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## Chapter 4 Development Strategy

Development strategy is a set of considerations to guide and mobilize various efforts effectively toward a successful development or development goal/vision.

### 4.1. Development Goal/Vision

Manufacturing sub-sector is expected to lead and sustain the DIDP socioeconomy in terms of value addition, employment generation, land use, and urbanization. Manufacturing labor productivity as a whole is higher than those of other economic sectors including agriculture. This means that manufacturing could offer a higher income. The DIDP manufacturing GVA per worker was ₱286,897 in 1995, while the agricultural GVA was ₱48,897.

One hectare of factory site can support more or less 100 workers on the average, but one hectare of agricultural land employs only one worker in the DIDP Area. Such intensive land use by manufacturing is a precondition for further growth of the DIDP economy, since land is not limitless resource. In this context, a well planned regional development including the manufacturing is essential for the DIDP Area to attain a rational land use/urbanization and modernization of people's life.

The main prospects to the DIDP manufacturing development are 1) good geographical and transport conditions, 2) abundant natural/industrial resources, 3) competitive business environments, 4) local initiative for the DIDP development, and 5) the BIMP-EAGA cooperation as studied before. These prospects support the vision/goal of the DIDP manufacturing development.

On the other hand, the DIDP development paradigm comprises basically the DAVAO concepts already defined in the Master Plan Report by the Study; 1) diversification, 2) agri-industrialization, 3) value development, 4) amenity creation, and 5) outward-orientation.

A DIDP development goal/vision for the manufacturing sub-sector extends over the year 2016, the target year of the Master Plan. Accordingly, it could be established as follows, based on the above prospects and corresponding to the DIDP paradigm:

- 1) The manufacturing sub-sector in the DIDP Area to be the engine of *diversification* of industrial structure necessary for further growth of the DIDP economy;
- 2) The manufacturing sub-sector to be an integrator of the *agri-industrialization*, also contributing to a rational and well-ordered urbanization;
- 3) The manufacturing sub-sector in the DIDP Area to be an innovator to support the *value development* conducive to a robust economy of the DIDP Area as well as of Mindanao;
- 4) The manufacturing sub-sector in the DIDP Area to be a pioneer of *amenity creation* in response to the forthcoming recycle-oriented and environment-friendly society; and
- 5) The manufacturing sub-sector in the DIDP Area to be a main player in *outward-orientation* of the DIDP Area, which must be an integral part of and a competitive edge within the globalizing economy through maximizing the BIMP-EAGA cooperation.

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The DIDP manufacturing development will realize the diversification of industrial structure through its trickled effects. It is proven that the expansion and diversification of manufacturing production has been conducive to the growth of supporting industries including trade and services.

Agri-industrialization is the basic strategy for the development of the DIDP Area with abundant natural/industrial resources. It is an integration between agriculture etc. and manufacturing/processing. The DIDP manufacturing sub-sector also should be a social integrator leading a planned urbanization in the DIDP Area, particularly in rural areas.

Innovation is a sort of value development. An innovative DIDP manufacturing sub-sector will be realized through effectively mobilizing the DIDP competitive business environments including the presence of the metropolis Davao City, highly educated manpower, and excellent universities/colleges, among others.

A recycle-oriented and environment-friendly society is inevitable based on the limitation of natural resources including energy resources such as oil and coal. Global warming is a critical issue stemmed from industrialization and modernization. To sustain the DIDP society, reuse/recycle of industrial wastes is a focal point. The DIDP manufacturing sub-sector should be a pioneer of resource recycling, and thereby will set the trend of industrialization in the 21<sup>st</sup> century.

The diversification of products and markets is an essential factor for the sustainable expansion of manufacturing production, and will necessitate outward-orientation of the DIDP manufacturing sub-sector within limited local market. The BIMP-EAGA cooperation, which is also based on local initiative and supported by good geographical and transport conditions of the DIDP Area, is a jumping board to further growth of the DIDP manufacturing.

## **4.2. Basic Strategy**

The basic strategy for the DIDP manufacturing development will be set to effectively achieve the development goal/vision, also incorporating the strategy and development needs of existing manufacturers in the DIDP Area.

### **4.2.1. Strategy and development needs of existing DIDP manufacturers**

#### **(1) Business strategy**

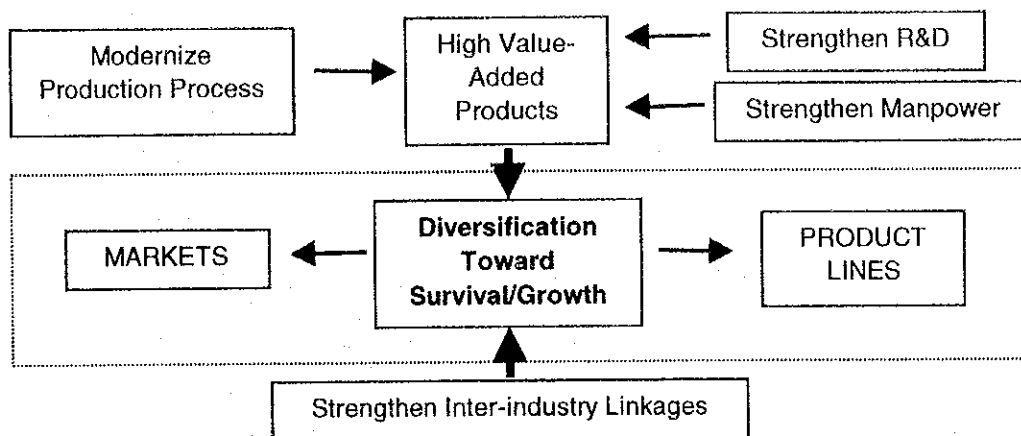
Figure 22 shows the business strategy to be adopted by the DIDP manufacturer respondents to the IQS. There is also no royal road for them to survive and grow. They will put forward diversification of their market place and product line through strengthening inter-industry linkages and manufacturing high value-added products. The high value-added production will be supported by modernization of production process and by strengthening R&D and manpower development. Details on answers to the IQS are shown in Figure 23.

Figure 24 shows the sub-strategies of the DIDP manufacturers. Diversification of market place encompasses Mindanao, Luzon including Metro Manila, Visayas, and foreign countries. BIMP-EAGA sub-regions are main export markets as well as developed countries.

Diversification of product lines will be mostly supported by development of new products in the present areas, but some 13% of the respondents will challenge the development of new products in different areas. Modernization of production process

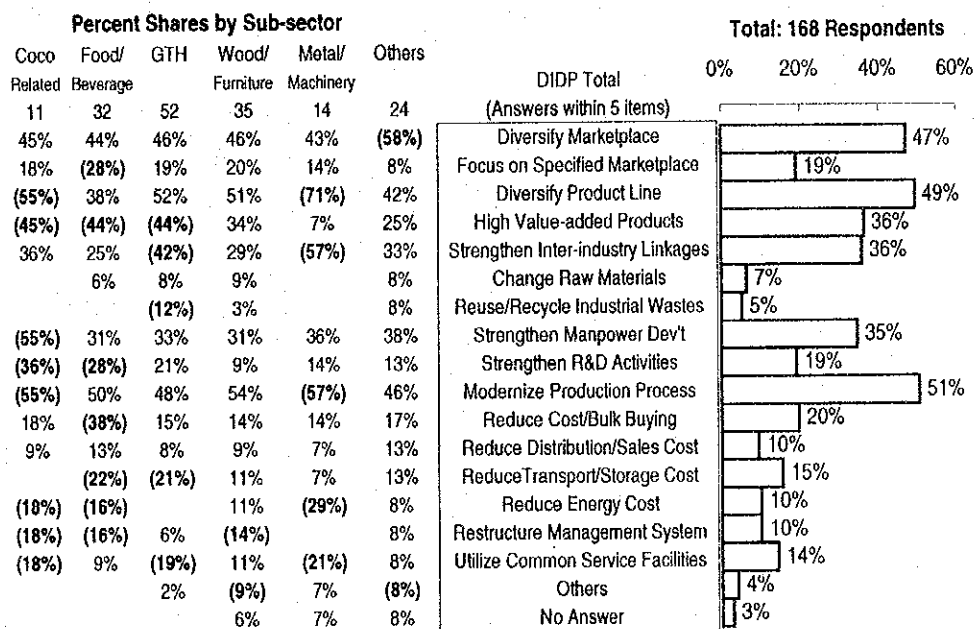
is focused on mechanization. Automation is planned by some 10% of the respondents, and computer-aided design/drafting planned by 8% of them.

**Figure 22 Structure of Business Strategy in DIDP Manufacturers**



Source: JICA Study Team based on the Industrial Questionnaire Survey (IQS)

**Figure 23 Business Strategy in DIDP Manufacturers by Sub-sector**



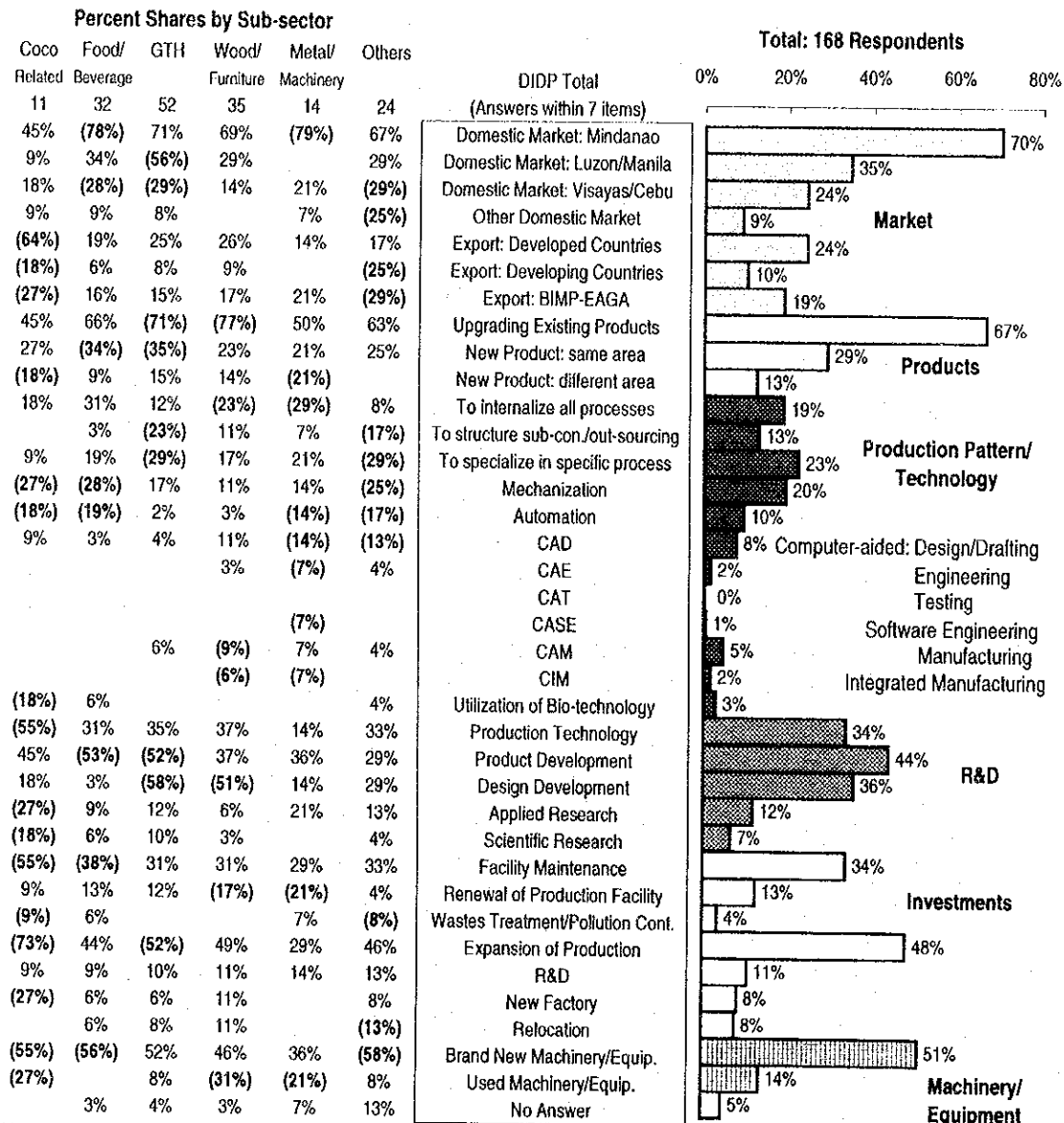
Note: ( ) Responding rates = 4% points more than the average of all Industries except for "No Answer"

Source: Industrial Questionnaire Survey (IQS) by DIDP-PMO and JICA Study Team

R&D will center on product and design development. More than 50% of the GTH manufacturers prioritize both of them. Production technology development is strongly prioritized by coconut-related manufacturers.

As such, the DIDP manufacturers will focus on investments in brand new machinery/equipment for expansion of production and/or modernization of production facilities.

**Figure 24 Sub-strategies (Specific Strategies) of DIDP Manufacturers**



Note: ( ) Responding rates = 4% points more than the average of all Industries except for "No Answer"  
 Source: Industrial Questionnaire Survey (IQS) by DIDP-PMO and JICA Study Team

**(2) Development needs**

**1) Emphasis on DIDP development**

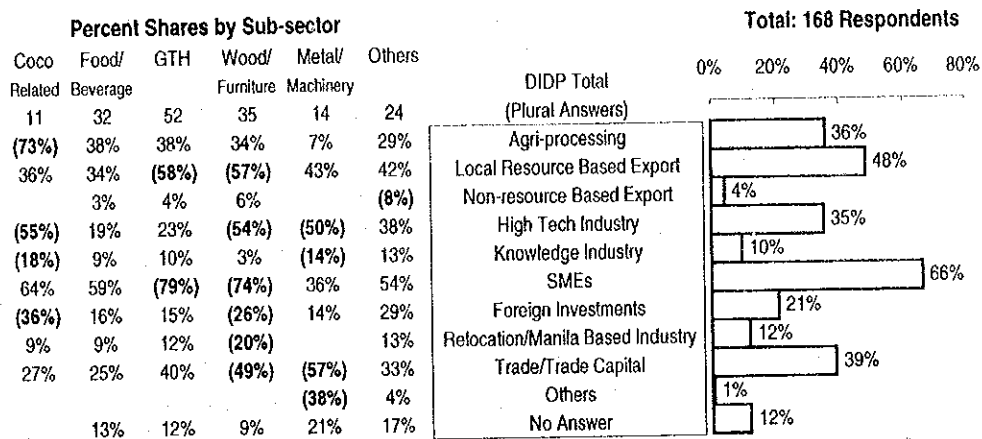
This relates to the basic directions of DIDP development. The respondents to the IQS expect emphasis to be placed on the three elements: 1) focus on agri-processing to localize "would be" value added, 2) promotion of export based mainly on local resources, and 3) promotion of high tech industries (Figure 25).

Promotion of small, medium, and cottage industries is also strongly supported by the respondents, probably because they are mostly SMEs. However, promotion of SMEs is very important in terms of generating employment and structuring a foundation for further development of manufacturing sub-sector in the DIDP Area.

Promotion of trade/Trade Capital supported by some 39% of the respondents will be a precondition for the growth of manufacturers who will challenge market expansion

and diversification also encompassing Luzon and foreign countries including the BIMP-EAGA sub-regions. In this context, it is better for the DIDP manufacturing development plan to deal with trade-related projects/programs.

**Figure 25 Emphasis on DIDP Development Expected by DIDP Manufactures**



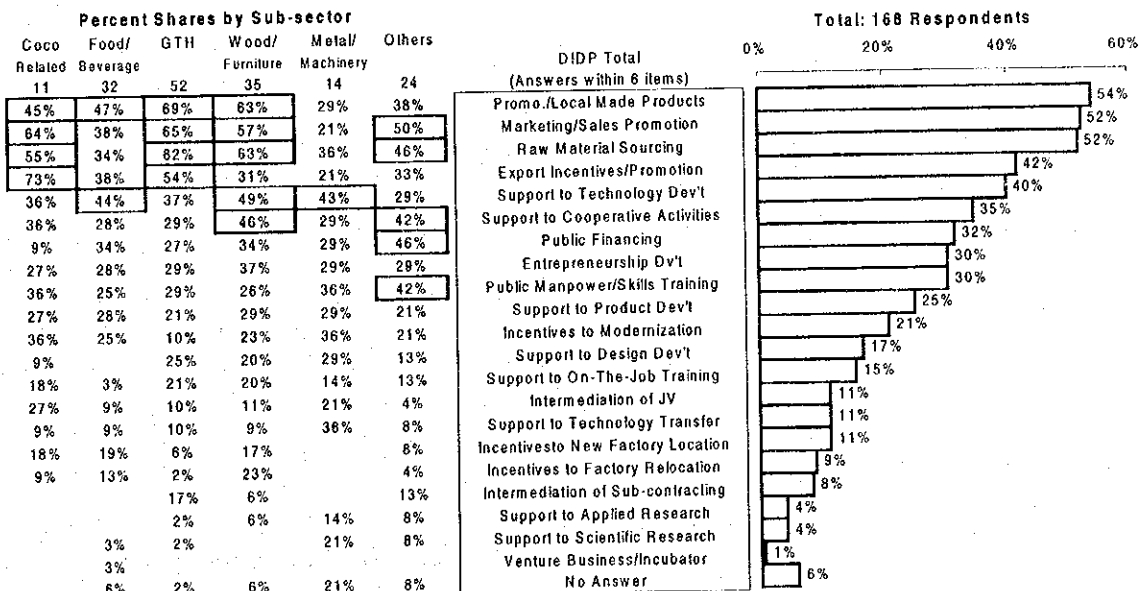
Note: ( ) Responding rates = 4% points more than the average of all Industries except for "No Answer"  
 Source: Industrial Questionnaire Survey (IQS) by DIDP-PMO and JICA Study Team

**2) Government supports to be strengthened**

Self-help is crucial for private enterprises including manufacturers for their survival and growth. On the other hand, it is true that appropriate government supports based on economies of scope is useful for a successful manufacturing development throughout the world.

According to the IQS, the respondents prioritize first the support to "promotion of local-made products (by Davao) as shown in Figure 26. Second closely to the first is the support to "marketing/sales promotion," probably because marketing is one of their weaknesses.

**Figure 26 Government Supports to be Strengthened**



Note: Responding rates = more than 40%  
 Source: Industrial Questionnaire Survey (IQS) by DIDP-PMO and JICA Study Team

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The respondents to the IQS also prioritize government support to the raw material sourcing including relevant financing to address its unstable supply and high cost. In addition, they expect export incentives/promotion and technology development to be supported by the government.

Given the limited budget, the government supports should be strategically allocated for the successful manufacturing development in the DIDP Area.

#### **4.2.2. Basic strategy for DIDP manufacturing development**

The basic strategy is a set of considerations to guide the DIDP manufacturing development in general toward the achievement of the development goal/vision, while addressing the constraints to it. Some components of the basic strategy correspond to the business strategy presented by the existing DIDP manufacturers as seen above, and are common to most development projects/programs, which will be derived mainly from specific strategies.

##### **Difference between the basic strategy and the specific strategies**

The specific strategies are assigned to formulation of the DIDP development projects/programs to support the DIDP regional development strategy; Internal Integration, Globalization Drive, and High Tech-High Services. The DIDP strategy is set in the Master Plan Report, and its component strategies are specific in principle to the three development phases as follows:

- Internal Integration for Phase 1 (1999-2004),
- Globalization Drive for Phase 2 (2005-2010), and
- High Tech-High Services for Phase 3 (2011-2016).

It is, however, noted that the DIDP strategy is also mobilized depending on the different conditions for regional development between Davao City and the three provinces. This is based on the consideration that it is not adequate to deal with the DIDP Area as one homogeneous region with the same conditions in terms of putting forward the DIDP development. Actually, the strategy of Globalization Drive is effective at present or during Phase 1 for Davao City already developed to some extent.

On the other hand, the basic strategy is common and effective during the three phases, and applicable to some DIDP projects/programs that will be derived from the specific strategies. Thus, the basic strategy is a set of considerations to directly support the development goal/vision of the DIDP manufacturing sub-sector, and could be established as follows (Figure 27).

