

Philippine PLASTICS INDUSTRY ROADMAP



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ACRONYMS

AFTA	ASEAN Free Trade Agreement
AKFTA	ASEAN-Korea Free Trade Agreement
APMP	Association of Petrochemical Manufacturers of the Philippines
ASEAN	Association of South East Asian Nations
ASPBI	Annual Survey of Philippine Business and Industry
BOC	Bureau of Customs
BOI	Board of Investments
BTX	Benzene, Toluene, Mixed Xylenes
CALABARZON	Cavite, Laguna, Batangas, Rizal, Quezon
CAMANAVA	Caloocan, Malabon, Navotas, Valenzuela
CEMAP	Cement Manufacturers Association of the Philippines
CHED	Commission on Higher Education
DENR	Department of Environment and Natural Resources
DOE	Department of Energy
DOF	Department of Finance
DOST	Department of Science and Technology
DOTC	Department of Transportation and Communication
DPWH	Department of Public Works and Highways
DTI	Department of Trade and Industry
DTI-BETP	Department of Trade and Industry-Bureau of Export Trade Promotions
EDC	Ethylene Dichloride
EO	Executive Order
EPPS	Expandable Polystyrene
ETBE	Ethyl-Tert-Butyl-Ether
FCC	Fluidized Catalytic Cracker
FOB	Freight on Board
FPI	Federation of Philippine Industries
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GPPS	General Purpose Polystyrene
HDPE	High Density Polyethylene
HIPS	High Impact Polystyrene
ICP	Integrated Chemists of the Philippines
IFC	International Finance Corporation
IFM	Inward Forward Manifest
IPA	Investment Promotions Agency
IPP	Investment Priority Program
JGSPC	JG Summit Petrochemical Corporation
kTA	Kilo Tons per Annum
LCA	Life Cycle Assessment
LGU	Local Government Unit
LLDE	Linear Low Density Polyethylene
MPRAI	Metro Plastics Recyclers Association, Inc.
MFN	Most Favored Nation

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MIDA	Malaysia Industrial Development Authority
MMDA	Metropolitan Manila Development Authority
MTBE	Methyl-Tert-Butyl-Ether
NEC	National Ecology Center
NEDA	National Economic and Development Authority
NPC	National Power Corporation
NSCB	National Statistics Coordination Board
NSO	National Statistics Office
NSWMC	National Solid Waste Management Council
PAGASA	Philippine Atmospheric, Geophysical, and Astronomical Services Administration
PCCI	Philippine Chamber of Commerce and Industry
PE	Polyethylene
PEZA	Philippine Economic Zone Authority
PICHE	Philippine Institute of Chemical Engineers, Inc.
PP	Polypropylene
PPCP	Polystyrene Packaging Council of the Philippines
PRA	Philippine Retirement Authority
PRII	Philippine Resins Industries, Inc.
PSA	Philippine Statistics Authority
PS	Polystyrene
PTMAPI	Pipes and Tubes Manufacturers Association of the Philippines, Inc.
PVC	Polyvinyl Chloride
PWA	Philippine Weavers Association
SPIK	Samahan Sa Pilipinas ng mga Industriyang Kimika
TCC	Tax Credit Certificate
TESDA	Technical Education and Skills Development Authority
VCM	Vinyl Chloride Monomer

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I. PERSPECTIVE OF THE ROADMAP

Plastics have come a long way from their humble beginnings well over 100 years ago. The existence of natural polymers was known in the 19th century, such as amber, tortoise shell, and horn. The late 1850's saw the occurrence of cellulose nitrate, which Alexander Parkes exhibited as the very first plastic in 1862. The English inventor's creation of Parkesine ushered in more man-made materials such as Xylonite made by Parkes' associate, Daniel Spill.

The Belgian inventor Leo Baekeland created and patented the first synthetic plastic in 1907, which he called Bakelite. This material's non-conductivity and heat resistance made it useful in a number of electrical and kitchen apparatuses. Soon after in 1913, Dr. Jacques Edwin Brandenberger created cellophane as a non-staining cloth.

Soon, plastics were being used in everyday life in larger and larger scales, thus requiring the steady manufacturing of such materials. 1921 saw the first injection molding machine design grace the world. It was not long before more familiar plastic materials, such as those made from petroleum- polystyrene, acrylic polymers, and polyvinyl chloride- were being manufactured by the 1930's.

Some decades later, the invention of polypropylene saw plastics enter the living spaces of the common man in the form of home decor. From 1960 to the 1970's, plastics were already playing an increasing “behind the scenes” role in technological advancements. By this time, so-called super polymers were already starting to replace metals in some industries. Plastics were also noted for their hygienic nature, leading them to be increasingly utilized by healthcare facilities worldwide.

The 90's saw an increased emphasis in environmental concerns, leading to the development of new techniques for recovery and recycling of end-of-life products for the now well-established global plastics industry. Its full integration into daily living now meeting new challenges, plastics moved into the new century with a lot riding on its shoulders.

Plastic is a widespread and pervasive material that can be used by a multitude of industries in the production of innumerable products. Industries such as the construction, automotive, industrial manufacturing equipment, mechanical engineering industry rely heavily on plastic parts in their businesses. While these strong linkages are a definite edge and foundation to drive the plastic industry, the recent years have not been without setbacks and difficulties. Widespread use of plastic also means that the decline of a large number of industries under recession could cripple the plastic manufacturers even more.

This 50 year old local industry faced one of its toughest challenges from 2004 to 2009 due to a distortive tariff structure. The same period also saw a decline in plastic manufacturing and an increase in the imports of primary, secondary and finished products that are packaged in plastics. It was only in

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2010 when the ASEAN tariffs for raw materials and finish goods leveled off which provided a reprieve for the domestic industry resulting in an overall increase of 30%.

In the mid-2010 and 2011, the plastic industry faced yet a new type of challenge in the form of banning of plastics and polystyrene (otherwise known by DOW chemical's brand name "Styrofoam") materials. Citing flooding, improper waste disposal leading to clogging of our waterways and waste disposal issues as major reasons for implementing such acts, over 59 municipalities have passed local ordinances that regulate and even eliminate the use of plastic bags. The local governments of Los Banos, Calamba, Cabuyao and many more in Laguna; Carmona in Cavite; Lucban in Quezon, Tanay in Rizal, Bacolod and Davao in the Visayas and Minadanao Region; and Metro Manila Cities like Muntinlupa, Las Piñas, Marikina, Quezon City and Makati to name a few, have supported and implemented its independent versions of the regulation or ban. Not only does this ban affect the industry sectors' manufacturing output (a decrease of 20 to 30 percent is already palpable), but threatens the livelihood of the workers of the plastic bag and polystyrene manufacturing workforce.

The local plastic industry is dominated by small to medium, family owned and controlled enterprises. The plastic bag and polystyrene sectors are considered the strongest and most resilient players least affected by imports as players have maintained its quality with low production costs. With globalization, ASEAN+4 and ASEAN 2015 just around the corner, and global players continuing to shift its production base to low cost Asian countries and given the fact that the applications for plastics are increasing, from building and infrastructure, transport, automotive field, rail, defense and aerospace, healthcare, telecommunication, up to electrical and electronics, the global demand for plastics seems to be inexhaustible. The only thing left to do would be to ride the wave so to speak, and capture the global market to take advantage of this great opportunity for growth.

It is with this in mind that the Philippine Plastics Industry Association (PPIA) is attempting to prepare the plastics industry of the Philippines for competition with other markets in the Asia-Pacific region, and hopefully capture the global market in the long run. The task is arduous and the goals would definitely not be met without any external help.

The purpose of the Downstream Plastics Industry's Competitiveness Roadmap is to present a comprehensive and definitive analysis of the current state of the plastics industry and from this, formulate possible courses of action which could benefit the industry. Ultimately, the aim is to ensure the viability, sustainability, and competitiveness of the industry and its different sectors. The information and statistics used in this paper were provided by the PPIA, Polystyrene Packaging Council of the Philippines (PPCP), Pipes and Tubes Manufacturers Association of the Philippines Inc. (PTMAPI), PVC Pipes Manufacturers and Dealers Association, Metro Plastics Recyclers Association Inc. (MPRAI), PET Manufacturers' Association, Flexibles Group, Philippine Weavers Association (PWA), with

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representatives from the academe, and national government agencies led by the Department of Trade and Industry-Board of Investments (DTI-BOI).

II. VISION & MISSION / GOALS & TARGETS

The downstream plastics industry is confident that its plans for future development will not only allow the industry to recover from setbacks faced in the past, but flourish along with the rest of the Asia-Pacific region. In providing the market with locally produced products and gearing to capture the international market, the plastics industry hopes that the government will aid them in their endeavor to bring about a healthy future for plastics in the Philippines.

A. VISION & MISSION

A proactively adaptive downstream plastic industry that is able to fully supply the growing and changing demands of the domestic and export market, create employment opportunities with a positive well-informed on the environmental image and perception.

B. GOALS & TARGETS¹

1. Satisfy domestic demand and be a leading contributor to the Philippine export basket.
2. Promote a high level of workforce productivity.
3. Be innovative in process.
4. Develop a sustainable industry mindful of our limited/finite resources.
5. Promote/ develop / strengthen the plastics recycling industry.
6. Create a wide range of innovative products with the best consumer value

For our first goal, “Satisfy domestic demand and be a leading contributor to the Philippine export basket”, the industry needs to secure and monitor the information on domestic plastics demand and requirements. This will enable the industry to tap these markets and adapt its operations to meet their needs. A strong domestic demand allows manufacturers to improve their economies of scale and increase their potential to be export competitive. By 2016, the plastics industry should be able to develop the local market, venture towards the ASEAN market by 2022, and the global market by 2030 through trade promotions. Creating a One Stop Shop to minimize if not totally eliminate red tape will encourage plastic manufacturers to venture into tapping export markets thereby providing the industry with a sustainable export growth.

