked for appropriate action programs.

Wholesale market planning should not involve linear extrapolation of recent trends. Urbanization has also slowed down in some of the large Asian cities since the 1960s through 1980s. Expansion in per capita consumption of horticultural products can only go so far, subject to Engel's Law. People can only eat so much fresh produce; once incomes reach high levels, as they have done in the three case study cities, further per capita consumption of fresh produce is likely to level off.

Specific Observations about Management and Services

Taipei

The track record of the Taipei Agricultural Products Marketing Corporation (TAPMC) has been good during the 20 years of operation in the principal, relocated wholesale market. It seems to work effectively in coordinating produce arrivals of several major domestic commodities, which are far greater than they were when the market was opened.

On the other hand, some corporation management practices may adversely affect trading activities. For example, although some wholesale traders complain that the registered delivery workers are inefficient and provide poor service, registered workers continue to provide delivery services. Other situations, such as misuse of parking spaces for produce cleaning and repacking, persist even in the face of overcrowded conditions because of lack of other viable options. Also, both wholesalers and management agree that the inaction of the Taipei municipal government is probably caused by competing views on a "solution" to the problem of deteriorating physical facilities, which are being overtaxed.

It is noteworthy that TAPMC has been at the forefront of marketing innovations, such as establishing its own supermarket chain, which offers produce at lower-than-average retail prices. However, the issue was raised as to whether the management time and skill requirements for that aspect of its business divert manpower from managing the increasingly complex situation in the wholesale market.

The emerging shortcomings of the overburdened Taipei wholesale market facilities, such as inadequate refrigerated storage space, may lead to more produce bypassing these marketplaces in the near future. An expansion in direct procurement from production zones by supermarket chains is already under way. Given the predominance of domestically grown horticultural products in the Taipei food supply, in marked contrast to Hong Kong and Singapore, greater direct procurement by retail chains would be a likely development over the next decade. If so, several key issues will arise, such as:

- Who will test for excess pesticide residues?
- How will increasing produce wastage be handled in the urban areas?
- Will demand signals to growers again become unclear?

Hong Kong

The provision of services in the two new facilities is generally good, except for reports of somewhat loose management and security conditions at Western market. However, one wonders why there is no market information service, whether publicly or privately operated. That absence is related

to the prominence of import businesses among these Hong Kong traders. By contrast, Taipei's traders, who procure mostly domestic products, have access to market information. Domestic market information services in Asia target farmers as priority beneficiaries of price information. Both Singapore and Hong Kong depend on imports and thus do not have active market information systems. The exception is Hong Kong's VMO market, which does collect and disseminate some price information, intended primarily for the benefit of its farmer suppliers.

Singapore

A forum for the expression of opinions and concerns is a useful service for marketplaces. Although there is no formal Market User Group or Board in this market, there are several associations and the market management takes special care to discuss things regularly with its clientele. However, a relatively standard, expected service for such a marketplace that appears lacking is the relative powerlessness of management in matters of providing security, issuing fines, and resolving disputes. This is surprising given Singapore's recognized concerns with public order and the quasi-public and quasi-private nature of the management group.

Empowering management may reduce the incidence of improper use of loading bays, sorting and trimming of produce in common passageways, and produce retailing that clutters the wholesale marketplace. However, the existing manpower and budget may not be adequate and may impact efforts at smooth relationships with the resident traders. Because some of those problems have emerged with overcrowding and the inadequacy of the original layout, rather than because of the contrariness of individuals, enforcement may not be sustainable. Problem resolution will more likely require updating the facilities, and the proposed renovations of the Pasir Panjang market may have to be accompanied by a redefinition and modifications of management's role to maximize efficiency gains.

EMERGING URBAN FOOD SYSTEM ORGANIZATION

Conventional wisdom, commonly found in publications of U.S. or West European origin, holds that terminal wholesale markets will play a declining role over time, as supermarket chains take over food distribution, integrate backward into wholesaling and warehousing, and procure directly from producers and importers. Hence, several analysts have predicted a substantial decrease in the proportion of fresh produce flowing through Asian wet markets over time.

Actual experience in several Asian cities shows that urban food distribution systems have not followed the U.S. or Western European patterns in lockstep. Although supermarkets in Singapore have been making substantial inroads in retailing fresh produce, supermarkets in other cities have experienced far slower growth than once anticipated, even in the relatively wealthy cities of Hong Kong, Taipei, and Seoul. Table 4-4 summarizes the estimated distribution of the fruit and vegetable supply passing through wholesale marketplaces and supermarkets that for the most part procure directly from producers and importers.

TABLE 4-4

FEATURES OF EMERGING URBAN FOOD SYSTEM ORGANIZATION, 1993

Feature	Taiwan	Hong Kong	Singapore
Estimated Vegetable Consumption	136.9 kg.	94.7 kg.	95.1 kg.
Estimated Fruit Consumption	130.7 kg.	102.4 kg.	118.4 kg.
Estimated % F&V via Wholesale Market(s)	41% for vegetables; 47% for fruit (1993)	87% of vegetables; 20% of imported fruits (1992)	Not available
Estimated % Retail Sales through Supermarkets	< 10% for the nation.	approx. 15% of fresh produce in 1994; approx. half of all other food products	Not available

Note: Wholesale traders at Yaumatai in Hong Kong, an "informal traditional market area" (as characterized by Speece, 1994), handled 70.7 percent of fruit imports in 1992. Yaumatai traders are scheduled to be relocated to CSW II in 1997, so their share of fruit imports will be captured largely by CSW.

As will be discussed in a later section, several factors seem to be at work here. First, supermarkets appear to serve primarily the highest income groups in these cities. Second, the produce shopping behavior of many consumers (particularly those over 40) seems to be highly price-sensitive. Those older consumers feel that produce is fresher in wet markets than in supermarkets; they can also personally select the best produce in wet markets. Many appear unwilling to pay the premium for the uniform quality and packed produce available in supermarkets. Third, consumers in super-crowded Asian cities place a high value on convenience in shopping. Rather than incurring high transaction costs in buying food several times per week by traveling to a relatively distant supermarket in a congested city, consumers prefer to take less time and energy in buying at nearby produce stalls. These stall owners procure their produce early each morning at terminal wholesale markets. Finally, restaurants are also likely to procure fruits and vegetables at wholesale markets. Because meals away from home are on the rise in urban Asia, a significant proportion of fruits and vegetables are consumed in restaurants or at food stands. How these patterns vary in each case is discussed below.

In **Taipei** wholesale marketplaces face increased competition from supermarkets, wholesalers, and importers who trade from their own dispersed shops. Some small-scale and aging wholesale traders within the marketplace reported that they are unlikely to be replaced by business partners or heirs when they retire or die. Several wholesale traders noted that since business conditions at the wholesale market have worsened in recent years, it is increasingly difficult to attract new entrants. As the small-scale traders leave the business, the wholesale produce trade may become more concentrated. Since the extent to which supermarkets procure produce directly from rural areas or import directly is unknown, their ability to increase their share of the produce market is uncertain.

In **Hong Kong**, on average, residents spend about one-third of their disposable income on food. Increasingly affluent consumers pay more attention to hygiene in food presentation and preparation and to food ingredients. As women's participation in the work force increases, convenience in shopping and

food preparation becomes more important. Eating in restaurants, where many households spend more than half of their food dollar, is very popular. There is an increasing orientation toward different foods, especially Western food.

At the same time, supermarkets have expanded their share of the retail market for all foods to approximately one-half. However, only 12-15 percent of fresh produce is reportedly sold through supermarkets. This percentage is projected to increase in this decade. Until recently, supermarkets perceived fruit and vegetable sales as very costly after experiencing substantial losses from damaged and unsold inventories. They did not vigorously compete with the wet market for consumer purchases. But now some of the major supermarkets not only use sales on less common fresh fruits as a way to gain new customers, but also are in the process of upgrading their distribution warehouses' ability to store, handle, and distribute fresh produce. The two largest chains, Wellcome and Park'N Shop, carry fresh produce and are improving their own wholesale centers' ability to serve their stores.

