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# A Rapid Assessment of the Horticulture Vegetable Sector in Indonesia

February 2007

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“Helping Indonesia to Grow”

A RAPID ASSESSMENT OF THE HORTICULTURE VEGETABLE SECTOR  
IN INDONESIA

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For the

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## Acronyms

Balitsa	Vegetable Research Institute
BBDAAH	Agribusiness and Horticulture Training Center
BPTP	Assessment Institute for Agricultural Technology
DC	Distribution Center
FFV	Fresh Fruit and Vegetable
GPP	Good Pesticide Practices
GAP	Good Agricultural Practices
PD	Commercially operated farm
PH	Packing House
R&D	Research and Development
RACA	Regional Agriculture Agribusiness Competitiveness Alliance
RAMS	Rapid Appraisal of Markets
RPO	Rural Producers Organization
SWOT	Strengths, Weaknesses, Opportunities, and Threats Analysis
TA	Technical Assistance
TD	Tiara Dewata

## **I. INTRODUCTION**

The primary goal of this rapid assessment was to identify opportunities for action interventions which could strengthen the performance of the horticulture sector. This is in line with the mandate of the Agribusiness Market and Support Activity (AMARTA) Project and the evolving program of the D.G. Horticulture. This assessment of the Horticulture sector was focused on the vegetable sub-sector and conducted during the wet season. It was primarily based on extensive first-hand field observations in major production areas, interviews with value chain participants, and consultations with key informants.

The vegetable sub-sector is prominent on all major islands throughout the country. It includes hundreds of thousands of growers, tens of thousand of traders, particularly women, and a wide range of allied agribusinesses, such as the manufacturers and distributors of seeds, fertilizers, pesticides, irrigation mechanisms, and equipment and tools, as well as commodity traders, transporters, and processors.

The field travel covered West, Central, and East Java, Bali, South Sulawesi, and North Sumatra where the assessment team traveled extensively in major vegetable production areas and wet markets. Since Indonesia is a country with over 13,000 islands, a population of over 240 million [2005 estimate], and a wide range of ethnic groups, including Javanese, Sundanese, Madurese, and others, the team experienced a wide diversity of cultivation and marketing situations, cross-cutting as well as site-specific problems and constraints to growth, and new opportunities for improvements and expansion.

Although brief, this report summarizes the overall situation for the vegetable sub-sector, critical problems and constraints, and recommends several forms of intervention to resolve critical problems. As warranted, references are made to changes to the vegetable sub-sector relative to the findings from a similar assessment in 1993.

An overall analytical framework guided the inquiries, analysis and presentation of findings. One expected outcome was the discovery of "working models" of improved production and/or marketing arrangements which could be replicated elsewhere in the country. Although relatively few, they have merit as short term, immediate impacts.

## **2. FIELD ASSESSMENT APPROACH**

The two person assessment team initially considered two main types of vegetables:

1. Less perishable and bulkier types, such as shallots and potatoes, and
2. High value, more perishable vegetables as grown in higher elevations, such as capsicum, cauliflower, broccoli and Chinese cabbage.

As is widely recognized in Indonesia, among all crop sub-sectors, the vegetable sub-sector has always had a very complex set of input-production-marketing-consumer conditions, relationships, and field situations.

The following sites were visited during the extensive field travel:

West Java: Bandung, Lembang, Majalangka, Cipanas;

Central Java: Brebes, Semarang;

East Java: Surabaya;

Bali: Denpasar, Bedugul;

South Sulawesi: Makassar, Pare Pare, Enrekang, Malino;

North Sumatra: Berastagi and Medan.

From those travels, the team observed wide variations in the conditions at the farm level and from farmers' fields to wet markets/supermarkets, listened to different perspectives on problems/constraints, exchanged ideas/insights with both government officials and private entrepreneurs, conferred with key informants, and learned many fact, figures, and opinions. An initial list of respondents is in Attachment I.

Frequently, the team compared key points regarding the current situation with the past findings from the Initial Broad Assessment of the Fresh Vegetable Sub Sector in Indonesia, by the Agribusiness Development Project in 1993.

The following sections will present observations, findings and insights according to:

3. Overview of the situation;
4. Roles of the private and public sectors;
5. Problems/constraints;
6. Recommendations.

### **3. OVERVIEW OF THE SITUATION**

In comparison with the vegetable situation in 1993, the following points were noted:

#### **3.1. Similarities**

Many problems with diseases/insects and issues regarding the poor quality of key inputs, still are experienced by most vegetable growers. In some cases, the situation has seriously worsened, especially in North Sumatra.

Likewise, conditions within most wet markets remain similar or have worsened. Even previous promising marketplace layout and utilization cases, such as in the Cipanas areas, have not been sustainable.

### 3.2. Differences

Emergence of a wide range of energetic and informed entrepreneurs who are very interested, willing and anxious to lead/stimulate development for a more vibrant agricultural sector. Examples include an innovative organic fertilizer company, various types of green houses [hydroponics or "organic"], plastic mulch on high value vegetables, semi-backward integrated specialized suppliers to supermarkets, private attempts to train youth in vegetable cultivation, and integrated livestock operations-cum-potato growing and exporting operations.

Likewise, it is important to acknowledge the major changes within the public sector with the timely formation and programs of the *DG Horticulture* as well as *DG Marketing and Processing*. Between them, they should be able to provide the key support services to those within the value/supply chain who want market-driven guidance and enforcement of critical regulations within the government's domain.

Current **key production and marketing patterns** included:

1. Primary production areas for highly perishable types of highland vegetables have traditionally been in close proximity to the main local population centers, such as Lembang/Bandung relative to Jakarta in Western Java, Malang/Batu for Surabaya in Eastern Java, Berastagi for Medan and exporters in Singapore in northern Sumatra, Bedugul for Denpasar on Bali, and Malino and, more recently, Enrekang for Makassar in South Sulawesi.
2. Primary production areas of the less perishable vegetables, such as shallots and potato, have been in sites with particularly favorable agro-climatic conditions, such as Brebes for shallots and Bandung/Berastagi/Malino for potato and then shipped to many population centers around the country.
3. Entry of many supermarkets and hypermarkets into the retail trade industry has stimulated the emergence of more progressive types of agribusiness enterprises, such as specialized wholesalers and greenhouse operators who in turn have influenced the location of higher valued perishable vegetables.
4. Supermarket driven value chains tend to be multiple in nature, vary by commodity type, and differ in their behavior by location. For example, the Carrefour supermarket's procurement arrangement in Medan reportedly pays suppliers in two weeks and has only two regular suppliers, whereas in Jakarta Carrefour supermarkets pay suppliers in four or more weeks and have a wide range of local suppliers.
5. Difference in the behavior, attitudes, ways-of-doing-things, and approaches to business relationships were evident between island groups, such as the more independent-minded people of Sumatra, community-centered Balinese, or followers among the Javanese.



6. Medan-based vegetable exporters have much to teach traders, growers, and other value chain participants throughout the country both in terms of practical post-harvest technologies and in terms of the consequences of not heeding the requirements of their buyers, such as the case of excess pesticide residues on vegetables shipped to Singapore.

### **3.3. Strengths Observed in the Vegetable Sub-sector**

1. The increased number and use of green house technologies, whether with hydroponics or "organic" methods of cultivation, illustrate the dynamic nature and versatility of the agribusiness sector in rising to a level required for year-round cultivation of higher valued vegetables and fruits.
2. The application of a wide range of agricultural technologies indicated awareness and testing of various options, such as, the selective uses of plastic mulch, plastic tunnel techniques, irrigation by channels, pump sets, and/or sprinklers attached to posts, tractors and power tillers for cultivation and bed formation, and new forms of organic fertilizers. Although these illustrate farm-level progress from a technological perspective, their limited and site-specific use suggests a "trial and error" stage in their adaptation to vegetable cultivation.
3. The emergence of creative and dynamic agribusinesses shows promise for future improvements for the vegetable sector, especially those servicing supermarket and hypermarket requirements. However, when more supermarkets establish their own Distribution Centers [DCs], these agribusinesses will require substantial change to business dynamics and incentive systems.
4. The formation of the D.G. Horticulture and D.G. Marketing and Processing reflects the government's recognition of the importance of this sector and represents significant promise for additional support services and improvements in the future, especially for vegetables. The real challenge will be to coordinate and provide support services from a market driven, vertical perspective whereby changing market requirements can be provided by domestic growers. The application of the FATIH framework appears to be a step in that direction.