¹ Adopted from the SPIK Chemicals Industry Master Plan

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Our second goal aims to “Promote a high level workforce productivity”, stresses the need to retain the industry’s technical workforce to stay competitive. Most of the skilled workers trained by the industry get “pirated” by plastic manufacturers abroad because of higher compensation. The industry needs to develop a program that will first attract, train and then retain workers to improve workforce productivity. Aligned with this is that the industry needs to work with academic institutions for technical development. Unions form an integral part of our local workforce and promoting social dialogue with them is essential for industrial peace. The industry aims to promote the integration of the values of innovation in the primary and secondary level of education into the academic curricula to prepare them to work for the industry after the government’s K+12 program, or pursue tertiary education through applied chemical courses integrated with the formal curricula related to Science and Technology and hopefully produce a pool of MS/PhD in the field of plastics by 2022 and have trained Filipino scientists for the plastics industry by 2030.

The third goal strives to, “Be innovative in process”. To achieve this, a Research and Development Center for the plastics needs to be set-up. Developing partnerships with academic institutions and private groups for the development of innovative process technology and in the future, forge partnerships with foreign institutions for the further development of process technologies. By 2030 the Philippines’ plastics industry should be at least at par with the ASEAN +4 in terms of product and process innovation.

The fourth goal, “Develop the industry sustainably mindful of finite/limited resources”, the industry needs to promote the value and principle of 3R within its manufacturers. The industry should be lobby for legislative policies and regulations in support of the recycling industry. To avert the negative perception by the general populous on plastics and environment here in the Philippines fueled by false information from non-government environmental organizations, enhancing the industry’s image as an industry that contributes to sustainability would be a priority. By 2022, the plastics industry should be a leader in innovative products that addresses climate change and green products and processes should also have a significant development at this point of time.

To “Promote/develop/strengthen the plastics recycling industry” is the fifth goal. The further development of the plastics recycling industry not only complements the preceding goal, but, more importantly, also significantly contributes to the development of the entire industry. Recovery for recycling of material inputs must be strengthened and institutionalized. By 2016 there should be a 20% recovery and recycling of disposable input and by 2022, a further increase of 20% and achieve a total of 60% by 2030. There must be a drive towards keeping recyclable resources locally in lieu of the current practice of profit oriented, backyard/underground traders in the practice of exporting. Providing incentives such as Income Tax Holidays and Value Added Tax Exemption for this industry

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sector for both existing and pioneering recycling companies would enhance activities and encourage players to modernize their equipment and further improve existing waste management facilities to fully comply with existing environmental laws. By 2022 the plastics industry should develop and promote products with high recycled content, and by 2030, the consuming public would fully patronize recycled products with the local industry's commitment to quality and performance through research.

Innovation on products is essential for an industry to strive and prosper. With this comes our last goal, "Create a wide range of innovative products with the best consumer value". Essential to this goal is Research and Development. To achieve this, partnerships must be forged with both local and international institutions to aiming to conceptualize and design products that aim to improve performance and functionality – whether it is for packaging, construction, agriculture, automotive, food, etc... Both incentives and safety nets must be in place to ensure its viability and cost recovery to enhance this activity. Joint government and private efforts should also be made to market to both local and overseas markets.

Table 1. Goals of the Philippine Plastics Industry

GOALS	OBJECTIVES/OUTCOMES	INDICATORS
Satisfy domestic demand and be a leading contributor to the Philippine export basket	<ul style="list-style-type: none"> Increased utilization and patronage of locally produced plastic products Sustainable growth for increased export performance 	<ul style="list-style-type: none"> Increased domestic outputs Decreased imports of plastic finished products and products where plastics is a major cost component by ensuring a rational, non-distortive tariff structure for raw materials and finished products Sustainable export sales
Promote a high level of workforce productivity	<ul style="list-style-type: none"> To have a pool of skilled, trained and motivated workforce for levels of productivity 	<ul style="list-style-type: none"> Labor productivity: Unit Output/Man Hours
Innovative processes	<ul style="list-style-type: none"> Improved production efficiency and productivity 	<ul style="list-style-type: none"> New technology produced Number of new processes introduced
Develop the industry sustainably mindful of finite/limited resources	<ul style="list-style-type: none"> Responsible utilization of resources Reduce production waste Reduce power consumption Utilization of recycled/ recyclables materials 	<ul style="list-style-type: none"> Number of products adopting the principles of 3R (REDUCE by down gauging, REUSE by developing reusable products, and RECYCLE by increasing percentage of recycled materials and developing dependable recyclable products)
Promote/develop/strengthen the plastics recycling industry	<ul style="list-style-type: none"> Positive environmental image for the industry Increased recovery of recyclable plastics from waste stream Create more job opportunities for marginalized sector waste picker Market patronizing recycled products 	<ul style="list-style-type: none"> Improved recycling rate Improved employment in the recycling industry including marginalized sector (informal waste pickers)

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GOALS	OBJECTIVES/OUTCOMES	INDICATORS
Create a wide range of innovative products with the best consumer value.	<u>New product offerings that:</u> <ul style="list-style-type: none"> • Are competitive in price, quality and service. • Develop new applications and innovations that promotes/leads to improved product/packaging performance. • Are environmentally acceptable • Are diversified and differentiated. 	<ul style="list-style-type: none"> • Number of products introduced for specific market, uses and comparative advantage • Number of patents and trademarks applied for

C. STRATEGIES & TIMELINES

To streamline its efforts, the industry has crafted specific action points or strategies with short-term (2016), medium-term (2022), and long-term (2030) goals, which was adopted following the Chemicals Industry Master Plan strategies and timelines.

- 2016 (Strong Philippines) - established competitiveness of chemical industry in price, quality, service and delivery and becoming a regional player in the chemical industry
- 2022 (Enter ASEAN + 4 Doors)- marks the chemical industry as an export industry and innovative in addressing climate change
- 2030 (Global Market Capture) - marks the chemical industry as the 3rd largest export industry and also lead the country in climate change

The goals and strategies with timelines presented in Table 2 provide a clear direction for the domestic plastics manufacturing industry. The participation, cooperation and commitment of both the private sector and the government are key components to achieving its objectives.

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Table 2. Goals and Targets of the Plastics Industry

Goal	2016 Strong Philippines	2022 Enter ASEAN + 4 Doors	2030 Global Market Capture	Responsibilities
Satisfy domestic demand and be a leading contributor to the Philippine export basket	<ul style="list-style-type: none"> Secure and monitor information for domestic plastics requirements Push for the removal of existing Tariff Distortion in the form of duty free access to raw materials (both MFN and ASEAN) Develop markets through trade promotion Creation of a One Stop Shop to help local plastic exporters minimize red tape 	<ul style="list-style-type: none"> Sustainable export growth Supply domestic requirements with plastic products Developed ASEAN market through trade promotion 	<ul style="list-style-type: none"> Developed global market through trade promotion 	<p><u>Government</u></p> <p>DTI, DTI-BETP, DOF</p> <p><u>Private Sector</u></p> <p>PPIA, FPI & FFCCCII (Buy Pinoy Movement), PRA, PASI, PAGASA</p>
Promote a high level of workforce productivity	<ul style="list-style-type: none"> Attract, develop and retain the workforce so that the industry can be forefront of process and product innovation Develop a steady stream of technically highly skilled manpower and trainers. Continuing education and training programs Coordinate with academic institutions for technical development. Continued promotion of social dialogue and industrial peace. 	<ul style="list-style-type: none"> Develop pool of MS/PhD graduates in the field of plastics Promote value of innovation in the primary and secondary level Develop industry work preparedness in secondary level Applied chemical courses integrated with the formal curriculum related to Science & Technology (e.g. chemistry, chemical engineering, material science) 	<ul style="list-style-type: none"> Trained Filipino scientists (chemist/ chemical engineers) for developing patented products and services. 	<p><u>Government</u></p> <p>TESDA, CHED, PICHE, ICP</p>
Innovative processes	<ul style="list-style-type: none"> Set-up R&D Center for plastics Develop partnership with academic institutions and private groups (e.g. TESDA, CHed, DOST, Filipino Inventors, ICP, PICHE) for development of innovative process technology 	<ul style="list-style-type: none"> Forge partnerships with foreign institutions for development/adoption of process technologies. 	<ul style="list-style-type: none"> At par with ASEAN +4 in terms of product and process innovation 	<p><u>Government</u></p> <p>DOST</p> <p><u>Private Sector</u></p> <p>PPIA Academic Institutions</p>
Develop the industry sustainably mindful of finite/limited resources	<ul style="list-style-type: none"> Increased number of companies practicing 3Rs Enhanced industry image as an industry that contribute to sustainability Lobby for legislative policies and regulations in support of the RECYCLING to the industry (e.g. RECYCLING LAW) 	<ul style="list-style-type: none"> Leading industry in innovative products addressing climate change Development of more green processes and products 	<ul style="list-style-type: none"> Leading industry in innovative products addressing climate change 	<p><u>Government</u></p> <p>Congress, DENR-NSWMC, DOST-ITDI</p> <p><u>Industry Groups</u></p> <p>Chemical Industry, Academic Institutions and Research Centers</p>