In Singapore, the Pasir Panjang market is likely to decline in importance with the completion of the new wholesale trading and cold storage site at Pandan Loop, the increased shipment of fresh produce from Malaysia to Housing Estates on the northeast side of Singapore, and direct importation by supermarkets of a larger portion of their growing market share of fresh produce. Thus, larger amounts of fresh fruits and vegetables are moving to consumers through supermarkets as opposed to wet markets, although today the Pasir Panjang wholesale market reportedly dominates both fruit (80 percent) and vegetable (50 percent) wholesale trade.

As older and smaller-scale wholesale traders retire and are not replaced by their heirs, larger-scale wholesalers and importer/wholesalers should increasingly dominate the produce trade. Intense competition is driving wholesalers to higher levels of efficiency and greater mechanization. Smaller operators will fall by the wayside, as wholesale trading becomes more concentrated and capital-intensive.

TRENDS IN INTERNATIONAL TRADE IN HORTICULTURAL PRODUCTS

We look here at trends in imports and exports of horticultural products, and how international trade has affected the organization and operation of the produce business. Basic information on horticultural imports and exports is compared in Table 4-5.

In Taiwan, farmers shifted out of lower-value rice to higher-value fruits and vegetables during the 1970s and 1980s in response to changing domestic incomes and consumption patterns, as well as export opportunities in Japan. An estimated 74 percent of Taiwan's horticultural exports were recently shipped to Japan.

The balance of fruit trade — in other words, the value of exports relative to imports — became negative as of 1988, as Taiwan imported high-value temperate fruit, about 56 percent of which came from the United States. The net value of vegetable exports remains positive but has been dwindling with a negative trade balance expected in the near future. The proportion of imported fruits and vegetables in Taiwanese consumption is relatively modest, probably less than 15 percent.⁶

⁶ No trade volume data are reported, so 15 percent is an informed guesstimate.

Based on the best available information, it appears that the majority of fruits and vegetables consumed in Taipei pass through the two wholesale markets. However, the proportion of imported fruits and vegetables moving through these wholesale markets is comparatively small. The marketing channels by which most imported produce reaches Taipei consumers bypasses these wholesale markets. Wholesalers in the central Taiwan city of Taichung are reportedly the channel captains who effectively influence a large share of the trade in imported fresh produce.

The recent import quota policies for fresh fruits and vegetables, beyond concerns regarding phytosanitary conditions, favored exports from the United States, because of the need to better address the overall trade imbalance with Taiwan. However, with the implementation of the GATT agreement, several countries are exerting considerable effort to compete in the less-regulated Taiwanese market.

Heavier crop damage than usual to the fresh vegetable crops during the most recent monsoon season of 1994 raised sharp outcries from the consumers in Taipei City. This situation raised retail prices for fresh vegetables to an unprecedented level, and signaled especially large imports of basic vegetables such as cabbage from Indonesia; this situation is thought to foreshadow a greater dependency on vegetable imports for the future, and several importers are reportedly discussing longer-term contracting arrangements with exporters for that season.

TABLE 4-5
CHARACTERISTICS OF IMPORTS AND EXPORTS
OF HORTICULTURAL PRODUCTS, 1993

Characteristic	Taiwan	Hong Kong	Singapore
Estimated Vegetable Imports	197,366 mt	511,200 mt	391,494 mt
Imports as % Vegetable Cons.	7%	84%	98%
Estimated Vegetable Exports (Re-exports)	204,557 mt	49,900 mt	128,300 mt
Estimated Fruit Imports	334,616 mt	685,300 mt	419,820 mt
Imports as % Fruit Consumption	12%	99%	almost 100%
Estimated Fruit Exports (Re-exports)	147,511 mt	92,000 mt	86,132 mt

Notes: 1) Consumption and import estimates are for fresh and processed fruits and vegetables for Taiwan. Estimates for Hong Kong are for fresh and frozen vegetables and fresh fruit only.

2) In Hong Kong, in 1992, 70.7 percent of fruit imports were handled by wholesale traders at Yaumatai, an "informal traditional market area" (as characterized by Speece, 1994). Because Yaumatai traders are scheduled to be relocated to CSW II in 1997, their share of fruit imports will be captured largely by CSW.

Although there are 71 wholesale markets for fruits and vegetables throughout the country, the Taipei markets handle the largest share, are the only markets using the auction form of transaction, and their price information serves as the reference prices for all the other markets.

Hong Kong imports 84 percent of the vegetables consumed domestically and 99 percent of the fruit. Local vegetable production declined from 176,000 metric tons in 1981 to 91,000 metric tons in 1993. Fruit production was only 4,200 metric tons in 1993. Vegetable imports expanded 40 percent from 364,900 metric tons in 1981 to 511,200 metric tons in 1993, and fruit imports increased 70 percent from 404,100 metric tons in 1981 to 685,300 metric tons in 1993, whereas Hong Kong's population grew only about 9 percent over that period. The expansion in vegetable imports appears to have slowed down in the early 1990s, whereas fruit imports grew 26 percent in 1991-93. Nearly 28 percent of expanded fruit imports during this period were reexported. The assumption is that increasing amounts of fruits are being transhipped into China from Hong Kong. Vegetable reexports have remained more or less flat since 1986 and comprised 9.8-11.5 percent of imports from 1991 to 1993.

Hong Kong receives fresh produce from a wide variety of tropical and temperate suppliers, including China, Southeast Asian countries, the United States, Holland, and Australia. Low-cost vegetables imported from China do not compete directly with higher-cost and higher-quality vegetables from the United States and Europe. Southeast Asia is the primary supplier of tropical fruits; the United States dominates the market for temperate fruit.

The CSW market handled 29.5 percent of imported vegetables in 1992, Kennedy Town (which was relocated to Western Phase II wholesale market in 1994) handled 14.5 percent, the Vegetable Marketing Organization handled 36.6 percent, 11.5 percent was reexported, and the remaining 7.9 percent was handled by other satellite markets or directly by retailers. Yaumatai market, an informal traditional market area scheduled for relocation to CSW when Phase II is completed in 1997, handled 70.7 percent of imported fruit in 1992. Western market accounted for 20.4 percent of imports, while the remaining 9 percent was reexported or imported directly by large retailers.

The case study identifies several key trends in consumer preferences that will affect the ability of imported produce to compete. First, convenience in packaging and cooking is paramount. Precut fresh vegetable mixes for specific dishes will gain favor, because women work outside the home and leisure time is limited. Second, consumers look for high-quality produce at reasonable prices. Value for money, as opposed to low-quality produce at low prices, governs produce purchasing decisions. Upper income consumers pay little attention to price. That study's author argues that the premium on quality will create incentives for air-freighting of high-quality fruits and vegetables to Hong Kong. Rapid, refrigerated sea transport should also benefit.

Singapore's trade in fruits and vegetables has grown significantly from 1984 to 1993 — from 234,019 to 391,494 metric tons for vegetables, and from 257,694 to 419,820 metric tons for fruit. At the same time, increasing quantities and proportions of these imports have been reexported to other countries. Reexports of fruits and vegetables nearly doubled from 1984 to 1993, representing 20.5 percent of fruit imports and 32.8 percent of vegetable imports in 1993. Malaysia is by far the largest supplier of fruits (48.9 percent of total imports) and vegetables (42.7 percent). China, India, and Australia are significant suppliers of vegetables, while Australia, China, and the United States ship large volumes of fruit.

Based on interviews with traders and other sources, the author of this case study concluded that the Singapore market for fresh produce has become intensely competitive and more volatile over time.

Given price volatility, an increasing amount of imported produce is entering the market on consignment terms. Produce handling is becoming increasingly mechanized. The declining volume of produce sold via auctions reflects the decreasing market share of Malaysian produce. One cause of this decrease is changes in the imported produce distribution system, as more wholesale traders import produce and supermarkets purchase produce directly from foreign suppliers. Also, more Malaysian wholesale traders are also delivering produce directly to retailers in the Housing Estates. And, finally, Indonesian vegetables are capturing a larger share of that market while Malaysian consumers purchase a larger share of the declining production from the Cameron Highlands of Malaysia.

SECTION FIVE

SIGNIFICANT LESSONS LEARNED FROM WHOLESALE MARKETPLACE DEVELOPMENT AND IMPROVEMENTS

This section summarizes several of the key lessons learned in the process of reviewing the literature, identifying and commissioning appropriate case studies, comparing the findings from those cases, examining the results of a recent Asian workshop on wholesale marketplaces in Asia, and consulting leading analysts in this field. The authors rely for much of the following material, however, on the case studies and the broader literature.