### **3.4. Weaknesses in the Vegetable Sub sector**

1. Two of the 11 wet markets observed in the cities of Jakarta, Bandung, Semarang, Surabaya, Denpasar, Makassar, Bogor and Medan showed indications of effective marketplace maintenance and management. All other wet markets showed the common deterioration, mismanagement, and poor health/hygiene implications for both resident traders and those who consume fresh vegetables moving through those facilities. A recent trend has been the establishment and operation of composting facilities beside those fresh food facilities in many towns and cities. This practice warrants careful evaluation from the perspective of health and sanitation.
2. Prior findings and concerns about the state of the domestic vegetable seed industry seem to have been exacerbated by the growing demand for reliable

quality and reasonably priced vegetable seed for specialized wholesalers who service the supermarket trade. Numerous complaints about irregular availability, high cost, and uncertain quality were heard from farmers, farmers groups, specialized wholesalers, processors and others. Both the public and private sectors have their role to play in resolving the bottlenecks and investment constraints experienced by the seed industry.

3. Excessive levels of pesticide residues not only continue to be practiced by many vegetable cultivators, but reportedly that behavior has now reached such a level that buyers in the prime export markets of Singapore and Malaysia sharply reduced their demand for vegetables from Medan. That repeated assertion not only needs immediate verification, but more importantly, it requires timely, aggressive research and development (R&D) to provide alternative forms of non-toxic pest control measures. Given those alternatives, campaigns can be launched to motivate growers to change their pest control practices for vegetables.
4. Limited emergence of non-traditional, farmer-buyer working relationships which can achieve the uniform quality, large volumes, and well-cared for high quality vegetables as sorted/graded, packed, shipped, and paid premium prices. The team found relatively few examples of such working relationships where many would have been expected, given the strong demand from supermarkets, high end restaurants, and exporters. Initial indications were that the terms of trade and pricing practices have inhibited that emergence.
5. A government's Sub-Terminal Market program was designed to strengthen the farmers marketing position, especially given farmers' perception that marketing problems are at the core of their poor trading position. Of the three sub-terminals visited, the sub-terminal in the Cipanas area was utilized, but is rapidly deteriorating and lost the use of its cold storage room; the older facility at the Merek site near Berastagi remained vacant; and the new facility in Sudu remains incomplete and of questionable use. Issues of poor design, impractical layouts, inefficient management, and underutilization reflect missed opportunities to assist farmers and traders to improve the performance of their vegetable marketing systems.
6. The prominence of traditional vegetable "packing practices", i.e., farmers' stuffing and tightly binding vegetables within used bags, and overloading trucks with those bags continues unabated from that earlier study. While most Asian countries have found alternative ways to improve vegetable packaging and transportation, especially for more fragile and perishable vegetables, Indonesia's vegetable handling practices still lag far behind.

### **3.5. Geography of the Highland Vegetable Production**

A brief overview of the geographic relationship between highland vegetable cultivation areas and the urban markets they supplied provides a basic perspective on problems and their impacts.

On **Java**, vegetable supplies for each **major urban area** primarily originate from historical or emerging supply areas to the south of those cities. For instance, vegetable growers in Bandung, Garut, Lembang, Cipanas, and Bogor supply the majority of Jakarta's vegetable supply, however, supplies of particular vegetables are arriving from Sumatra [especially potato] and more specialized production areas to the east, such as shallots from Brebes.

For Semarang, supplies are coming mainly from Salatiga, Ungaran, Pemaland, and Wonosobo.

Surabaya consumers receive the majority of their requirements from the Batu and Malang areas, such as Nauruan, Rummaging, and Mojokerto.

On **Bali**, Denpasar is mainly serviced by the three key highland areas of Bedugul, Kintamani, and Gunung Abang with the latter two increasing their cultivated area. Because of the recent down-turn in tourism [due to bombings], demand is reportedly lower than previous years.

On **South Sulawesi**, the Enrekang supply areas of Sudu [limited area accessible for new vegetable cultivation] and Baraka [rapidly expanding vegetable production areas] provide substantial supplies for central and northern Sulawesi, major volumes for Kalimantan cities via Pare Pare's port, and other islands to the East. Malino cultivation has been an historical source of supply to Makassar but the rapidly deteriorating road condition [recently a major road breach] will cause serious market access problems if the numerous sand trucks and rock trucks are not discontinued during the rainy season.

On **North Sumatra**, Medan is supplied from the traditional Berastagi supply area which has reportedly reached its carrying capacity. In other words, there are no new potential production areas, thus productivity gains are needed. Seasonal overproduction and low glut prices are becoming very serious. Although it continues to supply Medan and provide substantial amounts for export to Malaysia and Singapore, the very serious chemical residue issue appears to have led to very substantial reductions in export demand since 2005.

## 4. ROLES OF PRIVATE AND PUBLIC SECTORS

This section is arranged with reference to the Food System Orientation Chart (Figure 1). This framework positions the fresh vegetable system (similar to the value chain) in the center between the lists of roles commonly attributed to either the public sector or private sector participants/organizations. Although this rapid assessment is limited in depth of coverage, this format is useful to organizing information, observations and examples learned in the field. Indonesia's industry leaders and analysts may prefer to shift, elaborate on, and/or modify roles on a case-by-case basis or as conditions warrant.

### 4.1. Private Sector Roles

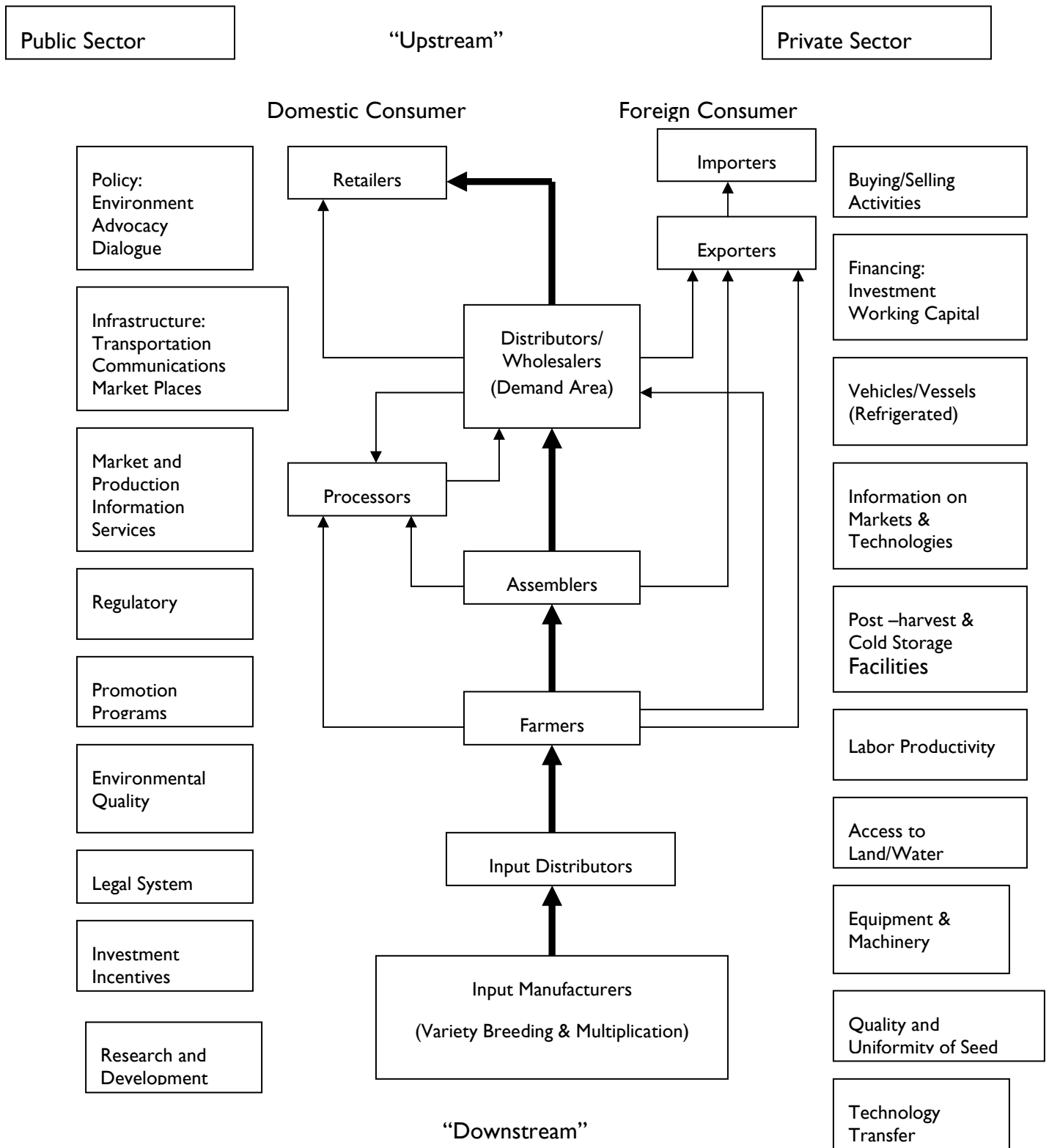
Buying and selling activities/practices, as applied by importers, exporters and supermarkets need further understanding and attention. There were repeated references of the supermarkets referencing their vegetable procurement prices for high