##### **(1) Integrated enterprise development**

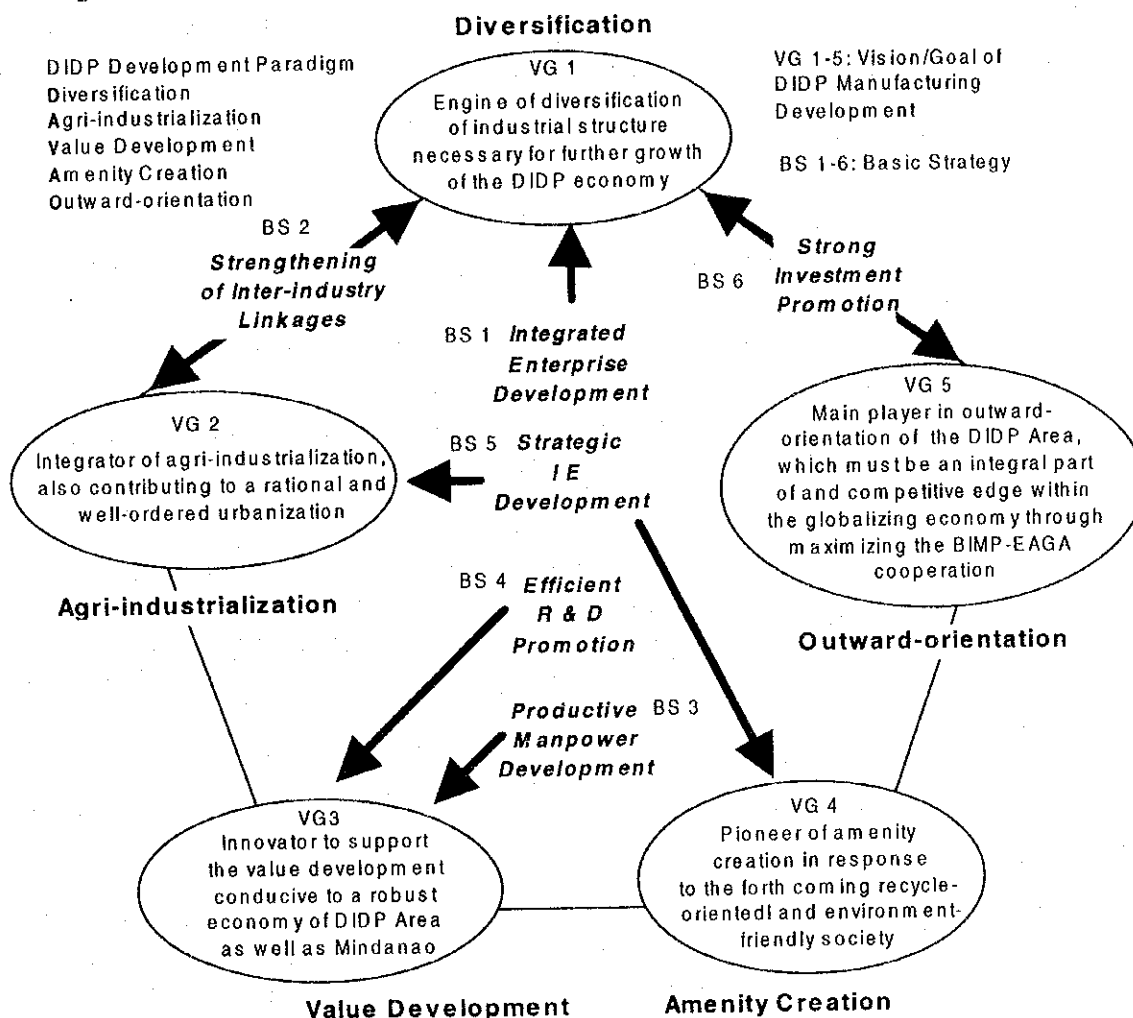
The first goal/vision of the DIDP manufacturing sub-sector is to be the engine of diversification of industrial structure necessary for further growth of the DIDP economy. To this end, there should be industrialists with strong entrepreneurship and management capability active in new business. However, the DIDP Area that still stays at an initial stage of industrialization lacks sizable numbers of such industrialists.

This strategy is to foster the commercial businessmen or the first generation of industrialists in a real sense, of which sources are livelihood businessmen, capable

SMEs, and student ventures, among others. This may be effected through combining and integrating policy measures as follows:

- training/consultancy services,
- public R&D and marketing supports,
- long-term financing with low interest rates,
- incubation,
- intermediation of joint venture (JV), and
- information services including forum for various exchanges between enterprises.

**Figure 27 Basic Strategy for DIDP Manufacturing Development**



**(2) Strengthening of inter-industry linkages**

The second goal/vision of the DIDP manufacturing sub-sector is to be an integrator of the agri-industrialization. In this context, strengthening of inter-industry linkages is prerequisite. The linkages will extend over agriculture, manufacturing, trade, and tourism, among others. Thus, diversification of industrial structure in the DIDP Area will be accelerated.

Strengthening of inter-industry linkages will be viable through networking forward/backward linkages. This linking will be supported by market matching,

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exposition, financing, and sourcing including financing assistance as well as public R&D supports. These functions are expected to be put forward by strengthening the coordination/intermediation capability of the PAIC offices as well as by the supports from the Central Government.

**(3) Productive manpower development**

The third goal/vision of the DIDP manufacturing sub-sector is to be an innovator to support the value development conducive to a robust economy of the DIDP Area as well as of Mindanao. To this end, productive manpower development should be strategized, focusing on skilled labor/technician (craftsman, designer, and staff for quality control and marketing) who are short in the DIDP Area. Also, R&D staff will be short in view of the progress of globalization and high tech industrialization.

This strategy aims to meet the needs of industries, and is oriented toward an efficient allocation/functional sharing between and among institutions/enterprises, given the limited resources through the following:

- worker training
- instructor training,
- expert exchanges including foreign experts,
- subsidy/supports to on-the-job-training, and
- networking of training centers, public R&D institutes and universities/colleges in the DIDP Area toward efficient manpower training.

The Social Sector Report will propose projects/program relative to manpower development including technical and vocational education and training (TVET).

**(4) Efficient R&D promotion**

This strategy supports the third and fifth goal/vision of the DIDP manufacturing sub-sector; an innovator to support the value development and a main player in outward-orientation of the DIDP Area. The value development will be strategically realized by an efficient R&D promotion coupled with the productive manpower development.

In the context of outward-orientation, the DIDP Area must be an integral part of and competitive edge within the globalizing economy. The globalizing economy will result in the free trade regime, which is to be institutionalized e.g., by the ASEAN Free Trade Area (AFTA) and the World Trade Organization (WTO).

Under the regime, subsidy for export promotion will be prohibited. Thus, public R&D supports are more instrumental to technical improvement and innovation of industries through the following:

- extension of technical advisory services,
- capability strengthening of public R&D institutes,
- increasing researchers, support staff and advanced facilities,
- specializing their activities into R&D for strategic technologies and industries,
- promotion of joint R&D, and
- incentives to promote in-house R&D of enterprises.

**(5) Strategic IE development**

Firstly, this strategy aim at a balanced development of the DIDP Area through industrial core formation in RAICs and PAICs. This also contributes to the second



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and forth goal/vision of the DIDP manufacturing sub-sector. Industrial Estate (IE) development is instrumental for the DIDP manufacturing as an integrator of agri-industrialization, contributing to a rational and well-ordered urbanization. Also, IE development is useful for the sub-sector to become a pioneer of amenity creation in response to the forthcoming recycle-oriented and environment-friendly society.

Some IEs development will be put forward coupled with modernization of industries. According to the Industrial Questionnaire Survey (IQS) with 168 manufacturer respondents, some 51% of them strategize modernization of production process centering on mechanization. The modernization may be implemented coupled with their collective relocation in line with urban redevelopment, especially in Davao City.

#### **(6) Strong investment promotion**

Investment incentives are not limited to provision of tax incentives. Other government supports as well as reliable infrastructure are also incentives for investments. In addition to these, a strong investment promotion is essential for the DIDP manufacturing sub-sector to be a main player in outward-orientation of the DIDP Area, i.e., an integral part of and a competitive edge within the globalizing economy. To this end, FDI that has been small in the DIDP Area should be strongly promoted.

This strategy may be effected through the following:

- seminars, missions etc. for investment promotion,
- database on potential investors that will be used commonly by the investment promotion agencies in the PAICs as well as in the DIDP Area as a whole,
- establishment of Mindanao Desk/DIDP Desk in BOI Manila,
- partnership with foreign regions,
- location of "Flagship Enterprises" resulting to investments by the followers, and
- DIDP investment promotion video.

### **4.3. Specific Strategies**

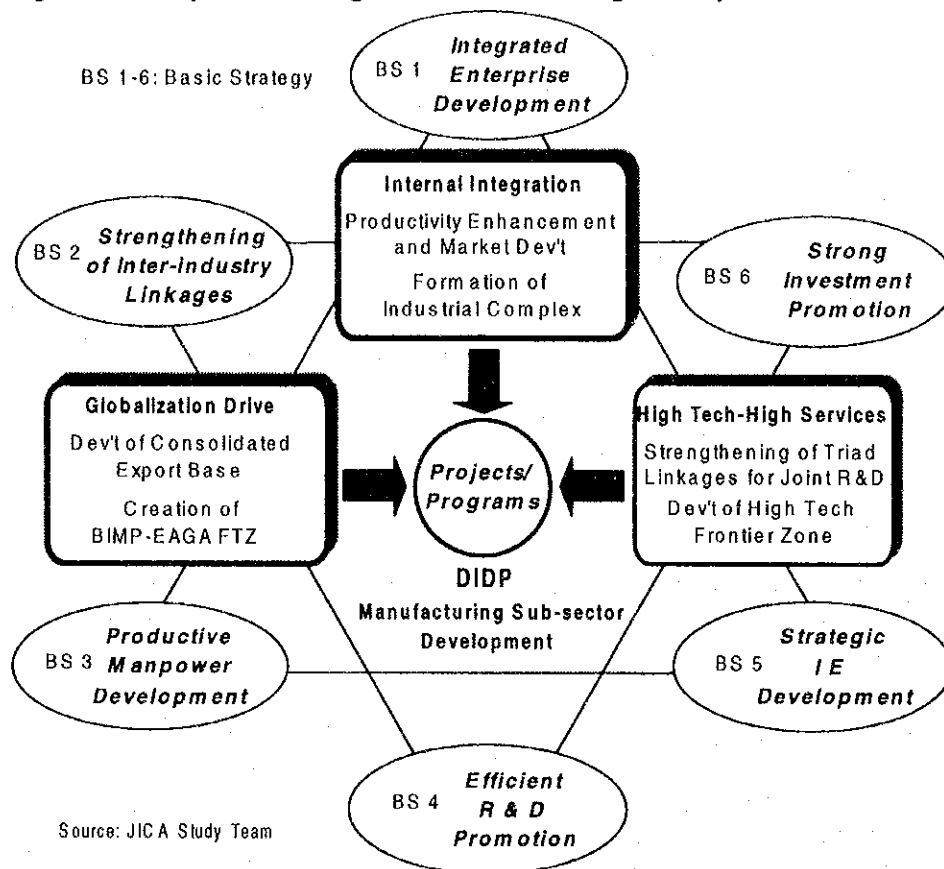
Specific strategies ought to be established to fabricate a growth structure for the DIDI manufacturing development. They are assigned to formulation of the DIDP projects/programs to support the DIDP regional development strategy; Internal Integration, Globalization Drive, and High Tech-High Services that may be applied to different areas at different stages of the DIDP regional development.

Figure 28 illustrates the specific strategies under the DIDP strategy, while showing the basic strategy for the DIDP manufacturing development. The basic strategy is common and effective throughout the three phases, and applicable to some DIDP projects/programs that will be derived from the specific strategies.

#### **4.3.1. Specific strategies under Internal Integration**

The Internal Integration strategy pursues resource-based and domestic market-oriented development toward agri-industrialization. The basic concept is to localize value added and utilize indigenous resources by and for the benefit of local people. In the context of the DIDP manufacturing development, two main strategies could be established; productivity enhancement and market development, and formation of industrial complex.

**Figure 28 Specific Strategies for Manufacturing Development under DIDP Strategy**



**(1) Productivity enhancement and market development**

Internal integration is also a sort of survival strategy for the DIDP manufacturers to prepare the forthcoming free trade regime represented by the AFTA/WTO agreements. In order that the DIDP manufacturing sub-sector will become a competitive edge in the Philippines, it should structure world-class competitiveness led by the following strategies.

**1) Enhancement of the total quality management (TQM)**

This is essential to meet the global standards, especially for exporting agri-processing products in the DIDP Area. To this end, an inspection/testing system coupled with product development is expected to be institutionalized in existing or new public R&D institutes to support manufacturers, and manpower training should be strengthened.

To materialize TQM in manufacturing industries as a whole, industrial associations or cooperatives will be instrumental in view of division of labor and complementary relationships between and among the member enterprises.

**2) Strengthening of marketing functions**

DTI Region XI has already upgraded the Computerized Regional Trade Information Service Center (CRTISC) in Davao City. On the other hand, the DIDP manufacturers want the government supports such as promotion of local-made products and marketing/sales promotion, according to the Industrial Questionnaire Survey (IQS) as seen before.

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To address such needs, some convention industries ought to be promoted in addition to enrichment of database in the CRTISC. A sort of "By Davao and Buy Davao" movement will be effective and may be supported by mass markets like super markets, schools, companies, and government offices. Creation of "regional trading corporation" as a match maker is also strategically important to strengthen the DIDP marketing functions. This might be initially established by public and private partnership.

**(2) Formation of industrial complex**

Formation of industrial complex is the strategy to put forward the Internal Integration strategy coupled with agri-industrialization in the DIDP Area. Industrial clustering is instrumental to the integration, which may be effected through agri-industrial villages formation or IE development to integrate spatially industrial activities toward an economically efficient and environmentally friendly manufacturing. The villages will include cultural villages of indigenous peoples while linking with tourism development, if viable. Some of these may be a component of PAICs development.

Other components of industrial complex will be resource-recycling and an integration with urban development. Resource-recycling may be effected through integrating industries that produce products by cascade use of wastes at a compound area. Integration with urbanization is a combined development of IE and a new town.

**4.3.2. Specific strategies under Globalization Drive**

The Globalization Drive is outward-oriented strategy of the DIDP Area likely conducive to its higher growth through increase in export to and various exchanges with foreign countries. This will be led by the following.

**(1) Development of consolidated export bases**

This strategy aims at the establishment of a consolidated foundation for export expansion with the following components:

- Construction Materials Merchandising Center (CMMC), which is already proposed in line with the mining and quarrying sub-sector development (Part 4),
- development of EPZ/SEZ in addition to existing and on-going ones in Davao City and Tagum City, and
- development of products with the DIDP specialty.

The additional EPZs/SEZs (ECOZONE) will be developed in Davao del Sur that have three plans for IE development. Panabo in Davao Province is also viable for EPZ/SEZ development. A SEZ in Madaum, Tagum City had its groundbreaking ceremony in September 1998.

The development of the Davao specialty products is part of developing new export markets. This may be effected through mobilizing mixed culture of the DIDP Area, which is expected to generate the specialty products with unique design and differentiated quality also supported by public R&D supports.

**2) Creation of the BIMP-EAGA Free Trade Zone (FTZ)**

This Free Trade Zone could be set up to expand the BIMP-EAGA sub-regional linkages/cooperation in the DIDP Area through an optimum distribution of resources and complementary relationships. The FTZ is a set of land development and relevant institutional arrangements, and is expected to be established prior to the completion

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of AFTA agreements in 2003. In other words, this is an extensive application of the ASEAN Industrial Cooperation Scheme (AICO) to the BIMP-EAGA, which allows duty-free trade among the factories located in ASEAN countries. The FTZ will be supported by the following components:

- institutionalization of duty-free trade of all goods,
- market place/merchandising center to wholesale the BIMP-EAGA local-made products,
- logistics center with processing function,
- convention/exposition center,
- shopping arcade and entertainment facilities,
- hotels and guest houses, and
- management body of FTZ.

Such a FTZ might legalize any transaction of goods in general and provide equitable opportunities where everybody can access. It might also promote the division of labor among the BIMP-EAGA sub-regions, which will be conducive to a rapid growth of the DIDP Area.

#### **4.3.3. Specific strategies under High Tech-High Services**

The High Tech-High Services strategy pursues external resources/market driven development. Industries to be introduced under the strategy would not be confined to resource-based and labor-intensive ones. More footloose type industries would be introduced including various high tech industries oriented to good locational conditions of the DIDP Area.

High tech industrialization is effective for achieving a more rapid increase in GVA/income due mainly to the hi-tech industry's higher labor productivity. It would also ensure world-class competitiveness in the DIDP Area.

In addition, high technology has a huge market potential stemming from the fact that high technology manipulates molecules and atoms, of which limitless combination can make a sustainable production of new products. In this point, high tech industry is the growth industry with long product lifecycle in a real sense.

As such, high tech industrialization could contribute a lot to technical innovation and improvement in the DIDP Area. High tech industrialization in the DIDP Area could be led by the following.

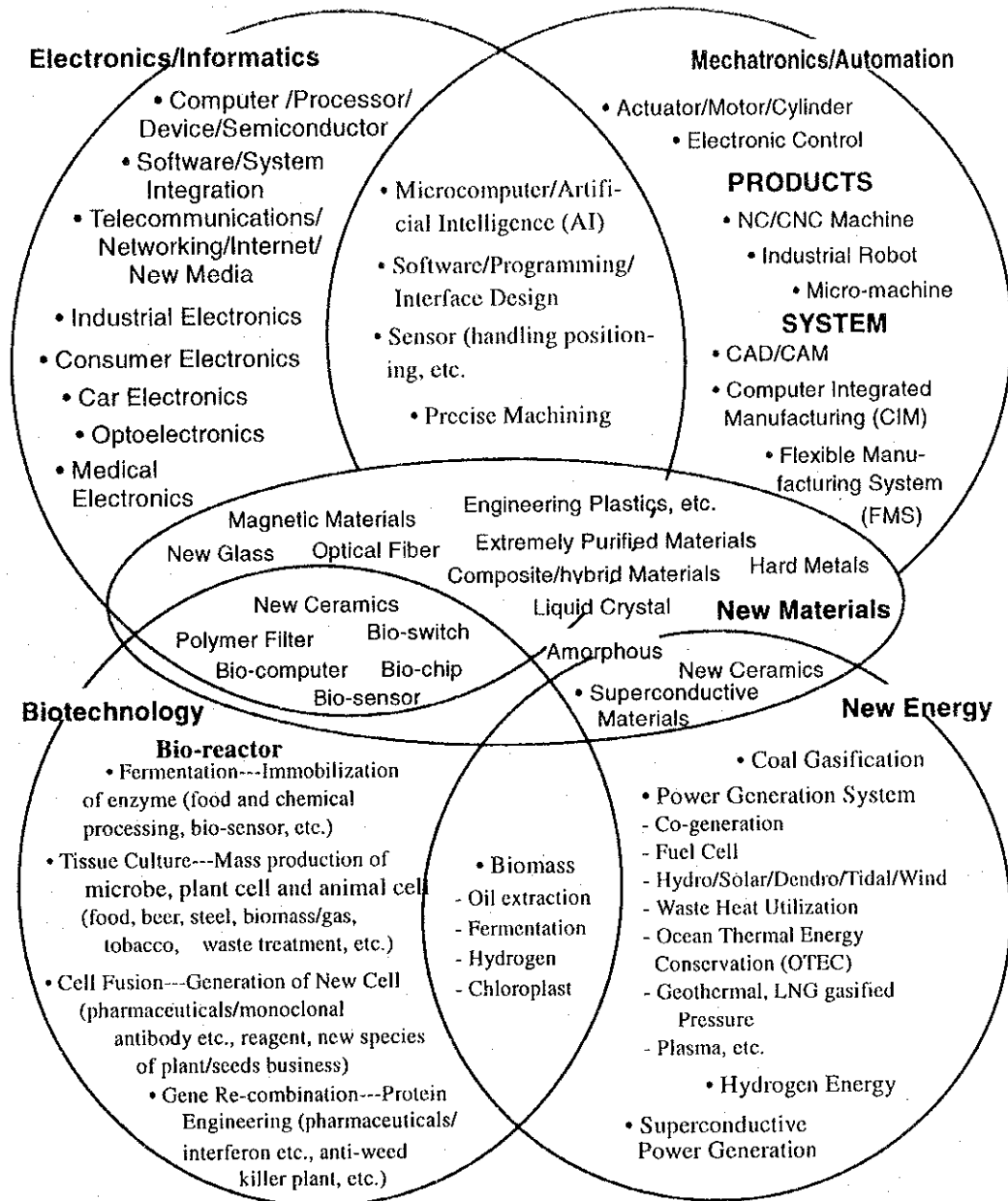
##### **(1) Strengthening of triad linkages for joint R&D**

This strategy is partly based on the attribute of high technology manipulating molecules and atoms. In this regard, high tech industries are closely linked with each other or interdisciplinary as shown in Figure 29. New materials are the most interdisciplinary and linked with each hi-tech field such as informatics (information technology)/electronics, mechatronics, biotechnology, and new energy.

In addition, the original attribute of hi-tech industry is technology innovation, which demands a continuous R&D activity.

Such attributes of hi-tech industry have resulted in a sizable R&D expenditure to develop new technologies, new fields, and new products

Figure 29 Main Products/Technological Fields of HI-Tech Industry and Their Linkages



Source: JICA Study Team

Accordingly, this strategy aims at integrating activities such as basic research, applied research, product development including prototype fabrication, production technology development and design development toward commercial production through organizing universities/colleges, public R&D institutes, and enterprises.

To this end, the government sector is expected to coordinate such linkages, and R&D functions of the partners in the DIDP Area should be strategically strengthened. In this respect, the DIDP universities/colleges are expected to put more emphasis on R&D activities. Some R&D pilot projects would be implemented by the triad linkages centering on biotechnology closely related agri-industry, and information technology (IT) including multi-media in response to a rapid informatization within the globalizing economy and the BIMP-EAGA cooperation.

## (2) Development of high tech frontier zone

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This is a combined development to spatially integrate R&D related functions with high tech industrial location at a compound area so as to maximize efficiency of high tech development.

Some universities/colleges are expected to be the core for relevant agglomeration, and high tech industries would be located by foreign investors, which could be instrumental to high tech transfer. Also, sub-regional joint R&D activities are conceived in line with the progress of the BIMP-EAGA cooperation. The above mentioned triad linkages for high tech development would be institutionalized including incubation system.

#### 4.4. Strategic Industries

Strategic industries for the DIDP manufacturing sub-sector development are industries to be promoted for the achievement of the development goal/vision. Practically, criteria to select the strategic industries could comprise two things as follows:

##### (1) Coincidence with the DIDP regional development strategy

Based on this criterion, strategic industries under the Internal Integration are resource-based and domestic market-oriented, particularly *agri-processing industries*. Strategic industries under the Globalization Drive strategy are *export-oriented industries*, and under the High Tech-High Services strategy are *high tech industries*. In this regard, the strategic industries are selected as follows:

- Agri-processing industries using local resources, relating closely to development of agriculture or supporting agriculture, and domestic market-oriented industries to grow in line with the development of DIDP Area;
- Export-oriented industries in principle having more than 50% export ratio based on the 1993 Annual Survey of Establishments-Manufacturing in the Philippines; and
- High tech industries with more than around 2% R&D expense ratio (R&D expenditure / total sales) and more than around 5% R&D staff-factory worker, based on the 1995 Basic Survey of Business Structure and Activity in Japan.