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Goal	2016 Strong Philippines	2022 Enter ASEAN + 4 Doors	2030 Global Market Capture	Responsibilities
Promote/develop/strengthen the plastics recycling industry	<ul style="list-style-type: none"> Recover and Recycle 20% of material inputs Development of Recycling Industry Specific Incentives (e.g. ITH and VAT exemption) for existing & new recycling companies to improve facilities and conform to RA 9003 and other related environmental laws. Develop new and improve/modernize existing recycling facilities. Develop alternative recycling technologies for low value recyclables (e.g. waste to innovative products/ waste to fuel/ waste to energy) Policy support regulating export of scrap plastics to protect the local recycling industry. Integration of Informal Sector Waste Pickers to the solid waste management stream. Improve recovery systems for plastic waste 	<ul style="list-style-type: none"> Recover and Recycle 40% of material inputs Develop technologies to improve recycling efficiency Improve recycling technologies. Develop & promote products with high recycled content Develop eco-parks utilizing recycled plastics/ recyclable materials. Promote government preference on recycled products or products with recycled contents. Improve alternative recycling technologies. 	<ul style="list-style-type: none"> Recover and Recycle 60% of material inputs Promotion to market to patronize/give premium to recycled products or products with recycled contents. Improve physical and mechanical of recycling technologies/products through R&D Adopt alternative recycling technologies nationwide. Put up recycling and production facilities in major cities and provinces/municipalities 	<u>Government</u> DENR-NSWMC, DOST-ITDI, DILG-LGUs, MMDA, DTI-BOI <u>Private Sector</u> PPIA, MPRAI, PRA, PASI, PAGASA
Create a wide range of innovative products with the best consumer value.	<ul style="list-style-type: none"> Increased R & D for innovative plastic products Full integration of petrochemical industry. Create applicable plastic products for agri/fisheries, furniture food use, packaging, medical & health care, automotive, construction Develop incentives for innovative/pioneer product Develop safety nets to products from changing government policies. Forge partnerships with international institutions to help develop innovative products 	<ul style="list-style-type: none"> Develop innovative plastic products for ASEAN market Expansion of capacity and production of plastic products. Develop incentives for innovative/pioneer products 	<ul style="list-style-type: none"> Develop innovative plastic products for Global market Expansion of capacity and production of plastic products Develop incentives for innovative/pioneer products 	<u>Government</u> DTI (BOI/ BPS/ BETP), DOST, DA, DOH, DPWH, DOF, PSA, NEDA, DOF <u>Private Sector</u> PPIA, APMP, SPIK, PIP, PCCI/ FPI, CIAP, PACCI (local auto assemblers), Philexport, PRA, PASI, PAGASA Academe Inventors Assn

III. STATE OF THE INDUSTRY

A. STRUCTURE

I. Sectoral Coverage

The Philippine downstream plastics industry refers to the plastic fabricators and manufacturers which convert plastic resins to industrial and consumer finished products. It serves as an allied industry with strong linkages to:

- Automotive and Transportation
- Home Appliances
- Food, Drug, and Cosmetics
- Soap and Detergent
- Fiber and Textiles
- Electrical and Electronics
- Buildings and Construction
- Healthcare
-

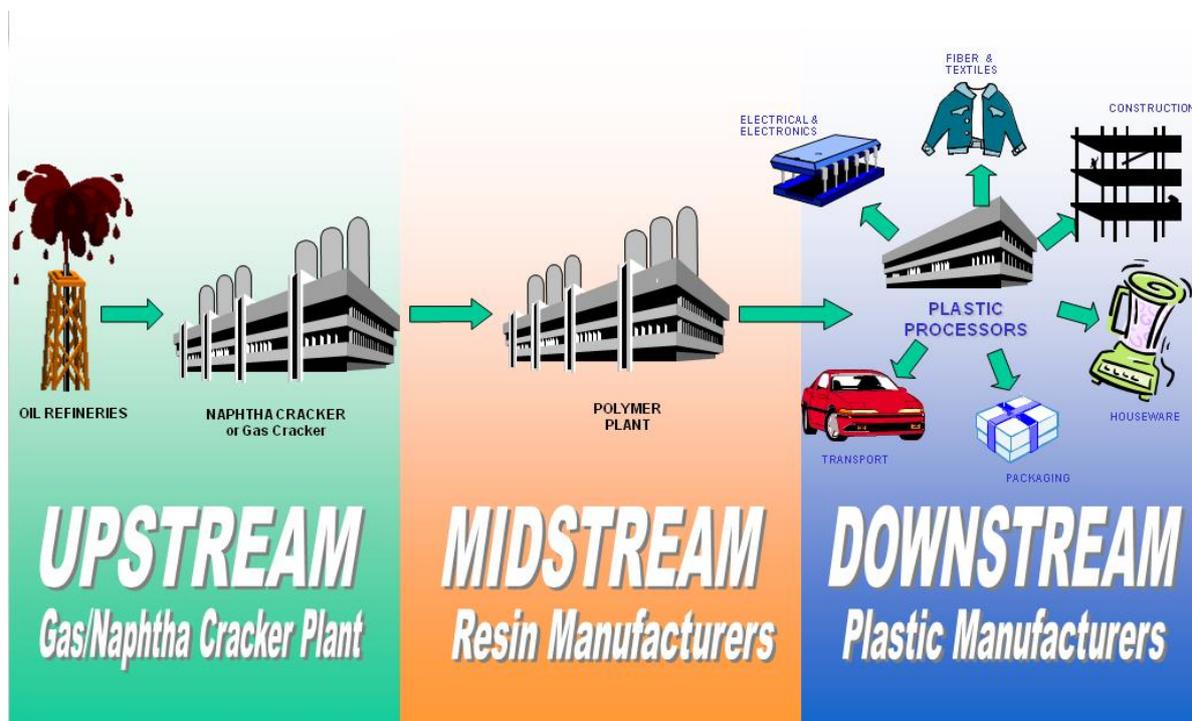
The PPIA has also categorized its subsectors as such based on their finished products:

- Flexible plastics
- Net, twine and sack
- Pipes and fittings
- Plastic bags
- PVC products
- Recycled plastics
- Rigid plastics
- Styro products
- Tapes and Others

While there are a few large companies, the industry is mainly comprised of small to medium scale enterprises with varying and wide degrees of equipment sophistication. Majority of the companies are situated in the CAMANAVA (Caloocan, Malabon, Navotas, Valenzuela) area, while others are from Manila, Pasig and the CALABARZON (Cavite, Laguna, Batangas, Rizal and Quezon).

Main production processes include film and sheet extrusion; injection moulding; compression moulding; extrusion blow moulding; injection blow moulding; injection stretch blow moulding; pipe and profile extrusion; net and twine extrusion; woven sack extrusion and weaving; sheet thermoforming, printing, lamination, slitting and bag forming; and recycling. A survey conducted by PPIA in May 2012 reveals that most companies adapt top of the line, state of the art technologies from Europe for their operations, especially large scale industries with high quality and volume demands. On the other hand, companies using old, outdated and cheap equipment still remain, for small scale industries where volume requirements are low. The strength of these smaller companies is that they keep their overhead low and are capable of modifying and retrofitting their machines to improve their efficiency. For this, the industry is given an internal overall medium rating for their operations.

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2. Supply Chain and Industry Linkages

Figure 1. Backward and Forward Linkages of the Plastics Industry

The Philippine plastics industry can be categorized according to the following manufacturing stages:

- **Upstream** manufactures the basic raw materials called monomers from naphtha which is an oil refinery by-product.
- **Midstream** produces the plastic resins or polymers from monomers represented by the Association of Petrochemical Manufacturers of the Philippines (APMP). However, developments took over with the production capacities of the midstream industries. The NPC Alliance Corporation (formerly Bataan Polyethylene) produces 275,000 MTPY of Polyethylene (PE), the Petron Corporation (formerly Philippine Polypropylene Inc.) utilizing its Fluidized

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Bed Catalytic Converter boosted its Polypropylene (PP) production capacity to 160,000 MTPY, and JG Summit Petrochemical Corporation with its Naphtha Cracker Plant Project is set to increase its production of PE to 380,000 MTPY and PP to 190,000 MTPY. The supply of Polyvinyl Chloride (PVC) from the Philippine Resins Industries Inc. (PRII) at the current capacity is 160,000 MTPY and Polystyrene (PS) by Chemrez Technologies at 30,000 MTPY would likewise remain stable. The Polyethylene Terephthalate (PET) supply would continue to be imported.

- **Downstream** represents the local plastic fabricators and converters who use the plastic resins to manufacture packaging, industrial and consumers' plastic products. There are only a few large downstream facilities. Majority are small and medium scale enterprises with varying and wide degrees of equipment sophistication. The industry is categorized into subsectors based on their finished products such as: Flexible plastics, Net, twine and sack, Pipes and fittings, Plastic bags, PVC products, Recycled plastics, Rigid plastics, Styro products, Tapes and Others. Based on industry survey, there are more than 1,000 plastic fabricators and converters nationwide. The labor force in the industry is estimated at 600,000 direct and indirect workers as production of plastic products have to go through many labor-intensive stages. These include the preparation of the plastic resins i.e. mixing with additives/colorants or compounding before extruding, molding, forming or laminating the plastic products, and additional workers or cutting, printing, labeling, packing and warehousing stages. The raw materials consumed by the downstream plastic industry are mostly imported as local midstream petrochemical companies still has to meet this requirement.