quality commodities to wholesale prices for mixed quality commodities in the local wet market. Further insights and understanding of that price referencing are needed.

- If the common local transaction mentality is "haggling", negotiating, and earning whatever the "market will bear" at that point in time, how will that impact on the formation of working relationships between farmers and specialized wholesalers, especially since the latter will be seen as outsiders and well-off traders.

Vehicles/vessels [refrigerated], refrigerated trucks, as observed on Java, Bali and Medan, had a capacity of only about 1 mt to 1.5 mt. This implies servicing short distance markets with very modest requirements for individual supermarkets. They would be inadequate for cost effective, inter-island shipments, thus inhibiting more progressive growers/suppliers to substantially expand the range of their markets.

- In other countries, entrepreneurs obtain used, 20' cargo containers as field chillers or as temporary cold rooms on a trial basis. They did this until their management systems had matured and the economics of this technology were assessed for their particular business. This option is far less expensive and more mobile than constructing an expensive and location-specific cold room. Perhaps this approach should be suggested to interested, local entrepreneurs.
- Vegetable importers were reportedly using cost effective, 20' refrigerated containers with mixed loads of vegetables as repacked and shipped from Singapore. The comparison of refrigerated transportations per kg of vegetables between those two modes of shipment needs to be assessed when planning and evaluating options for a longer term import substitution strategy.



**Figure 1 Subsector Framework Focused on Fresh Vegetables**

- The availability, common usage and costs to operate vessels equipped to handle refrigerated containers for inter-island shipments need to be examined as a potential constraint to the fast, efficient, and effective movement of perishable vegetables around Indonesia. There was inadequate information on that point.

Information on production technologies appeared to be available, given their applications as noted above. However, information on marketing technologies, even the common nestable plastic crates used throughout Asia, seemed far less available. However, further field inquiries would need to verify this aspect.

Post harvest and cold storage facilities: in Malino, South Sulawesi, the team found a large, recently constructed production/marketing complex. The owner had rights to 35 hectares of land, cir. 400 mt capacity cold room [fully functioning when visited], mechanized carrot cleaning/sorting equipment in operation, tractor plowing and forming beds in a large field, and equipment shed containing four wheel tractors with equipment as well as vegetable sorting machines. Recently, contract growing schemes with local growers were reportedly attempted and planned for this year. As a part of a reported investment of Rp 20 billion, it illustrates the extent of belief in Indonesia's capacity to become a major player in the production and marketing of high quality vegetables. Unfortunately, financial and operational success still eludes this investor.

- The Distribution Center for the Tiara Dewata supermarket chain in Denpasar represents one of the earliest, functioning distribution centers in operation, including a set of 4 linked, fully functioning cold storage rooms, sorting and packing areas, and related equipment. With the assistance of the former Cold Chain project, this has become a tangible illustration of what can be expected in other parts of Indonesia in the near term.
- Regarding post harvest packaging, in Berastagi the team talked with a packing house operator whose staff carefully wrapped each head of Chinese cabbage in newspaper before carefully wedging it into used cardboard, cigarette cartons [favored by Malaysian importers] or in new, "branded" cardboard cartons [provided by Singaporean importers]. Both forms of packaging were provided by the exporter. In other words, different grades and appropriate packaging materials are accessible and packing techniques known, at least in locations where vegetable exports have been traditional. The traditional post harvest practices of stuffing used fertilizer or similar bags with vegetables before binding them tightly shut will not be adequate for servicing supermarket or export demand

Access to land/water remains an important, longer term, macro consideration for the highland vegetable sector. The traditional highland vegetable supply areas on Java are located along the southern part of Java, whether in the western, central or eastern regions. Since those have become the prime real estate sites for housing developers, especially wherever water is available, land prices are steadily increasing and the most productive sites being converted to other uses. Consequently, within a few decades such major cities as Jakarta, Bandung, and Surabaya will receive more and more vegetables from off-island production location. This evolving pattern has many

implications for longer term strategies for strengthening the sector, achieving lower costs for fresh vegetables, and competing with lower cost imports. Regarding water, limited access during certain seasons was cited by growers within most major production sites visited.

Quality and uniformity of seed and seed materials have not been realized and remain at the top of the list for priority interventions for this vegetable sub-sector, as described elsewhere.

Technology transfer had been observed in several cases where a particular technology was applied to resolve a location or situation-specific problem/constraint. Examples, as cited elsewhere, indicate access to relevant information and materials but questions remain regarding their cost efficiency and whether they have been efficiently integrated within the prevailing production or marketing practices and patterns. Likewise, is their adequate access to skilled and low cost management expertise to accomplish such integration? For instance, how can a high cost green house operation [dilapidated greenhouse structures observed] recover when heavily damaged by high winds before the scheduled replacement of the entire plastic surface every 3 years?

- Green houses in Bedugul contained moderate volume and narrow range of higher valued vegetables and fruits. Over 10 green houses were observed and 8 were confirmed to be growing capsicums under hydroponics regimes, include nutrient feeding mechanisms. New structures were under construction.
- Green house in Cipanas area used organic forms of cultivation. Preproduction market agreements seemed to be required in order to assure adequate cost recovery in this business. Limited access of knowledgeable, trained and skilled managers was noted.

Issues: Does the "Free Rider" phenomenon provide a plausible explanation for the marginal performance of several private enterprises observed within certain industries over the past decades, especially the seed industry? Free Rider simply means that if a particular entrepreneur invests substantial money in that business, he cannot capture the benefits from his innovations because other entrepreneurs will simply copy that innovation at no cost. There would need to be effective recourse for infringement on a patent or other innovation. The reasons inhibiting the types of business investments common in other Asian countries should be identified under Indonesian conditions.

Likewise, accusations of opportunistic behavior by certain input suppliers have historically been presented by farmers who bear the consequences. Inconsistent and limited enforcement of regulations was cited. The uncertainty which such cases generates inhibits the rate of innovation needed. However, it was beyond our ability to evaluate those points on a case-by-case basis.

## 4.2. Public Sector Roles

Given that this assessment was largely based on field observations, interviews with farmers/traders/transporters, and key information consultations, the Team had little opportunity to delve into most of the points outlined under this role.

Infrastructure, in terms of road network, is crucial for getting perishables to consumers. For instance, just outside of Makassar city, the road leading to the Malino highland vegetable production areas has been recently breached [about 2/3 of the road slid away]. More critical is the on-going, serious deterioration of this access road as hundreds of heavy trucks haul wet sand and rock from the river bed into the city every day during the rainy season. This is a *practical advocacy issue* for collaboration between the public and private sectors. For example, how can the local government stop that severe deterioration which threatens to cause additional breaches and disrupt the flow of perishable vegetables? Breaches/ total stoppage of traffic would cause serious losses to vegetable growers and higher prices to consumers as well as large infrastructure bills.