Table 20 shows exported-oriented manufacturing industries based on the Annual Survey. The highest export ratio was 99% for the office, computing and accounting equipment industry in the Philippines, and 87% for the canned/preserved fish industry in Region XI including the DIDP Area and General Santos.

Table 21 shows high tech industries selected by using the Basic Survey in Japan. They comprise mostly chemicals and machinery/equipment including electronics.

##### (2) Contribution to the DIDP development paradigm

The DIDP development paradigm consists of five viable concepts: diversification, agri-industrialization, value development, amenity creation, and outward-orientation. Strategic industries in the context of contribution to the paradigm are selected as follows.

- Strategic industries to contribute to the **diversification** are industries that does not exist or not agglomerated at present in the DIDP Area.

**Table 21 Export-Oriented Manufacturing Industries in the Philippines in 1993**

1993/Annual Survey	Export Ratio				
	Philippines	Region XI			
ALL INDUSTRY	21%	37%			
Food/Beverage/Tobacco	10%	56%	GVA: mill. Pesos	103,816.4	4,034.8
Export Industry			GVA: mill. Pesos	13,367.5	3,578.1
3115 Canned/Preserved Fish and the Like	78%	87%	Export Industry's Share	13%	89%
3125 Desiccated Coconut	75%	86%			
3114 Canned/Preserved Fruit/Vegetables	44%	81%			
3116 Crud Coco Oil (inc. cake/meal)	39%	49%			
Textiles/Garments/Leather	51%	26%	GVA: mill. Pesos	30,470.6	75.0
Export Industry			GVA: mill. Pesos	21,769.0	10.6
3229 Other Wearing Apparel	86%		Export Industry's Share	71%	14%
3215 Cordage/Rope/Twine	70%	81%			
3222 Ready-Made Clothing	64%	0%			
3219 Other Textiles	62%				
3232 Leather Products	57%				
3212 Knitting Mills	56%				
3241 Leather Shoes	44%				
331 Wood/Cork/Cane/Bamboo	31%	42%	GVA: mill. Pesos	3,740.3	1,169.3
Export Industry			GVA: mill. Pesos	2,137.9	891.0
3315 Millwork Plant	91%		Export Industry's Share	57%	76%
3316 Wooden Cane/Container	69%				
3319 Other Wood/Cane/Cork Products	52%	70%			
3312 Veneer/Plywood	27%	47%			
332 Furniture	44%	3%	GVA: mill. Pesos	2,199.6	73.9
Export Industry			GVA: mill. Pesos	1,132.2	8.5
3322 Rattan Furniture	79%	29%	Export Industry's Share	51%	12%
Chemicals/Rubber/Plastics	8%	47%	GVA: mill. Pesos	52,400.2	317.6
Export Industry			GVA: mill. Pesos	5,129.6	0.0
3512 Fertilizers	43%		Export Industry's Share	10%	0%
3552 Rubber Footwear	31%				
3559 Other Rubber Products	28%				
Non-Metallic Mineral Prds			GVA: mill. Pesos	12,344.1	893.9
Export Industry			GVA: mill. Pesos	1,307.6	891.3
361 Pottery, China/Earthenware	42%	0%	Export Industry's Share	11%	100%
Metal Processing	23%	3%	GVA: mill. Pesos	21,348.8	24.3
Export Industry			GVA: mill. Pesos	8,429.5	0.0
3719 Other Iron/Steel Industries	96%		Export Industry's Share	39%	0%
372 Non-Ferrous Metal Basic Industries	79%	X			
3815 Fabricated Wire Products	47%				
386 Metal Furniture	64%				
Machinery	66%	0%	GVA: mill. Pesos	32,316.8	84.6
Export Industry			GVA: mill. Pesos	26,139.9	0.0
3825 Office, Computing/Accounting Equip.	99%		Export Industry's Share	81%	0%
3832 Radio/TV/Communication Equip.	78%				
3836 Electric Wire/Wiring Devices	63%				
3839 Other Electrical Machinery/Equip.	44%				
3851 Scientific/Measuring Equipment, etc.	61%				
3852-3 Camera, Optical Instrument, watches, etc.	77%				
384 Transport Equipment	9%	0%	GVA: mill. Pesos	12,578.6	66.4
Export Industry			GVA: mill. Pesos	4,742.9	0.0
3841 Ship building/Repair	21%		Export Industry's Share	38%	0%
3845 Vehicle Parts/Accessories	34%				
3847-9 Other Transport Equip.	87%				
390 Other Manufacturing Industries	60%		GVA: mill. Pesos	3,185.8	0.0
Export Industry			GVA: mill. Pesos	2,822.2	0.0
3901 Jewelry/Related Articles	85%		Export Industry's Share	89%	0%
3902 Musical Instruments	73%				
3903 Sporting/Athletic Goods	87%				
3904 Surgical/Dental/Medical Supply	27%				
3906 Toys/Dolls	56%				
3909 Other Manufacturing Industries	60%				

Source: 1993 Annual Survey of Establishments-Manufacturing (NSO)

**Table 22 High Tech Industries and Their Pertinent Indicators**

	R&D Expense Ratio	R&D Staff- Factory Worker Ratio	Gross Value Added		Structure		
			Japan in 1995 (mill.Yen)	PHP in 1993 (mill. Pesos)	(1) Japan	(2) PHP	(3) (1+2)/2
<b>ALL INDUSTRY</b>	2.9%	9.3%	50,758,724	299,148			
<b>Hi-Tech Industry Total</b>	4.1%	11.9%	30,345,920	75,993	100.0%	100.0%	100.0%
<b>Chemicals/Rubbers/Plastics</b>	-	-	8,905,080	29,683	29.3%	39.1%	34.2%
Non-Metallic Products	-	-	296,261	2,434	1.0%	3.2%	2.1%
Metal Processing	-	-	1,460,635	514	4.8%	0.7%	2.7%
Machinery	-	-	14,732,190	32,416	48.5%	42.7%	45.6%
Transport Equipment	-	-	4,700,191	10,800	15.5%	14.2%	14.9%
Other Manufacturing	-	-	251,563	145	0.8%	0.2%	0.5%
<b>Chemicals/Rubbers/Plastics</b>			<b>8,905,080</b>	<b>29,683</b>	<b>29.3%</b>	<b>39.1%</b>	
Fertilizers & Inorganic Chemicals	2.6%	18.1%	374,903	3,239	1.2%	4.3%	
Organic Chemicals	4.5%	22.2%	1,551,703	3,229	5.1%	4.2%	
Synthetic Fibers	3.9%	9.1%	444,788	1,827	1.5%	2.4%	
Detergents, Surfactants, Paints, etc.	4.0%	32.1%	853,672	1,348	2.8%	1.8%	
Pharmaceuticals	9.8%	58.2%	3,431,318	13,659	11.3%	18.0%	
Other Chemical Products	2.5%	28.7%	1,811,725	2,844	6.0%	3.7%	
Rubber Tires & Tubes	3.5%	15.2%	436,971	3,537	1.4%	4.7%	
<b>Non-Metallic Products</b>			<b>296,261</b>	<b>2,434</b>	<b>1.0%</b>	<b>3.2%</b>	
Glass and Glass Products	1.9%	4.5%	296,261	2,434	1.0%	3.2%	
<b>Metal Processing</b>			<b>1,460,635</b>	<b>514</b>	<b>4.8%</b>	<b>0.7%</b>	
Iron & Steel Products	2.1%	4.8%	1,460,635	514	4.8%	0.7%	
<b>Machinery</b>			<b>14,732,190</b>	<b>32,416</b>	<b>48.5%</b>	<b>42.7%</b>	
Metal Processing Machinery/Equip.	2.0%	8.9%	242,578	190	0.8%	0.3%	
Special Industrial Machinery	3.1%	8.9%	1,037,342	161	3.4%	0.2%	
Office Equip., Air-Conditioners, etc.	4.0%	22.3%	1,207,170	1,147	4.0%	1.5%	
Other General Machinery/Equip.	2.1%	6.9%	2,023,702	1,357	6.7%	1.8%	
Industrial Electrical Machinery/Equip.	4.4%	7.5%	1,377,110	981	4.5%	1.3%	
Electrical Home Appliance	6.1%	13.0%	624,064	1,635	2.1%	2.2%	
Telecommunications Equipment	5.6%	12.8%	1,570,100	18,549	5.2%	24.4%	
Computers, X Ray Equip. VTR, etc.	6.8%	10.9%	3,935,891	539	13.0%	0.7%	
Electronic Parts/Devices, etc.	3.6%	7.9%	1,803,647	4,477	5.9%	5.9%	
Other Electrical/Electronic Products	3.8%	11.3%	507,879	2,097	1.7%	2.8%	
Optical Equipment & Lenses/Watches	2.1-3.1%	4.3-11.3%	153,579	920	0.5%	1.2%	
Other Precision Instruments	3.7%	10.6%	249,128	363	0.8%	0.5%	
<b>Transport Equipment</b>			<b>4,700,191</b>	<b>10,800</b>	<b>15.5%</b>	<b>14.2%</b>	
Motor Vehicles & Parts, etc.	3.3%	11.2%	4,700,191	10,800	15.5%	14.2%	
<b>Other Manufacturing</b>			<b>251,563</b>	<b>145</b>	<b>0.8%</b>	<b>0.2%</b>	
Medical Equipment, etc.	6.8%	30.0%	251,563	145	0.8%	0.2%	

Source: 1995 Basic Survey of Business Structure and Activity in Japan (Ministry of Industry and International Trade)

- Strategic industries to contribute to the **agri-industrialization** are agri-processing industries using local resources, and industries related closely to development of agriculture or supporting industries for agriculture.
- Strategic industries to contribute to the **value development** are high tech industries selected above due to their high labor productivity.
- Strategic industries to contribute to the **amenity creation** are industries that have a possibility for resource (industrial wastes)-recycling.
- Strategic industries to contribute to the **outward-orientation** are export-oriented industries selected above.



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### (3) Selected strategic industries

Table 22 shows the strategic industries selected based on the criteria above, including software industry that is not classified into manufacturing industry. All of these industries are viable in terms of investment and industrial location in the DIDP Area up to the year 2016 based on the prospects to the manufacturing sub-sector development in the DIDP Area.

Contribution to the DIDP development paradigm is translated into score by giving one point to each concept of the paradigm. The score could mean the strategic importance of strategic industries, but there is no industry getting the full mark of five points. The industries having score of four points are canned/preserved fish/fruit, and other rubber products, which are agri-processing industries. Two other four-point scorers are electronic parts/components and vehicle parts/accessories. All in all, industries having more than three points might be the strategic industries of more strategic importance for both the DIDP regional and manufacturing development.

**Table 23 DIDP Strategic Industries**

DIDP Regional Dev't Paradigm: D (diversification), A (agri-industrialization), V (value development)  
 A (amenity creation), O (outward-orientatin)  
 Strategic Importance: Score = 1 point for each above DAVAO

DIDP Strategic Industries	Internal Integration	Globaliza-tion Drive	High-Tech/ Services	Strategic Importance					
				Score	D	A	V	A	O
3111 Slaughtering, Preserved Meat, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D	A		A	
3112-3 Processed Milk/Dairy Products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D	A			O
3114 Canned/Preserved Fruit/Vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	D	A		A	O
3115 Canned/Preserved Fish and the Like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	D	A		A	O
3116/25 Coconut Products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3		A		A	O
3119 Flour Milling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	D				
3124 Cocoa, Chocolate/Sugar Confectionery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D	A			O
3127 Coffee Roasting/Processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D	A			O
3128 Animal Feeds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2		A		A	
321 Textile Goods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2		A			O
322 Wearing Apparel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D				O
323 Leather Products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D	A			O
333 Wood Products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3		A		A	O
3314 Wood Drying/Preservation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D	A			
3321-9 Wooden/Rattan/Bamboo Furniture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3		A		A	O
3512 Fertilizers including Organic Fertilizer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D	A		A	
3513 Synthetic Resins/Plastics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V	A	
3521 Paints, Varnishes, Lacquers, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	D		V		
3522 Drugs/Medicines/Pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D	A	V		
3523 Soap, Cleanser, Cosmetics, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V	A	
353 Petroleum Refineries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	D				
3552 Rubber Footwear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D				O
3559 Other Rubber Products	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4	D	A	V	A	
356 Plastic Products	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V	A	
361 Pottery, China/Earthenware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D	A			O
362 Glass/Glass Products	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V	A	
363 Cement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3		A		A	O
3712 Steel Works/Rolling Mills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D			A	
3713 Foundries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D			A	
3719 Other Iron/Steel Industries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D			A	
372 Non-Ferrous Metal Basic Industries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D			A	O
3811 Cutlery, Hard Tools/Hardware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D	A			
3812 Structural Metal Products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	D				
3813 Metal Containers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D				O
3814 Metal Stamping, Coating, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	D				
3815 Fabricated Wire Products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D			A	O
3822 Agricultural Machinery/Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D	A			
3823 Metal/Wood Working Machinery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D	A			
3825 Office, Computing/Accounting Equip.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V		O
3832 Radio/TV/Communication Equip.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V		O
3833 Electrical Appliance/Houseware	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V		O
3836 Electric Wire/Wiring Devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V		O
Electronic Parts/Components	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4	D		V	A	O
3841 Ship building/Repair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D			A	O
3843-44 Vehicle Rebuilding, Body Assmly etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D			A	O
3845 Vehicle Parts/Accessories	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4	D		V	A	O
3846 Motorcycles/Bicycles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D				
3852-3 Camera, Optical Instrument, Watches, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V		O
386 Metal Furniture	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V		O
3901 Jewelry/Related Articles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D	A			O
3903 Sporting/Athletic Goods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	D				O
3904 Surgical/Dental/Medical Supply	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	D		V		
3906 Toys/Dolls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	D			A	O
Software Industry	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	D		V		O

Source: JICA Study Team

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## Chapter 5 Development Plan

Outline and directions of the DIDP manufacturing sub-sector development are already set up by studies so far. The next is to formulate a plan that will guide the sub-sector development toward the year 2016. As such, the development plan of the manufacturing sub-sector in the DIDP Area is composed of development framework, development projects/programs, and policy recommendation on the sub-sector development.

### 5.1. Development Framework

The socioeconomic macro framework of the DIDP Area is set up in the Master Plan Report combining the three DIDP regional development strategies: the Internal Integration strategy, the Globalization Drive strategy, and the High Tech-High Services strategy. Accordingly, the DIDP GRDP will grow by 6.7% per annum from 1995 to 2016, amounting to ₱430 billion (in 1995 constant prices) in 2016. Likewise, the manufacturing GVA will be ₱88.2 billion in 2016 from ₱15.8 billion in 1995, growing by 8.7% per annum.

First, this section will estimate the DIDP manufacturing GVA by phase and by sub-sector. Employment will be calculated, corresponding to the GVA estimated above. Second, the GVA and employment by province/City will be indicated. Third, demand for industrial land and water will be estimated based on the employment.

#### 5.1.1. DIDP manufacturing framework by phase and by industry

Figure 30 summarizes the DIDP manufacturing framework. Manufacturing GVA will grow up to the year 2016 by 8.7% per annum: likewise 7.5% during 1995-2004, 11.3% during 2005-2010, and 7.9% during 2011-2016, amounting to ₱29.3 billion, ₱55.8 billion, and ₱88.2 billion in the last year of each phase, respectively.

The DIDP manufacturing employment will increase from 55,391 in 1995 to 89,100 in 2004, 141,000 in 2010, and 185,000 in 2016 corresponding to the increasing manufacturing GVA.

The estimates summarized in Figure 30 are based on the following considerations.

##### (1) Growth of manufacturing GVA as a whole up to the year 2016

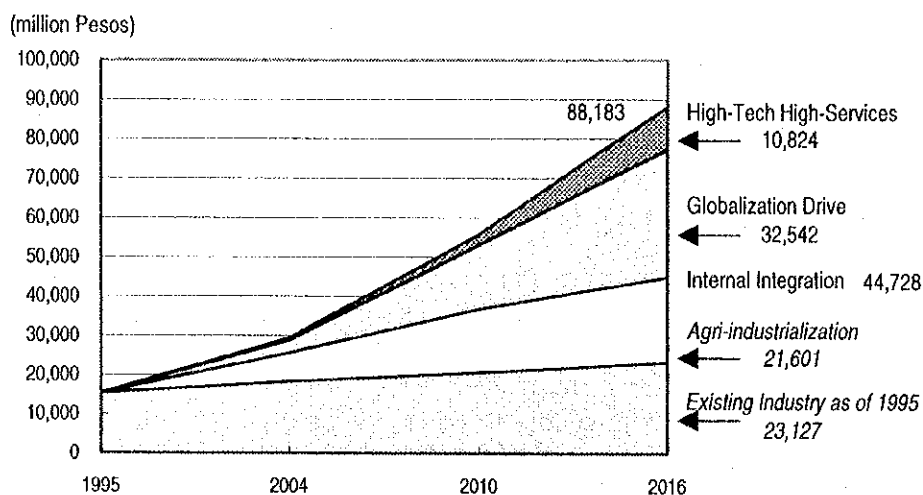
The DIDP manufacturing will rapidly grow during Phase 2 corresponding to the progress of infrastructure development in the DIDP Area. Established AFTA and ASEAN Investments Area (AIA) will encourage investments between and among the member countries including the DIDP Area. The growth rate will be saturated during Phase 3 due mainly to a slow growth of agri-industries posed by the limitation of agricultural development.

##### (2) GVA under Internal Integration

This strategy pursues local resource-based and domestic market-oriented development toward agri-industrialization as mentioned before. Factors of manufacturing growth difference between the sub-sectors are taken into account as follows.

- Progress of agri-industrialization is taken into account. Agri-processing ratio (food industry GVA to agriculture GVA) is assumed to increase from 0.278 in 1995 to 0.350 in 2016, an increase of around 20% from 1995.

**Figure 30 Summary of DIDP Manufacturing Framework by Phase and by Industry**



(in 1995 constant prices)	Gross Value Added (million Pesos)				GVA Structure (%)				Growth Rates (AAGR)			
	Phase 1		Phase 2		Phase 1		Phase 2		Phase 1		Phase 2	
	1995	2004	2010	2016	1995	2004	2010	2016	96-16	96-04	05-10	11-16
<b>Manufacturing Total</b>	<b>15,318</b>	<b>29,342</b>	<b>55,763</b>	<b>88,183</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>8.7%</b>	<b>7.5%</b>	<b>11.3%</b>	<b>7.9%</b>
Internal Integration	15,318	25,546	36,786	44,818	100	87	66	50	5.2%	8.9%	6.3%	3.3%
Existing as of 1995	15,318	18,306	20,616	23,217	100	62	37	26	2.0%	2.0%	2.0%	2.0%
Agri-industrialization		7,240	16,170	21,601		25	29	24			14.3%	4.9%
Globalization Drive		3,254	16,271	32,542		11	29	37			30.8%	12.2%
High Tech-High Services		541	2,706	10,824		2	5	12			30.8%	26.0%
	Employment (persons)				Productivity ('000 Pesos/worker)				Productivity: AAGR			
	Phase 1		Phase 2		Phase 1		Phase 2		Phase 1		Phase 2	
	1995	2004	2010	2016	1995	2004	2010	2016	95-16	95-04	05-10	11-16
<b>Manufacturing Total</b>	<b>53,391</b>	<b>89,413</b>	<b>141,037</b>	<b>185,000</b>	<b>287</b>	<b>328</b>	<b>395</b>	<b>477</b>	<b>6.1%</b>	<b>5.9%</b>	<b>7.9%</b>	<b>4.6%</b>
Internal Integration	53,391	73,341	87,491	95,891	287	348	420	467	2.4%	3.3%	3.2%	1.8%
Existing as of 1995	53,391	53,391	53,391	53,391	287	343	386	435	2.0%	2.0%	2.0%	2.0%
Agri-industrialization		19,950	34,100	42,500		363	474	508			4.5%	1.2%
Globalization Drive		14,322	46,546	71,609		227	350	454			7.5%	4.4%
High Tech-High Services		1,750	7,000	17,500		309	387	619			3.8%	8.1%

Source: JICA Study Team

- A pinpoint location of petroleum refinery is assumed based on expected local demand expansion for oil in Mindanao as a whole. The location has been promoted also by BOI. It is considerable coupled with a planned location of power plants in Digos, Davao del Sur. Another pinpoint location of cement factory is assumed based on market expansion and presence of raw limestone in the DIDP Area. GVA to be generated by a petroleum refinery and a cement factory is calculated based on unit size by the Annual Survey of Establishments-Manufacturing.
- Other factors are the DIDP population growth that will be around 2% per annum up to the year 2016 and the DIDP GRDP growth as a whole, which is 6.7% per annum.
- Growth of existing industries, which is based on employment as of 1995, is also considered in estimating demand for industrial land and water to be used by new factories/investments. This is assumed to grow by 2% per annum up to the year 2016, corresponding to increase in labor productivity. Manufacturing labor productivity in the Philippines fluctuated until 1991, without record of increase. However, it increased by 2.8% per annum during 1992-1996. This increase

might be due partly to investment in new factories, and therefore some 2% growth is applied for the existing industries.

Table 24 shows the results from above considerations.