The three main categories of lessons learned are lessons in motivation, planning, and implementation. The lessons in motivation follow from examples of what motivated or stimulated market changes in each situation. Each case was somewhat different in intent, timing, and approach. Although awareness is often widespread of the severity and many problems associated with overcrowded, dilapidated, and poorly located or laid-out market facilities, corrective action is often delayed for several years. And then, when the improvement is in place, leadership becomes lax and forgets that, in the near future, the situation will again change and require further updating to keep pace with evolving consumer demands for foods and urban food distribution patterns.

The planning lessons are more straightforward and more readily incorporated in each country's efforts to improve its own wholesale marketplaces. Here there is a literature available to guide the steps that should be taken once the decision to invest in marketplace improvements has been made and funds become available.

Lessons learned from the actual establishment of new facilities or from major renovations or expansion again present a wider spectrum of unexpected experiences or events, because each implementation situation is different and case-by-case mishaps or unanticipated problems arise. In these instances, the frequent last-minute deviations from the planned design set in place a delayed effect that can produce future, unexpected consequences.

In one case, after completing a comprehensive planning process that recommended a set of well-positioned wholesale marketplaces, unforeseen events and political pressures during the implementation stage resulted in the construction of one huge facility. In addition, retailing of produce was also suggested, contrary to the original design. Some basic technical decisions were reversed during the implementation stage. Now a marketplace that should have been an example for other countries to follow is struggling to fulfill even its basic functions.

LESSONS IN MOTIVATING CHANGE: CREATING AWARENESS AND CONSENSUS FOR NEEDED CHANGES

Lessons in motivating progressive change center on the dynamics that cause or lead to decisions to act upon the existing, unsatisfactory conditions. Causal factors range from the recognized severity of the problems associated with the current situation to perceived benefits to be derived from improvements or updating of facilities. Typical motivating forces for change include broad-based recognition in the urban or agricultural sector of substantial benefits from new facilities or new operating procedures; access

to large amounts of funds made available for such infrastructural or food system improvements; political clamor for change from special interest groups, such as farmer associations and consumer advocacy organizations adversely affected by the present situation; city administration's urgent need to reduce the high management or clean-up costs incurred; the poor appearance of current facilities; or the political ambitions of certain political figures.

In the three cases reviewed, there were reportedly different forces for change. For instance, in Taiwan, the public sector, particularly key agriculture agencies, had the lead role and objective of intervening on the farmers' behalf in the traditional organization of the agricultural marketing system. Their goal was to enhance market transparency and improve access of farmers' associations to this major terminal market in a practical version of a market-led approach to agricultural development. Thus, the new facilities embodied the agencies' vision of a more efficient form of agricultural marketing from the farmers' perspective, namely, the auction form of transactions combined with an arrangement to manage each month's volume of arrivals for major commodities. Recognizing the expertise of the traders and the need for their participation, the market ownership included private sector ownership and active participation of traders in key activities, such as agreeing on a starting price/commodity on each auction day. Also, the management of the facility was turned over to a semi-private sector company rather than a government agency.

Thus, the planning and political need to accelerate the development of its large farm sector was fundamental to restructuring Taiwan's marketing system, with the auction system within its new wholesale market guiding the way. Hong Kong's Vegetable Marketing Organization managed one market facility for its smaller farm sector while the two large new marketplaces were built primarily to handle imports. Singapore's agricultural sector is negligible, so its wholesale marketplace handled imports.

In both Hong Kong and Singapore, urban officials, rather than agricultural officials, took the initiative for change in the marketplace. They did so based primarily on urban problems and concerns. Most improvements were facility-oriented rather than intended to influence the organization or operations of the marketing system for produce. In fact, both cases invested very little in commonly expected support services for suppliers, such as market information services or introductions of new packaging or commodity handling technologies. Informed sources even suggested that they practiced a hands-off policy to most trading matters, leaving trading to the private sector. This approach was opposite from the Taiwan case where the government became very much involved in many aspects of fresh fruit and vegetable marketing by actively supporting cooperative marketing and by funding infrastructure programs.

An important difference between the Hong Kong and Singapore cases is the timing and long-term intent of their action. Hong Kong has moved its facilities among various temporary sites over the last couple of decades before making this major current investment. Singapore made the major shift once in the 1980s. Perhaps Hong Kong's large-scale facilities may indicate recognition of the longer-term implications of its reversion to China, namely its likely new role as China's major export gate to supply many Asian markets with its produce after 1997. The initial motivation of improving the supply arrangements for the Hong Kong population of more than 6 million people may become overshadowed by the infrastructural need to orchestrate future, large-scale exports through the Hong Kong facilities.

Although Singapore's fruit and vegetable trading sector has expanded beyond its primary function of supplying domestic consumers and increased its efforts to reexport throughout the region from this market facility base, it will not achieve the volume of exports likely to flow from or to Hong Kong in the near future.

One similar motivating factor among the three cases was access to sufficient capital from existing national budgets rather than sourcing funds from outside organizations or institutions. Other countries within the region will not have such large cash reserves to fund major infrastructural improvements. Also noteworthy, Hong Kong had access to large sums of money that it used in this major, phased construction project, whereas the Taiwan and Singapore investment funds were much more modest.

In summary, there was no one single motivating factor guaranteed to instigate action for changing marketing systems or updating current market facilities; each case responded to somewhat different conditions although all recognized the need to move the wholesaling of fresh produce from city centers to more peripheral sites with permanent structures and access to primary roadways. Taipei and Singapore face mounting pressures on their current facilities that dictate the need for again preparing progressive and pragmatic change. It is time to update, renovate, or build facilities and modify market layouts in response to new demands from the fresh produce sector. Thus, as dynamic changes in demand for food and food services affect large cities, there should be a corresponding change in the organization of the urban food systems, including wholesale marketplaces.

In the Taiwan and Singapore cases, although the facilities reached design capacity within the first 10-year period, it has become increasingly difficult to form a consensus on or plan for the next generation of improvements. Thus, without a consensus on an initial set of well-defined and agreed-upon procedures for instituting and budgeting for improvement or updates, the response lag becomes longer and the results more uncertain. Proactive versus responsive updating of facilities and management needs to occur, anticipating needed change versus only fire-fighting marketplace problems.

PLANNING LESSONS: THE NEED FOR CAREFUL DIAGNOSTIC ASSESSMENTS

This section discusses planning lessons and key planning issues or considerations. The interested reader is also referred to Annex A, which summarizes Hans Mittendorf's recommendations (1979) regarding urban wholesale market design.

Planning Lessons

There are two major sets of planning lessons: those learned from the Asian case studies, and others found in the world literature but applicable to Asian marketplaces today. Some lessons emphasize the planning process while others focus on the end product of that process, namely the design for the market. The key points for each set will be first listed and then explained.

Planning lessons from the three case studies include the following:

- A marketing systems orientation should define the key characteristics of the wholesale marketplace;
- Designed capacity should be reached within 10-15 years and new steps are required after that period;
- Plans should be based on past experience, but future throughput/volume expectations should be modified to reflect specialization, demographic changes, and economies of scale;

- The major difference between fruit and vegetable trading practices and patterns should be accommodated, while similar access to market services, especially cold storage, for both types of trade should be facilitated;
- The implications of major shifts in sourcing fresh fruits and vegetables, whether shifts from domestic to foreign sources or sourcing from one country to several countries, should be recognized and accommodated;
- Pragmatic planning requires the active participation of those most familiar with the use of such facilities, particularly the experienced wholesale traders;
- Semi-private or private sector management arrangements, rather than public sector management, should perform more efficiently and effectively in such facilities; and
- Relocating traders requires special marketing extension efforts and appropriate incentives to ensure timely, complete utilization of the market space and responsive management arrangements.