- Roads ascending into most highland areas create serious traffic problems whenever loaded trucks are disabled. During the Team's descent along the road leading from Berastagi, a disabled truck in the ascending lane caused many hours of traffic jams for several hundred vehicles on both sides of the road. Fuel losses for many vehicles, late arrivals of truck loads of fresh vegetables, reckless behavior of some drivers, and the like constitute needless losses. Again, local advocacy could petition local governments to construct simple, short off-ramps or passing lanes to allow other traffic to pass broken down or heavily loaded vehicles.
- The resurfacing of a hilly road leading from Berastagi to an investor's agribusiness complex presented a case for the benefits of investor-local government collaboration. In this case, it reinforced the flow of capital into expanded facilities, accelerated introductions of new technologies for local growers, increased local demand for farm by-products, and enhanced local employment opportunities.

Regulatory functions were briefly explained in terms of the quarantine systems for testing imported vegetable seeds of new varieties. There was logic in the description of the sequence of steps, agencies involved, time periods for each testing stage, and labeling requirements. However, when relating that procedure with the number and variety of unlabeled seed packages in various input stores, the extent to which that system was implemented became unclear. If one compares the costs of that Rp 60,000 procedure requiring up to 6 months for completion with the costs to smuggle, doubts arise.

Research and development aspects for the shallot seed programs to improve the quality of suitable varieties and seed materials were mentioned. Hopefully, this program can be expanded and merge successfully with seed distribution with the collaboration of the private sector participants.



## 5. PROBLEMS/CONSTRAINTS

Those weaknesses are further summarized and expressed in terms of major problems, as un-met expectations, and constraints, as limitations. They were ranked as:

### 1. Seed Industry in Disarray:

- high and escalating prices for hybrid seeds or foreign seed materials [less so for most open pollinated, improved varieties];
- strong demand for, but lack of farmer trust in, imported seeds, often based on bad experiences;
- emergence of several local, seed repackaging companies [particularly in West Java] with uncertain qualifications;
- acknowledged smuggling or direct importing of hybrid seed [several cases noted]; and
- instances of "irregular seed quality" per bag, i.e., mixing foreign materials or different seed varieties.
- illustrations of the costs of seed per select vegetable crop as percentage of total production costs/ha given in Table I.

### 2. Excessive Pesticide Residue:

- widely recognized concerns in the public and private sectors regarding the excessive levels of pesticide application in the traditional highland vegetable production areas;
- wide variability in use/costs of pesticides among individual vegetables [Table I];
- reports that Singapore buyers have reduced their purchases of Medan vegetables in 2005 because of the residue issue;
- technical relationship between poor seed materials and need for higher levels of pesticide applications;
- vigorous advertising campaign regarding pesticide choices was noted along roads leading to the Berastagi area;
- high levels of pesticide use increase costs while jeopardizing longer term markets and prices; and
- illustrations of the costs of pesticides per select vegetable crop as percentage of total production costs/ha given in Table I.

**Table I Costs of Seed and Pesticide per Crop as Percentage of Total Production Costs/Ha for Selected Vegetable in Kabupaten Karo, 2005**

Crop	Total Production Seed Costs [Rp]	Pesticide Costs [%]	Costs [%]
Highland areas:			
Pechay	20,320,000	24.6	13.5*
Potato	14,755,000	24.4	9.9
Cabbage	13,690,000	16.4	20.3*
Beans	12,097,000	6.6	12.3
Chilies	35,605,000	3.4?	26.7*
Leeks	34,420,000	1.2?	16.0*
Lowland areas:			
Eggplant	9,310,000	7.5	4.7
Notes: “?” = Figures disputed by experienced growers. “*” = particularly large percentages.			

### 3. Wet Markets Continued Neglect and Deterioration:

- widespread, historical neglect of wet markets throughout Indonesia with few signs of improvement;
- inefficiencies in terms of restricted truck traffic flows and parking, rough treatment of goods during loading and unloading, excessive mid-day heat on exposed vegetables, substantial weight loss/vegetable, inadequate lighting, poor packing practices and materials, and relatively high costs-of-doing business for wet markets with many wholesale transactions;
- health and sanitation concerns regarding the traders who live and work in those conditions every day;
- food safety concerns regarding the vegetables which pass through and/or are bought from those wet market every day;

- urban authorities concern about the vast amounts of wet marketing wastes which have been costly to handle in landfills; and
  - two noteworthy, exceptional cases identified included:
    - Pasar Induk Tanah Tinggi [privately operated wholesale/retail facility] in Tangerang, Jakarta, and
    - Pasar Badung [publicly operated retail facility, including the street trading of mostly fresh vegetables] in Denpasar.
4. Limited working relationships between farmers and buyers servicing supermarkets:
- specialized wholesale suppliers to supermarkets mentioned shifts away from dealing directly with farmers and toward local traders when scheduling procurement of their supplies;
  - farmers expressed reservations about dealing exclusively with supermarket suppliers;
  - purchase price uncertainty within farmer-buyer agreements was seen as a concern, especially given the increased costs and risks to achieve more uniform higher quality;
  - persistence of farmers' traditional packing practice of placing the good quality pieces on the top, but poorer quality, underneath.
5. Limited awareness and access to market information/market intelligence:
- growers, small traders, and agricultural officials, especially in Berastagi, wanted to know the causes and market alternative to a recent decline in demand for locally grown vegetables;
  - rumors were rampant regarding possible problems with local vegetables in the Singapore and Malaysian markets but no mechanism to verify them was accessible;
  - Enrekang officials were informed by Kalimantan urban officials that poor quality vegetables were reaching there from Enrekang and asked to correct that situation, however local officials had little understanding of those market requirements, prevailing post harvest practices, transport constraints, and the like [Graphically, they ask why Sulawesi is sending its garbage to them!];
  - Bali farmers and traders knew that fewer tourists after the bombings had depressed local demand for their vegetables but had no mechanism to learn about alternative marketing options.
6. Traditional prime, highland vegetable production land is steadily shrinking:
- In Bandung, land developers continue to buy and build houses, especially on land with access to water;

- In Bedugul, additional land with vegetable cultivation potential is scarce and expensive;
- In Malino, there appears to be very little new land available for additional vegetable cultivation, and
- In Berastagi, additional large extents of prime vegetable growing land are no longer available.

This evolving situation has major implications of the DG Horticulture's long term strategy and plans for stimulating, guiding and supporting the vigorous growth of the vegetable sub-sector.

#### 7. Absence of basic marketing technologies

Three examples included:

- standard nestable, plastic crates used throughout Asia for vegetable packing and shipping for cost saving and quality enhancement purposed. These were not found anywhere in Indonesia;
- standard forms of perforated plastic wraps commonly used when displaying more perishable vegetables in refrigerated units, particularly in supermarkets, was said to not be locally available;
- only the small, 1 metric ton to 1.5 metric ton capacity refrigerated trucks were observed to service the supermarket trade.

#### 8. Globalization causing adverse consequences for certain vegetables

Most domestic garlic growers in the prime production areas have discontinued garlic production and garlic imports dominate throughout the country.

Shallot imports from Thailand, Philippines and China, claimed for food purposes, have been diverted into the seed market, thus putting pressure of domestic seed growers and by-passing quarantine regulations.

[NOTE: regarding #3, some of the adverse health consequences of wet market conditions may enter the supermarket food chain because some supermarket suppliers acknowledged buying vegetables from the local wet market and packaging them for supermarket display.]

## 6. RECOMMENDATIONS

### Interventions/Opportunities

Given the complexities of these situations and systems, additional fact-finding and analysis should be conducted on a location-specific basis for each intervention.

#### I. Stimulate emergence of a vibrant and vigorous national vegetable seed industry.

First, investigate thoroughly the entire vegetable seed industry, both for hybrid seed, such as bell pepper, broccoli, cauliflower, and tomato, as well as seed materials, such as for potato and shallots. This assessment should cover activities/programs for both the private seed companies and seed-related agribusinesses and the public sector programs, especially those active with the shallot and potato seed materials.

Second, propose a national Strategy and Action Plan which addresses the key issues of high cost, yet irregular/uncertain quality of seed materials, and emergence of seed packers, rather than authentic seed companies.

AMARTA TA should support a Vegetable Seed Assessment Team, including one or more persons as deputed by the DG Horticulture. The Team would diagnose the sector's problems, understand their causes, evaluate the industry's suggested solutions, and devise practical strategies to stimulate the emergence of a vibrant private vegetable seed industry, as already developed in Taiwan, Thailand, and other Asian countries. In fact, consultation trips to two selected Asian countries with strong vegetable seed industries could provide practical working "models" and guidelines for both the role of public and private sector initiatives worth adapting to the Indonesia business environment.