**Table 24 Manufacturing GVA by DIDP Strategy**

(in 1995 constant prices)	GVA in 1995 Total	GVA in 2004/Phase 1 (million Pesos)					Structure (%)		AAGR (%) 96-2004
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	1995	2004	
Manufacturing Total	15,318	18,306	7,240	3,254	541	29,342	100.0%	100.0%	7.5%
Food/Beverage/Tobacco	7,905	9,447	3,454	916	0	13,817	51.6%	47.1%	6.4%
Textiles/Garments/Leather	1,226	1,465	623	568	0	2,656	8.0%	9.1%	9.0%
Wood/Cork/Cane/Bamboo	1,168	1,396	469	243	0	2,108	7.6%	7.2%	6.8%
Furniture	500	598	201	77	0	877	3.3%	3.0%	6.4%
Paper/Publishing/Printing	510	609	156	0	0	765	3.3%	2.6%	4.6%
Chemicals/Rubber/Plastics	935	1,117	285	133	185	1,721	6.1%	5.9%	7.0%
Petroleum Products		0	0	0	0	0	0.0%	0.0%	
Non-Metallic Mineral Prds.	1,279	1,528	1,104	221	11	2,864	8.3%	9.8%	9.4%
Metal Processing	459	548	346	219	15	1,128	3.0%	3.8%	10.5%
Machinery	638	763	195	679	247	1,884	4.2%	6.4%	12.8%
Transport Equipment	263	314	80	123	81	598	1.7%	2.0%	9.6%
Other Manufacturing	435	520	328	73	3	925	2.8%	3.2%	8.7%
(in 1995 constant prices)	GVA in 2004 Total	GVA in 2010/Phase 2 (million Pesos)					Structure (%)		AAGR (%) 2005-10
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	2004	2010	
Manufacturing Total	29,342	20,616	16,170	16,271	2,706	55,763	100.0%	100.0%	11.3%
Food/Beverage/Tobacco	13,817	10,639	6,044	4,580	0	21,263	47.1%	38.1%	4.9%
Textiles/Garments/Leather	2,656	1,650	1,090	2,840	0	5,580	9.1%	10.0%	8.6%
Wood/Cork/Cane/Bamboo	2,108	1,572	821	1,214	0	3,607	7.2%	6.5%	6.2%
Furniture	877	673	352	387	0	1,413	3.0%	2.5%	5.4%
Paper/Publishing/Printing	765	686	272	0	0	959	2.6%	1.7%	2.5%
Chemicals/Rubber/Plastics	1,721	1,258	499	667	925	3,349	5.9%	6.0%	7.7%
Petroleum Products	0	0	3,500	0	0	3,500	0.0%	6.3%	
Non-Metallic Mineral Prds.	2,864	1,721	1,931	1,106	57	4,815	9.8%	8.6%	5.9%
Metal Processing	1,128	617	605	1,096	73	2,391	3.8%	4.3%	8.7%
Machinery	1,884	859	341	3,397	1,234	5,832	6.4%	10.5%	13.4%
Transport Equipment	598	354	140	616	403	1,514	2.0%	2.7%	10.9%
Other Manufacturing	925	586	574	367	14	1,540	3.2%	2.8%	5.8%
(in 1995 constant prices)	GVA in 2010 Total	GVA in 2016/Phase 3 (million Pesos)					Structure (%)		AAGR (%) 2011-16
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	2010	2016	
Manufacturing Total	55,763	23,217	21,601	32,542	10,824	88,183	100.0%	100.0%	7.9%
Food/Beverage/Tobacco	21,263	11,981	8,634	9,160	0	29,775	38.1%	33.8%	5.8%
Textiles/Garments/Leather	5,580	1,858	1,557	5,681	0	9,096	10.0%	10.3%	8.5%
Wood/Cork/Cane/Bamboo	3,607	1,770	1,173	2,428	0	5,372	6.5%	6.1%	6.9%
Furniture	1,413	758	503	775	0	2,036	2.5%	2.3%	6.3%
Paper/Publishing/Printing	959	773	389	0	0	1,162	1.7%	1.3%	3.3%
Chemicals/Rubber/Plastics	3,349	1,417	713	1,333	3,702	7,165	6.0%	8.1%	13.5%
Petroleum Products	3,500	0	3,500	0	0	3,500	6.3%	4.0%	
Non-Metallic Mineral Prds.	4,815	1,938	2,759	2,213	227	7,137	8.6%	8.1%	6.8%
Metal Processing	2,391	695	864	2,191	292	4,043	4.3%	4.6%	9.1%
Machinery	5,832	968	487	6,795	4,936	13,185	10.5%	15.0%	14.6%
Transport Equipment	1,514	398	201	1,233	1,613	3,444	2.7%	3.9%	14.7%
Other Manufacturing	1,540	660	820	734	54	2,268	2.8%	2.6%	6.7%

Source: JICA Study Team

### (3) GVA under Globalization Drive and High-Tech High Services

Growth of manufacturing GVA solely under the Internal Integration is around 5% per annum. To retain the GVA worth ₱88.2 billion in 2016, the remaining ₱43.4 billion will be borne by export-oriented and high tech industries as already identified in the previous sub-section. The remaining GVA is allocated to them: 75% to export-oriented industry and 25% to high tech industry. This allocation is based on the two industries' development stages and investment conditions in the DIDP Area; investments will progress in export-oriented industry earlier and widely than high tech industry. In other words, it will take a long time for high tech industry to locate its factory in remote areas from Davao City, and vice versa.

Sub-sector structure of export-oriented industry in 2016 is set up based on its average shares between the Philippines and Region XI (arithmetical mean of GVA, Table 21). Likewise, the structure of high tech industry is fixed based on its average shares between the Philippines and Japan (Table 22). Table 24 shows the results from above procedures.

### (4) Employment and labor productivity

Table 25 shows employment and labor productivity by manufacturing sub-sector. Differences of labor productivity between the sub-sectors are considered in calculating the number of workers corresponding to GVA. Average labor productivity under the High-Tech High Services strategy is highest in 2016. Productivity under the Internal Integration is higher in any phase than that of export-oriented industry under the Globalization Drive. These differences are due mainly to the sub-sector structures.

For example, the Internal Integration strategy includes capital-intensive petroleum refinery and cement factory, of which labor productivity is very high. It also includes highly productive food industries.

**Table 25. Employment and Labor Productivity by Sub-sector and by Phase**

	Employment (persons)				Productivity ('000 Pesos/worker)				Productivity: AAGR					
	Phase 1		Phase 2		Phase 2		Phase 3		Phase 1		Phase 2		Phase 3	
	1995	2004	2010	2016	1995	2004	2010	2016	96-16	96-04	05-10	11-16		
<b>Manufacturing Total</b>	<b>53,391</b>	<b>89,413</b>	<b>141,037</b>	<b>185,000</b>	<b>287</b>	<b>328</b>	<b>395</b>	<b>477</b>	<b>2.4%</b>	<b>2.3%</b>	<b>3.1%</b>	<b>3.2%</b>		
Food/Beverage/Tobacco	16,922	24,248	32,006	37,421	467	570	664	796	2.6%	3.4%	2.6%	3.1%		
Textiles/Garments/Leather	10,598	19,727	33,403	43,553	116	135	167	209	2.8%	2.6%	3.6%	3.8%		
Wood/Cork/Cane/Bamboo	4,912	7,396	10,575	12,876	238	285	341	417	2.7%	3.0%	3.0%	3.4%		
Furniture	4,048	5,809	7,878	9,354	124	151	179	218	2.7%	3.3%	3.9%	3.3%		
Paper/Publishing/Printing	2,483	2,894	3,176	3,349	205	264	302	347	2.5%	4.3%	2.3%	2.3%		
Chemicals/Rubber/Plastics	1,893	2,945	4,807	7,362	494	647	889	973	3.3%	4.6%	5.4%	1.5%		
Petroleum Products		0	500	500	0	0	7,000	7,000	0.0%	0.0%	0.0%	0.0%		
Non-Metallic Mineral Prds.	2,145	3,991	5,841	7,173	596	721	834	995	2.5%	3.2%	2.5%	3.0%		
Metal Processing	3,106	6,572	11,412	15,270	148	174	216	265	2.8%	2.7%	3.7%	3.5%		
Machinery	3,028	8,060	18,922	31,020	211	264	373	425	3.4%	3.8%	5.9%	2.2%		
Transport Equipment	1,131	2,246	4,527	7,366	232	302	423	468	3.4%	4.5%	5.8%	1.7%		
Other Manufacturing	3,125	5,527	7,991	9,756	139	168	194	232	2.5%	3.2%	2.4%	3.0%		

Source: JICA Study Team

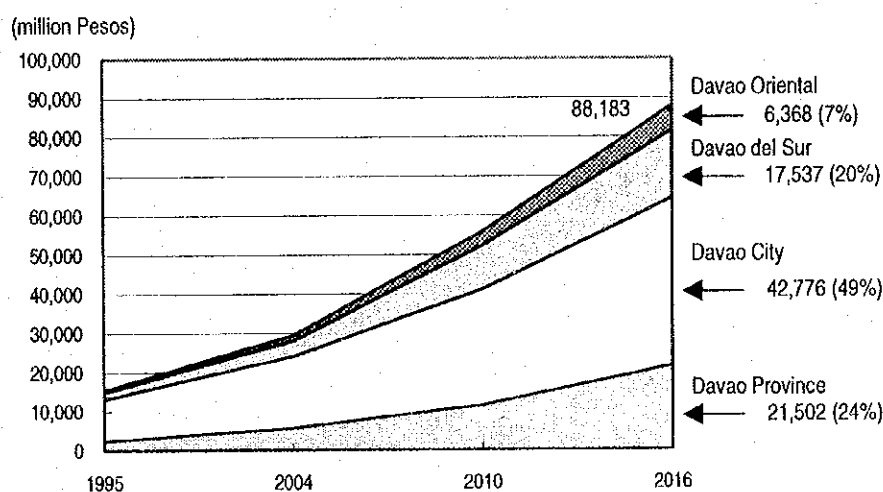
## 5.1.2. Manufacturing framework by province/City

### (1) Manufacturing GVA by province/City

#### Decentralization from Davao City toward the year 2016

Figure 31 summarizes the provincial/City's manufacturing GVA allocated in 2016: ₱21.5 billion to Davao Province, ₱42.8 billion to Davao City, ₱17.5 billion to Davao del Sur, and ₱6.4 billion to Davao Oriental. In terms of their shares of the DIDP Area total, Davao Province gets the largest increase, i.e., 9 percentage points increase from 15% in 1995 to 24% in 2016, due mainly to GVA increase in export-oriented industries. Second is Davao del Sur adding 8% to 12% in 1995 due to GVA increase related to agri-industrialization and export-oriented industries. Davao Oriental gets 4 percentage points increase from 3% in 1995 to 7% in 2016 on account of high tech industry. On the other hand, Davao City loses some 20% from 69% in 1995 to 49% in 2016 (Table 26).

**Figure 31 Summary of DIDP Manufacturing GVA by Province/City**



Thus, manufacturing decentralization from Davao City is assumed in the long term. Such a framework of manufacturing production is established based on the considerations as shown in Figure 32.

#### GVA allocation under Internal Integration

GVA under this strategy comprises production of existing DIDP industries as of 1995 and by new industries/agri-industries. The DIDP GVA of the existing industries by sub-sector is distributed by shares of the three provinces and City in 1995.

The DIDP GVA by agri-industrialization is distributed by provincial and City's shares calculated from allocation ratios and locational shares as shown in the formula in Table 27. The allocation ratios are set for four locational factors; existing agglomeration (EA), labor/population (LP), agriculture GVA (AGVA), and other factors (OF). These factors have implications on the GVA allocation as follows.

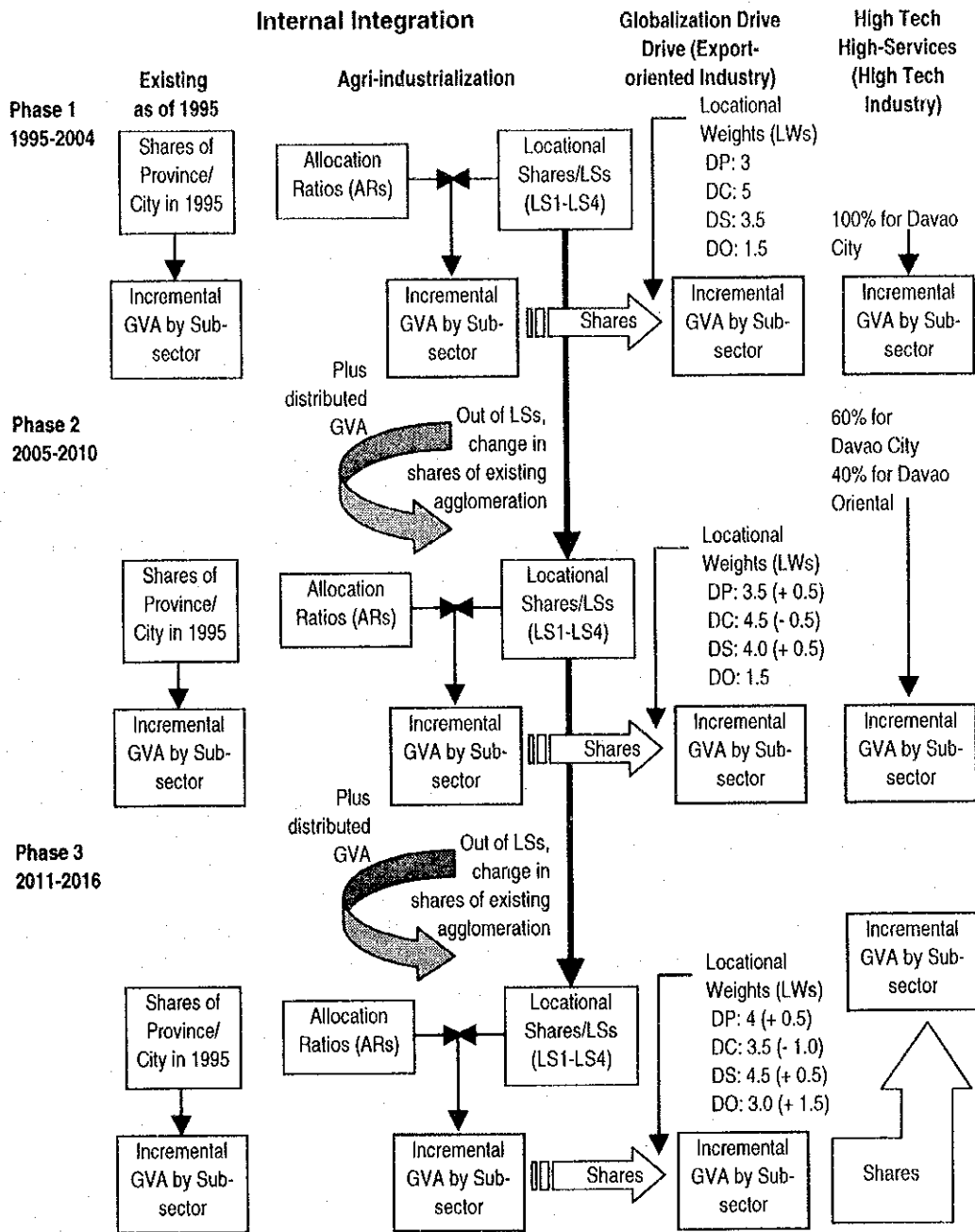
**Table 26 Summary of Provincial/City's Manufacturing GVA by DIDP Strategy**

Davao Province	Annual Average Growth Rates				Shares of DIDP Total			
	1996-2016	1996-2004	2005-2010	2011-2016	1995	2004	2010	2016
Manufacturing GVA Total	11.1%	10.1%	12.4%	11.2%	15%	19%	20%	24%
	GVA (million Pesos in 1995 constant prices)				GVA Structure			
	1995	2004	2010	2016	1995	2004	2010	2016
<b>Manufacturing Total</b>	<b>2,365</b>	<b>5,636</b>	<b>11,372</b>	<b>21,502</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Internal Integration		4,852	6,818	8,815		86%	60%	41%
Existing as of 1995		2,827	3,184	3,585		50%	28%	17%
Agri-industrialization		2,025	3,634	5,230		36%	32%	24%
Globalization Drive		784	4,554	9,889		14%	40%	46%
High Tech-High Services		0	0	2,799		0%	0%	13%
<b>Davao City</b>	Annual Average Growth Rates				Shares of DIDP Total			
	1996-2016	1996-2004	2005-2010	2011-2016	1995	2004	2010	2016
Manufacturing GVA Total	6.8%	6.2%	8.3%	6.3%	69%	62%	53%	49%
	GVA (million Pesos in 1995 constant prices)				GVA Structure			
	1995	2004	2010	2016	1995	2004	2010	2016
<b>Manufacturing Total</b>	<b>10,644</b>	<b>18,293</b>	<b>29,587</b>	<b>42,776</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Internal Integration		15,897	19,697	23,730		87%	67%	55%
Existing as of 1995		12,721	14,326	16,133		70%	48%	38%
Agri-industrialization		3,176	5,371	7,596		17%	18%	18%
Globalization Drive		1,855	8,050	14,136		10%	27%	33%
High Tech-High Services		541	1,840	4,911		3%	6%	11%
<b>Davao del Sur</b>	Annual Average Growth Rates				Shares of DIDP Total			
	1996-2016	1996-2004	2005-2010	2011-2016	1995	2004	2010	2016
Manufacturing GVA Total	11.4%	9.1%	18.8%	7.7%	12%	14%	20%	20%
	GVA (million Pesos in 1995 constant prices)				GVA Structure			
	1995	2004	2010	2016	1995	2004	2010	2016
<b>Manufacturing Total</b>	<b>1,824</b>	<b>4,000</b>	<b>11,268</b>	<b>17,537</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Internal Integration		3,475	8,264	9,581		87%	73%	55%
Existing as of 1995		2,180	2,455	2,765		55%	22%	16%
Agri-industrialization		1,294	5,808	6,816		32%	52%	39%
Globalization Drive		525	3,004	6,449		13%	27%	37%
High Tech-High Services		0	0	1,507		0%	0%	9%
<b>Davao Oriental</b>	Annual Average Growth Rates				Shares of DIDP Total			
	1996-2016	1996-2004	2005-2010	2011-2016	1995	2004	2010	2016
Manufacturing GVA Total	13.1%	12.7%	16.5%	10.3%	3%	5%	6%	7%
	GVA (million Pesos in 1995 constant prices)				GVA Structure			
	1995	2004	2010	2016	1995	2004	2010	2016
<b>Manufacturing Total</b>	<b>483</b>	<b>1,413</b>	<b>3,535</b>	<b>6,368</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Internal Integration		1,323	2,007	2,692		94%	57%	42%
Existing as of 1995		578	651	733		41%	18%	12%
Agri-industrialization		746	1,357	1,959		53%	38%	31%
Globalization Drive		89	662	2,068		6%	19%	32%
High Tech-High Services		0	866	1,607		0%	24%	25%
<b>DIDP Total</b>	Annual Average Growth Rates				Shares of DIDP Total			
	1996-2016	1996-2004	2005-2010	2011-2016	1995	2004	2010	2016
Manufacturing GVA Total	8.7%	7.5%	11.3%	7.9%	100%	100%	100%	100%
	GVA (million Pesos in 1995 constant prices)				GVA Structure			
	1995	2004	2010	2016	1995	2004	2010	2016
<b>Manufacturing Total</b>	<b>15,318</b>	<b>29,342</b>	<b>55,763</b>	<b>88,183</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Internal Integration		25,546	36,786	44,817		87%	66%	51%
Existing as of 1995		18,306	20,616	23,217		62%	37%	26%
Agri-industrialization		7,240	16,170	21,601		25%	29%	24%
Globalization Drive		3,254	16,271	32,542		11%	29%	37%
High Tech-High Services		541	2,706	10,824		2%	5%	12%

Source: JICA Study Team



Figure 32 Structure of DIDP Manufacturing GVA Allocation to Provinces/City



Source: JICA Study Team

- **Existing agglomeration (EA):** New industrial investments and locations tend to be attracted in the areas where industries are already agglomerated. Such agglomeration represents good infrastructure, inter-industry linkages including relevant technology, and business supporting services as well as the presence of industrialists/potential investors. Practically, Davao City is the center of manufacturing and investments. The City had collected more than 80% of BOI registered investments during 1990-1997. This factor is applied to all sub-sectors.
- **Labor/population (LP):** Provincial/City's shares on this factor are applied to

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seven sub-sectors consisting of the labor-intensive industries such as textiles, garments, machinery including electronics, and the local market-oriented non-metallic mineral products.

- **Agriculture GVA (AGVA):** This factor is used to allocate GVA of agri-processing and its related-industries producing food, wood products/furniture, metal processing (e.g., cutlery etc), and agricultural machinery.
- **Other factors (OF):** This factor is specific to the industry that has special conditions for its location e.g., waterfront/port for shipbuilding and repair as shown in Table 27. Policy emphasis is also taken into account, i.e., PAICs development for furniture, GTH, and jewelry industries.

Among these factors, provincial and City's shares in existing agglomeration change after Phase 1, and then new shares will be calculated by adding their already distributed GVA to GVA of 1995. This also takes into account the mechanism that increasing agglomeration might be conducive to cluster formation of agri-industries.

On the other hand, allocation ratio of the existing agglomeration decreases to Phase 3 from Phase 1 in view of industrial decentralization from Davao City. Also, a reduced difference in locational conditions, which is represented by improvement of infrastructure in remote areas, is taken into account to put forward both agri-industrialization and industrial decentralization.

#### **GVA allocation under Globalization Drive**

This is to allocate the DIDP incremental GVA of export-oriented industry to the three provinces and City. The shares, resulting from allocation of GVA under the Internal Integration strategy, are used coupled with locational weight. These represent their locational conditions as a whole.