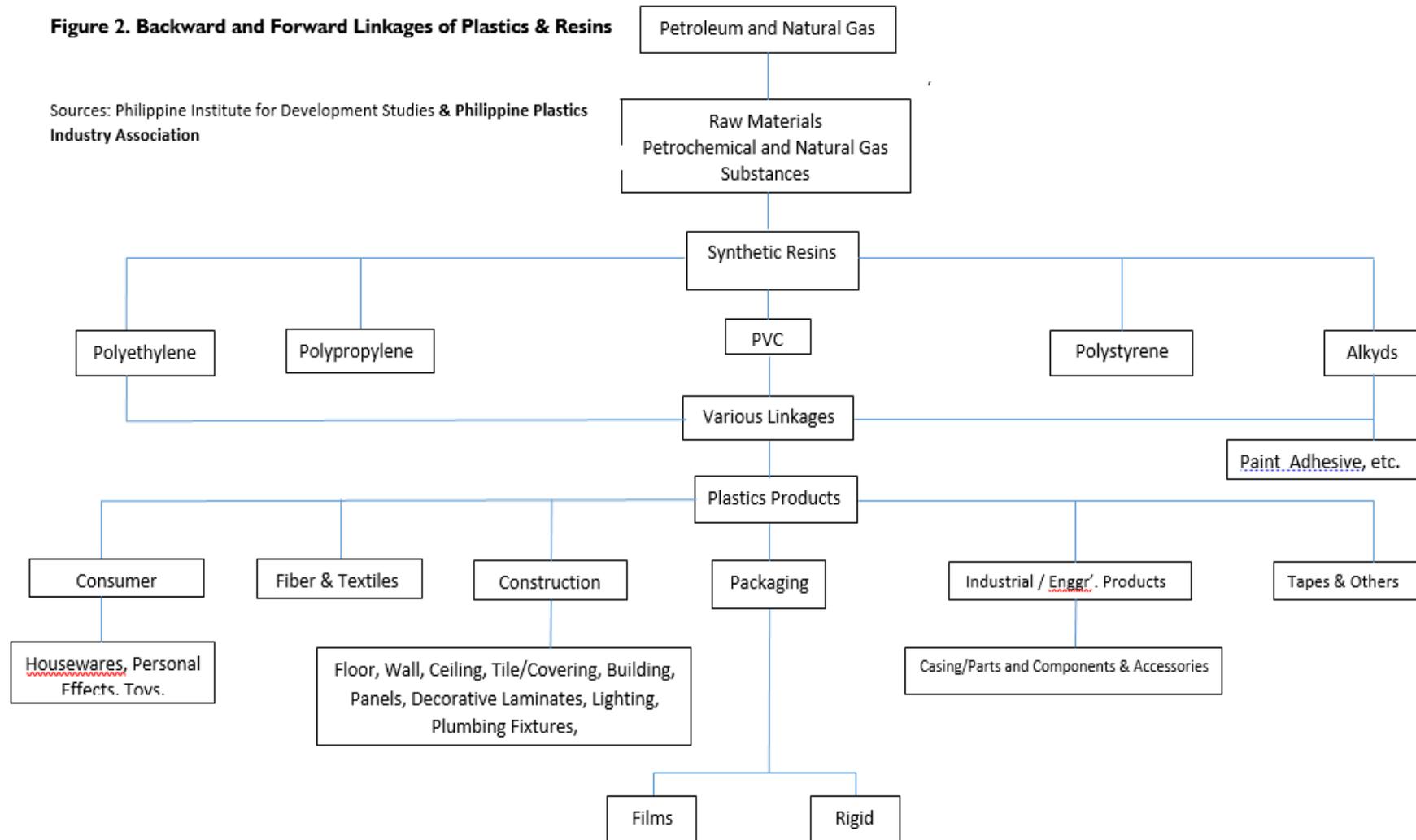
The industry lacks an upstream sector to provide the midstream with ethylene and propylene. The midstream which manufactures synthetic resins (polyvinyl chloride (PVC), polystyrene (PS), polypropylene (PP) and polyethylene (PE) for the downstream sector, had to import and are vulnerable to foreign exchange fluctuations and tariff rates. This part of the industry has not grown very large due to the insufficient supply of inputs from its upstream sector. The current shape of the industry is central to the downstream industry. There are 1,600 companies in the downstream industry. Some of the companies, particularly the small ones, have encountered problems that force them to close and sell their business to larger plastic manufacturing companies

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Figure 2. Backward and Forward Linkages of Plastics & Resins

Sources: Philippine Institute for Development Studies & Philippine Plastics Industry Association



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3. Industry Players and Associations

The Philippine Plastics Industry Association, Inc. (PPIA) is the country's premiere association of plastic fabricators with members engaged in molding, extrusion, weaving, lamination, recycling, and more. It was formed on 18 January 1970 with its office building located at 122 A Del Mundo St, between 10th and 11th Avenues, Caloocan City, Metro Manila, Philippines. Its leadership in 2014 consists of 51 officers, of whom 49 are men and 2 are women.

The PPIA began as an organization dedicated to the promotion of cooperation and understanding among plastic product manufacturers in the country. It has built a reputation as the **“Voice of the Philippine Petrochemical Downstream Plastics Industry”**, effectively representing the industry in resolving significant issues and concerns affecting competitiveness, interests in key policies and legislation – particularly on tariffs, environmental laws, customs rules and regulations, and product standards, among others.

The PPIA is actively involved in addressing environmental issues. In May 2003, it converged with the major plastics sector groups and allied industries in the country to carry out a uniform advocacy and information and educational campaign on proper plastic waste management, recovery, and recycling by convening an ad hoc group called the Multi-Sectoral Committee on Plastics and the Environment.² PPIA co-organizes trade exhibitions to promote business opportunities for locally produced products and enhance linkages to the latest plastics manufacturing technologies from around the world.

The PPIA maintains active affiliations with local organizations such as the Federation of Filipino Chinese Chamber of Commerce and Industry (FFCCCII), the Philippine Chamber of Commerce and Industry (PCCI), the Federation of Philippine Industries (FPI), the Exporters Confederation of the Philippines (PhilExport), the Philippine Employers & Labor Social Partnership, Incorporated (PELSPI), Samahan sa Pilipinas ng mga Industriyang Kimika (SPIK) and the Solid Waste Management Association of the Philippines (SWMAP). Internationally, PPIA co-organized and has been the country's representative in the ASEAN Federation of Plastic Industries (AFPI) since its establishment in 1981 and the Asian Plastics Forum (APF), a regional grouping formed to discuss and address environmental issues on plastics. It is also a member of the Council of International Plastic Associations Directors (CIPAD) and the Global Plastic Litter Group where PPIA is the country's signatory to the Declaration for Solutions on Marine Litter.³

² Members include PNOC Alternative Fuels Corporation (PNOC-AFC), formerly Petrochemical Development Corporation of the Philippine National Oil Corporation (PNOC-PPDC), Association of Petrochemical Manufacturers of the Philippines (APMP), Polystyrene Packaging Council of the Philippines (PPCP), Metro Plastics Recyclers Association Inc. (MPRAI), PET Manufacturers' Association (PETMA), Flexibles Group, Packaging Institute of the Philippines (PIP), Soap and Detergents Association of the Philippines (SDAP), among others.

³ <http://www.marinedebrisolutions.com/Global>

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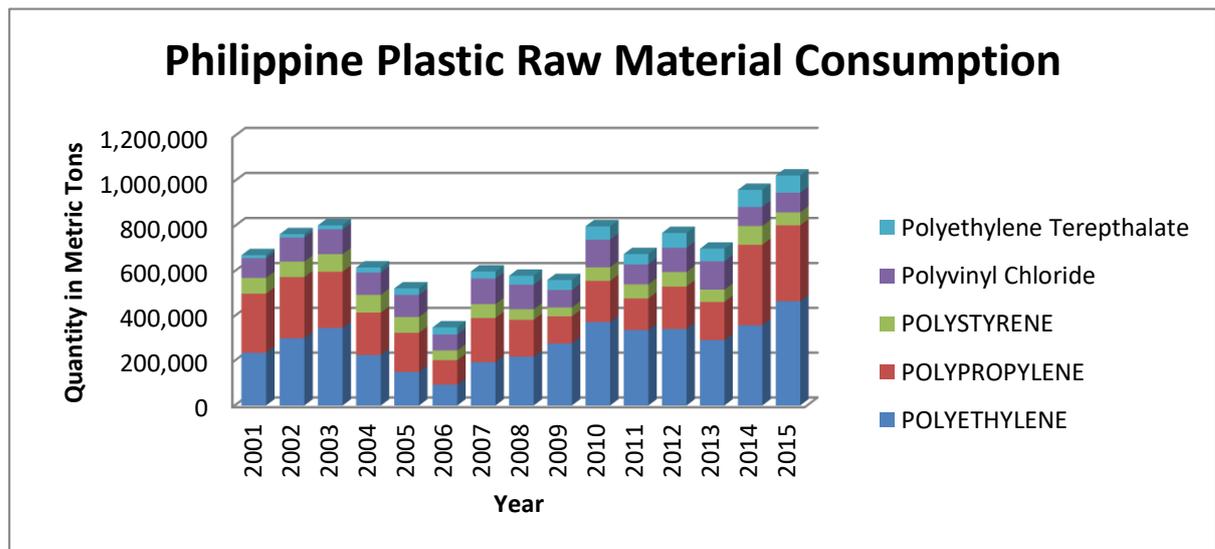
4. Factors Affecting Supply and Demand

Supply. The raw materials consumed by the downstream industry are mainly imported since the local midstream petrochemical companies have yet to meet its requirements. With recent developments, including the recent takeover of NPC Alliance Corporation (formerly Bataan Polyethylene) and Philippine Polypropylene Inc. (PPI now under Petron Corporation, formerly Petrocorp), and upstream movements, including Petron's Fluidized Bed Catalytic Converter for Propylene to boost PPI's operations and JG Summit Olefins Corporation's Naphtha Cracker Plant Project set to be on stream by 2014 to boost JG Summit Petrochemical Corporation's operations, there is confidence that there would be stable, consistent and competitively priced supply of polymer resins from the domestic market to fulfill the needs of local plastic manufacturers for Polyethylene (PE – HD & LD) and Polypropylene (PP) materials. The supply of Polyvinyl Chloride (PVC) from Philippine Resins Industries Inc. (PRII) who controls the market and Polystyrene (PS) from Chemrez Technologies, both local manufacturers, on the other hand, remains stable. Polyethylene Terephthalate (PET) is 100% imported.