For instance, lead local seed companies could form sales alliances with foreign seed companies in order to guarantee high germination rates, consistent quality per pack and reasonable prices. In addition, these local companies could acquire the mandate, resources, and ability of those partners to manage effective screening trials in major production areas throughout the country. Selected varieties of priority commodities per elevated site would be determined to be the most suitable for the agro-climatic conditions within each major production area/season. Otherwise, farmers must continue to rely on their "trial and error" experiences to learn which variety best suits their specific environment each season.

If requested by the DG Horticulture, AMARTA could provide one or two technical experts who would assist it assess a full array of public sector regulations, enforcement activities, and screening quarantine procedures from the public sector's perspective. This would also cover the agricultural department's seed production and multiplication strategies and programs. In close collaboration with the DG Horticulture, this technical assistance (TA) could include interviews per location with private sector seed companies, legal/illegal importers of seed materials, and seed repackaging firms in order to understand the practical constraints/problems hampering the emergence of a

**vigorous and innovative seed industry.** Programs and incentives for conducting screening tests per variety of Chinese cabbage, tomato, bell pepper, broccoli, cauliflower, and the like within key production sites throughout the main production areas should be a part of a vigorous seed industry program.

[In house 2 person TA for total of 4 - 5 months; 2 X 10 day trips to neighboring Asian countries, and consultation/planning sessions with the DG Horticulture's efforts]

2. **Improve farmer - buyer contracts/agreements:** Design, identify, and trial test several types of working arrangements within a range of major production locations between key partners [buyers], especially specialized vegetable suppliers, processors, and exporters, and local interested farmers. Participatory techniques for the design would be required.

These practical field tests need to reflect the unique local-ways-of-doing things per location, such as the group-centered nature of the Balinese versus independent-minded Sumatrans. In other words, the linkage arrangements should be site-specific in order to accommodate the differences in local relationships, types of buyers, degree of perishability of individual vegetables, and levels of risk under local agro-climatic conditions.

Initial trial tests with lead buyers in priority locations as linked to small groups of experienced growers should include:

West Java. The specialized fresh vegetable supplier, PT. Bimandiri, should form effective farmer teams or small groups who will schedule the provision of a list of quality vegetables in high demand by supermarkets as well as key restaurants. It should be anticipated that a couple of green house operators would participate in this strategy in order to ensure year-round supplies of the more highly sensitive vegetables, such as capsicum and large tomatoes. Once the initial arrangement has proven successful, PT. Bimandiri may open an export marketing channel to Singapore for a percentage of the throughput in order to have an alternative high value outlet whenever losing a particular short term supply contract from a supermarket (Note additional items in Attachment 2).

Northern Sumatra. In this location, two different types of buyer-farm linkages should be supported / tested. First, the replication, refinement, and diversification of the vegetable processor-grower contract systems as developed by PT. Putra Agro Sejati of Berastagi. Timely access to imported seed was particularly problematic for this buyer and will need special attention. Second, a more diversified, tightly scheduled, and broader weekly supply arrangement for the proposed new retail outlets near the suburbs of Medan, if financed and operated by a local businessman, such as, PT. Hortikultura Alami Nusantara Abadi. The use of nestable plastic crates would be particularly useful for this linkage arrangement. However, unlike the first proven case, this activity needs further consultation and evaluation given the lack of a known precedent within Medan.

Bali. The supermarket Distribution Center of the dynamic Tiara Dewata [TD] has established different types of buyer-farmer linkages which can be examined as "lessons learned" for replication elsewhere as well as improved from a scheduling perspective.

For instance, the government-owned, but a commercially operated farm [PD] has been contracted to supply TD, as also noted in Dr. David Neven's report. The other side of this opportunity is the provision of TA to assist TD combining those procurement arrangements with an effective and expanded, inter-island shipping strategy for servicing supermarkets in Surabaya or other cities.

South Sulawesi. The substantial expansion of vegetable cultivation in and marketing from Baraka, Enrekang, and its direct shipment to Kalimantan represents a unique opportunity for action/test interventions which substantially reduce losses, increase grower earnings, improve quality reaching that market, and benefit the numerous women traders involved. However, given the reported aggressive nature of some local growers/traders in this area, one must proceed with care in this particular location.

Nucleus Estate Perspective. Among the full range of practical bridging or linkages arrangements between a larger buyer and a group of smaller vegetable growers, a practical modification of the original nucleus estate concept has substantial merit. In this case, the buyer grows or arranges for the growth of vegetables on small plot of land within a key production location. This provides an opportunity for first hand familiarity with crop care practices, soils, seasonality, and farmers' ways of thinking.

On this central or core land, s/he tests new seed varieties, illustrates improved cultural practices, determines local seasonal patterns, and offers better ways of packing vegetables under local conditions. As an integral part of the local agricultural community, he or his staff can effectively communicate plans for scheduling planting/harvesting, making reasonable buying agreements, providing important timely inputs, such as seed, and monitoring their use. Variations of this approach were mentioned or illustrated in various locations.

Agribusiness entrepreneurs require motivation and tangible incentives before committing resources to substantive, costly changes. Information on or ideas about improved technologies are not likely to be sufficient to create the needed, sustainable value chain changes. The following sequence of steps includes the key elements for such changes as embodied in the nucleus estate concept:

First, trust is the prerequisite for effective working relationships between buyers and growers. Effective communications helps build that trust. Since agreements between buyers and growers from different clans or ethnic groups have been particularly difficult, more skilled and widely traveled local traders within a particular community can bridge a trust relationship between outside buyers and groups of local growers.

Second, motivation and tangible incentives are useful in gaining agreement and bonding the buyer with growers through some form of risk sharing. For instance, what happens when the buyer provided seeds but the crops failed in that area? Does the buyer share that loss and earn gratitude/loyalty of the growers by once again providing that critical input for the next crop? Information on improved technologies, such as hybrid seed, is not nearly as effective as its actual use as a well-informed incentive for collaboration.

Third, some form of pricing agreement, even as a minimum price, for purchasing the entire crop, engages all parties in the formation of an integrated system. This shared

marketing risk is critical for the scheduled flow of large amounts of high quality, uniform commodities. Thus, the common local practice of offering or paying only whatever the “market will bear” and selling to the highest bidder is detrimental to the formation of such integrated systems.

[In house TA in terms of field office staff and RACAs for 4 to 6 months in close collaboration with these particular entrepreneurs]

Identify, evaluate, document, and provide extension materials for effective substitutes for prominent commercial pesticides now being over-used within the Berastagi/Medan production areas.

Close consultation and collaboration with the DG Horticulture is extremely important in recovering Indonesia's reputation as an Asian exporter of safe, quality vegetables. The DG Horticulture has access to most vegetable growers on a national scale as well as considerable technical in-house expertise regarding pest control options. AMARTA has access to a range of TA expertise around the world who could directly contribute to the DG Horticulture's strategy and program on a location and crop type basis.

In addition to any foreign expertise available on a case-by-case basis, AMARTA could call upon the expertise of selected local trial partners with organic interests and experiences, including PT Bening in Bali and Haryanto's Pt. Hortikultura Alami Nusantara Abadi in Medan. It is apparent that the merits of Horticultural Oils have not yet been evaluated by the DG Horticulture.

[In house from the AMARTA field offices as TA for 3-6 months in close collaboration with the DG Horticulture and local counterparts within the Ministry as well as potential private partners. The initial set of evaluations per site would include 3 horticultural trials side-by-side with local use of a traditional pesticide. Once this form of field demonstration has proven efficient and cost effective, others could be programmed for next year. Additional costs of materials at \$200/3,000 sq meter X 3 or \$600 plus \$2,000 for translations and drafting of extension-related materials for distribution per location.]

**Aggressively apply basic "marketplace design/management" technical assistance** for marketplace improvements, especially following an in-depth evaluation of the Pasar Induk Tarrah Tinggi in Jakarta, which could represent a working "model" for a private sector, terminal marketplace. On a nationwide basis, there are tens of thousands of women traders and millions of women consumers shopping for fresh vegetables in wet markets every day. Basic marketplace management improvements, such as additional water access, hygiene in public toilets, daily waste removal, and faster traffic flow patterns, will produce positive benefits to their daily working conditions and the food safety of the fresh vegetables being sold. These could signify a degree of welfare for Indonesian women not witnessed in many decades.