Davao City's shares in GVA total under the strategy are 62% in 2004, 54% in 2010, and 53% in 2016. Its sub-sectors' shares are also reduced and saturated after Phase 2. If these shares are used solely for GVA allocation of export-oriented industry that relatively centers on labor-intensive ones, industrial decentralization will not progress much. Accordingly, locational weights are used to prepare provincial and City shares for reasonable allocation. These weights change from Phase 1 to Phase 3 in order to put forward industrial decentralization in the DIDP Area.

#### **GVA allocation under High Tech-High-Services**

This is to allocate the DIIDP incremental GVA of high tech industry to the three provinces and City.

High tech industry demands relatively a higher level of infrastructure and locational conditions such as public R&D institutes, universities/colleges, highly educated manpower, and agglomeration of supporting industries including services, among others. Such conditions are available at present only in Davao City. Thus, all GVA of high-tech industry is allocated to Davao City during Phase 1.

The incremental high tech GVA during Phase 2 is allocated to Davao City (60%) and Davao Oriental (40%), considering the presence of the Davao Oriental State College of Science and Technology in Mati as well as the progress of infrastructure improvement. This is a policy consideration for new high tech core formation in Davao Oriental.

**Table 27 Factors and Shares Relevant to Manufacturing GVA Allocation**

**I. Locational factors for allocation**

EA = existing agglomeration, LP = labor/population, AGVA = agriculture GVA, OF = other factors

**II. Allocation ratio (ARs) for incremental manufacturing GVA/workers (Total=1.0)**

	1996-2004/Phase 1				2005-2010/Phase 2				2011-2016/Phase 3			
	EA	LP	AGVA	OF	EA	LP	AGVA	OF	EA	LP	AGVA	OF
Food/Beverage/Tobacco	0.6		0.4		0.4	0.2	0.4		0.2	0.4	0.4	
Textiles/Garments/Leather	0.3	0.7			0.2	0.8			0.1	0.9		
Wood/Cork/Cane/Bamboo	0.6		0.4		0.4	0.2	0.4		0.2		0.8	
Furniture	0.6		0.2	0.2	0.4		0.3	0.3	0.2		0.4	0.4
Paper/Publishing/Printing	0.8	0.2			0.7	0.3			0.6	0.4		
Chemicals/Rubber/Plastics	0.6			0.4	0.4				0.2			0.8
Petroleum Products								1.0				
Non-Metallic Mineral Prds.	0.3	0.3		0.4	0.2	0.4		0.4	0.2	0.4		0.4
Metal Processing	0.6	0.3	0.1		0.4	0.5	0.1		0.2	0.6	0.2	
Machinery	0.6	0.2	0.2		0.4	0.3	0.3		0.2	0.4	0.4	
Transport Equipment	0.6	0.2		0.2	0.4	0.6			0.2	0.4		0.4
Other Manufacturing	0.6	0.2		0.2	0.4	0.3		0.3	0.2	0.4		0.4

**III. Locational Shares by province/City (LS1 -LS4)**

**LS1. Manufacturing GVA**

(EA) in 1995	DP	DC	DS	DO
Food/Beverage/Tobacco	11%	70%	15%	3%
Textiles/Garments/Leather	25%	55%	15%	5%
Wood/Cork/Cane/Bamboo	21%	75%	2%	2%
Furniture	27%	60%	8%	5%
Paper/Publishing/Printing	14%	77%	6%	3%
Chemicals/Rubber/Plastics	19%	72%	7%	1%
Petroleum Products				
Non-Metallic Mineral Prds.	4%	93%	3%	0%
Metal Processing	37%	54%	6%	3%
Machinery	25%	62%	8%	5%
Transport Equipment	22%	59%	13%	6%
Other Manufacturing	23%	45%	27%	5%

DP: Davao Province  
 DC: Davao City  
 DS: Davac del Sur  
 DO: Davao Oriental

Shares for GVA Allocation: Formula  
 = EA \*LS1+LP\*LS2+AGVA\*LS3+  
 LF4\*LS4  
 Note: Allocation ratios (ARs) change  
 between the three phases due to loca-  
 tional decentralization from Davao City.

Base Data (GVA in 1995)

GVA under Internal Integration/Agri-industrialization  
 Provincial and City's shares change after Phase 1 as  
 new shares will be calculated by adding their already  
 distributed GVA to GVA in 1995.

LS2. Labor/Population (LP)	36%	31%	21%	13%	← Representing market size and labor supply condition (Base Data (Population in 1995))
LS3. Agriculture GVA (AGVA)	40%	20%	22%	18%	← Representing linkages with agricultue/possible agri-processing (Base Data: GVA in 1995)
LS4. Other FactorsI (OF)					
• Specific to Furniture			50%	50%	← Representing policy emphasis (PAICs Developemnt)
• Specific to Chemicals, etc.	44%	12%	17%	28%	← Factor for location of water-intensive/oriented industry (Base Data: Water Potential)
• Petroleum:		100%			← Combined Location with power pants (Digos/del Sur)
• Specific to Non-Metallic Mineral Products	37%	25%	28%	10%	← Factor for location of land-intensive industris based on land potential (average between industrial area of RAICs/PAICs and area suitable for Urban Use)
• Specific to Transport Equipment	50%		50%		← Factor for location of port-oriented Industries (shipbuilding and repair etc.)
• Specific to Other Manufacturing	50%		25%	25%	← Representing policy emphasis (PAICs Developemnt-GTH/jewelry making)

Source: JICA Study Team

The incremental GVA during Phase 3 is allocated by provincial and City's shares which resulted from GVA allocation of export-oriented industry under the Globalization Drive strategy. Such shares could represent improved conditions for

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high tech industry location throughout the DIDP Area. Therefore, it is reasonable that they are used in view of pushing the further decentralization of industry.

#### **Details on allocated GVA by province/City**

These are shown in Table 28 through Table 31. These manufacturing GVA/frameworks by province/City are indicative, but might be reasonable in terms of a balanced development between Davao City and the three provinces of Davao Province, Davao del Sur, and Davao Oriental.

The manufacturing sub-sector in Davao City will grow while reducing its share in the whole of DIDP Area. This will be conducive to diversification of the industrial structure in Davao City as a whole, i.e., more high tech-high services oriented. Thus, the metropolis of Davao City in the BIMP-EAGA sub-regions will be viable, playing the roles of both manufacturing center and trade capital.

Substantially, Davao Province will be the export-base in the DIDP Area while supplementing Davao City's manufacturing functions. Practically, Tagum and Panabo in Davao Province will be major export base transformed from agri-export centers at present based on the progress of industrial estate development.

Davao del Sur will be an energy center in the DIDP Area as well as in Mindanao since the first petroleum refinery in Mindanao might be located, in addition to the planned power plants in Digos. Industrial estates planned in Santa Cruz will accommodate sizable numbers of export-oriented and high-tech factory.

Davao Oriental will be an agri-industrial center as well as a high tech center. The latter should be justified by the existence of the Davao Oriental State College of Science and Technology in Mati.

#### **(2) Manufacturing employment by province/City**

Employment corresponds to the manufacturing GVA allocated to the provinces and City. This means that there is no regional difference between provinces/City in terms of labor productivity of the same sub-sector, which is under the same DIDP regional development strategy. Practically, there may be a difference. However, GVA of the allocation is what will be produced by "new investments/new industries," and therefore it could be assumed that their labor productivity has no regional difference.

Table 32 shows employment allocated corresponding to the manufacturing GVA by province/City.

Employment in 2016 will total 50,260 workers in Davao Province, accounting for 27% of the DIDP total. This share is 3 percentage points higher than that of the manufacturing GVA, reflecting that the manufacturing in Davao Province is relatively labor-intensive. On the other hand, employment in Davao del Sur will total 31,130 workers, corresponding to 17% of the DIDP total, while its manufacturing GVA accounts for 20% mainly on account of less labor-intensive or capital-intensive petroleum refinery.

**Table 28 Manufacturing GVA/Development Framework of Davao Province**

(in 1995 constant prices)	GVA in 1995 Total	GVA in 2004/Phase 1 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globalization Dv.	High Tech	Total	1995	2004	96-2004
	Manufacturing Total	2,365	2,827	2,025	784		5,636	100.0%	100.0%
Food/Beverage/Tobacco	892	1,066	893	188		2,146	37.7%	38.1%	10.3%
Textiles/Garments/Leather	309	369	205	154		728	13.1%	12.9%	10.0%
Wood/Cork/Cane/Bamboo	243	290	144	58		493	10.3%	8.7%	8.2%
Furniture	136	163	44	15		222	5.8%	3.9%	5.5%
Paper/Publishing/Printing	70	83	28			111	2.9%	2.0%	5.4%
Chemicals/Rubber/Plastics	181	216	90	35		341	7.6%	6.1%	7.3%
Petroleum Products									
Non-Metallic Mineral Prds.	47	56	295	46		397	2.0%	7.0%	26.8%
Metal Processing	170	203	128	65		396	7.2%	7.0%	9.9%
Machinery	159	190	61	170		421	6.7%	7.5%	11.4%
Transport Equipment	59	70	26	32		128	2.5%	2.3%	9.0%
Other Manufacturing	101	120	111	22		253	4.3%	4.5%	10.8%
(in 1995 constant prices)	GVA in 2004 Total	GVA in 2010/Phase 2 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globalization Dv.	High Tech	Total	2004	2010	2005-10
	<b>Manufacturing Total</b>	<b>5,636</b>	<b>3,184</b>	<b>3,634</b>	<b>4,554</b>		<b>11,372</b>	<b>100.0%</b>	<b>100.0%</b>
Food/Beverage/Tobacco	2,146	1,200	1,613	1,130		3,943	38.1%	34.7%	7.0%
Textiles/Garments/Leather	728	416	362	867		1,645	12.9%	14.5%	9.5%
Wood/Cork/Cane/Bamboo	493	327	256	344		927	8.7%	8.1%	7.3%
Furniture	222	184	75	81		340	3.9%	3.0%	4.9%
Paper/Publishing/Printing	111	94	50			144	2.0%	1.3%	2.9%
Chemicals/Rubber/Plastics	341	243	161	204		608	6.1%	5.3%	6.6%
Petroleum Products									
Non-Metallic Mineral Prds.	397	63	541	285		889	7.0%	7.8%	9.4%
Metal Processing	396	228	224	366		818	7.0%	7.2%	8.4%
Machinery	421	214	108	973		1,296	7.5%	11.4%	13.3%
Transport Equipment	128	79	46	180		305	2.3%	2.7%	10.1%
Other Manufacturing	253	136	199	124		459	4.5%	4.0%	6.8%
(in 1995 constant prices)	GVA in 2010 Total	GVA in 2016/Phase 3 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globalization Dv.	High Tech	Total	2010	2016	2011-16
	<b>Manufacturing Total</b>	<b>11,372</b>	<b>3,585</b>	<b>5,230</b>	<b>9,889</b>	<b>2,799</b>	<b>21,502</b>	<b>100.0%</b>	<b>100.0%</b>
Food/Beverage/Tobacco	3,943	1,352	2,324	2,464		6,139	34.7%	28.6%	7.7%
Textiles/Garments/Leather	1,645	468	518	1,866		2,853	14.5%	13.3%	9.6%
Wood/Cork/Cane/Bamboo	927	368	367	755		1,490	8.1%	6.9%	8.2%
Furniture	340	207	107	168		482	3.0%	2.2%	6.0%
Paper/Publishing/Printing	144	105	72			178	1.3%	0.8%	3.6%
Chemicals/Rubber/Plastics	608	274	230	439	977	1,920	5.3%	8.9%	21.1%
Petroleum Products.									
Non-Metallic Mineral Prds	889	71	783	626	53	1,533	7.8%	7.1%	9.5%
Metal Processing	818	257	320	794	86	1,457	7.2%	6.8%	10.1%
Machinery	1,296	241	155	2,127	1,257	3,780	11.4%	17.6%	19.5%
Transport Equipment	305	89	65	390	411	956	2.7%	4.4%	21.0%
Other Manufacturing	459	153	287	260	15	715	4.0%	3.3%	7.7%

Source: JICA Study Team

**Table 29 Manufacturing GVA/Development Framework of Davao City**

(in 1995 constant prices)	GVA in 1995 Total	GVA in 2004/Phase 1 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	1995	2004	96-2004
<b>Manufacturing Total</b>	<b>10,644</b>	<b>12,721</b>	<b>3,176</b>	<b>1,855</b>	<b>541</b>	<b>18,293</b>	<b>100.0%</b>	<b>100.0%</b>	<b>6.2%</b>
Food/Beverage/Tobacco	5,532	6,611	1,549	543		8,703	52.0%	47.6%	5.2%
Textiles/Garments/Leather	680	812	237	296		1,345	6.4%	7.4%	7.9%
Wood/Cork/Cane/Bamboo	879	1,051	223	151		1,425	8.3%	7.8%	5.5%
Furniture	299	357	68	39		464	2.8%	2.5%	5.0%
Paper/Publishing/Printing	393	469	105			575	3.7%	3.1%	4.3%
Chemicals/Rubber/Plastics	675	806	120	78	185	1,188	6.3%	6.5%	6.5%
Petroleum Products									
Non-Metallic Mineral Prds.	1,193	1,426	520	135	11	2,092	11.2%	11.4%	6.4%
Metal Processing	247	295	142	121	15	573	2.3%	3.1%	9.8%
Machinery	397	474	86	399	247	1,207	3.7%	6.6%	13.1%
Transport Equipment	155	186	31	64	81	361	1.5%	2.0%	9.8%
Other Manufacturing	196	234	94	30	3	361	1.8%	2.0%	7.0%
(in 1995 constant prices)	GVA in 2004 Total	GVA in 2010/Phase 2 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	2004	2010	2005-10
<b>Manufacturing Total</b>	<b>18,293</b>	<b>14,326</b>	<b>5,371</b>	<b>8,050</b>	<b>1,840</b>	<b>29,587</b>	<b>100.0%</b>	<b>100.0%</b>	<b>8.3%</b>
Food/Beverage/Tobacco	8,703	7,445	2,624	2,352		12,421	47.6%	42.0%	4.0%
Textiles/Garments/Leather	1,345	915	408	1,292		2,614	7.4%	8.8%	7.7%
Wood/Cork/Cane/Bamboo	1,425	1,183	378	658		2,219	7.8%	7.5%	5.0%
Furniture	464	402	114	162		677	2.5%	2.3%	4.3%
Paper/Publishing/Printing	575	529	183			711	3.1%	2.4%	2.4%
Chemicals/Rubber/Plastics	1,188	908	203	334	629	2,074	6.5%	7.0%	6.4%
Petroleum Products									
Non-Metallic Mineral Prds.	2,092	1,605	862	564	39	3,070	11.4%	10.4%	4.4%
Metal Processing	573	332	242	525	50	1,149	3.1%	3.9%	8.0%
Machinery	1,207	534	148	1,764	839	3,286	6.6%	11.1%	11.8%
Transport Equipment	361	209	53	275	274	811	2.0%	2.7%	9.4%
Other Manufacturing	361	264	157	124	9	553	2.0%	1.9%	4.9%
(in 1995 constant prices)	GVA in 2010 Total	GVA in 2016/Phase 3 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	2010	2016	2011-16
<b>Manufacturing Total</b>	<b>29,587</b>	<b>16,133</b>	<b>7,596</b>	<b>14,136</b>	<b>4,911</b>	<b>42,776</b>	<b>100.0%</b>	<b>100.0%</b>	<b>6.3%</b>
Food/Beverage/Tobacco	12,421	8,384	3,714	4,139		16,237	42.0%	38.0%	4.6%
Textiles/Garments/Leather	2,614	1,030	580	2,253		3,863	8.8%	9.0%	6.7%
Wood/Cork/Cane/Bamboo	2,219	1,332	535	1,165		3,033	7.5%	7.1%	5.3%
Furniture	677	453	161	274		888	2.3%	2.1%	4.6%
Paper/Publishing/Printing	711	595	260			856	2.4%	2.0%	3.1%
Chemicals/Rubber/Plastics	2,074	1,022	288	583	1,666	3,559	7.0%	8.3%	9.4%
Petroleum Products									
Non-Metallic Mineral Prds.	3,070	1,808	1,210	992	105	4,115	10.4%	9.6%	5.0%
Metal Processing	1,149	374	343	919	128	1,765	3.9%	4.1%	7.4%
Machinery	3,286	602	211	3,117	2,313	6,242	11.1%	14.6%	11.3%
Transport Equipment	811	235	75	482	681	1,474	2.7%	3.4%	10.5%
Other Manufacturing	553	297	220	210	19	745	1.9%	1.7%	5.1%

Source: JICA Study Team

**Table 30 Manufacturing GVA/Development Framework of Davao del Sur**

(in 1995 constant prices)	GVA in 1995 Total	GVA in 2004/Phase 1 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	1995	2004	96-2004
<b>Manufacturing Total</b>	<b>1,824</b>	<b>2,180</b>	<b>1,294</b>	<b>525</b>	<b>4,000</b>	<b>100.0%</b>	<b>100.0%</b>	<b>9.1%</b>	
Food/Beverage/Tobacco	1,216	1,453	650	160	2,263	66.6%	56.6%	7.1%	
Textiles/Garments/Leather	182	217	117	103	437	10.0%	10.9%	10.3%	
Wood/Cork/Cane/Bamboo	25	30	57	27	114	1.4%	2.9%	18.4%	
Furniture	39	46	47	19	112	2.1%	2.8%	12.5%	
Paper/Publishing/Printing	30	36	14		50	1.7%	1.2%	5.7%	
Chemicals/Rubber/Plastics	68	81	34	15	130	3.7%	3.3%	7.6%	
Petroleum Products									
Non-Metallic Mineral Prds.	35	42	200	36	278	1.9%	7.0%	25.7%	
Metal Processing	29	35	47	28	110	1.6%	2.7%	15.9%	
Machinery	52	62	29	93	184	2.8%	4.6%	15.1%	
Transport Equipment	33	40	18	26	84	1.8%	2.1%	10.8%	
Other Manufacturing	116	138	82	19	239	6.3%	6.0%	8.4%	
(in 1995 constant prices)	GVA in 2004 Total	GVA in 2010/Phase 2 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	2004	2010	2005-10
<b>Manufacturing Total</b>	<b>4,000</b>	<b>2,455</b>	<b>5,808</b>	<b>3,004</b>	<b>11,268</b>	<b>100.0%</b>	<b>100.0%</b>	<b>18.8%</b>	
Food/Beverage/Tobacco	2,263	1,637	1,149	906	3,692	56.6%	32.8%	5.6%	
Textiles/Garments/Leather	437	245	207	569	1,020	10.9%	9.1%	9.9%	
Wood/Cork/Cane/Bamboo	114	34	105	165	303	2.9%	2.7%	11.5%	
Furniture	112	52	85	109	246	2.8%	2.2%	9.2%	
Paper/Publishing/Printing	50	41	25		65	1.2%	0.6%	3.0%	
Chemicals/Rubber/Plastics	130	91	61	88	240	3.3%	2.1%	7.0%	
Petroleum Products			3,500		3,500		31.1%		
Non-Metallic Mineral Prds.	278	48	366	221	634	7.0%	5.6%	9.6%	
Metal Processing	110	39	86	168	293	2.7%	2.6%	11.5%	
Machinery	184	70	51	533	654	4.6%	5.8%	15.2%	
Transport Equipment	84	45	32	146	223	2.1%	2.0%	11.5%	
Other Manufacturing	239	156	142	99	397	6.0%	3.5%	5.8%	
(in 1995 constant prices)	GVA in 2010 Total	GVA in 2016/Phase 3 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	2010	2016	2011-16
<b>Manufacturing Total</b>	<b>11,268</b>	<b>2,765</b>	<b>6,816</b>	<b>6,449</b>	<b>1,507</b>	<b>17,537</b>	<b>100.0%</b>	<b>100.0%</b>	<b>7.7%</b>
Food/Beverage/Tobacco	3,692	1,843	1,646	1,955		5,444	32.8%	31.0%	6.7%
Textiles/Garments/Leather	1,020	275	297	1,212		1,784	9.1%	10.2%	9.8%
Wood/Cork/Cane/Bamboo	303	38	151	358		547	2.7%	3.1%	10.3%
Furniture	246	58	123	225		406	2.2%	2.3%	8.7%
Paper/Publishing/Printing	65	46	35			81	0.6%	0.5%	3.7%
Chemicals/Rubber/Plastics	240	102	87	188	414	791	2.1%	4.5%	22.0%
Petroleum Products	3,500		3,500			3,500	31.1%	20.0%	
Non-Metallic Mineral Prds.	634	54	529	480	40	1,103	5.6%	6.3%	9.7%
Metal Processing	293	44	125	362	39	569	2.6%	3.2%	11.7%
Machinery	654	79	73	1,151	674	1,978	5.8%	11.3%	20.3%
Transport Equipment	223	50	46	313	328	738	2.0%	4.2%	22.1%
Other Manufacturing	397	175	203	204	12	594	3.5%	3.4%	7.0%