Chart I illustrates the consumption of major raw materials by the domestic downstream industry. It shows that PE dominates consumption from 2001 to 2011, followed by PP, PVC and PS. PET is slowly gaining ground with a relatively consistent growth rate.

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Chart I. Philippine Plastic Raw Material Consumption



Demand. The plastics industry mostly caters to the local market, and with an official population data of 100 million Filipinos released by the NSO in 2015, there is a big potential market. Unfortunately, local consumers tend to patronize cheap products, particularly imported goods that do not conform to safety and quality standards. Furthermore, countries like China have economies of scale with its large domestic and export base, while other ASEAN countries might be enjoying have government support to encourage exports

Export opportunities are present, although tapping the same is challenging due to cost competitiveness (high cost of electricity, labor and raw materials). Local documentary and red tape as well as delays in recovering tax credits contribute to its additional challenges. With ASEAN economic integration in 2015 and more and more global players shifting their operations out of China, there is a need to review and assess opportunities that would allow not only foreign investments to come to the Philippines but also encourage exports among local players.

A review of the free trade agreements entered by the Philippines is in order. Placing plastic raw materials under sensitive and highly sensitive list to protect the midstream petrochemical industry curtails the growth of the downstream plastic manufacturing industry since most of the raw materials used are imported. Thus, the removal of potential distortive tariff policies would “level the playing field” and allow local manufacturers to compete and fulfill the demand of the local market.

Programs like “Buy Pinoy” should be actively promoted to shift the behavior of the market. Government agencies should also strictly implement RA 9184 or the Government Procurement Reform Act and plug loopholes that allow imported materials to be sold in the guise of local products.)

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Table 3. Consumption of the Plastics Industry (2015)

Polymer	Approximate Percentage Consumption of the downstream industry
Polyethylene	49.12%
Polypropylene	35.61%
Polyvinylchloride	9.21%
Polystyrene	6.06%
Polyethylene Terephthalate (PET)	8.07%

Only polyvinylchloride and polystyrene are produced locally. The remaining 75% of inputs are imported. Meanwhile, the main products for the plastic industry includes Polybags (woven sacks, regular film bags, PVC pipes, Industrial crates, bottles and housewares). Hence, the main markets of plastics include the manufacturers and producers of sugar and rice, millers and supermarkets, contractors, hardwares, restaurants, fish dealers, bakeries, soft drink manufactures, cosmetics, health care, food and pharmaceutical industries and consumers, wholesalers and retailers.

The demand determinants vary depending on the market. Industrial clients mainly look for quality rather than price. For the mass consumer market, price is a critical factor.

B. ECONOMIC PERFORMANCE

According to the World Economic Forum on global competitiveness, the Philippines is being left behind compared with its neighbors in ASEAN. However in the recent WEF survey, the Philippines has improved its economic position while rising its rankings from 70th to 59th in 2013-2014, and is now ahead of Cambodia, Vietnam, Lao PDR, and Myanmar in terms of competitiveness. ASEAN countries' level of competitiveness are as follows (competitiveness ranking in parenthesis): Singapore (2), Malaysia (24), Brunei Darussalam (26), Thailand (37), Indonesia (38), Philippines (59), Vietnam (70), Cambodia (88), and Myanmar (139). Among the original five ASEAN countries, only the Philippines has been left behind as a factor-driven economy while, Indonesia, Malaysia, and Thailand are classified as efficiency driven and Singapore as innovation driven economies. The competitiveness of the Philippines is weighed down by five major problematic factors in doing business, namely: corruption, inefficient government bureaucracy, inadequate supply of infrastructure, policy instability and tax regulations.

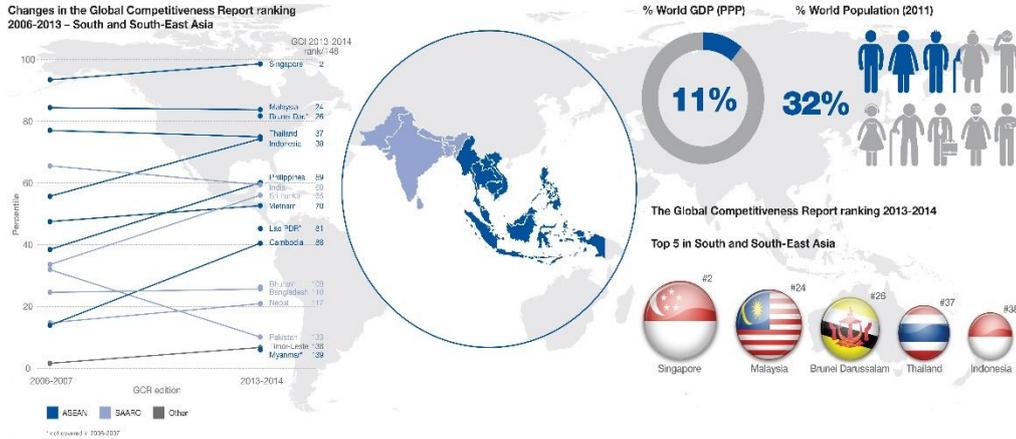
ENHANCED ROADMAP PLASTICS INDUSTRY

Figure 3. Global Competitiveness Report, 2013-2014

The Global Competitiveness Report 2013–2014 South and South-East Asia



The competitiveness divide runs deep between South and South-East Asia. Competitiveness levels and trends are overwhelmingly better in South-East Asia than in South Asia. Led by Singapore, the five best performing are all members of ASEAN (the Association of Southeast Asian Nations), well ahead of most countries of the South Asian Association for Regional Cooperation.

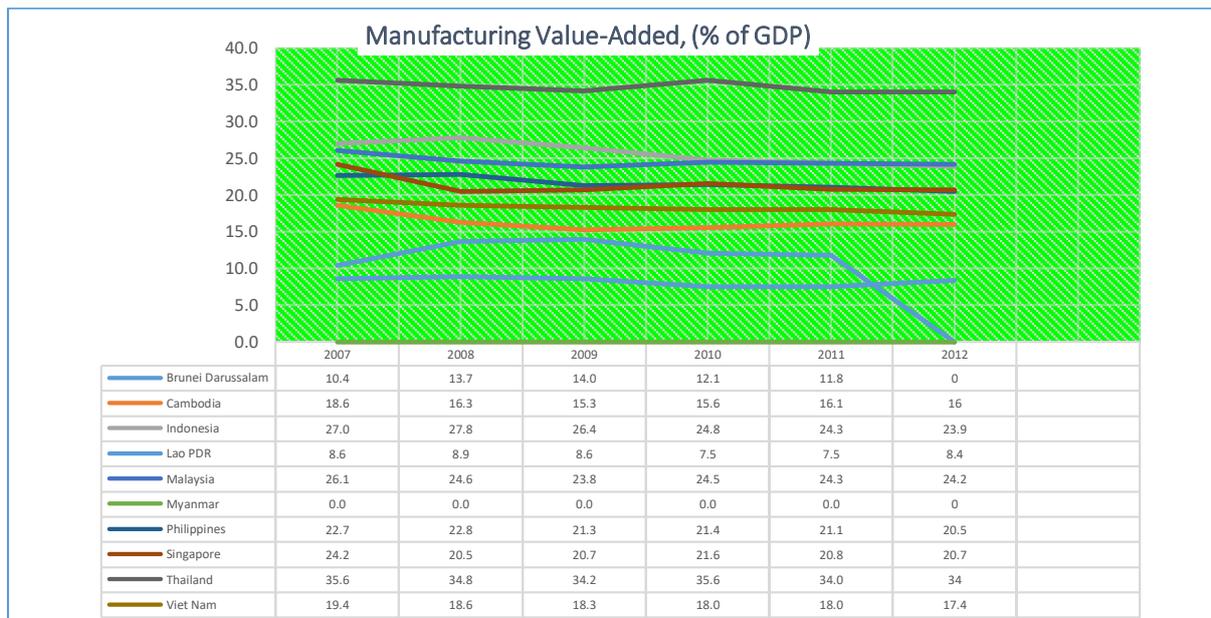


Sources: World Economic Forum, Global Competitiveness Report 2013-2014; International Monetary Fund, World Economic Outlook, April 2013; World Bank, World Development Indicators; UN Population Division, World Population Prospects, 2011; UN Statistics Division, World Development Indicators. Note: All figures are in US dollars, unless otherwise specified. All data are in US dollars, unless otherwise specified.

I. Manufacturing Output, Value Added, & GDP Share

From 2007 to 2012, the value added of manufacturing as a percentage of GDP for all ASEAN member states have declined. Vietnam suffered the most, while experiencing a negative 3.3% growth rate in 2012 for its manufacturing value added. The Philippines, on the other hand, has a relatively stable manufacturing sector having an increased growth of 2.84% in the same year.