Regarding improved marketplace design, this TA would occur after the evaluation of the Pasar Induk Tarrah Tinggi and consultations with the private sector investors/managers in wet market rehabilitation efforts throughout the country. This TA serves the dual purposes of providing trouble-shooting expertise to future private investors in



wholesale and/or retail marketplaces as well as documenting the various ways that such rehabilitated marketplaces can tangibly benefit traders, farmers, and local governments. In fact, the findings from this evaluation of the Pasar Induk Tarrah Tinggi should be compared to the recently rehabilitated Pasar Induk Krama Jati which is the largest in the country and recent recipient of Japanese infrastructure development funds.

Identify and recruit local manpower, support field activities, and offer the services of a small cadre of "market development advisors/analysts" on a cost sharing basis.

These "market development advisors" would be commissioned to conduct Rapid Appraisals of Markets [RAMS] for a range of horticultural commodities on a cost-sharing basis for private clients, including farmers' groups, green house operators, exporters, supermarkets, and inter-island shippers. In addition, they would use down-time to prepare basic marketing training materials for farmers and small traders, including optimum timing for quality harvests, practical handling techniques, trading/marketing practices, and the like. They can operate domestically or regionally, as the opportunities warrant and skilled expertise becomes available. In special cases where a local government has adequate funds available, these advisors could be commissioned to identify additional market opportunities for prominent local horticultural products which experience seasonal surpluses.

For instance, a vegetable exporter in Medan may need to understand the bigger picture of what has been happening, prominent problems, and types of competition within the Singapore, Malaysia, Vietnam, and/or Taiwan markets which have caused a serious decreased demand for Indonesian vegetable commodities. In other words, rather than have rampant rumors, as in this present case regarding excessive pesticide residues, all stakeholders need to know what is actually happening, whether prices are no longer competitive, residues may be ruining the reputation of local vegetables, or a very low cost producer is dumping cheap commodities in the Singapore market.

Alternatively, a green house operator may need to better sequence the planting of the most profitable and readily saleable vegetables within his expanded facilities, however, is not aware of new buyers entering the market for those types of commodities.

Responses to new inter-island trade opportunities should be explored in greater depth by these teams on behalf of particular agribusiness enterprises, such as transshipping high quality carrots from Berastagi to the Java markets on a regular basis. These marketing advisory services should immediately assist Bimandiri for West Java, benefit processors and exporters in North Sumatra, and expand market opportunities for the excess production capacity in Bali at the Tiara Dewata Distribution Center.

[TA would include: a) foreign marketing expertise to provide field training and writing experience to local AMARTA staff members, especially those based in the AMARTA field offices, and b) selected local experts would augment those staff members to form two – three person RAMS teams on a case-by-case basis. An initial Rp 12 million per month should cover the field costs for conducting field activities, writing the findings, and presenting the results of individual RAMS]

Conduct a series of practical trials with nestable plastics crates for different highly perishable vegetables, including determination of shelf life improvement, estimation of any increases in transportation costs, and calculation of backhaul cost savings. However, the clients who participate in these trials must have "integrated transport systems" beginning with the distribution of crates at the farm/trader level to their recovery from the supermarkets or other outlets which unload the vegetables.

This form of improved, post-harvest technology is widely used throughout Asia and often sold within the wet markets in Thailand. It is designed to substantially reduce backhaul costs within integrated farm-to-buyer-to-farmer marketing arrangements while maintaining the quality of the more perishable types of vegetables. Since the sturdy brands can be used over 100 times, their cost per usage is usually lower than other forms of local packing materials.

Traders will be interested to purchase/use them once these trials have proven successful and the results widely publicized. At that time AMARTA and its clients can approach two or more local plastic's manufacturer and commission nestable crate production in Indonesia.

Known potential trial partners include a) Bimandiri in West Java, b) Tiara Dewata in Bali and c) PT Putra Agro Sejati in Berastagi.

[TA from outside for 1.5 months to identify agreeable local partners, negotiate working arrangements per collaborator, write test monitoring procedures, initiate the trials, and train the AMARTA staff in the longer term monitoring and evaluation process. Later, this expert may need to return to assist in analyzing the data, writing the evaluation, conferring with interested local plastic manufacturers, and drafting any promotional materials, once proven successful. In house, intermittent TA to assist in the identification of participants, participate in all phases of this effort, and conduct follow-up monitoring of the usage. Duration of 3 months with 3 – 5 partners; materials costs of \$16,000 with imported crates @ \$30 X 500 crates = \$15,000 plus transportation/customs costs of \$1,000]

Provide TA to objectively evaluate the expanding practice of installing and operating composting facilities within fresh food wholesale/retail marketplaces.

There should be commercial options which are far safer and more hygienic for handling vegetable wastes as generated by wet markets. However, this current practice seems to have gained a "life of its own". The team found this practice in many wet marketplaces around the country. Based on simple health and hygiene considerations, this practice of stimulating the deterioration of discarded vegetable parts within or near the fresh vegetables sold for daily consumption needs further thought before being institutionalized throughout the country.

The public health bureau needs to actively participate in the thorough review of this public market strategy. During visits to wet markets, the team observed that many activities and things that did not work properly or as intended. Examples included absence of toilet maintenance, stuffed drainage channels with standing water, presence of many mosquitoes and flies, limited availability of clean water, broken light fixtures,

irregular and poor waste removal, restricted traffic flows, people residing within facilities, and odors which were particularly fragrant during the mid-day heat! Consequently, how could one possibly assume that proper composting procedures would be followed 365 days/year, including proper drainage.

[In house TA to increase public and government agency awareness of this issue, support the DG Horticulture forthcoming efforts in resolving this problem, contribute technical know-how regarding alternatives regarding commercial composting businesses, and engage in the policy review and debate as warranted.]

Engage RACAS of AMARTA in participatory forms of meaningful and practical advocacy:

Illustrations are provided according to location:

Medan/Berastagi:

- Petition the local government for the improvement of access road conditions for high employment agribusiness facilities, such as the vegetable processing factory of P.T. Putra Agro Sejati;
- Promote and support consultation sessions among the local government, farmers, traders, and transporters who have used a parking lot, Pasar Berastagi, since 1980 for buying and selling large amounts of vegetables in order to achieve the improvement of drainage and upgrading the surface of this open market;
- Engage the trading community, transporters, and local farmers in consultations with the relevant government institution regarding practical and economic ways of making the Merek sub-terminal a viable agribusiness entity, including issues of redesign, better layout for access and exit, a private management mechanism, and multiple commodity packing and local facility.

Enrekang:

- Engage the local trading community, transporters, and local farmers in consultations with the relevant government institution regarding practical and economic ways of making the Sudu sub-terminal a viable agribusiness entity, including issues of space usage payments, graded access road, better layout for access, private management mechanism, and expanded array of services for long distance transporters who can reach Kalimantan.

Malino:

- Identify, arrange and support consultations with the full range of current road users, especially transporters of perishable vegetables, regarding the deteriorating section of the road leading to Malino in order to resolve problems of accelerated road deterioration, especially during the rainy season.

Steep Access Roads to Highland Vegetable Areas:

- Within each jurisdiction, investigate the merits, feasibility, and interests of local truckers and other transporters for the construction of a few sections of "passing lanes" on the ascending sections of those roads. Serious bottlenecks were observed in almost every location and the resulting reckless driving of fast vehicles was hazardous to all parties.