Source: JICA Study Team

**Table 31 Manufacturing GVA/Development Framework of Davao Oriental**

(in 1995 constant prices)	GVA in 1995 Total	GVA in 2004/Phase 1 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	1995	2004	96-2004
<b>Manufacturing Total</b>	<b>483</b>	<b>578</b>	<b>746</b>	<b>89</b>		<b>1,413</b>	<b>100.0%</b>	<b>100.0%</b>	<b>12.7%</b>
Food/Beverage/Tobacco	265	317	362	25		705	54.9%	49.9%	11.5%
Textiles/Garments/Leather	56	66	63	16		146	11.5%	10.3%	11.3%
Wood/Cork/Cane/Bamboo	21	25	46	6		77	4.3%	5.4%	15.5%
Furniture	27	32	43	5		80	5.6%	5.6%	12.8%
Paper/Publishing/Printing	17	21	8			29	3.6%	2.0%	5.8%
Chemicals/Rubber/Plastics	12	14	41	5		61	2.4%	4.3%	20.0%
Petroleum Products									
Non-Metallic Mineral Prds.	4	4	89	5		98	0.8%	6.9%	44.0%
Metal Processing	13	16	28	5		49	2.7%	3.5%	15.8%
Machinery	30	36	19	17		73	6.3%	5.1%	10.2%
Transport Equipment	15	18	5	2		26	3.2%	1.8%	6.0%
Other Manufacturing	23	27	42	3		72	4.8%	5.1%	13.5%
(in 1995 constant prices)	GVA in 2004 Total	GVA in 2010/Phase 2 (million Pesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	2004	2010	2005-10
<b>Manufacturing Total</b>	<b>1,413</b>	<b>651</b>	<b>1,357</b>	<b>662</b>	<b>866</b>	<b>3,535</b>	<b>100.0%</b>	<b>100.0%</b>	<b>16.5%</b>
Food/Beverage/Tobacco	705	357	658	192		1,207	49.9%	34.1%	6.2%
Textiles/Garments/Leather	146	75	113	113		301	10.3%	8.5%	8.4%
Wood/Cork/Cane/Bamboo	77	28	83	47		159	5.4%	4.5%	8.4%
Furniture	80	36	78	36		150	5.6%	4.2%	7.3%
Paper/Publishing/Printing	29	23	15			38	2.0%	1.1%	3.1%
Chemicals/Rubber/Plastics	61	16	75	40	296	427	4.3%	12.1%	24.2%
Petroleum Products									
Non-Metallic Mineral Prds.	98	5	163	36	18	222	6.9%	6.3%	9.6%
Metal Processing	49	18	52	37	23	130	3.5%	3.7%	11.5%
Machinery	73	41	34	127	395	596	5.1%	16.9%	26.4%
Transport Equipment	26	21	9	15	129	174	1.8%	4.9%	23.6%
Other Manufacturing	72	31	76	20	4	131	5.1%	3.7%	7.0%
(in 1995 constant prices)	GVA in 2010 Total	GVA in 2016/Phase 3 (millionPesos)					Structure (%)		AAGR (%)
		Existing as of 1995	Agri-indst.	Globaliz-ation Dv.	High Tech	Total	2010	2016	2011-16
<b>Manufacturing Total</b>	<b>3,535</b>	<b>733</b>	<b>1,959</b>	<b>2,068</b>	<b>1,607</b>	<b>6,368</b>	<b>100.0%</b>	<b>100.0%</b>	<b>10.3%</b>
Food/Beverage/Tobacco	1,207	402	950	602		1,954	34.1%	30.7%	8.4%
Textiles/Garments/Leather	301	84	162	349		596	8.5%	9.4%	12.1%
Wood/Cork/Cane/Bamboo	159	32	120	150		302	4.5%	4.7%	11.3%
Furniture	150	41	112	107		260	4.2%	4.1%	9.6%
Paper/Publishing/Printing	38	26	21			47	1.1%	0.7%	3.7%
Chemicals/Rubber/Plastics	427	18	108	124	645	894	12.1%	14.0%	13.1%
Petroleum Products									
Non-Metallic Mineral Prds.	222	6	237	113	30	386	6.3%	6.1%	9.6%
Metal Processing	130	20	76	117	39	252	3.7%	4.0%	11.6%
Machinery	596	46	48	399	692	1,186	16.9%	18.6%	12.1%
Transport Equipment	174	23	13	48	192	277	4.9%	4.3%	8.0%
Other Manufacturing	131	35	111	60	9	214	3.7%	3.4%	8.5%

Source: JICA Study Team



**Table 32 Manufacturing Framework: Employment by Province/City**

	Davao Province				Davao City			
		Phase1	Phase 2	Phase 3		Phase1	Phase 2	Phase 3
	1995	2004	2010	2016	1995	2004	2010	2016
<b>Manufacturing Total</b>	<b>12,095</b>	<b>21,664</b>	<b>35,565</b>	<b>50,261</b>	<b>32,165</b>	<b>50,110</b>	<b>73,445</b>	<b>89,777</b>
<b>(shares of DIDP Total)</b>	<b>(23%)</b>	<b>(24%)</b>	<b>(19%)</b>	<b>(27%)</b>	<b>(60%)</b>	<b>(56%)</b>	<b>(52%)</b>	<b>(49%)</b>
Food/Beverage/Tobacco	3,057	4,857	6,931	8,469	10,330	13,869	17,399	19,584
Textiles/Garments/Leather	2,702	5,428	9,787	13,327	5,836	9,977	15,752	19,243
Wood/Cork/Cane/Bamboo	1,175	1,873	2,833	3,598	3,441	4,760	6,333	7,313
Furniture	1,202	1,571	2,008	2,335	2,239	2,924	3,669	4,109
Paper/Publishing/Printing	354	429	482	514	1,871	2,150	2,336	2,451
Chemicals/Rubber/Plastics	359	578	871	1,765	1,390	2,057	3,036	3,995
Petroleum Products		0	0	0		0	0	0
Non-Metallic Mineral Prds.	244	712	1,226	1,627	1,647	2,573	3,403	3,940
Metal Processing	1,220	2,367	3,977	5,469	1,555	3,235	5,403	6,813
Machinery	793	1,847	4,168	8,269	1,804	5,066	10,780	15,606
Transport Equipment	266	494	916	1,880	646	1,329	2,448	3,407
Other Manufacturing	723	1,508	2,364	3,007	1,406	2,169	2,885	3,316
	Davao del Sur				Davao Oriental			
		Phase1	Phase 2	Phase 3		Phase1	Phase 2	Phase 3
	1995	2004	2010	2016	1995	2004	2010	2016
<b>Manufacturing Total</b>	<b>6,962</b>	<b>12,934</b>	<b>22,208</b>	<b>31,135</b>	<b>2,169</b>	<b>4,704</b>	<b>9,819</b>	<b>13,828</b>
<b>(shares of DIDP Total)</b>	<b>(13%)</b>	<b>(14%)</b>	<b>(12%)</b>	<b>(17%)</b>	<b>(4%)</b>	<b>(5%)</b>	<b>(7%)</b>	<b>(7%)</b>
Food/Beverage/Tobacco	2,891	4,245	5,784	6,937	644	1,277	1,891	2,431
Textiles/Garments/Leather	1,574	3,258	6,024	8,258	486	1,063	1,839	2,726
Wood/Cork/Cane/Bamboo	161	454	898	1,247	135	308	511	718
Furniture	355	770	1,342	1,758	252	543	859	1,153
Paper/Publishing/Printing	164	200	227	243	94	116	131	141
Chemicals/Rubber/Plastics	106	193	313	690	38	117	586	912
Petroleum Products		0	500	500	0	0	0	0
Non-Metallic Mineral Prds.	230	555	923	1,213	24	150	288	393
Metal Processing	228	677	1,395	2,056	103	294	637	932
Machinery	272	828	2,087	4,281	159	318	1,887	2,865
Transport Equipment	150	326	662	1,427	69	98	501	652
Other Manufacturing	831	1,427	2,053	2,527	165	422	689	905

Source: JICA Study Team

**5.1.3. Demand for industrial land and water**

Table 33 shows the results of forecast on industrial land and water, based on the incremental workers from 1995 up to the year 2016 and relevant parameters. Required industrial land and water will total 1,136 ha and 80,080 m<sup>3</sup>/day, respectively in the DIDP Area.

The incremental workers of 101,186 in total during 1996-2016 are workers in the establishment with 20 or more workers, accounting for 77% of 131,609 in all manufacturing establishments. This incremental workers are used for the demand forecast to avoid over-estimation, since small enterprises/factories have been mostly household/livelihood businesses not resulting to land/water development in view of planning.

Demand for industrial land to be developed up to the year 2016 will amount to 318 ha in Davao Province against on-going 445 ha, 499 ha in Davao City against the planned 512 ha, 216 ha in Davao del Sur against the planned 514 ha, and 103 ha in Davao Oriental (Refer to Table 18.).

**Table 33 Demand for Industrial Land and Water**

	(1) Incremental Workers from 1995			(2) Averaged Parameters	(3) Required Demand of Water (m <sup>3</sup> /day)		
	2004	2010	2016	in 2016 (m <sup>3</sup> /day per worker)	2004	2010	2016
<b>DIDP Total</b>	<b>26,785</b>	<b>66,550</b>	<b>101,186</b>	<b>0.79</b>	<b>21,675</b>	<b>54,140</b>	<b>80,088</b>
Davao Province	7,111	17,692	29,367	0.74	5,557	13,229	21,796
Davao City	13,503	31,557	44,419	0.78	11,065	24,818	34,681
Davao del Sur	4,367	11,443	18,433	0.89	3,503	11,333	16,374
Davao Oriental	1,803	5,857	8,967	0.81	1,550	4,759	7,237
	(4) Required Factory Site			(5) Averaged Parameters	(6) Land Area to be Developed ( (4) / 0.8)		
	2004 (ha)	2010 (ha)	2016 (ha)	in 2016 (workers per ha)	2004 (ha)	2010 (ha)	2016 (ha)
<b>DIDP Total</b>	<b>246.6</b>	<b>607.1</b>	<b>908.7</b>	<b>111</b>	<b>308</b>	<b>759</b>	<b>1,136</b>
Davao Province	64.3	153.9	254.4	115	80	192	318
Davao City	126.3	285.0	398.9	111	158	356	499
Davao del Sur	38.6	113.6	172.8	107	48	142	216
Davao Oriental	17.4	54.6	82.6	109	22	68	103

**Formula and parameters for demand forecast**

	Ratio for Demand Forecast	Parameters Water (m <sup>3</sup> /day per worker)	Site (workers per ha)	
Food/Beverage/Tobacco	58.0%	2.00	100	<b>Ratio for Demand Forecast =</b> Workers of manufacturing establishments with 20 or more workers / All workers (base data: 1993 Annual Survey of Establishments-Manufacturing)  <b>Parameters :</b> based on Japanese industrial statistics and existing examples of factory available in some ASEAN countries  <b>Water Demand by Sub-sector =</b> Workers * Ratio for Demand Forecast * Parameter  <b>Factory Site Demand by Sub-sector =</b> (Workers * Ratio for Demand Forecast) / Parameter
Textiles/Garments/Leather	81.9%	0.50	250	
Wood/Cork/Cane/Bamboo	75.5%	0.30	60	
Furniture	53.3%	0.30	80	
Paper/Publishing/Printing	78.7%	0.50	80	
Chemicals/Rubber/Plastics	95.1%	2.00	60	
Petroleum Products	100.0%	6.00	25	
Non-Metallic Mineral Prds.	67.9%	1.20	40	
Metal Processing	65.4%	0.80	80	
Machinery	88.4%	0.50	160	
Transport Equipment	89.1%	0.40	100	
Other Manufacturing	81.4%	0.25	150	

Source: JICA Study Team

Not all demand for industrial land will be satisfied by industrial estate (IE). Some new factories will locate at sites outside of IE. Also, not all the above planned land development will be prepared for IE to accommodate factories. For example in Davao del Sur, planned area amounting to 514 ha is much larger than 216 ha projected by the Study, but some developers have a plan not only to develop IE, but also to develop the land for other use such as residence or new town.

In any case, the demand forecast is indicative, but might provide a guideline for IE developers and water development in the DIDP Area.

**5.2. Development Projects and Programs**

Many activities should be integrated into the projects/programs well guided by the strategies already set up to attain the DIDP manufacturing development goal and vision. They could be divided into two categories: pipeline and regular (PR), and DIDP projects/programs newly proposed by the Study.

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The PR projects/programs correspond to the basic/common strategy, and will be successively carried out throughout the three development phases; Phase 1 (1999-2004), Phase 2 (2005-2010), and Phase 3 (2011-2016). DIDP projects/programs are derived from the specific strategies under the DIDP regional development strategy; Internal Integration, Globalization Drive, and High Tech-High Services.

### **5.2.1. Pipeline and regular projects/programs**

Table 34 summarizes pipeline and regular (PR) projects/programs, and almost all of them are already outlined in sub-section 4.2.2.

#### **(1) Pipeline projects**

Among the PR projects/programs, there are four pipeline projects/programs. Building construction of the Regional Trade, Design, Development, and Exposition (RTDDE) -DTI Region XI is expected to be implemented as fast as possible. Another option for RTDDE is that it will be constructed as a component of the Davao Trade Business Center project to be proposed in the next sub-section. In that case, the construction will be implemented during Phase 2 (2005-2010).

The second pipeline project is a product testing laboratory planned by DTI Region XI, implementation of which is already requested from a foreign assistance agency.

The third is a heat treatment/testing laboratory planned by DTI Region XI. This laboratory may overlap its functions with those of the existing Regional Metals Testing Laboratory owned by DOST Region XI. If so, a proper demarcation or functional sharing between them will be necessary for the realization. In any case, heat treatment is crucial for mechanical and physical reinforcement of metals. This will contribute to the development of industries producing tool, cutlery, agricultural machinery, and its parts, which are strategic industries in the DIDP Area.

BOI-Mindanao Desk is also under the pipeline while the Cebu Desk is already operational at the BOI Head Office in Makati City, Metro Manila. Investment promotion activities might be more effective where potential investors are agglomerated. BOI-Mindanao Desk or DIDP Desk at Metro Manila will contribute to attracting and accelerating investments in the DIDP Area, including the ones by foreigners/FDI.

#### **(2) Regular projects/programs**

Public supports to manufacturing development have been well accommodated in the Philippines. Majority of regular projects/programs will be implemented as extension services of existing regular works by concerned agencies and organizations.

Most of existing manufacturers in the DIDP Area are SMEs. Thus, the following public supports or regular projects/programs including the Advisory Service Center for SME Industry are addressed mainly to SMEs.

#### **Integrated enterprise development-related**

Training and consultancy services will be undertaken mainly by DTI, which has managed "Entrepreneur Support Program" (ESP) funded by CIDA. The ESP will focus on training, management capability building, participation in trade fair, and other market-related functions. The DIDP manufacturers can also utilize these supports.

**Table 34 Pipeline and Regular Projects/Programs for DIDP Manufacturing Dev't**

Basic Strategy	Components of Strategy	Pipelined and Regular Projects/Programs
BS 1: Integrated Enterprise Dev't toward diversification of industrial structure ( to foster commercial businessmen and the first generation of industrialists active in new new business)	<ul style="list-style-type: none"> <li>• Training/Consultancy</li> <li>• R&amp;D Supports Including Technology Transfer</li> <li>• Supports to Marketing</li> <li>• Long-term Financing with Low Interests</li> <li>• Incubation</li> <li>• Intermediation of JV</li> <li>• Information Services</li> </ul>	<ul style="list-style-type: none"> <li>- Seminars etc for entrepreneurship ( DTI/BOI ) etc.</li> <li>- Advisory Service Center for SME Industry ( DTI )</li> <li>- Mindanao Investors Assistance Center ( DTI )</li> <li>- DTI ( design/product dev't ), DOST laboratories</li> <li>- DIDP universities/colleges</li> <li>- DTI ( trade fair/market matching)</li> <li>- Computerized Regional Trade Information Center (DTI)</li> <li>- Technology transfer/dev't ( DOST, TLRC )</li> <li>- DBP for new entrepreneurship in start-up</li> <li>- NDC ( venture capital for cottage/SMEs )</li> <li>- ( linked with DIDP universities/colleges )</li> <li>- DTI, Chamber of Commerce &amp; Industry (CCI)</li> <li>- DTI, DOST, CCI/Davao</li> </ul>
BS 2: Strengthening of Inter- industry Linkages for agri- industrialization	<ul style="list-style-type: none"> <li>• Market Matching</li> <li>• Exposition</li> <li>• Financing</li> <li>• Sourcing</li> <li>• R&amp;D Supports</li> <li>• Coordination/Intermediation</li> </ul>	<ul style="list-style-type: none"> <li>- DTI/BOI</li> <li>- DTI ( trade fair/market matching )</li> <li>- <u>Pipelined: Regional Trade, Design, Development and Exposition (Building)</u></li> <li>- DTI, DBP ( Window I-III), LBP, SSS etc.</li> <li>- DTI/BOI ( market matching etc ), contract farming</li> <li>- DIDP universities/colleges, DOST laboratories</li> <li>- Strengthening of PAIC offices</li> </ul>
BS 3: Productive Manpower Development toward innovation/ value development ( focusing on skilled labor/ technician: designer, craftsman, staff for marketing, quality control and R&D)	<ul style="list-style-type: none"> <li>• Worker Training</li> <li>• Instructor Training</li> <li>• Expert Exchanges Including Foreign Experts</li> <li>• Subsidy/Supports to On-The-Job Training</li> <li>• Networking/Coordination between Relevant Institutions</li> </ul>	<ul style="list-style-type: none"> <li>- Jewelry (DOST, DTI), Woodworking (DTI) etc.</li> <li>- DOST, DTI, DIDP universities/colleges</li> <li>- DOST, DTI, PCA, DA etc.</li> <li>- ( for specific technology of strategic industries )</li> <li>- Compensation for training ( additional deduction of 50% wages for 5 years: available by BOI )</li> <li>- Training expenses for ECOZONE enterprises</li> <li>- DTI, DOST, TVET, DIDP universities/colleges</li> </ul>
BS 4: Efficient R&D Promotion toward Innovation/value development and outward-orientation	<ul style="list-style-type: none"> <li>• Technical Advisory Services</li> <li>• Capability Strengthening of R&amp;D Institutes</li> <li>- Increasing Researchers, Support Staff and Advanced Facilities</li> <li>- Specializing in R&amp;D for Strategic Technologies/Industries</li> <li>- Promotion of Joint R&amp;D</li> <li>• Incentives to Promote In-house R&amp;D of Enterprises</li> </ul>	<ul style="list-style-type: none"> <li>- DOST, DTI/BOI</li> <li>- Public R&amp;D institutes including universities/ colleges and DOST institutes</li> <li>- <u>Pipelined: Product Testing Laboratory (DTI)</u></li> <li>- <u>Pipelined: Heat Treatment/Testing Lab (DTI)</u></li> <li>- Coordinators: DOST, DTI, LGUs/PAICs</li> <li>- BOI Incentive ( available )</li> </ul>
BS 5: Strategic Industrial Estate (IE) Dev't toward balanced development	<ul style="list-style-type: none"> <li>• Industrial Core Formation</li> <li>• Integration with Urbanization</li> <li>• Linking with Amenity Creation</li> <li>• Coupled with Modernization of Industries</li> </ul>	<ul style="list-style-type: none"> <li>- RAICs and PAICs</li> <li>- RAICs and PAICs</li> <li>- Coupled with residential area development</li> <li>- Urban redevelopment in Davao City etc.</li> </ul>
BS 6: Strong Investment Promotion toward outward-orientation while focusing on FDIs	<ul style="list-style-type: none"> <li>• Seminars, Mission etc.</li> <li>• Database on Potential Investors</li> <li>• Mindanao Desk/DIDP Desk</li> <li>• Partnership with Foreign Regions</li> <li>• Location of Flagship Enterprises</li> <li>• Promotion Video</li> <li>• Simplified Procedures</li> </ul>	<ul style="list-style-type: none"> <li>- DTI, LGUs, RAICs/PAICs (Use of Internet)</li> <li>- Mindanao Investors Assistance Center (DTI)</li> <li>- <u>Pipelined: BOI Manila</u></li> <li>- Utilization of "Sister City" etc.</li> <li>- Invitation program (DIDP-PMO, PAICs etc.)</li> <li>- DIDP Project Management Office (PMO) etc.</li> <li>- LGUs etc.</li> </ul>

Note: TLRC = Technology Livelihood Resource Center DBP = Development Bank of the Philippines

NDC = National Development Corporation LBP = Land Bank of the Philippines

SSS = Social Security System PCA = Philippine Coconut Authority

Source: JICA Study Team

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DTI and DOST Region XI and their provincial offices continue to play important roles in the DIDP manufacturing development. This is mainly because their functions are not devolved to LGUs except for industrial R&D services and transfer of appropriate technology, which being undertaken by provincial/City governments (Section 17, LDC 1991).

However, such industrial R&D and technology transfer services have not been substantially undertaken by the DIDP provinces/City due to lack of strong needs and lack of budget and/or capability.

Provincial R&D institute may be considered, but its realization relative to the manufacturing sub-sector may take a long time though the sub-sector will grow as forecasted by the Study. In this context, the DIDP universities/colleges will be mobilized for an efficient R&D and manpower training coupled with strengthening of existing public R&D institutes.

AS for marketing, DTI and its networked Computerized Regional Trade Information Center will contribute a lot. DIDP manufacturers also utilize Internet for sales promotion or marketing as well as searching technology and reduction of communication cost, among others.

Financing programs for enterprise development are available. DOST and TRLC provide loan for technology development and transfer. DBP supports start-up of new enterprises. NDC is functioning as a venture capital. A BIMP-EAGA fund for SMEs is already established and available in the DIDP Area.

Incubation might be viable supported by the DIDP universities/colleges. To this end, some of their facilities might be open to potential entrepreneurs with business idea and talent while mobilizing resources from outside.

In summary, the integrated enterprise development strategy is targeted to foster commercial businessmen and the first generation of industrialists in the DIDP Area. To this end, various activities mentioned above should be well organized to generate them. Incubation is one component of the strategy, and not limited to "high tech venture businesses."

According to the data compiled by the National Business Incubator Association (NBIA) in USA, there were 550 incubators in 1997. Clients by category of industry constituted; light industry 23%, services 40%, technology 22%, research 7%, and others 8%. By specific objective for promotion, minority and gender accounted for 33%, computer/software 11%, arts/crafts 12%, medical services/biotechnology 11%, food industry 5%, and others 38% (environmental technology, multi-media, new materials etc.).