Figure 4. Manufacturing Value Added (% of GDP), 2007-2012



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Table 4 shows the highest and lowest value-added⁴ of plastics sub-industries in 2014. Among the eight plastics sub-industries, the plastic articles for packing goods obtained the highest value-added, having almost half the value for the entire plastics industry in the country. The manufacture of plastic window, etc., on the other hand, gets the lowest value added due to very minimal difference between value of output and the intermediate cost.

Table 4. Value Added of the Plastics Industry, 2014

Plastics Sub-Industries	Value of Output	Intermediate Cost	Value-Added
plastic articles for packing goods (e.g. boxes, bags, sacks, etc.)	54,242,715	41,625,441	10,550,481
plastic household wares	6,602,309	5,502,337	987,399
plastic and furniture fittings	15,884	10,766	3,765
plastic pipes and tubes	13,351,261	9,903,168	2,727,321
other plastic, industrial/office/school supplies	13,340,983	8,956,059	3,718,540
primary plastic products (e.g sheets, films, plates, etc.)	3,446,570	2,926,225	394,965
plastic window and door screen, shades, and venetian blinds	1,555,173	1,168,538	310,744
plastic products, n.e.c	10,368,118	7,039,177	2,778,733
Plastics Industry Total	102,923,013	77,131,711	21,471,948
Manufacturing Industry Total	4,505,501,799	3,040,550,408	1,162,565,558

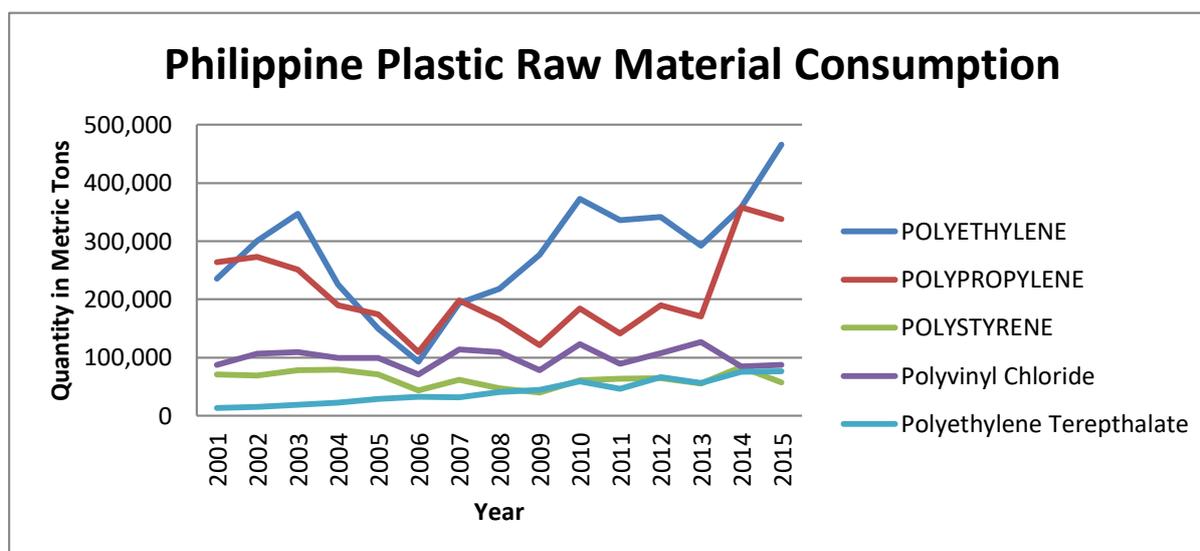
Source: ASPBI, 2014

Figure 5 represents the major raw materials consumed by the domestic downstream industry. PE dominates consumption from 2001 to 2015, followed by PP, PVC and PS, while PET is slowly gaining ground with a relatively consistent growth rate. Data reveals that the sharp decline from 2003 to 2006 is attributed to tariff distortion where raw materials were imposed a duty rate of 15% (for ASEAN-CEPT), while tariff of imported plastics finished goods is only 5%. With a slight correction of the tariff structure, domestic resin consumption recovered from the period of 2007 to 2009 and showed full recovery when tariffs for ASEAN-CEPT were eliminated in 2010. However, PPIA maintains that tariff distortion still persists since the industry continues to import 55% its resin needs from MFN countries (tariff adjusted from 15% to 10% per EO 61 in 2011) since ASEAN suppliers cannot meet the local demand. Likewise, the PE consumption demand declined in 2011 due to the banning of plastic bags by local government units but in 2015 its consumption reaches new heights.

⁴ Value added⁴ is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources.

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Figure 5. Philippine Plastic Resins Consumption



Source: PSA

2. Trade

Chart 2 shows the import and export volume of plastic finished goods and clearly shows a trade deficit. Over the past seven years, from 2006-2015, the average growth rate for imported finished plastic products is 6.7%. In 2013, the year-to-year import volume of finished goods marginally increased by 4.60%, from 403,413,759 MT in 2012 to 422,074,562 MT in 2013.

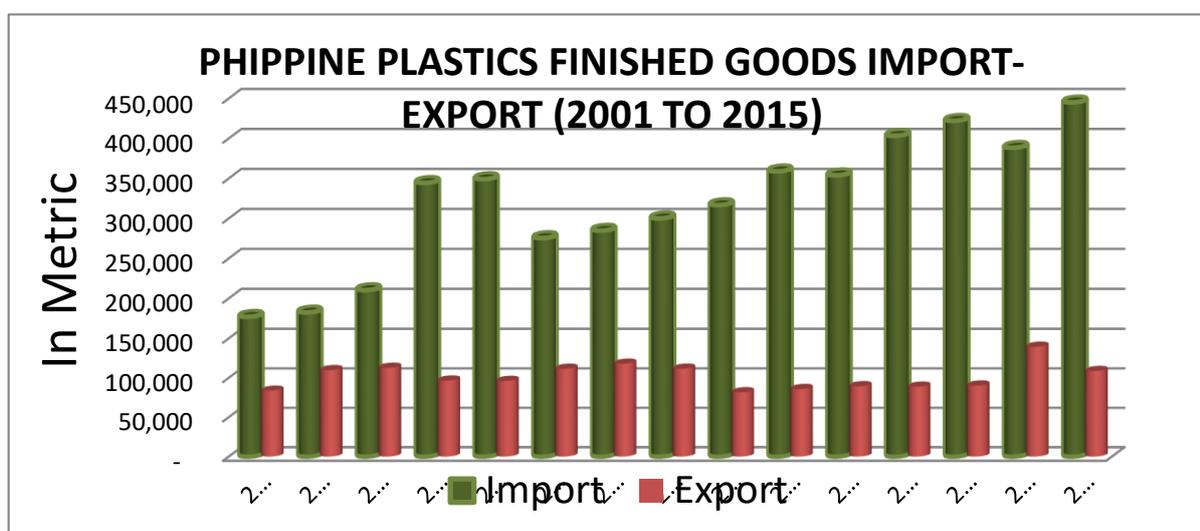
In 2009, the country imported mostly raw materials of plastics since there are no domestic factories of such products. Top imported raw materials of plastics in 2009 include ethylene (US\$ 126.2 million), polyether, epoxide (US\$ 104.38 million), other olefin primary (US\$ 74.5 million), silicone, primary form (US\$ 66.7 million), and self-adhesive materials (US\$ 56.43 million). On the other hand, the finished plastic materials that the Philippines imported were box, bag, closures (US\$ 89.98 million), plate and sheets (US\$ 83.65 million), tube, pipes and hoses (US\$ 38.81 million), and tableware and housewares (US\$ 20.9 million). Top importing countries include Japan, China, Indonesia, Taiwan and Vietnam. The country also exported to Thailand box, bag, closures, etc. and other articles of plastics.

From 2006-2015, the exports of finished plastics has a declining average growth rate of -2.3%. For 2013 alone, the year-to-year export volume of these finished goods slightly grew from 88,659,000 MT in 2012 to 90,083,294 MT in 2013. The top export plastic products include finished product such as box, bag, closure, etc. (US\$ 73.06 million), plate, sheet, etc. (US\$ 27.82 million), waste, parings, scrap (US\$ 25.58 million), raw materials such as ethylene, primary form (US\$ 66.96 million), other articles of plastic (US\$ 56.78 million), and self-adhesive materials (US\$ 25.58 million). Top exporting countries include Singapore, Thailand, Korea, Japan, USA and China.

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However, the major factors affecting supply include the oil prices increases of ethylene and propylene. Since these raw materials are imported from abroad and prices are subject to currency changes, currency fluctuations adversely affect the downstream industry because of the limited purchasing power of their market. Most multinationals, such as Procter & Gamble and Colgate, now outsource manufacturing operations to Thailand, Vietnam and other countries, because of their cheaper cost of production. Wholesale clients are diminishing. As for the consumer market, downstream firms are having difficulty in managing their costs due to the limited budget of consumers. Overall, the import to export ratio has grown by 7.15% over the years (2006-2013). In 2013, year-to-year import-export ratio slightly increased by 2.8%, with 4.55 in 2012 to 468 in 2013.

Chart 2. Import and Export of Finished Goods



Source: PSA

Table 5. Imports and Exports of Plastic Products

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT OF FINISHED GOODS (IN MT)														
106,358	118,544	143,468	239,515	233,609	176,572	188,351	194,763	215,447	241,370	235,517	403,414	422,075	388,445	445,137
EXPORT OF FINISHED GOODS (IN MT)														
83,500	109,603	112,608	96,330	95,954	111,374	117,805	111,461	81,501	85,694	89,215	88,659	90,083	139,315	108,524
IMPORT EXPORT RATIO														
1.27	1.08	1.27	2.49	2.43	1.59	1.60	1.75	2.64	2.82	2.64	4.55	4.69	2.79	4.10

Source: PSA

3. Investment

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Industry estimates downstream investments cost at Php 600 billion. The major components of the cost are plant, property and equipment, coupled with raw materials, power cost and workers' salary (see Box 1). Total employment in the industry is estimated to be around 650,000 workers.