## Attachment I: Initial List of Respondents

Initial List of Respondents			
No	Respondent	Position and Company	Address/Contact
1	Heri	Shallot trader	Pasar Induk Caringin, Bandung
2	Salim	Garlic importer	Pasar Induk Caringin C-13, 022-5403737
3	Pepen	Director, Bimandiri – Vegetables supplier	Jl. Panorama no.54, Lembang, 022-2787139
4	Trisnaran	Staff, Bimandiri	Jl. Panorama no.54, Lembang, 022-2787139
5	Sandredo	Staff, Bimandiri	Jl. Panorama no.54, Lembang, 022-2787139
6	Dede	Owner, Buana Tani – input store	Lembang
7	Dodi Kusdinar	Chairman, West Java Agro Commodities Trader Association	Blok Tajursari RT 011/004, Majalengka, 0233-282625
8	H. Halim	Shallot Trader	Pasar Bawang Klampok
9	Hadi Sutomo	Owner, Wilia Tani – Input store	Jl. Klampok RT08/05 Brebes, 0283-3302711
10	Tulab	Sales Executive Central Java, PT Syngenta Indonesia	Pasar Bawang Klampok, Brebes
11	Djoko Sutikno	Manager, Pasar Keputran Cooperative	Jl. Gunungsari no.43, Surabaya, 031-5632033
12	Bambang Eko Witono	Staff, Balai Riset dan Standarisasi	Jl. Jagir Wonokromo 360, Surabaya, 031-70425400
13	Irita Rahayu Aryati	Staff, Dinas Pertanian Jawa Timur	Kantor Dinas Pertanian Jawa Timur, Surabaya
14	Budi Santoso	Owner, Bromo Horti – Vegetable supplier	Pondok Jati Al-19, Sidoarjo, 031-8052068
15	Ratnawati	DC Manager, Tiara Dewata	Jl. Tunjungsari 7X, Denpasar, 0361-8444560
16	Alex	Staff, Tiara Dewata	Jl. Tunjungsari 7X, Denpasar, 0361-8444560
17	Wayan Widia	Vegetables grower and supplier, UD Sila Arta	Bedugul Mobile : 08123997867
18	I Ketut Gusti Rai Wirawan	Vegetable grower and supplier, Ketua Himpunan Pengusaha Hortikultura Bali (HPHB)	Enjung Beji Resor Jl. KM 51 Denpasar – Singaraja, 0368-21490
19	Nyoman Wardawan	Head of Tourism Promotion Division, Bali Government Tourism Office	Jl. S. Parman, Niti Mandala, Denpasar, 0361-222387

20	I Made S. Utama	The Chairman of Board of Trustee, ARPI	Jl. Raya Pasar Minggu no.2 B-C, Jakarta, 021-7972311
21	Nelvita	Staff, Winrock	Jl. By Pass Ngurah Rai, Denpasar
22	Ben Ripple	Owner, PT Bening, food supplier and exporter	Jl. By Pass Ngurah Rai no.36, Denpasar, 0361 461978
23	Agus Herry Ariesta	Director, PT Bening, food supplier and exporter	Jl. By Pass Ngurah Rai no.36, Denpasar, 0361 461978, 08123997867
24	Luthfi Sato	Consultant, PT. ACI, organic fertilizer supplier	Jl. Panakkukang Mas, Makassar
25	Marzuki	Head of Horticulture Division, Dinas Pertanian Enrekang	Enrekang, South Sulawesi
26	Irfan Barung	Head of Dinas Perekonomian dan Perindustrian Enrekang	Jl. Pancaitana Bungawalie no.9, Enrekang, South Sulawesi, 0420-21024
27	Irma	Vegetables trader	Pasar Sudu, Enrekang
28	Wibowo	Agronomist, PT. Focus Malino	Malino, South Sulawesi
29	Rahma	Vice Production Planner, PT. Focus Malino	Malino, South Sulawesi
30	Daulat Ginting	Owner, UD.Lagogo - transporter	Jl. Pasar no.6, Brastagi, 0628-92842
31	Petrus Sitepu	Director, PT. Prima Indojoya Mandiri – exporter - grower	Jl. Jamin Ginting no.5 Peceren, Berastagi, 0628-93173
32	Aspin Purba	Owner, PT. Putra Agro Sejati	Jl. Komp. Perumahan Korpri no. 268, Brastagi, 0628-91575
33	Jeffri Novianto Halim	Marketing Staff, PT Selektani	Jl. Iskandar Muda no. 248, Medan, 061-4526388
34	Haryanto	Director, PT.Hortikultura Alami Nusantara Abadi and Hakiki Organic Farm	Jl. H.Zainal Arifin 164, Medan, 061-4517328
35	Dayan Sutomo	Director, Lembaga Pendidikan Profesional Sentra Bina Karya	Jl. Harmonika no.11 Tanjungsari, Medan, 061-8224514
36	Elianor Sembiring	Chairman, LPM KASU	Jl. Jamin Ginting no. 72, Medan, 061-8214734
37	Rani	Fresh Product Manager	Carrefour, Medan
38	Surapati	Consultant, PT.Anugrah Bumi Persada	Kp. Galudra RT05/02, Ds. Galudra, Cianjur

## Attachment 2: Thought of Horticulture Value Chain Pilot Project in West Java “HELPING FARMERS TO HELP THEMSELVES”

By Sjaiful Bahri

### Introduction

This assessment report aims to assess the possibility of horticulture value chain development in West Java. West Java is selected because of the following reasons:

- It is in the top rank of horticulture production area of Indonesia,
- The most populated province in Indonesia; the highest in number of population and the second (the first in Jakarta as the national capital) in term of population density,
- It is, perhaps, the province with the largest number of poor people,
- It has several important horticulture-related supporting institutions such as the Vegetable Research Institute (Balitsa), the Agribusiness and Horticulture Training Center (BDDAH), the Assessment Institute for Agricultural Technology (BPTP) and, surprisingly, the Agro Chemical Installation. All of these institutions are located in Lembang, a sub-district of Bandung.
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Bimandiri Packing House



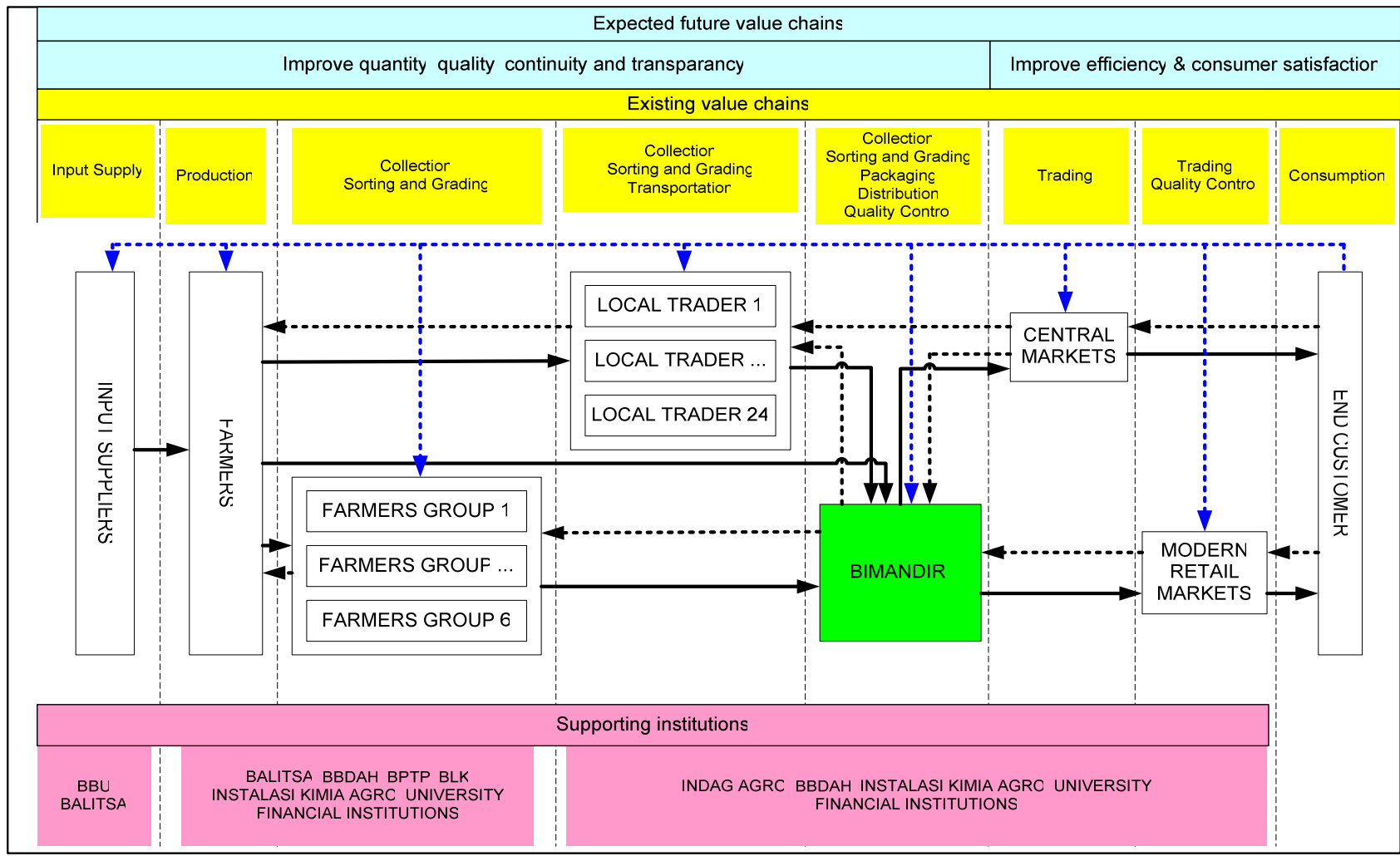
Agro-chemical Instalation



In this assessment, Bimandiri is purposively selected as a sample of catalyst (or lead firm) in the value chain, considering its long experience and well perform supermarket Fresh