The DIDP Area with many universities/colleges might be a good incubator for entrepreneurs. Their study courses are comprehensive while concentrating in commerce, business, and accountancy. However, incubation business is comprehensive, and need not only engineering and technology, but also various consultancy services including accounting, marketing, capital raising or financing, and law. In this regard, a sort of integrator/organizer to direct such incubation is a "must." DTI and DOST Region XI will play the role. Otherwise, DIDP-PMO might be such an integrator through mobilizing various resources at home and abroad.

Students are also potential entrepreneurs, researchers, and scientists. There are many working students in the DIDP Area. DOST has funded "Science and

Technology Scholarship Program (STSP) based on RA7687. Some 115 students (Bachelor of Science) in the DIDP Area have received STSP as shown in Table 35. In addition, the technician program has 124 students for three-year course, and 66 for two-year course. These students might be mobilized for the MOLT Program to be proposed in the next sub-section.

**Table 35 Recipients of DOST S&T Scholarship Program in DIDP Area (BS: 1994-1998)**

	Total	Ateneo	AMA	UIC	UM	UP Mindanao	USEP	USEP Tagum
Total	115	62	6	16	6	8	15	2
Computer Science	15	10	1	4				
Computer Engineering	14		5	9				
Chemical Engineering	21	18			3			
Electrical Engineering	4	4						
Mechanical Engineering	5	1			3		1	
Electronics/Computer Engineering	23	12		3			8	
Industrial Engineering	7	7						
Agricultural Engineering	2							2
BS Computer Technology	2						2	
Applied Mathematics	8					8		
Mathematics	6	2					4	
Chemistry	7	7						
Marine Biology								
BSE Physics	1	1						

Note: Ateneo = Ateneo de Davao University AMA = AMA Computer College UIM = University of the Immaculate Conception UM = University of Mindanao UP Mindanao = University of the Philippines-Mindanao USEP = University of Southeastern Philippines

Source: DOST Region XI

### **Strengthening of inter-industry linkages-related**

This strategy will be effected through the supports to market matching, exposition, financing, sourcing, and R&D. Respective supporting functions will be shouldered by respective agencies as shown in Table 34, but proper coordination or intermediation is also necessary for the inter-industry linking. To this end, PAIC offices as well as DTI Region XI will be the main players mandated to promote agri-industrialization.

### **Productive manpower development-related**

This strategy is directed to training of skilled labor/technician such as designer, craftsman, staff for marketing, quality control, and R&D. It is also well known throughout the world that highly skilled technicians play a crucial role in an efficient R&D, especially prototype fabrication even in high tech industry.

Training centers for jewelry making and woodworking are already existing in the DIDP Area in addition to many vocational schools. Successors of traditional skills in cultural communities should be respected and mobilized as instructors/trainers.

Retired engineers/technicians in strategic industries also will be mobilized as instructors/trainers. In addition, DOST and DTI Region XI, and the DIDP universities/colleges will foster instructors/trainers to attain advanced knowledge and skills. Transfer of proven technology is important, but sustenance of competitive technology ought to be ensured by advanced technology. Otherwise,

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growth of the DIDP industry is depending on a chance. In this context, expert exchange is meaningful and productive.

Borderless transfer of technology has a long history, and the transferred technology has been localized to generate new local technology. Such cultural impact is a source of growth. Foreign experts will introduce not only technology/techniques, but also know-how on industrial production system conducive to social integration. Socialized division of labor will contribute to productive agri-industrialization in the DIDP Area.

On-the-job training is productive. Incentives/compensations provided for the BOI and ECOZONE enterprises should be well utilized for investment promotion. In addition, similar incentives are expected to be applicable to the strategic industries of the DIDP Area, which are already identified in section 4.4.

Networking/coordination will be undertaken between DTI Region XI, DOST region XI, TVET, DIDP universities/colleges, and enterprises toward productive manpower development that matches well with the needs of industrial society. NEDA Region XI could lead such networking and coordination. Social Sector Report of the Study proposes the establishment of Triad Labor Market Information System.

#### **Efficient R&D promotion-related**

R&D activities should be oriented to and specialized in the strategic technologies and industries selected in section 4.4 to put forward agri-industrialization in the DIDP Area. According to the DOST Region XI Investment Plan (a guideline during 1994-1998, refer to Table), sizable amounts of budget are allocated to the development of proven technologies under the strategy of basic domestic needs. In other words, the DOST budget might have been used for technology transfer, assistance to starting-up business or consigned R&D.

DOST has its own financing programs: 1) special financing on technology/new products, 2) financing for mature technology endorsed by DOST to small farmer cooperatives, and 3) financing for commercialization of new products/technologies. In the DIDP Area, DOST Region XI is expected to focus more on new products/new technologies, while extending technical advisory services.

Capability strengthening of public R&D institutes will progress also through mobilizing foreign assistance. Increasing researchers, support staff, and advanced facilities is essential for fruitful R&D supports. DOST Region XI laboratories lack researchers and support staff. This situation will be addressed by the R&D Expert Development Program to be proposed in the next sub-section.

Given a limited resources, joint R&D should be promoted between public R&D institutes, universities/colleges, and enterprises toward an efficient R&D. To this end, PAIC offices should play an important role in coordinating the joint R&D.

In addition, the DIDP manufacturers have to mobilize the BOI incentives such as income tax holiday for six years as a pioneer status in order to strengthen their in-house R&D functions.

In summary, R&D supports will be shifted to level-up or innovation from bottom-up of technologies. In this context, strengthening of R&D capability in public institutes is a serious issue. Also, an appropriate technology appraisal will be needed to achieve an efficient R&D support by DOST. This will be addressed by

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the R&D Expert Development Program to be proposed in the next sub-section.

### **Strategic IE development-related**

Industrial estate (IE) development in the DIDP Area has been progressed well taking into account a spatially balanced development through PAICs/RAICs. In addition to on-going IE projects in Madum, Tagum, and three RAICs in Davao City, planned IE projects in Sta. Cruz, Davao del Sur are expected to be developed while responding adequately to demand-supply situations. Another IE development is expected to be materialized in Mati, Davao Oriental as well though land demand forecasted by the Study is only 83 ha up to the year 2016.

Some IE development might be implemented coupled with the modernization of existing factories, i.e., their collective relocation in line with urban redevelopment, especially in Davao City.

### **Strong investment promotion-related**

“No investment without promotion” has been well recognized among concerned agencies and organizations. DTI Region XI, RAIC developers, and PAIC offices will carry out investment promotion more actively, focusing on FDI. The Mindanao Investors Assistance Center-DTI Region XI will serve also as an information center on potential investors in the DIDP Area. A home page to sell the DIDP Area may be made available through Internet. The pipelined Mindanao/DIDP Desk will be established at the BOI Manila Office to attract more investors to the DIDP Area. Some investment promotion offices of PAIC will be constructed.

Partnership with foreign regions such as “Sister City” will be mobilized to attract FDI. An investment promotion video will be made and strongly instrumental to sell the DIDP Area to the world. Invitation of potential investors might be programmed targeting “Flagship Enterprises” whose investment will trigger the following and successive investments in the DIDP Area. Expanded BIMP-EAGA cooperation will be conducive to investments from the EAGA countries.

DIDP PMO may play a major role in the DIDP investment promotion in coordination with DTI/BOI Region XI, LGUs, and PAIC offices in terms of representing the DIDP Area as a whole.

#### **5.2.2. DIDP projects/programs by phase**

In addition to the pipeline and regular projects/programs, Table 36 summarizes DIDP projects/programs newly proposed by the Study. In line with strengthening of marketing, these also include two trade-related projects (Davao Trade Business Center and Davao Trade Corporation) as well as a BIMP-EAGA Construction Material Merchandising Center (CMMC).

All the DIDP projects/programs comprise an integrated project/program formulated by packaging some elements of specific strategies. Details on them are compiled in Project Report as a separate volume. They will be implemented and thereby put forward the DIDP manufacturing development as follows.

#### **Phase 1 (1999-2004)**

Manufacturing GVA will amount to ₱29.3 billion (in 1995 constant prices, the same hereinafter) in 2004 to grow by 7.5 % per annum from ₱15.3 billion in 1995. The growth will be led mainly by the Internal Integration strategy with agri-industrialization in the forefront.



**Table 36 DIDP Projects/Programs for Manufacturing Development**

SMEs IE = Integrated Small and Medium Enterprises (SMEs) Industrial Estate (IE) Development Program  
 RRE = Resource Recycling Estate Project ICD = Industrial Community Development Project  
 MOLT = More Like This (MOLT) Program DTBC = Davao Trade Business Center Project  
 DTC = Davao Trade Corporation Project R&D Expert = R&D Expert Development Program  
 BIMP TLP = BIMP-EAGA R&D Triad Linkages Program  
 CMMC = BIMP-EAGA Construction Materials Merchandising Center Project (proposed in Chapter 2)

Specific Strategies / Components of Strategies	SMEs IE	RRE	ICD	MOLT	DTBC	DTC	R&D Expert	BIMP-TLP	CM-MC
Dev't Phase: 1(1999-2004), (2005-10), 3(2011-16)	1-2	2	2	1	1-2	1	2	2-3	1-2
<b>Under Internal Integration Strategy</b>									
1. Productivity Enhancement and Market Development	☰	☰		☰					☰
1) Enhancement of Total Quality Management (TQC)				☰					☰
• Inspection/Testing System				☰					☰
• Manpower Dev't / R&D	☰			☰					☰
• Mobilization of Industrial Associations/Cooperatives	☰								☰
2) Strengthening of Market Functions									
• Convention Industry					☰				
• "By Davao/Buy Davao"	☰				☰	☰			☰
• Regional Trade Corp.	☰				☰	☰			
2. Formation of Industrial Complex	☰	☰							
• Industrial Clustering / Agri-industrial Villages	☰	☰							
• IE development	☰	☰	☰						
• Resource-recycling		☰							
• Integration with Urban Development/Linked with Amenity Creation			☰						
<b>Under Globalization Drive Strategy</b>									
1. Dev't of Consolidated Export Base	☰		☰						
• EPZ/SEZ			☰						
• Davao Specialty Products	☰						☰		
2. Creation of BIMP-EAGA Free Trade Zone ( FTZ )									☰
• Duty-free Trade						☰			
• Logistics Center with Processing Functions						☰			
• Shopping Arcade						☰			
• Entertainment Facilities						☰			
<b>Under High Tech- High Services Strategy</b>									
1. Strengthening of Triad Linkages for Joint R&D ( Biotechnology: agri/marine-related, Information Technology, and Life Science)							☰	☰	
• Integrating R&D-related Activities through Organizing Universities /Colleges, Public R&D Institutes, and Enterprises							☰	☰	
• Coordination for the above							☰	☰	
• Straightening of R&D Functions of Partners/More emphasis on R&D by Universities / Colleges							☰	☰	
• Pilot Project for Joint R&D								☰	
2. Dev't of High Tech Frontier Zone								☰	
• Combined Development of R&D Institutes and High Tech Industries by FDI's								☰	
• Promotion of High Tech Transfer and R&D								☰	
<b>Relevant Factors to be Incorporated</b>									
• Supporting Common Service Facilities	☰							☰	
• Integration of Relevant Organizations						☰			

Source: JICA Study Team

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**Integrated SMEs IE** development will be programmed for the duration of Phase 1 through the clustering of industry groups producing confectionery, fruit processing, GTH/handicraft, pottery/ceramics, and jewelry making. (A **Jewelry Making Industry Development Program** is proposed in Part 4.) Standard factory or factory apartment will be constructed to accommodate SMEs, particularly these facing difficulty to operate their businesses at existing sites located in urban areas. They will be able to find out their frontier, and will expand their businesses through organizing cooperatives and utilizing common service facilities/functions prepared in the IE such as basic processing facilities, prototype fabrication, training, marketing, and R&D services. DTI/BOI will support these activities to generate Davao specialty products/Davao brand products. Joint bulk-buying of raw materials and joint marketing including tracking by cooperative members will decrease production cost. Various exchanges between locators will improve their technology and enrich information. An efficient division of labor will be formed to improve their productivity as a whole. Such SMEs IE will be the core of PAIC development along with agri-industrial village following Japanese-made "one product-one village movement" already popular in the DIDP Area.

Development of SMEs also will be enhanced by a "**More Like This**" (**MOLT**) **Program**. Senior qualified students in the DIDP Area will be mobilized to play a role of business consultant or technical advisor to SMEs. Beneficiaries of SME will be able to prepare documents easily to avail bank loans, and to improve their management, accounting system, technology, and production system. Then, SMEs will transform into commercial business from livelihood business. Through the exchanges between the students and SMEs, mutual stimulation will be produced to upgrade their capabilities as they think "they have more like this" with each other. Some SMEs might recruit their successors from the students since SMEs mostly lack successors even from among their children.

A **Davao Trade Corporation (DTC)** will be established in Davao City by a public-private partnership to strengthen marketing capability of the DIDP Area as a whole. DTC will have comprehensive functions as a trading arm to promote Davao-made products including Davao specialty products. DTC will put forward "By Davao and Buy Davao Movement" through developing mass-markets such as supermarkets, department stores, schools, government offices, big company offices etc. at home and abroad. DTC will also act as an investment promoter including match-maker for joint ventures and a stock holder if necessary.

A testing laboratory for construction materials will be established as a component of the **BIMP-EAGA Construction Materials Merchandising Center (CMMC)** in Davao City. The laboratory will play the leading role in technical and technology development for construction materials industries with R&D functions, thereby promoting export of the materials.

Globalization drive will already have been operational in Davao City thanks to its good locational conditions during Phase 1. Location and expansion of export-oriented industries will be active centering on Davao City. Davao City will also accommodate several factories engaged in high tech industries. A BIMP-EAGA Free Trade Zone (FTZ) will be institutionalized in and around Davao City.

#### **Phase 2 (2005-2010)**

Phase 2 will be a period when the manufacturing sub-sector in the DIDP Area will

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grow very rapidly with GVA increasing at 11.3% per annum. Globalization drive will extend throughout the Area in accordance with the progress of rural infrastructure development. Manufacturing GVA to be generated in the DIDP Area will amount to ₱55.8 billion in 2010.

With the rapid growth of the DIDP economy as a whole, people's income will correspondingly increase, resulting to expansion of the middle class, the users of durable consumer goods and high tech products. In line with this, expansion of the domestic market will be accelerated. The middle class includes critical evaluators of product quality. R&D efforts relative to the manufacturing industries in the DIDP Area will be properly evaluated by them as the market.

To accommodate the rapid manufacturing growth in an orderly manner, **Industrial Community (IC) Development** might be implemented in Madaum, Tagum City and Sta. Cruz in Davao del Sur. Industrial production and community development centering on a new town will be well synchronized in the IC areas. The environment-friendly production and attractive living environments with amenity will result to an influx of investments by foreigners/FDIs. Efficient and intensive investments in infrastructure will ensure competitiveness of the IC development.

**Resource Recycling Estate (RRE)** will be viable during Phase 2. Industrial wastes will be well recognized as kind of local resources. Integrated coconut processing will be done in a RRE so that coconut components could be utilized to the maximum extent by producing a variety of products. Other industrial complexes will be formed between food industries and live stock industries as well as fiber industries (including abaca processing). Outline of resource recycling relative to processing of meat and fish is shown in Figures 33 and 34, respectively. Wood/furniture complex will be formed to minimize wastes and generate new products such as composite materials.

SMEs already successful and transformed into commercial business in some **SMEs IE** may establish their own factories in other sites within or outside the IE to move from the standard factory/factory apartment. In turn, some student ventures through the MOLT Program started during Phase 1 will locate in the standard factory/factory apartment. Encouraged by the successful development of SMEs IE, some PAICs may follow suit.

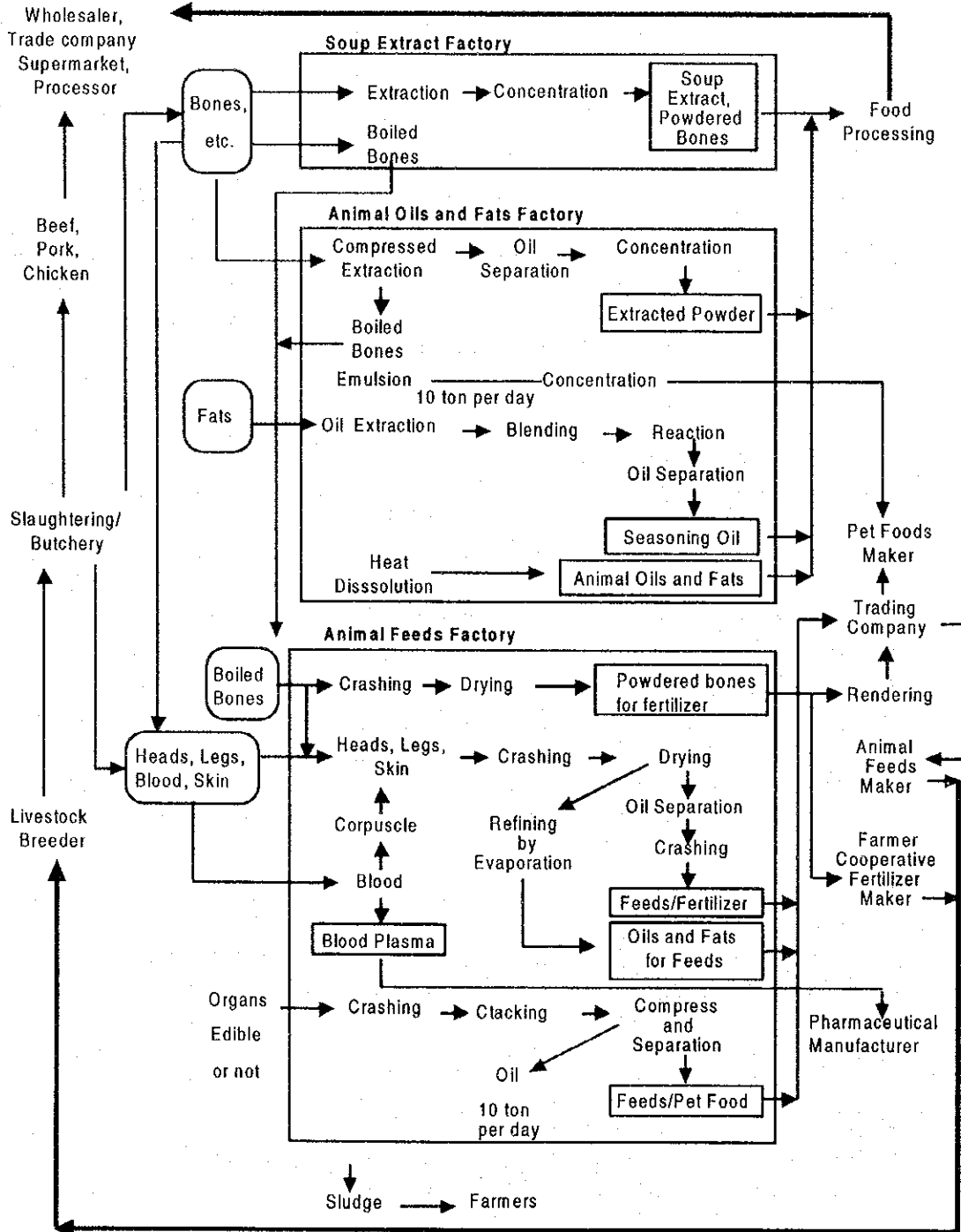
Under the DIDP regional development strategy, i.e., Globalization Drive, the development of consolidated export base will substantiate BIMP-EAGA FTZ institutionalized during Phase 1. Location and expansion of export-oriented industries will be active in SEZs/EPZs in the DIDP Area more than during Phase 1. Trading functions will be strengthened as well.

Many Davao-made products or Davao specialty/brand products will penetrate widely and deeply in domestic and foreign markets through a strong marketing of the **Davao Trade Corporation (DTC)**. DTC will extend its business to develop the **Davao Trade Business Center (DTBC)** and **BIMP-EAGA Construction Materials Merchandising Center (CMMC)** in Davao City. The CMMC will expand export of construction materials to the BIMP-EAGA sub-regions.