Box 1. PPIA Total Downstream Plastics Industry Investments Cost

Parameters		
A-	120,000-	Cost of machinery per or one (1) metric ton of product
B	-120,000-	Cost of equipment and auxiliaries (not limited to molds, compressors, chillers, etc.)
C	-240,000-	Total A + B
D	-703,672-	2012 Total Resin Consumption in MT
Computation		
1.	Estimated cost of machinery, equipment and auxiliaries (C * D) -	PHP 168,881,280,000 28.15% per resin consumption
<u>The other major investments:</u>		
2	RM inventory and Working Capital	- 149,718,700,000 25.00%
3	Building, Land and Electrical	- 221,400,020,000 36.90%
4	Transport Vehicles	- 60,000,000,000 0.00%
	Total Investment	- PHP 600,000,000,000 100%
		or \$13,953,488,372

Box 2. Investment Opportunity for the Plastics Industry

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Case Study: OPPORTUNITIES OF THAI COMPANIES TO EXPAND AND PENETRATE INTO THE PHILIPPINE MARKET OF PLASTICS

Based on the previous data, Thailand has already penetrated the Philippine market of plastics specifically on raw materials such as ethylene, primary form, polyether, epoxide, other olefin primary, silicone primary, etc. Hence, finished products that the country imported from Thailand are box, bag, closure, other plate and sheets, tubes, pipe, hoses and fit. Philippines has a greater advantage to import from Thailand because the country can avail of the ASEAN CEPT rate which is “0%” and the cost of transportation will be cheaper.

Meanwhile, Thai Companies can invest in the Philippines particularly the “upstream and midstream industries” for the Plastic Industry since they can avail of the Foreign Investments Incentives from the Board of Investments in the Philippines. Likewise, there are no government regulations for this kind of industry. Thai companies deciding to invest in the Philippines should consider the naphtha crackling plant which supply ethylene and propylene, to set up a synthetic resin manufacturing plant, and to act as one group in the international market to be able to capture transactions that require bigger volumes.

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4. Financial

Table 6 shows the sub-plastic industries revenue in 2010. The total revenue for the industry is about 1.93% of the manufacturing sector. Of the three major sources of revenues in the industry, the value of products and by-products has the largest share to revenue with 98.08% of the plastics industry and 1.89% of the manufacturing sector. Of the eight sub-industries, the following recorded an above plastic industry revenue average: plastic articles for packing goods; plastic pipes and tubes; and other industrial/office/school supplies. Overall, the plastics industry revenue average is less than the manufacturing sector revenue average.

Table 6. Revenue by Plastics Sub-Industry, 2010

Plastics Sub-Industries	Total	Revenue per Establishment	Value of Products and by-Products	Value of Industrial Services Done for others	Value of Non-industrial Services Done for others
plastic articles for packing goods (e.g. boxes, bags, sacks)	40,021,945	138,007	39,493,494	23,391	106,830
plastic household wares	3,787,781	64,200	3,760,886		11,692
plastic and furniture fittings	S	S	S	S	S
plastic pipes and tubes	8,215,246	195,601	8,137,220		7,365
other plastic, industrial/office/school supplies	10,550,252	131,878	10,420,013		5,567
primary plastic products (e.g. sheets, films, plates, etc.)	2,265,012	87,116	2,223,064	8,226	4,286
plastic window and door screen, shades, and venetian blinds	585,609	39,041	546,329		
plastic products, n.e.c	4,637,757	51,531	4,142,263	377,833	
Plastics Industry Total	70,063,602	116,385	68,723,269	409,450	135,740
Manufacturing Industry Total	3,623,370,280	222,716	3,494,109,288	36,305,231	9,079,935

"s" denotes suppressed data to avoid disclosure of individual establishment's data.

Source: ASPBI, 2010

Table 7, on the other hand, shows the computed cost per establishment of the Philippine plastics industry in 2010. The manufacture of plastic articles for packing goods, and plastic pipes and tubes again top the list for having the highest and more than the plastics industry average cost. Raw materials account for the largest cost component with about one-third of the plastics total cost; and with less than 1% of the entire manufacturing cost. The least share to cost, on the other hand, is relegated to fuels and lubricants with a mere 0.13% share to total plastics industry cost. The other expenses component, which comprises at least 2.5% share to industry, is an aggregate of: 1) goods purchased for resale; 2) interest expense; 3) taxes on products and production; 4) research and experimental development; 5) environmental protection expense; 6) royalty fee; 7) franchise fee; 8) foreign exchange losses; 9) bad and doubtful debts; 10) depreciation of fixed assets; and 11) other costs.

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Table 7. Cost by Plastics Sub-Industry, 2010

Plastics Sub-Industries	Cost per Establishment	Raw Materials	Fuels, Lubricants	Electricity and Water	Industrial Services Done by Others	Non-Industrial Services Done by Others	Other Expenses
plastic articles for packing goods (e.g. boxes, bags, sacks, etc.)	116,616	23,760,995	283,157	3,412,748	904,817	2,602,058	984,180
plastic household wares	56,892	2,518,831	27,157	515,958	96,520	52,138	79,339
plastic and furniture fittings	S	S	S	S	S	S	S
plastic pipes and tubes	164,693	5,382,193	68,371	578,812	66,975	320,113	120,194
other plastic, industrial/office /school supplies	93,459	4,966,998	38,151	875,792	145,256	681,784	115,807
primary plastic products (e.g sheets, films, plates, etc.)	66,228	1,315,334	46,717	143,130	31,314	84,359	19,049
plastic window and door screen, shades, and venetian blinds	32,944	374,876	12,020	31,562	8,529	30,080	32,439
plastic products, n.e.c	40,619	2,456,555	74,734	313,351	76,868	321,838	95,060
Plastics Industry Total	95,417	17,014,787	550,307	5,871,353	1,330,279	4,092,370	1,446,068
Manufacturing Industry Total	172,870	1,952,181,832	182,657,685	85,260,697	79,358,216	204,939,609	89,026,884

s" denotes suppressed data to avoid disclosure of individual establishment's data.

Source: ASPBI, 2010

Table 8 shows the computed profit (total expenses less total revenue) for the eight plastics sub-industries in the country in 2010. The manufacture of other plastic (industrial/office/supplies) registered the highest profit average with 1.41 pesos earned for every peso spent. This is opposite the plastic household wares which only generate a mere 1.13 pesos revenue for every peso spent.

Table 8. Profit by Plastics Sub-Industry, 2010

Plastics Sub-Industries	Revenue	Cost	Profit	Revenue per Cost
plastic articles for packing goods (e.g. boxes, bags, sacks, etc.)	40,021,945	33,818,905	21,389	1.18
plastic household wares	3,787,781	3,356,672	7,306	1.13
plastic and furniture fittings	S	S	S	S
plastic pipes and tubes	8,215,246	6,917,142	30,907	1.19
other plastic, industrial/office/school supplies	10,550,252	7,476,779	38,418	1.41

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primary plastic products (e.g sheets, films, plates, etc.)	2,265,012	1,721,944	20,887	1.32
plastic window and door screen, shades, and venetian blinds	585,609	494,169	6,096	1.19
plastic products, n.e.c	4,637,757	3,655,726	1,091	1.27
Plastics Industry Average	116,384	95,417	20,967	1.22
Manufacturing Industry Average	222,716	172,870	49,846	1.29

s" denotes suppressed data to avoid disclosure of individual establishment's data. Source: ASPBI, 2010

5. Employment

Table 9 shows the eight plastics sub-industries in 2010. Total employment generated by all manufacturing establishments reached 978,027 in 2010. Of this, 968,671 (99%) were paid employees while the rest were working owners and unpaid workers (Annual Survey of Philippine Business & Industry, 2010). Only three industries under plastics have this above employment average than the manufacturing average of 60 workers per establishment. Of the total 37,345 workers employed by the plastics industry, about 64% were men and 36%, women. About 8 of 10 male workers and 7 of 10 female workers are in production lines. As in other sub-industries of the chemicals industry, women workers are in administrative or support offices. It is also interesting to note that all the plastic industries have a compensation level that is less than the manufacturing average of Php 210,700 per year. The highest and the lowest paid are in the manufacture of primary plastic products and in the manufacture of plastic window and door screen, respectively.

The plastic industry in the Philippines is vital to the growth of the national economy. Allied industries such as electronics, construction, food, cosmetics, packaging, automotive and many others depend on its viability to strengthen its individual growths. Having a local source benefits all sectors with its adaptive just in time delivery capabilities, and more importantly softens the impact brought about by dollar and import requirements.