Planning lessons from the available world literature on experiences in other countries include the following points:

- A task force or similar consensus-building working group should be used to enable all important sectors to participate in the major design decisions, including management and services to the various sectors;
- The inclusion of international consultants or advisors should be balanced with several local experts in food marketing systems and urban infrastructure planning and development;
- A "sunrise" provision to force the periodic reevaluation of the performance of the urban food system and its linkage with the domestic and international sources of supply should be used. Budgetary resources should be set aside to ensure corrective action on any serious problems identified;
- A monitoring mechanism to track key performance indicators, such as throughput relative to design capacity, revenue generation of the market relative to the appreciated land values, changes in stall rental rates reflecting inflationary costs, changes in market share of supermarkets compared with that of the wholesale market supporting traditional retail outlets, should be incorporated within the plan;
- Planning should be undertaken with an understanding of tradeoffs between increases in the size of the area occupied by the facilities, effective carrying capacity as related to the distance from retailers to be serviced, and road or waterway capacity to deliver and distribute commodities in an efficient and timely manner; and
- A consensus should be formed on whether to recover all, part, or none of the investment costs through rental charges or fees in light of their impact on increased consumer retail prices or reduced supplier prices.

Key Performance Criteria

In planning for wholesale marketplace improvements, analysts are recommended to assess wholesale marketplace performance with reference to the four dimensions for evaluating wholesale marketplaces as they relate to the food distribution system, as discussed in Section Two.

Key performance criteria or norms related to the **coordinating role** of a wholesale marketplace within the current and emerging organization of the domestic marketing system are:

- Provide adequate, regular supplies of main commodities.
- Create and maintain strong linkages to all dominant forms of sellers and buyers.
- Ensure regular access for quality goods from farmers' groups.
- Disseminate timely market information to suppliers to signal increased or reduced deliveries.
- Facilitate redistribution of reusable containers to supply areas.
- Support postharvest training and observation trips of farmers to the wholesale and retail marketplaces.

Key performance criteria related to **urban development goals** are:

- Improve the efficiency and reduce the cost of waste disposal, eliminating bad odors associated with rotting produce.
- Encourage small business to use by-products from wholesaling.
- Avoid obstruction of main traffic flow patterns or related causes of traffic congestion.
- Maintain facility appearance as fits the surrounding urban environment.
- Generate revenue to cover all operating costs with a marginal profit for yearly repairs or updating.

Key performance criteria related to the **quality and wholesomeness of the urban produce supply** are:

- Conduct tests for food safety on a regular basis.
- Prevent unsafe food from being sold to buyers at wholesale marketplaces.
- Report incidences of excess pesticide residues to extension services in corresponding supply areas.
- Ensure competitive distribution of high-quality produce to all consumer groups.

Key performance criteria related to **better integration of domestic and international supplies** are:

- Set aside adequate space for several importers and exporters to do business within the market.
- Disseminate price/market condition information to all importers and exporters.
- Provide an advisory service or trader access to relevant vital information, such as foreign trade statistics and foreign business contacts.
- Allow resident importers/exporters to add and customize their own refrigeration units to their shops.
- Develop a forum or feedback channels for domestic wholesale traders, importers, and exporters to interact with marketplace managers, planners, and key government officials.

Other Planning Issues

Long, Flexible Planning Time Horizon

Placing marketplace improvement planning within a longer, yet flexible planning time horizon is of critical importance and strongly recommended. Near-term changes in wholesale marketplaces should be planned within a flexible, long-term planning time horizon so that the time horizon keeps pace with urban growth (population), area expansion, and produce sourcing patterns. Planning modifications are inevitable over time, as in the Singapore case. There, the initial planning focus on changing the sites of vegetable wholesaling was superseded by a later transfer of fruit traders to the new marketplace. This ad hoc planning led to an unsatisfactory situation for fruit traders, who find their trading area within the marketplace to be inappropriately located (far from cold storage) relative to their business requirements.

Expanded Planning Scope

Another key planning issue is the scope of marketplace improvement plans. Many urban planners and engineers prefer to focus on marketplace improvement as an urban renewal project. Although their specialized expertise and narrow focus are needed, agricultural marketing specialists can make significant contributions to the planning process by placing wholesale marketplace design within the broader context of a national (or regional) produce market improvement plan and process. Expanding the scope of the planning exercise will require greater manpower and resources, not to mention the increased need for effective coordination among all the participants in the planning process.

Importance of Flexible Planning

Unexpected changes in market structure and operations, or in demand patterns, can lead to new sets of marketplace user needs, typically forcing reactive measures. Flexible planning, supported by ongoing monitoring and evaluation of marketplace organization and performance, can help managers prepare for inevitable surprises. Examples of not always foreseen changes include the following:

- An area in a marketplace reserved for auctioning a commodity group coming from a particular source of supply may need to be dedicated to other uses if that source of supply declines sharply in volume;
- Imports may gradually displace previous sources of domestic produce supply in wholesale marketplaces;
- Consumer concern may increase for adequate food of high quality without excess pesticide residues. In the near future, Hong Kong's change from a small city-state to part of a huge nation will bring about significant changes in the organization and operation of wholesale marketplaces. Although the exact nature of these changes cannot always be easily forecast, it behooves Hong Kong planners to anticipate the most likely possible changes, construct alternative scenarios of the consequences, and develop plans for meeting these contingencies;

Anticipation of Tradeoffs Required

Planners also need to consider tradeoffs in requirements of facilities, layout, and services between (and among) the following:

- Fruit versus vegetable trade sectors;⁶
- Importing businesses sourcing from abroad versus businesses that source domestically;
- Wholesaling businesses selling to individual retailers, institutional buyers, or other wholesalers;
- Retail businesses selling to individual households or to small food enterprises; and
- Accommodating space for 40-foot containers along with the large trucks and small pick-ups.

Clearly, whose preferences count will enter into any analysis of such tradeoffs. Certain groups may exercise more political clout or lobbying savvy and resources than others. To minimize the advantage that stronger, more politically powerful groups have in gaining access to key decision makers and peddling influence, ways to enhance the voice of different groups should be devised. At a minimum, traders and representatives of producer groups need to be consulted privately or in public forums regarding planned facilities and management options.

Public or Private Management

Another key set of planning issues concerns the type of management structure for a wholesale marketplace. A public sector management arrangement, although having the authority to respond

⁶ Other groups of traders selling flowers, meat/fish, dairy products, and other agricultural products could also enter into this equation.

decisively to conflicts, has decided disadvantages.⁷ Running a large wholesale marketplace requires a management presence beyond the 8:00 a.m. to 5:00 p.m. schedules of civil servants, for example. Semi-private or private management is often better suited to effective wholesale marketplace operation; skilled managers can be recruited (and paid better than civil servants) who are more responsive to legitimate trader needs and committed to improving market efficiency. Whatever the management model, some form of periodic, ongoing marketplace user input and feedback is required to assure a well-functioning wholesale marketplace.

Summary Observations and Recommendations

Urban planners, architects, and engineers have often dominated discussions regarding the need for and design of urban wholesale markets in developing countries. This is understandable, given the fact that a terminal market is a sizeable infrastructure investment with significant implications for urban land use, traffic patterns, and engineering, sanitation, waste removal, and environmental issues. Probably the most significant lesson learned in the process of planning for wholesale market relocation or expansion is that hardware considerations tend to dominate software issues, such as marketplace operation, voice of trader, management, rules, fee schedules, and services.

It is strongly recommended that managers leading a wholesale market development team encourage planners, engineers, and marketing specialists to think first in terms of urban food systems rather than physical facilities. Design of the latter needs to flow from a solid understanding of the former. One can ignore up-front diagnostic assessments, but only at one's peril. Planners and designers need to understand how the emergence and decline of competing market channels should influence investment decisions regarding public marketing facilities. For example, if there is a pattern or evidence of a declining proportion of fruit and vegetable transactions going through terminal markets, marketplace investments or expansions should not be oversized.

The design of new or expanded facilities should be preceded by fruit and vegetable marketing subsystem assessments that look at competing marketing channels and how they are changing over time, as well as the existing infrastructure for handling domestic marketing flows and imports/exports. It is critical to understand how produce marketing is organized in that particular urban area, who are the key participants, what their roles are, whether there are ascending or descending channels or players, and how well the existing system is performing. Such an assessment is especially critical when exports (or imports) of fresh produce comprise a high and increasing proportion of domestic production (or domestic supply). Box 1 shows the scope of an initial diagnostic review. To the extent that recent studies cover some of the topics in Box 1, the diagnostic assessment can be shortened or focused on particular issues. For our purposes, this assessment should be followed up with more in-depth investigation of the four key dimensions related to wholesale marketplace improvement and their performance attributes, as discussed in the previous section.