Almost all the regional offices of the Central Government now scattered in Davao City will move to the rooms or buildings to be constructed in the DTBC. Investors, particularly Metro Manila/foreign-based ones could easily access the offices, which will be convenient for them, and thus will contribute to acceleration of investments

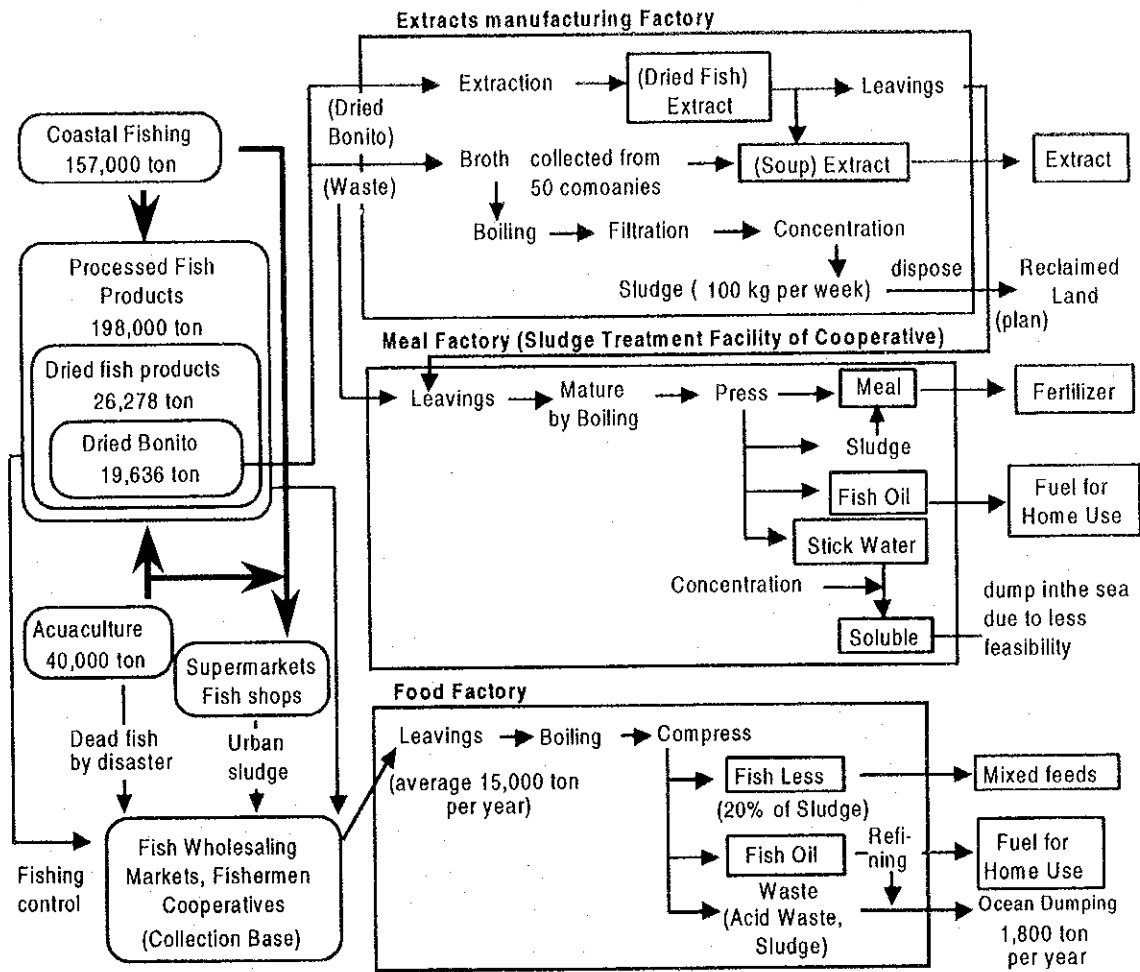
in the DIDP Area. Some private companies may develop the DTBC. In that case, this "one stop service building" may also trigger successful development.

**Figure 33 An Example of Resource Recycling Relative to Meat Processing in Japan**



Source: Japan Location Center

**Figure 34 An Example of Resource Recycling Relative to Fish Processing in Japan**



Source: Japan Location Center

The “one stop service building” of the DTBC will also accommodate various business/trade-related organizations and entities such as Chamber of Commerce and Industry (CCI), other industrial associations/cooperatives, SMEs (representative offices), and foreign enterprise offices including BIMP-EAGA regional headquarters. All of them could benefit from increasing business opportunities and exchanges. The DTBC will be a new trading core in Davao City as *de facto* Capital/Trade Capital in the BIMP-EAGA sub-regions.

The DTBC will also be an urban and industrial core in the DIDP Area to install facilities such as multi-purpose convention center (Durian Dome), five-star hotel, amusement facilities, and thereby attracting a wide range of people including tourists at home and abroad. An industrial logistic center (ILC) will be developed in the DTBC. The ILC will accommodate facilities for distribution, distribution-processing, merchandising, and storage. Many kinds of goods will be collected from Mindanao, Luzon, Visayas, the BIMP-EAGA sub-regions, and other foreign countries to the ILC, and distributed within and to the rest of world. With the DTBC and the CMMC, Davao City will be the gateway of the BIMP-EAGA sub-regions.

The progress of Globalization Drive will recognize necessity of R&D to improve quality of technologies and products in the DIDP Area. R&D efforts, as mentioned before, will be properly evaluated and substantiated by the market consisting of

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increasing middle class.

A **R&D Expert Development Program** will start during Phase 2. R&D staff in the DIDP public R&D institutes and universities/colleges will increase in number and quality while being oriented to agri-industry related technology including heat treatment, biotechnology, and information technology (informatics).

Some R&D staff will be recruited through the MOLT program which would be started during Phase 1. Some capable R&D experts to be rooted in the DIDP Area will act not only as researchers and techno advisers, but also as R&D appraisers to evaluate and manage public R&D supports to the DIDP Area manufacturers/SMEs. Thus, public R&D will be more efficient in terms of the budget expenditure and attainment of assigned objectives.

The DIDP Area universities/colleges will place more emphasis on R&D rather than education, and lead R&D activities in the DIDP Area. Foreign experts may be mobilized for specific joint R&D projects and training of local staff. A **BIMP-EAGA R&D Triad Linkages Program (BIMP-TLP)** will start during Phase 2 initially to set up joint R&D centers.

Spatial and industrial structure in the DIDP Area will change in accordance with the progress of the said projects/programs and the infrastructure development in the rural and remote areas.

Davao City will shift its economic activities to trade, goods distribution, and services including R&D rather than manufacturing as this will spill over to the neighboring provinces. The City's share of the DIDP manufacturing GVA will decrease to 53% in 2010 from 62% in 2004 and from 69% in 1995, although location of export-oriented and high tech industries will increase in Davao City. Davao del Norte and Compostela Valley, particularly the former will receive industrial spillover from Davao City, and location of export-oriented industries will be active in its SEZs/EPZs. Davao del Sur also will attract investments in IEs in Sta Cruz while forming the **Industrial Community**. Location of high tech industries as well as export-oriented ones will extend to Davao Oriental where the Davao Oriental State College of Science and Technology is located in Mati. This location of high tech industries will be based on their location tendency, i.e., knowledge-oriented. Thus, a balanced development of the DIDP Area will have a foundation toward the further extension or industrial decentralization from Davao City.

### **Phase 3 (2011-2016)**

The DIDP Area as a whole will transform into an industrial society centering on urban areas. Manufacturing GVA in the DIDP Area will amount to P88.2 billion, growing at the rate of 7.5% per annum during Phase 3.

Production of agri-industries will be stable being practically saturated. On the other hand, export-oriented industries will continue to grow rapidly. Location of high tech industries will extend to many urban areas throughout the DIDP Area. Davao City will be a more sophisticated Metro Pole Davao in the BIMP-EAGA sub-regions, and form the Metropolitan Davao Gulf Area encompassing Panabo and Tagum to the north, and Sta. Cruz and Digos to the south.

SMEs located in the **SMEs IE** will be a source of growth in DIDP Area, continuously innovating themselves, and challenging new product development with Davao specialty. Some SMEs will be an integral part of the globalized

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production to support locators in SEZs/EPZs. Resource recycling will extend from the **Resource Recycling Estate (RRE)** to the DIDP Area as a whole, resulting to the formation of recycle-oriented and environment-friendly society. The **MOLT Program** will have rooted deeply in the DIDP Area, and graduates from the program may be the leading R&D staff, commercial businessmen, and industrialists.

The **Davao Trade Corporation (DTC)** established during Phase 1 will be reorganized as a private company after finishing its initial assignment to trigger the DIDP Area development. The **Davao Trade Business Center (DTBC)** will increase its importance in the economy of the BIMP-EAGA and Asian Pacific region along with Rabuan Island in Malaysia as a financial park. A horizontal division of labor will be extended over industries such as electronics and information technology-related ones located in the DIDP Area and other BIMP-EAGA sub-regions such as Sabah/Sarawak in Malaysia.

A **BIMP-EAGA R&D Triad Linkages Program (BIMP-TLP)** started during Phase 2 will expand its activities. Joint R&D centers as common service facilities will be utilized also by universities/colleges in Mindanao other than the DIDP Area and the BIMP-EAGA sub-regions. R&D activities will be led by such universities/colleges with centers as the Davao Oriental State Collage of Science and Technology (tropical/agri-biotechnology), the Ateneo de Davao University, the Davao Medical School Foundation (life science), UP Mindanao, and the University of Southeastern Philippines (informatics/information technology). The joint R&D centers are expected to become "Center of Excellence" (COE) in the BIMP-EAGA sub-regions, respectively.

R&D activities to be done under BIMP-TLP will attract high tech industries into the DIDP Area. Variable supporting industries to high tech industrialization will be agglomerated, and thereby form a High Tech Frontier Zone in Davao City, coupled with high tech factories and the COE universities/colleges. Thus, the DIDP Area will fabricate a structure for further growth so that it will be able to streamline scientific/basic research, applied research, product/production technology development including design and prototype fabrication toward commercialization of R&D results.

### **5.3. Policy Recommendation**

Manufacturing development in the DIDP Area will achieve its goal/vision led by the pipeline and regular projects/programs and the DIDP projects/programs mentioned. This section will recommend successful implementation policies for the DIDP projects/programs including trade-related ones. The roles of DIDP PMO, which is likely to be transformed into an autonomous authority, i.e., the Davao Development Authority (DDA: a tentative name used in succeeding discussion) will be indicated. Lastly, recommendation on investment promotion will be presented, including deregulation at the national level.

#### **5.3.1. Toward implementation of DIDP projects/programs**

Table 37 summarizes rough schemes on the DIDP projects/programs. The following is expected to be taken into consideration for their implementation.

**Table 37 Rough Schemes on DIDP Projects/Programs in Manufacturing Sub-sector**

Projects/ Programs	Dev't Phase	Location	Available Resources		Incentives	Implementor	Cooperator	Roles of DIDP- PMO/DIDA
			Domestic	Foreign				
1. Integrated SMEs IE Dev't Program	1-2	DIDP Area/ PAICs	X	X	(BOI) (LGU)	(Option) - LGU/PAIC - Private	LGUs/PAICs/ DTI/BOI/DOST /DALGSP etc.	- Organizer - Coordinator - Fund sourcing
2. Resource Recycling Estate (RRE)	2	DIDP Area	X	X	BOI (LGU)	- Private	LGUs/PAICs/ DTI/BOI/DOST /PCA etc.	- Formulator of a dev't plan
3. Industrial Community Dev't (IC)	2	Sta. Cruz (del Sur)	X	X	BOI/(LGU) (PEZA: EPZ/SEZ)	- Private	Davao del Sur Sta. Cruz DTI/BOI	- Formulator of a dev't plan
4. More Like This Program (MOLT)	Start from 1	DIDP Area	X			DTI/DOST/ CHED	Universities/ colleges	- Organizer - Manager
5. Davao Trade Business Center (DTBC)	FS: 1 Imple. 2	Davao City	X	X	BOI	(Option) - DTC - Private	Davao City/ CCI/DTI/other NGAs	- Formulator of a dev't plan
6. Davao Trade Corp. (DTC)	1	DIDP Area/DC	X	X		JV (public- private)	DTI/Davao City/CCI etc.	- Board member of DTC - Investor
7. R&D Expert Development Program	2	DIDP Area	X	Foreign Expert (Fund)		DTI/CHED/ DOST	Universities/ colleges/CCI	- Formulator of a technology dev't plan
8. BIMP-EAGA R&D Triad Lin- kages Program	Start from 2	DIDP Area/DC, DO	X	Foreign Expert (Fund)		DTI/CHED/ DOST	MEDECO Universities/ colleges	- Coordinator - Monitor

Note: ( ) is expected to be granted.

(EC) = Economic Enterprises prescribed in the Local Government Code of 1991

DA = Department of Agriculture LGSP = Local Government Support Program

PCA = Philippine Coconut Authority CCI = Chamber of Commerce and Industry

NGAs = National Government Agencies MEDECO = Mindanao Development Council

Source: JICA Study Team

**(1) Integrated SMEs IE: to be implemented during Phase 1-2**

- SMEs IE as a basic infrastructure to be developed by LGUs/ PAICs alliances as far as possible, since they can develop and manage the IE as one of the economic enterprises as provided in LDC 1991;
- SMEs to be granted the BOI and LGU incentives automatically when they locate in the SMEs IE (The 1998 Philippine Investment Priorities Plan of BOI says that "BOI will continue to target a minimum of 80% SME registered companies relative to total registrations as previously specified in the past IPPs.");
- SMEs to be granted such a incentive as deduction of income by selling its existing site and facilities from taxable income (in case of relocation into the SMEs IE);
- SMEs in the IE also to establish joint ventures with enterprises including SMEs in advanced countries so that they can upgrade their technology and ensure their product market channels;
- SMEs IE development likely to mobilize foreign assistance including financing to implementation based on a public character, as a basic infrastructure for SMEs like irrigation for farmers;



- SMEs IE development able to be implemented through the public and private joint venture/partnership, e.g., LGUs provides the land wherein a private company develop the IE facilities including factory apartment/standard factory; and
- DIDP PMO/DDA to organize SMEs in coordinatiton with LGUs, PAICs, DTI, DOST, DAP, LGSP, and other concerned organizations by formulating a SMEs IE development plan including PFS/FS, at the same time acting as conduit for sourcing funds for the IE at home and from abroad.

**(2) Resource Recycling Estate (RRE) and Industrial Community (IC) : to be implemented during Phase 2**

These projects are oriented and targeted under direct investment, and eligible to get BOI incentives. In this context, the following is recommended in addition to ordinary procedures/steps necessary for implementation.

- RRE and ICC locators eligible to get the LGU incentives in addition to the BOI incentives;
- LGUs (e.g., Sta. Cruz) to designate some IE as RRE or IC in coordination with the IE developer;
- RRE and IC developer to mobilize foreign funds and public capital/financing to develop the RRE and IC as kind of the environmental projects in response to the forthcoming recycle-oriented and environment-friendly society, particularly to install common service facilities for environment protection; and
- DIDP PMO/DDA to formulate a RRE and IC development plan including PFS/FS. In case of RRE, DIDP PMO/DIDA might be a center of basic data on resources/industrial wastes in cooperation with LGUs, PAICs, DTI, DOST, DAR, DENR, PCA, and other concerned organizations.

**(3) More Like This (MOLT) Program: starting from Phase 1**

This is a capability building program for both SMEs and senior qualified students in the DIDP Area. It can be viable through a close relationship/coordination among SMEs, students/universities/colleges, DTI, DOST, and the Council of Higher Education (CHED). In this context, the following is recommended for success.

- The DOST S&T and other scholarships to be well linked to MOLT in order to mobilize and encourage excellent senior students;
- Media to well disseminate MOLT, MOLT enterprises and students so that they will be respected widely to shoulder the DIDP economic/manufacturing development;
- Budget for MOLT to be mobilized basically from DTI and DOST, while soliciting from industrial associations including CCI; and
- DIDP PMO/DDA to organize a committee for MOLT, with members from concerned agencies and industrial associations, in order to select, manage, and monitor the MOLT enterprises and students.

**(4) Davao Trade Business Center (DTBC): to be implemented during Phase 2 (feasibility study will be dine during Phase 1)**

This project is a core formation for trade, business, goods distribution, and

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urbanization conducive to *de facto* Capital or Trade Capital of Davao City in the BIMP-EAGA sub-regions. The DTBC will be developed by the Davao Trade Corporation (DTC) to be established as a joint venture between the public and private sector or the private developer. As such, the following is recommended for its implementation.

- The Davao Chapter, Chamber of Commerce and Industry (CCI) to take initiative in the implementation of the DTBC;
- The Central Government agencies in Region XI to organize a task force mandated to relocate their regional offices into the DTBC's "one stop service building," which will drastically improve business environments in the DIDP Area;
- DTC to seek investors including foreign ones for the implementation of the DTBC;
- DTC to coordinate with Davao City in terms of site selection for the DTBC; the site should be located outside the poblacion of Davao City in order not to aggravate traffic congestion in the City. One of the best sites might be a site located between the Davao International Airport and the Davao Port.; and
- DIDP PMO/DDA to prepare a master plan on the DTBC through organizing a working group, with members from DTC, Davao City, other board members of DIDP, DTI, chairman of the said task force, CCI etc.

**(5) Davao Trade Corporation (DTC): to established during Phase 1**

DTC is a corporation to be established by a joint partnership between the public and the private sector basically to develop and manage the DTBC and the CMMC, and to promote "By Davao and Buy Davao Movement." As such, the following is recommended for its implementation.

- The Davao Chapter, CCI or the Mindanao Business Council to organize potential stockholders/investors including foreign investors in the BIMP and other countries in order to establish DTC in cooperation with DTI, while launching the DTBC as a crucial core/gateway formation in the BIMP-EAGA sub-regions as a whole;
- DTC to create a common brand or label for the Davao specialty products to put forward "By Davao and Buy Davao Movement";
- DTC to recruit trading experts to be sent on loan from investors including the DIDP provinces/City and DTI; and
- DIDP PMO/DDA to be a board member of DTC through collection of start-up capital from the DIDP Board member provinces and cities.

**(6) R&D Expert Development Program: starting from Phase 2**

This program will be implemented basically by DTI and DOST in cooperation with CHED. However, LGUs (provinces and cities) are mandated to provide industrial R&D services and transfer of appropriate technology as prescribed in LDC 1991. In this context, the following is recommended in view of fostering R&D experts in the long run.

- DTI to place an emphasis on fostering designers including industrial designer who shall contribute to the development of product designs, which can cost-

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efficiently manufacture products (product design matching cost-efficient production system) in cooperation with the Product Development Design Center of the Philippines (PDDCP), DOST, and the DIDP universities/colleges;

- DOST to be oriented toward fostering R&D staff for the development of new technology rather than transferring proven technology, since the latter will be devolved to LGUs;
- CHED to guide and provide budget to DIDP universities/colleges to foster R&D staff, and to make upgrading of education effective, while installing common service facilities for R&D/joint R&D centers linked to BIMP-EAGA R&D Triad Linkages Program;
- Some fostered R&D staff to be transferred to LGU industrial R&D institutes and the like which will be established in the long run; and
- DIDP PMO/DDA to prepare a technology development plan containing strategic/specified technologies and guidelines for proper appraisal system on public R&D support in cooperation with DTI, DOST, LGUs, and the DIDP universities/colleges.

**(7) BIMP-EAGA R&D Triad Linkages Program: to be implemented during Phase 2-3**

This program is formulated in view of high tech industrialization. It is directed to the formation of a high tech frontier zone in the DIDP Area in the long run. The main component is to establish joint R&D centers at the DIDP existing universities/colleges through the following:

- CHED to mobilize its own fund and foreign assistance fund for the establishment of joint R&D centers in the said DIDP universities/colleges;
- CHED to organize the BIMP-EAGA universities/colleges for joint R&D activities relative to tropical/agri-biotechnology, information technology (informatics), and life science;
- DIDP enterprises and other BIMP-EAGA enterprises to participate in joint R&D activities relative to the said fields by sending their R&D staff to the centers;
- DTI/DOST to mobilize foreign fund and experts for joint R&D projects; and
- DIDP PMO/DDA to coordinate and monitor the joint R&D projects in cooperation with DTI, DOST, CHED, and other concerned organizations.

**(8) BIMP-EAGA Construction Materials Merchandising Center (CMMC): to be implemented during Phase 1-2**

- This project is designed to be implemented by the aforementioned Davao Trade Corporation (DTC). However, a testing laboratory for construction materials including R&D functions is a component of the CMMC, which is expected to be implemented during Phase 1. For the implementation of the laboratory, DTI and DOST Region XI should conduct a feasibility study.

**5.3.2. Recommendations on investment promotion**

**Investment promotion to be improved in the DIDP Area**

A relatively high growth of the manufacturing sub-sector in the DIDP Area will be materialized by incremental/additional investments, coupled with developing and

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ensuring markets for products. Some ₱65 billion will be an incremental manufacturing GVA up to the year 2016, excluding GVA to be generated by existing industries as of 1995. The incremental GVA corresponds to around 74% of the total (₱88.2 billion in 1995 constant prices). Thus, investment promotion is critical for the DIDP manufacturing development.

Tax and non-tax incentives are already well prepared for investors in the DIDP Area including the ones already proposed. Accordingly, the focal point will shift to an effective investment promotion. In this context, the following is recommended to induce investments.

- “Top Sales” by governors, mayors and the like to be undertaken, particularly to invite “Flagship Enterprises” in the DIDP Area as this has been testified by investment promotion for the SBMA and the Luisita Industrial Park, among others;
- Attractive image-building of the DIDP Area to be carried out by DIDP-PMO/DDA, excluding too much emphasis on “agri-industrial” in naming of IEs in DIDP Area to avoid misunderstanding that investors in industries other than agri-industry are not welcome;
- Investment promotion activities to be streamlined between and among PAICs, LGUs, DIDP-PMO/DDA, and the private sector including IE developers through networking and coordinating led by the Mindanao Investors Assistance Center which will be restructured as an umbrella organization; and
- Simplified procedures: for example, business permit granting is expected to be simplified in such a manner that if once registered, application of tax payment to LGUs will automatically renew the permit without any additional procedure in principle. (This is recommended in “A Review of Constraints to Foreign Direct Investment in Mindanao” by the Foreign Investment Advisory Service, July 1998.)

#### **Deregulation to be expected at the national level**

The following have been proposed by many studies including the ones conducted by JRTR to expand FDI in the Philippines, and are expected to be realized as soon as possible.

- Liberalization of retail business to foreigners so that they can integrate manufacturing and retail trade;
- Flexible regulation of export ratio of 70% that allows 100% foreign investment in manufacturing industry in response to unstable export market;
- Liberalization/higher ceiling of local capital raising (150% at present to the paid-up capital) to keep a good timing for investments;
- Rapid refund of VAT to exporters (two to three years at present for the refund) to avoid heavy burden of loan interest;
- Modification of patent system (in compliance with the WTO rules, shortening of duration for approval etc.);
- Deregulation of foreigner’s ownership to the lands (application of the Condominium Law to industrial estate (IE) allowing foreigner’s ownership up to 40% of the total floor area); and

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- Increase in internal reserves of enterprises more than the amount of the paid-up capital.