Fruit and Vegetable (FFV) supplier, evidenced by the award received in 2006 as the best Carrefour FFV supplier. Figure 2 below presents existing supply chain





**Figure 2 Bimandiri's existing supply chains**

## The Findings

Most of the products were supplied by local traders and small parts directly from farmers. According to Bimandiri, however, it could not match the quantity, quality and continuity demanded by supermarket. Its service level is mostly less than 70 percent due to, among others:

- Supply from local traders is unpredictable because there is no production mapping (where, when, what quality, and how much)
- There is no integrated planting schedule in line with demand of the products
- The area are small in size and scattered
- Good farming practice is not supported by the availability of good quality seed

Improper post harvest handling makes the products even worse as they transported using improper devices (such as products are put in the sack and transported using motorcycle).

Sorting and grading is done repeatedly in each agent in the value chains. Lack of equal perception regarding quality standard makes higher waste and rejected products that leads to increase cost and lower return.

### Intervention that AMARTA can make

AMARTA's most critical intervention is in **packing house provision** and **farm good practice training**. Training is necessary condition but not sufficient. It may improve productivity but without proper grading, sorting, packaging and other post harvest handling will lead to high waste and rejected product which ultimately increase costs and lower income packing house the benefit of improved production might not be accrued. On the other hand, packing house without improvement in production will be useless. A simple pilot project value chains diagram will be as shown in Figure 3 below.

There are two important points in the diagram; Empowering farmers in the frame of Rural Producers Organization (RPO) and the provision of centralized Packing House (PH)

#### a. Empowering Farmers in The Frame of Rural Producers Organization (RPO)

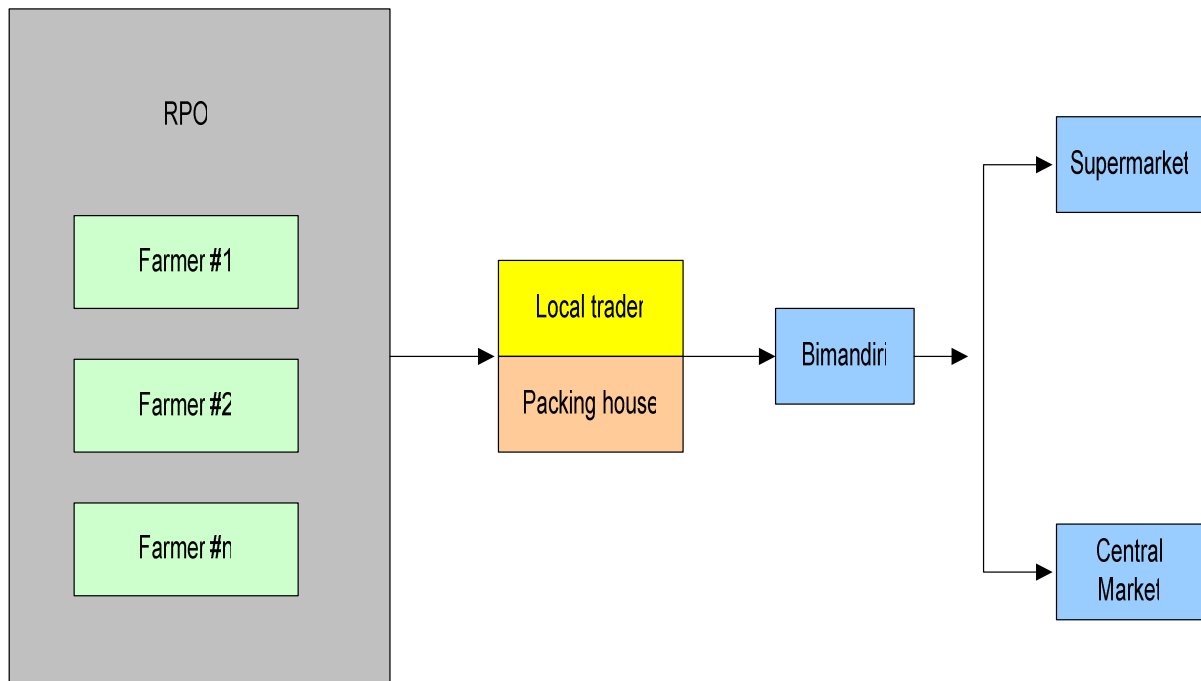
The formation of RPO (similar to farmers group) is not only useful in giving a well structured farm good practice and post harvest training but also organizing planting schedule. By following agreed planting schedule, product supply can be well managed, avoiding unpredictable supply that causes price instability.

A good planting schedule is not only used to manage supply but also to spread and reduce risk. A good planting schedule is even more important as most of the farmers are doing farming with multiple cropping system; not only to fulfil the need of cash but also land fertility purpose.

The RPO will also make training and other value chain related activities in a more coordinated way. It may also be used to develop a symmetric information flow. As shown

in Figure 2 (draw in blue color dotted arrow line), in an ideal value chain, information is shared openly among agents to create transparency as an important determinant factor for a value chain to succeed. By having an RPO, production mapping can be done more easily.

In short, by having the RPO, problems can be analysed and solved in a more comprehensive and easy way.



**Figure 3 Tomato Area Based Value Chains**

The following training subjects might be worthwhile to consider:

*Technical aspect:*

- Integrated planting schedule
- Products standards such as Good Pesticide Practices (GPP) and Good Agricultural Practices (GAP)
- Standardization on Post Harvest (sorting, grading and other handling activities)

*Institutional aspects*

- Commitment and rule of the game in agricultural supply chain
- Group/organization dynamics

*Managerial aspects*

- Production management

- Financial management
- Quality control management

#### b. Centralized Packing House (PH)

The main objective of having centralized PH is to improve post harvest handling especially sorting, grading and packaging. It is expected that the existence of the PH will lead to a more efficient post harvest handling process. Ultimately, product quantity, quality and continuity can be fulfilled.

The PH should be made in such a way that it is small and cheap enough for farmers to replicate without ignoring its economic of scale and scope. Accordingly, the PH should not limit it self for tomato only, but also other agricultural products from surrounding areas.

Principally, as implicitly shown the Figure 2, the PH might be managed or/and owned by RPO, local trader or lead firm (in this case Bimandiri). For this time, however, giving the ownership to the RPO is not recommended as it will be more complicated compared those to local trader or lead firm. Managing a collective owned investment is usually more complicated rather than individually one; it may invite conflict among RPO members that may lead the value chains failure.

The PH investment, perhaps, should not in the form of grant but credit; in line with the mission and spirit of "HELPING FARMERS TO HELP THEMSELVES". The grant, otherwise, should be provided in the form of training, or any kind of agribusiness-related public investments.

#### 4. The Next Important Steps

To make the value chain run effectively and efficiently, the following steps should be taken comprehensively:

Production potential assessment and market review. It should include production mapping, market place, price fluctuation etc.

A more in depth assessment on problems and constraints faced by farmers in improving productivity, quality and continuity. This is important in determining required trainings.

Financial analysis of PH investment including benefit cost analysis, break event point, return on investment, IRR etc.

Stakeholder analysis. In a simple way, stakeholders can be categorized into four categories (a) high interest; high influence, (b) high interest; low influence, (c) Low interest; high influence, and (d) low interest; low influence. This is important in determining the role of each stakeholder in the value chains.

Overall value chains analysis, such as Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis that assesses the strength and weakness of the value chains organization and the opportunities and the oportunities and threat of the value chain environment.