A diagnostic set of issues of fundamental importance in urban areas of increasingly wealthy Asian countries is the relative importance of wholesale markets and supermarket chains. In the United States and Western Europe, the importance of terminal wholesale markets has declined over time, as supermarket chains have come to dominate the retail landscape. This trend is most pronounced in the United States. For example, about one-third of Florida fruits and vegetables pass through terminal

⁷ Although civil servants may have authority, they can be inflexible bureaucrats ill suited to working closely with the private sector, particularly conflicting parties within the private sector.

Box 1: Urban Produce Distribution System Diagnostic Assessment

1. Fruit and vegetable production and trade. Historical trends and future projections of production by major production zone, urban produce consumption (by income and ethnic group), urban demographic patterns, and exports and imports (by commodity).
2. Description and analysis of the existing fruit and vegetable distribution system centered on the largest city, with some attention to related secondary cities and rural supply zones.
3. Linked to #2, subsector studies of key or representative fruits and vegetables that figure importantly in the urban food supply or export/import trade.
4. Diagnostic studies of specialized industries in the produce marketing system, particularly transportation, packaging, storage/cold storage, sorting and grading, and retailing.
5. Analysis of public sector policies, programs, and institutions that affect produce marketing, such as laws, regulations, information services, credit policies and programs, production and marketing research and extension, training programs, and price/income policies.

Source: Adapted from *Improving Food Marketing Systems in Developing Countries: Experiences from Latin America*, Kelly Harrison et al., Research Report No. 6, Latin American Studies Center, Michigan State University, November 1974, pp. 121-122.

wholesale markets in the Mid-Atlantic and Northeast regions. The proportion is higher in more densely populated urban settings. The other two-thirds are shipped by producers directly to retail chains.

Many analysts assume that the U.S. experience will be repeated in East Asia and parts of the developing world — that there is an inevitability to supermarkets forcing out less well-capitalized and well-equipped competitors. In the same way that mom-and-pop corner grocery stores have disappeared from many parts of the U.S. suburban and urban landscape, the conventional wisdom is that this will take place in other parts of the world as well. Supermarkets have made significant inroads in retailing fruits and vegetables and other perishables in major Asian cities. In Hong Kong, the number of supermarkets increased from 100 in 1975 to more than 800 by 1990, and by 1991 it was estimated that more than half of all food sales went through supermarkets. However, only about 15 percent of all fresh produce was sold by supermarkets (Speece, 1994). Wet markets and small retail shops continue to dominate produce sales. These shops, as well as restaurants, procure their supplies at wholesale markets, whereas supermarkets are supplied directly by wholesale warehouses serving multiple stores.

The reasons for the continued dominance of wet markets and small retail shops in produce sales to urban consumers are not entirely clear. Table 5-1 identifies salient characteristics of both wet markets and supermarkets in Asian cities that shed light on this question. Some observers argue that wet markets dominate and supermarkets have made slow inroads because the latter cater to the wealthiest consumers and hence offer produce of uniform quality at significantly higher prices. Despite the increasingly widespread wealth in East Asia, many consumers, particularly older consumers, housewives, maids, and members of large families remain more cost conscious and appreciate produce freshness, which is a hallmark of wet markets. As incomes continue to rise, however, supermarkets would be expected to make significant inroads over time. Speece argues that this will happen in Hong Kong during the 1990s.

TABLE 5-1

COMPARISON OF WET MARKETS AND SUPERMARKETS AS RETAIL OUTLETS

Factor	Wet Market	Supermarket
Customer Types	Grandmothers, housewives, and maids of price-conscious households. Members of large families.	Younger generation of working women and men; higher income households; smaller families.
When Shop	Early mornings on daily or every other day basis.	Evenings and weekends. Fewer visits per week.
Favored Features	Fresher produce, more varietal and size/shape choices, lower cost, nearby convenient location.	Prewrapped, uniform produce (but lack highest quality produce). Pleasant and clean environment in which to shop.
Accessibility	Consumers rely on cheap, convenient public transport or walk.	Consumers use automobile or public transport (when purchases limited).
Range of Goods Available	Fresh produce, meats, fish.	One-stop shopping for a wide variety of dry goods and fresh produce.
Source of Produce Supplies	Wholesale marketplaces.	Rely more on direct procurement from producers or importers.
Impact of Population Density and Land Cost	More prevalent in densely populated urban settings. Traditional form of produce retailing, so land dedicated to wet market use long ago (before land values skyrocketed).	Horizontal space requirements (store plus parking) can be substantial. Multi-story supermarkets can reduce horizontal space requirements. High land and site development costs in crowded cities may be a deterrent to opening a supermarket.

The wet market versus supermarket choice for produce purchases is part of a broader set of issues concerning the emerging configuration of major urban food systems, of which fruit and vegetable distribution form an important subset. Factors that affect the relative importance of wholesale marketplaces in relation to direct procurement by supermarkets include the following:

- Population density. The higher it is in an Asian city, the more one would expect the wholesale marketplace-wet market channel to prevail. Assuming that terminal market sites were established a decade or more ago (before rapid land price increases), supermarkets, as relative latecomers, may face high entry costs;
- Access to wholesale marketplaces. If they are located in congested sections of cities and hard to reach via truck or other transport modes, supermarket chains might have an advantage in being served by a wholesale warehouse facility outside of town that is easily accessible;
- Relative importance and costs of domestic versus foreign supplies. Predominance of imports might give supermarkets a scale economy advantage in procuring supplies directly from foreign shippers;

- Extent to which consumers value convenience. Numerous wet markets and small neighborhood retail shops would be favored over less numerous (and perhaps less conveniently located) supermarkets.
- In less wealthy Asian countries than the three case study countries, availability of refrigeration (and space for food storage) in the home or apartment might favor supermarkets, *ceteris paribus*. Refrigeration enables households to buy produce and other perishables in larger quantities less frequently; and
- Procurement patterns of restaurants, kiosks, and movable stands and other servers of prepared meals. If consumers allocate a high proportion of their food expenditures to meals prepared outside the home, the procurement patterns of food preparers takes on greater significance.

The predominance of wet markets and retail shops may be explained in part in some Asian cities by high transactions costs associated with buying food several times a week. Many consumers lack refrigeration and most others lack food storage capacity in typically small, crowded flats. It is also time-consuming and inconvenient to go to supermarkets at some distance from the place of residence via public transport. Furthermore, if many consumers eat a relatively high proportion of their cooked meals outside the home, as in Hong Kong, they may buy more limited quantities of fruits and vegetables for home consumption, while restaurants and other food vendors may procure their supplies at the central wholesale markets.

Whether the wholesale marketplace-wet market channel dominates urban produce distribution or not, it is clear that *wholesale (and retail) traders, transporters, and private providers of other marketing services should be consulted during the design phase of any terminal market improvement project*. The task force must obtain the private trade's input early on regarding current and proposed market location, size, access via public transport, parking capacity and configuration, stall size and layout, stall leasing practices, cold storage size, ownership and location, traffic flow, fee structure, management, marketing rules, and a host of other factors. Without such up-front input, municipal authorities and wholesale market managers court disaster.

There are numerous cases of sizeable public sector investments in terminal markets that turned sour — to which, for example, wholesale traders were unwilling to relocate or they found rented stalls and other marketplace facilities to be outsized or in some way inadequate to meet their needs. Cases in point are the huge terminal market in Metro Manila, Philippines, constructed during the 1970s, and the Buenos Aires central market built in the late 1970s. Presumably, traders in these cities were never fully consulted about the proposed marketplace changes. The Hong Kong case is exceptional in that the authorities consulted not only wholesale traders in the old marketplaces, but they also solicited the views of those who were operating extra-legally. Rather than penalizing such traders, the Hong Kong planning group valued their input.

Another important issue is to *clarify government objectives for a new facility from the outset*. Governments may not always want these objectives to be clearly delineated, particularly if a key objective of investment in a centralized wholesale market is to control produce prices. In other cases, such as Hong Kong and Taipei, marketplaces are built to serve local producers. The proportion of local produce to total produce sold in the wholesale marketplaces has declined over time in Hong Kong, however, because imports have comprised an increasing percentage of supply. In some Asian countries, wholesale marketplaces are constructed to increase market transparency. Government officials sometimes perceive that middlemen squeeze producers and gouge consumers, capturing unfairly high returns for their seemingly limited role. Their attitude is that wholesale traders are parasites who don't produce anything,

unlike the farmer or the processor. This attitude appears to be on the wane in most Asian countries. Another possible government objective could be that a central wholesale market provide a location and an efficient vehicle for demonstrating and enforcing phytosanitary, hygiene, grading, packaging, and waste-handling standards.

IMPLEMENTATION LESSONS IN WHOLESALE MARKET DEVELOPMENT

Implementation lessons from the three case studies and the broader literature include the following:

- Emphasize the smooth relocation of current traders who should be a valuable resource to the city's food system;
- Build a recognizable monitoring mechanism into the operations of the marketplace;
- Establish a formal means to institutionalize the dialogue between traders and market management to explain and address emerging problems or constraints;
- Maintain documentation regarding the rationale or justification for the final decisions on key issues, such as funding level, size and layout of facilities, fee structures, and the like;
- Select some form of semi-private or private sector management company that is flexible, empathetic with traders' problems, and responsive to both city and agricultural concerns;
- Budget sufficient resources and personnel to provide key support services such as timely market information and periodic training of market staff and supplier groups. Training could be in packaging technologies, handling techniques, display techniques, coldroom specification for each commodity by season and source (cold chain concepts), and interpretation and use of marketing information by buyers and supplier groups.

In Asia, wholesale traders are of mixed views regarding the choice between private sector, semi-private or public sector management of marketplace facilities. In other parts of the world, governments are commonly viewed as inefficient and unwilling to provide the necessary level of market management services. Government officials are often underpaid, poorly equipped and trained, and generally undermotivated. As a result, they tend to use their discretionary authority to elicit bribes from market participants.

Public or quasi-public agency need not provide all the services required by wholesale and retail traders at marketplaces. Depending upon the context, an appropriate mix of public and private services is possible, as well as services that can be privately contracted out. As an example, private enterprise can provide handling services within the marketplace and transport from the wholesale market to retailing sites at lower costs than most public agencies. Private providers may also be able to collect, manage, and sell waste, and customize/alter stalls (including installing cold storage units). Provision of utilities (electricity, water, sewage) is beyond the scope of private contractors. They could, however, collect utility bills under contract to public utilities, serving as a one-stop bill collection and processing shop, thereby lowering traders' transactions costs.

In contrast, *market information collection and dissemination should be reserved for the public sector*, because a private firm might have an incentive to manipulate reported prices to their trading benefit or the benefit of particular trading parties. The role of enforcing safe, hygienic handling practices is also a public sector one. Produce inspection and pesticide residue testing can be done by private firms or public agencies, depending upon the context. The public sector needs, however, to ensure that these functions are properly performed.

Wholesale traders and in some cases farmers' organizations should have formal, systematic input into market management decisions. With this voice, market users are able to influence decisions about market regulations, how stall and cold storage space is allocated, what the level of user fees should be, which marketplace improvements or renovations are the highest priority, and which private contractors should be selected to perform needed services. Formalization of this input through periodic management advisory meetings, or through a market management structure that guarantees access through partial ownership by wholesale trader or producer associations, helps to ensure that unpopular decisions are not made without first consulting representatives of users. Among the case studies, the Taipei wholesale marketplace is the largest beneficiary of co-ownership of the market management organization, TAPMC, as well as of systematic input by representatives of producer associations, produce shippers, and wholesale traders in scheduling of produce arrivals to an increasingly outmoded facility. Marketplace users in Singapore also can communicate their preferences and input to the management entity, EM Services, through trader associations.

One realistic way to better service the demands of cost conscious consumers is for market managers to look at cost-effective ways to upgrade facilities and enhance efficient market operations, which in turn cuts marketing costs. Market management organizations will lose support, causing wholesale traders to look elsewhere for alternative sites and space, unless they do the following:

- Constantly look for ways to improve traffic flow into, through, and out of the wholesale marketplaces;
- Provide needed services;
- Regulate unlawful trading practices;
- Fine or otherwise punish those who do not comply with well-established market regulations; and,
- Generally increase the efficiency of the marketplace.

As is true in many businesses, the key is to identify and define user needs, anticipate future market developments with impacts users, and plan hardware renovations that meet future needs before the existing situation becomes a crisis.

SECTION SIX

TOWARD AN APPLIED RESEARCH AND DEVELOPMENT AGENDA

The three wholesale market case studies commissioned by Asia RAP are valuable additions to the dated literature on wholesale market facility design, operation, and management. Based on a comparative analysis of the studies, as well as a broader review of the available literature, we conclude that it is important to organize the preplanning investigations for wholesale marketplace improvement in urban Asia around the four cornerstones identified in Section Two: city revitalization, urban food systems, domestic supply patterns, and import and export trade.

ACTION AGENDA

In light of RAP's limited resources yet broad mandate, what specific actions might the project take to improve the performance of wholesale markets in large cities of South and Southeast Asia? A few key options would include the following:

Critical Initial Steps

- Design and undertake an effective method for forming a **regional, multisectoral task force** consisting of regional institutions and donor agencies to review applications for future marketplace assessments as the first step in marketplace updating.
- Propose that the **public agricultural agencies** establish a presence and **play a more vital role in urban areas** of South and Southeast Asia rather than maintain the traditional perception that they have jurisdiction only within the rural areas. This would support the food system's approach and market-led stimulation and guidance of the agricultural sector by proposing that adequate and appropriate food, excess pesticide residue, high produce price levels, and so forth all have an urban dimension.

Seminars, Workshops, and Training

- **Co-sponsor a regional seminar series** in South and Southeast Asia with the Asian Productivity Organization (APO), Food and Fertilizer Technology Center (FFTC), or ASEAN Food Handling Bureau (AFHB) entitled: "The Benefits and Prospects of Updating Urban Wholesale Marketplaces for Fresh Produce".
- **Sponsor national workshops and seminars in several Asian countries and disseminate publications that stress the significant lessons learned** from past and ongoing wholesale marketplace improvement programs in other Asian countries. Planners, analysts, and managers with experience in design and implementation of improvement programs should be identified as seminar and workshop presenters or resource people.

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- **Sponsor national workshops on urban marketplace improvement** that bring together influential local leaders from the horticulture and trading communities and from select municipal and national government agencies to explore the need for change and options.
- **Develop support materials and propose a series of forums** in South and Southeast Asia for marketplace users to express their concerns, ideas, and support for updating the existing facilities and management practices of wholesale marketplaces.
- **Conduct observation trips to more successful Asian wholesale markets for key local leaders in RAP countries.** Lead teams of concerned public and private sector participants on observation tours to more successful marketplaces in order for them to get first-hand familiarity with the possibilities for updating their own facilities and marketing systems.

Case Studies, Monographs, and Training Materials

- **Commission brief case studies to document East Asian experiences** with the active involvement of their ministries of agriculture, especially agricultural marketing divisions, in the key decisions of how to improve/design urban wholesale marketplaces, to support legislation regarding agricultural marketing, and to respond to changing quarantine concerns.
- **Undertake additional wholesale market planning, design, and implementation case studies.** Well-written studies can influence future design and current market management. Note, after all, that the Housing Development Board technicians who designed the Pasir Panjang wholesale market in Singapore consulted the 1976 Food and Agriculture Organization (FAO) guidelines. Yet generic guidelines may not always be the most useful. Detailed case studies may provide Asian planners with more valuable information on how to adapt generic guidelines to a particular set of local conditions.
- **Propose a collaborative "state of the art" document** with other institutions (such as the FAO, the Asian Development Bank, and World Bank) that have extensive experience in infrastructure development to document their experiences and lessons learned, especially relative to the four dimensions identified by this analysis.
- **Based on the materials from the case studies and this analytical study, develop:**
 - **Training materials** on how to update marketplaces for the use of municipal and agricultural officials;
 - **Practical, low-cost, and timely marketplace assessment methods** for preliminary decisions regarding what forms of marketplace updating are suited to the prevailing situation, resources and needs of marketplace users as well as compatible with the agenda of municipal authorities; and
 - **Presentation materials** for the use in seminars, workshops, or conferences on this timely subject.

Other Actions

- Propose to local (and national) governments and to trade associations that **wholesale marketplaces be used to monitor price movements and target traders, including importers and exporters, for training, extension, and produce inspection/testing.** Although airports/ports may sometimes be used in this capacity, it may be impractical, because these transport junctures are the final staging points, not points at which produce can be resorted or repacked.
- **Improve collection and dissemination of wholesale market information at selected Asian wholesale marketplaces,** where there is a rationale for improvement, public and private sector support for such improvement, and a reasonable likelihood that a market information system (MSI) could be made self-sustaining within a reasonably short time frame (and thus continue without donor funding).
- Because "a picture is worth a thousand words," **commission a slide series documenting actual cases of marketplace problems** along with alternative ways that other markets have resolved such problems.

For any further case studies, the revised guidelines written by Guyton and Menegay (1995), benefitting from an initial review of preliminary drafts for the first three case studies, should be used to structure the inquiry and the expected deliverables. An important addition to the revised guidelines is the separate chapter on the organization and operation of the fruit and vegetable marketing system, with special attention to the role of major wholesale marketplaces in coordinating urban produce distribution and import and export of internationally traded horticultural products. Given additional writing requirements, and the need to think about an urban wholesale market in a broader produce marketing systems context, the level of effort would likely need to expand to some 25-30 days (beyond the 15 days allocated to each case study).

RESEARCH AGENDA

This section raises several broad research questions and is followed by a more detailed discussion of several specific research issues.

A key recurring theme in this paper is the evolving role of wholesale marketplaces and supermarkets in large Asian cities. For a broader sample of urban markets than the three featured in the case studies, it would be useful to learn the following:

- The number of supermarkets, their market share in retail sales of fresh produce, and trends in supermarket produce volume and market share;
- Sources of supply for supermarkets (own domestic procurement channels versus terminal marketplaces versus imports);
- Trends in throughput of fruits and vegetables for key wholesale marketplaces;

- Comparative prices of selected (comparable) fruits and vegetables in supermarkets, wet markets, and produce shops, as well as that received by street retail sellers; and
- Consumer preferences regarding alternative retail outlets and profiles of what types of consumer shop where.

If supermarkets do not dominate produce sales in the high-income cities of Hong Kong and Singapore, they are probably far less well established in large cities in lower-income countries. It would be useful to examine in-depth in several representative Asian cities in the RAP countries why supermarkets have not become as well entrenched as they have in other parts of the world. Do supermarkets face cost disadvantages? Given the low cost of labor in many Asian countries (and by extension the relatively low cost of prepared food), do consumers prefer to buy meals from restaurants, stalls, or shops? Have supermarkets failed to establish wholesale centers that service multiple stores? Do full-service wholesalers (independently owned from supermarket chains) exist and operate competitively? What are supermarket chains' plans to improve and expand produce wholesaling during the next five or more years? A survey of a sample of supermarket chains and independently owned stores in one or more major urban areas could help to answer these questions. The results of such a survey could provide valuable input to a planning and design exercise for construction of a new wholesale market or expansion of an old one in the survey city (cities).

Applied research is currently under way to forecast the changes that adoption of the Uruguay Round GATT measures will have on the following variables:

- Volume, prices, and exporting country composition of produce imports (and exports);
- Composition of domestic produce supply (and the prices of produce supplied by different sources); and
- Volume and destination of produce exports and reexports (where relevant) in Asian countries.

Further applied research could examine how GATT implementation will affect the relative importance of terminal markets versus alternative produce marketing channels in key RAP countries in Asia. In other words, how will GATT affect the organization, operation, and performance of produce marketing, particularly wholesale-retail linkages. Rather than stop at anticipating changes, post-GATT implementation impacts should be monitored and evaluated, with results periodically reported to Asia RAP countries.

SELECTED RESEARCH ISSUES

Pesticide Residues: Protecting Consumers through Information, Testing, and Extension

This issue was briefly described in the Taipei case study but not given much attention in the other cases, mainly because relatively little is being done in this area. There are reports of consumer concern about pesticide residues in each of the three countries, and it is of critical importance in international trade in horticultural products. Both importing countries that wish to protect their consumers and exporting countries that strive to establish a reputation as a consistent and reliable supplier need to pay close attention to pesticide residue issues.

Note that the pesticide residue issue is part of the broader issue of meeting phytosanitary standards. In addition to production practices, postharvest handling, storage (and associated chemical use), and transport affect produce quality. Although the public may be more concerned with the issue of pesticide residues, it is important not to ignore produce handling, preservation, cleaning, and display practices that influence quality. Any information and extension program designed to reduce the incidence of pesticide residue contamination and educate growers and consumers should address this issue within the broader context of food safety.

Dealing head-on with the pesticide residue testing issue requires that produce marketing authorities respond directly to consumer perceptions and concerns, rather than evade them. A first step is to ascertain the extent to which pesticide residues are a problem in the marketing of fresh produce. What are the most commonly used chemical pesticides, and what are the risks to consumers at different levels of application? Which commodities in particular, supplied by which production areas, show evidence of the highest pesticide residue use, putting consumers at risk? Once an empirical information base has been established, how should this information be disseminated to consumers, consumer groups, producers, marketing system participants, and other public agencies? Last, what technically proven testing and control procedures can be applied to the conditions of wholesale market trading in Asian countries?

Key issues regarding pesticide residue testing include:

- Which agency, private firm, or association has the jurisdiction and mandate to inspect produce and conduct spot pesticide residue tests?
- Where and how effectively are these done? Is the sampling method valid and adequate? Are there quick, reliable tests that are being done or could be done on the spot? Who pays for the initial equipping of a laboratory, if required, and the testing?
- Are test results made known to a wider audience than just the shipper or receiver concerned?

Important marketing extension questions are as follows:

- Have the major urban wholesale markets played a role in heightening producer and trader awareness of the pesticide residue issue? Why or why not?
- What extension role, if any, does the market management team play? In countries where urban wholesale markets serve as assembly and staging points for exports, who tests shipments destined for export?

Wholesale Markets As Demonstration Centers

Given the large volume of produce flowing through major urban wholesale markets, and the active participation of numerous traders, brokers, producers, and buyers, these markets are well placed to introduce and encourage new packaging/crating techniques, handling practices, hygiene, and grades and standards. The Taipei wholesale market management took a leadership position in this because of the strong influence of the agricultural sector and backward linkage to domestic farmers' organizations. However, has the market management staff in other cases used the wholesale market to provide progressive marketing extension?

As the Taipei case illustrates, the management team in a large wholesale market could use this setting for a strong demonstration effect, combining the carrot (positive demonstration effect for traders seeing better practices) with the stick (delayed auctioning and lower prices for shipments of poorer-quality, damaged produce or evidence of excessive pesticide residues). However, since innovations ultimately depend on the specific conditions within each country and wholesale marketplace, their use cannot be generalized.

The Role of Wholesale Markets in Price Formation and Improving Market Transparency

Urban wholesale markets are central points in the produce marketing systems that convey significant market information to buyers and sellers at those markets, including price, offered and traded volume, assortment (varietal, size, color), produce quality, and produce presentation/packaging. Should the public sector intervene in organizing and running market information systems based at key wholesale marketplaces? This depends on whom such information would service in the domestic market. When large numbers of producers and producer associations ship produce to the marketplace, as in Taiwan, there is more likely a justification for committing scarce public sector resources to a formal MIS. In urban marketplaces supplied in large part by imports (as in Hong Kong and Singapore) or a handful of large-scale domestic production units, the justification is likely to be weak.

Key issues to consider when examining market information include:

- How is market information collected, processed, and disseminated, and who performs these functions?
- In what form and to whom is it disseminated: producers, rural assemblers, suppliers in other countries, importers, exporters, wholesale traders?
- Given the relative ease of collecting market information from auctions as opposed to private direct negotiations, how is reliable information gathered in the latter case?
- If the public agency is responsible for the collection and dissemination of market information, should one agency handle all aspects and locations for uniformity of specifications (types/units of observations, number of observations per commodity per marketplace, frequency of data collection), and timely and coordinated coverage?
- How can representative prices be collected given multiple varieties of each commodity, uncertain grades, price variations throughout the market day, and quality differences based on source of supply (domestic production zone or imports)?

Much of the literature argues that wholesale markets provide price leadership and a centralized place for carrying out transactions and conveying market information. In the future, if terminal wholesale markets decline in relative importance, they can play a major role in the price discovery process, particularly for domestically consumed produce. They may put competitive pressure on private transactions between retail chains (or wholesalers serving retailers) and suppliers, which could cover an increasing proportion of produce marketed in major urban areas of Asia.

Auction versus Direct Negotiation in Wholesale Markets

Auctions are primarily used in the Taipei markets and secondarily in the Singapore market for Malaysian produce, while Hong Kong traders use direct, private negotiations. Which method is superior for which circumstances and why? What has been the impact of those methods on price volatility (versus relative stability), on buyer and seller returns, and on what consumers ultimately pay for fresh produce? In theory, a cross-country comparative study could be conducted in which detailed price data (daily or weekly) were examined over different periods. However, data limitations would make such studies difficult, if not impossible, to conduct.

The auction approach used in Korea, Japan, and Taiwan has had the farmers as the main beneficiaries because the auction is seen as a way to improve farmers' bargaining position via more market transparency. Retail prices are very high in those countries, which may be a consequence of using auctions.⁸ Japan's domestic production continues to become a smaller proportion of supply while imports increase to take up the slack; this is recognized as a "sellers market condition," where domestic producers exercise significant market power.⁹ In this situation, farmers have recognized their strong bargaining position. In fact, some produce growers report an interest in discontinuing auctions in Japan.

In the two Taipei markets where auction transactions are used, wholesale traders have commented on increasing competitiveness (bordering on hyper-competitiveness), declining returns, and the likelihood that sons/daughters will not follow them in the business. RAP should assess the tradeoffs between the auction versus negotiated types of transactions — both in terms of "preconditions" for using one versus the other type of market transaction, and the costs/prospects of transforming the traditional marketing practices, based on price negotiation, to the auction method for discovering prices.

Further Applied Research Topics

RAP should consider conducting applied research on the following topics:

- Comparative analysis of the tradeoffs between private, semi-private, and public sector management of urban wholesale markets;
- Determination of the additional revenue generated relative to the facility, management, waste disposal, and related costs associated with retailing activities within the wholesale market as compared with alternative types of space/time use, such as wholesaling of dry goods from the back of large trucks within the market for the down-time use of the facilities or parking lots; and

⁸ Some possible factors that increase produce costs in Korea, Japan, and Taiwan are high labor costs (as labor gets bid away to industrial and other sectors), high market fees/rents paid by participants in the produce trade, and more value added through packaging, presentation, and other retailing techniques.

⁹ Domestic producers grow the varieties of produce most desired by consumers in Japan. Although other countries may produce the same varieties as Japanese producers, foreign-grown produce is likely to be produced under somewhat different agro-ecological, soil, and rainfall/irrigation conditions, leading to subtle differences in taste and other characteristics. Witness the long-standing debate over how Japanese-grown rice is superior in quality to U.S. rice and other imported rice. Many Japanese analysts assert that consumers are willing to pay a premium for higher-cost Japanese rice.

- Test the common assumption that traders within and suppliers of major marketplaces for imports maintain their own market information system that services their information. In other words, the public sector in Hong Kong and Singapore does not establish and maintain a market information system because the private sector market participants already have their own adequate information system.

CONCLUSION

The research and action agenda outlined in this chapter is a component of the research agenda for the Wholesale Markets and Market Information components of the Asia RAP project. The research and action carried out under this agenda are intended to have an impact on public agencies and technicians who are planning and designing wholesale marketplace improvements. Leaders of farmer or trader organizations may also find this paper and future research of value, particularly if they are active participants in the planning and design process.

Terminal wholesale marketplaces will continue to play a pivotal role in urban Asian produce and food systems for many years to come. Supermarkets, supplied by alternative marketing channels, will not supplant wholesale marketplaces in the near to medium term. Hence, improving upon existing wholesale market facilities and carefully designing new facilities are likely to have a high payoff in improving the efficiency, effectiveness, and progressiveness of Asian urban food systems. Furthermore, improved wholesale marketplaces could play a key coordinating role in distributing produce imports and consolidating produce exports. Design and construction of better hardware (marketplace infrastructure) needs to be complemented by improved software, namely better marketplace management and services, targeted marketing extension, user-driven market information (where it meets a real need), and monitoring of produce quality relative to phytosanitary standards.

The authors welcome critical comments on the questions and issues raised in this paper. They invite interested readers to send papers or notes about wholesale marketplace development in Asia (and elsewhere) that are not cited in this report or not in the public domain. One important role of the Wholesale Markets and Market Information components of the Asia RAP project is to summarize and disseminate significant lessons learned from experience in Asian cities and comparable urban areas of other parts of the developing world. Comments on this paper or questions about RAP services can be sent to Merle Menegay, Regional Agribusiness Project, 7250 Woodmont Avenue, Suite 200, Bethesda, Maryland 20814; telephone: 301-215-7036; fax: 301-907-2655; Internet: rap@dai.com. Comments or papers can also be sent to John S. Holtzman, Abt Associates Inc., Hampden Square - Suite 600, 4800 Montgomery Lane, Bethesda, Maryland 20814-5341; telephone: 301-913-0500; fax: 301-652-3618; Internet: john_holtzman@abtassoc.com.

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ANNEX A

VARIATIONS ON A THEME BY HANS MITTENDORF

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Following a decade of FAO-sponsored conferences and studies in Asia, Latin America, and Sub-Saharan Africa during the 1970s, Hans Mittendorf prepared recommendations for the collective planning and design experience of donors, researchers, and developing country practitioners (see Mittendorf, 1979). He called his lessons learned the *Ten Commandments*. We summarize these below, adding observations where appropriate.

1. *Size of the wholesale market.* Oversizing of new markets can be avoided by assessing space actually used by wholesale enterprises (storage and sales area) and projecting what wholesalers' future needs will be under more efficient scale and operations. In the aggregate, realistic projections need to be made of likely produce volume throughput.
2. *Size and shape of stalls.* Detailed analysis of the space requirements of different categories of wholesale traders needs to be done to avoid adopting a type of building and stalls better suited to industrial countries. Note that designers can err on the other side, too, by designing stalls that are too small for future wholesaling operations, as in the case of the smallest stalls in the Singapore wholesale market.
3. *Type of building.* Avoid the temptation to overbuild, using costly materials, when more simple structures and materials will do. This commandment is more relevant to rural or small town markets than to large city wholesale markets. In some cases, the latter may be underdesigned and underbuilt, leading to serious structural deficiencies, as in the case of the second Taipei market constructed in 1985.
4. *Layout.* The layout has to be based on local trading patterns and must provide for a functional and low-cost operation.
5. *One or more wholesale markets?* One central wholesale market, handling some 50-60 percent of the total produce supply, can be supplemented by several satellite distribution markets that provide a convenient supply point for small-scale retailers in distant neighborhoods.
6. *Location (location, location).* Like the real estate dictum, location or siting of a wholesale market is key. If wholesale markets are located too far from residential areas and their retail markets and shops, small-scale retailers will face problems in attending the market. Mittendorf recommends that retailers should travel no more than 30 minutes to a wholesale market.¹
7. *Cooperation with wholesalers.* As noted above, wholesale traders are not always consulted in the planning and design process.
8. *Ownership.* The pros and cons of alternative ownership forms need to be carefully weighed. In developing countries where capital is very scarce, public ownership, through some form of government subsidy or donor support, may be inevitable. In wealthier countries, the private wholesale trade may be able to co-finance or fully finance construction and operation of wholesale markets.
9. *Policies on rents.* Low rents, which do not typically cover all market management and operation costs, let alone investment costs, are common in many wholesale markets in developing countries. Mittendorf argues that the concept of fees covering costs has to be advocated in order to convince wholesale traders that higher fees will translate into greater operating efficiency and productivity.

¹ Given the increasing population and congestion in Asian mega-cities, 30 minutes (in the late 1970s) should probably be extended to 45-60 minutes.

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10. *Financing.* If wholesale market development projects are properly costed and realistic account has been taken of the key factors above, local and international sources of funds can be attracted. If viable wholesale trade associations have been formed, private sources of funding may also be leveraged.

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