Table 9. Employment in the Plastics Industry, 2014

Plastic Sub-Industries	Employment per Establishment (PhP. 1,000)	Annual Compensation per Paid Employee (PhP. 1,000)	Value Added per Total Employment (PhP. 1,000)
plastic articles for packing goods (e.g. boxes, bags, sacks, etc.)	68	181	415
plastic household wares	45	140	254
plastic and furniture fittings	8	135	157
plastic pipes and tubes	63	265	574
other plastic, industrial/office/school supplies	118	193	367
primary plastic products (e.g sheets, films, plates, etc.)	54	198	336
plastic window and door screen, shades, and venetian blinds	27	161	346
plastic products, n.e.c	39	265	448
Plastic Industry Average	422	1,538	2,897
Manufacturing Industry Total	49	258	950

Source: ASPBI, 2014

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This manufacturing sector also contributes to the much needed employment for Filipinos and their families. It allows the hiring of both skilled and unskilled personnel where they could eventually hone their skills and move up the ladder. Most of its current supervisors rose from the ranks and with the skills training currently provided in-house (and this could eventually be improved and institutionalized with the help of the K+12 and TESDA programs), it allows the trained workforce to eventually seek better-paying job opportunities overseas. Most of the workforce in the predominantly family owned companies for the industry is second generation, or children of existing employees. While labor unions are present, most of them are non-adversarial and PPIA continues to promote industrial peace through social dialogue with the help of the Philippine Employers-Labor Social Partners Inc. (PELSPI), an association composed of employers, labor and the academe with core principles revolving around the three pillars of decent work, productivity and competitiveness.

6. Multiplier Effects

Multiplier effects are used to explain the effect of one subsector of the economy on other subsectors as well as on household income and employment. This section was completed through an Input-Output (I-O) analysis of the 2000 and 2006 I-O Accounts of the Philippines of the Philippine Statistical Authority⁵ using a semi-closed model.⁶

For the plastics industry, the 2000 and 2006 I-O tables provided by the NSO do not contain the same set of sub-industries (see below). Note that in 2006, all the plastic sub-industries are re-grouped and re-classified such that manufacture of synthetic resins, plastic materials, and other man-made fiber except glass, for instance, was divided into two industries: 1) manufacture of plastic products; and 2) manufacture of plastic products in primary forms and of synthetic rubber.

Sub-industries in the 2000 I-O Table

- Manufacture of plastic furniture, plastic footwear, and other fabricated plastic products
- Manufacture of synthetic resins, plastic materials, and other man-made fiber except glass

Sub-industries in the 2006 I-O Table

- Manufacture of plastic products
- Manufacture of plastics in primary forms and of synthetic rubber
- Manufacture of plastic furniture

Global Total Output Multiplier and Multiplier Effects. Using the 2006 I-O Accounts of 240 industries, the global total output multiplier for the plastic-related industries are 3.58 (plastic furniture), 3.46 (plastic products), and 3.15 (plastics and synthetic rubber) respectively, which means that a one-peso increase in final demand accordingly generates a corresponding *potential* increase of output in the economy. Among these plastic sub-industries, the manufacture of plastic furniture⁷ ranks the highest at 71st. This industry climbed from its previous ranking in 2000 (142nd) when it only had a multiplier of 3.113679.

⁵ PSA Input-Output Tables of the Philippines, 2014. <http://www.nscb.gov.ph/io/DataCharts.asp>.

⁶ The semi-closed input-output model treat both final demand and value-added flows as endogenous. In the semi-closed input-output model, household activities (as reflected by the use of labor inputs by industries) and the purchase of different goods and services by households are taken into account.

⁷ In the 2000 Input-Output Account, the manufacture of plastics furniture was then classified as manufacture plastics furniture, plastic footwear, and other fabricated plastic products.

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Table 10. Global Total Output Multiplier and Multiplier Effects

Rank	Industry	Global Total Output Multiplier	Assumed Increase in Demand (in pesos)	Total Multiplier Effects (in pesos)
002	Manufacture of semi-conductor devices and other electronic components	4.80542	100,000,000	480,542,000
004	Manufacture of Office, Accounting and Computing Machinery	4.54647	100,000,000	454,647,000
006	Building and repairing of ships and boats	4.38619	100,000,000	438,619,000
007	Postal and courier activities	4.26725	100,000,000	426,725,000
008	Manufacture of other wearing apparel n.e.c	4.21325	100,000,000	421,325,000
009	Railway transport	4.17015	100,000,000	417,015,000
010	Agricultural, Forestry and Fishing Activities and Services	4.12392	100,000,000	412,329,000
071	Manufacture of plastic furniture	3.58091	100,000,000	358,091,000
097	Manufacture of plastic products	3.46477	100,000,000	346,477,000
153	Manufacture of plastics in primary forms and of synthetic rubber	3.15848	100,000,000	315,848,000

Table 11. Global Total Output Multiplier Comparison, 2000 and 2006

Industry	2000		2006	
	Multiplier	Multiplier Effects	Multiplier	Multiplier Effects
Plastic products	3.113679	311,367,900	3.46477	346,477,000
Plastic furniture			3.58091	358,091,000
Plastic resins	2.930925	293,092,500	3.15848	315,848,000

Domestic Total Output Multiplier and Multiplier Effects. When accounting only for domestic inputs, the rankings of all the three plastic-related industries fell to 145th (plastic furniture, from 71st), 168th (plastic products, from 97th), and 169th (plastic & synthetic rubber, from 153rd) when compared its global multiplier rankings. Table 12 shows that a one-peso increase in final demand in the plastics furniture, for instance, would produce a 2.19 increase in output for the economy. Compared to the 2000 I-O result, this industry was at a lower ranking at 203rd, with a multiplier of 2.01.

Table 12. Domestic Total Output Multiplier and Multiplier Effects

Rank	Industry	Domestic Total Output Multiplier	Assumed Increase in Demand (in pesos)	Total Multiplier Effects (in pesos)
004	Agricultural, Forestry and Fishing Activities and Services	3.246345	100,000,000	324,634,500
005	Slaughtering and meat packing	3.207384	100,000,000	320,738,400
006	Railway transport	3.163985	100,000,000	316,398,500
007	Production, processing and preserving of meat and meat products	3.046025	100,000,000	304,602,500
008	Postal and courier activities	3.026159	100,000,000	302,615,900
009	Production of prepared animal feeds	2.987544	100,000,000	298,754,400
010	Other animal including dairy production	2.976871	100,000,000	297,687,100
145	Manufacture of plastic furniture	2.190953	100,000,000	219,095,300
168	Manufacture of plastic products	2.084212	100,000,000	208,421,200

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169	Manufacture of plastics in primary forms and of synthetic rubber	2.082086	100,000,000	208,208,600
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Table 13. Domestic Total Output Multiplier Comparison, 2000 and 2006

Industry	2000		2006	
	Multiplier	Multiplier Effects	Multiplier	Multiplier Effects
Plastic products	2.013069	201,306,900	2.084212	208,421,200
Plastic furniture			2.190953	219,095,300
Plastic resins	2.025805	202,580,500	2.082086	208,208,600

Table 14 shows the global linkages for the Philippine plastic-related industries.⁸ The manufacture of plastic furniture has a *strong backward linkage* but *weak forward linkage*. Similarly, the manufacture of plastics in primary forms and synthetic rubber has *weak backward linkage* but *strong forward linkage*. A strong backward linkage signifies that the industry induces demand for products of other industries. A strong forward linkage, on the other hand, indicates that the industry stimulates production to other industries with lower inputs.

Table 14. Global Backward and Forward Linkages Rankings

Global Backward Linkage			Global Forward Linkage		
Rank	Industry	Index	Rank	Industry	Index
002	Manufacture of semi-conductor devices and other electronic components	1.4761	002	Wholesale and retail trade	20.4340
004	Manufacture of Office, Accounting and Computing Machinery	1.3965	003	Manufacture of refined petroleum products	9.9722
006	Building and repairing of ships and boats	1.3473	004	Crude oil and natural gas	7.1742
007	Postal and courier activities	1.3107	005	Generation, collection and distribution of electricity	5.4308
008	Manufacture of other wearing apparel n.e.c	1.2942	006	Real Estate Activities	3.1907
009	Railway transport	1.2809	007	Banking Institutions	3.1153
010	Agricultural, Forestry and Fishing Activities and Services	1.2667	008	Manufacture of basic chemicals except fertilizers and nitrogen compounds	2.9262
71	Manufacture of plastic furniture	1.0999	009	Rice/corn milling	2.8007
97	Manufacture of plastic products	1.0643	25	Manufacture of plastics in primary forms and of synthetic rubber	1.5604
153	Manufacture of plastics in primary forms and of synthetic rubber	0.9702	37	Manufacture of plastic products	1.1825
			110	Manufacture of plastic furniture	0.5449

⁸ The relative strength of production linkages is measured by backward and forward linkage indexes. An index greater than 1 indicates relatively strong forward or backward linkage while an index less than 1 indicates relatively weak forward or backward linkage. Meanwhile, the dispersion of the backward and forward linkages of the selected industries is measured using the coefficient of variation. If the coefficient of variation of an industry is greater than the average coefficient of variation for all industries, production linkages are deemed less evenly dispersed. If the coefficient of variation of an industry is less than the average coefficient of variation for all industries, production linkages are deemed more evenly dispersed.

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Table 15. Global Backward and Forward Linkages Rankings Comparison, 2000 and 2006

Industry	2000				2006			
	Backward Linkage		Forward Linkage		Backward Linkage		Forward Linkage	
Plastic products	0.9820	Weak	1.5711	Strong	1.0643	Strong	1.1825	Strong
Plastic furniture					1.0999	Strong	0.5449	Weak
Plastic resins	9.9244	Weak	1.7870	Strong	0.9702	Weak	1.5604	Strong

All the plastics sub-industries have an *evenly* dispersed linkages, suggesting that these industries benefit *more* other industries, both in their backward and forward linkages.

Table 16. Global Backward and Forward Linkages Coefficients of Variation

Industry	Backward Linkage Coefficient of Variation	Dispersion	Forward Linkage Coefficient of Variation	Dispersion
Manufacture of plastic furniture	2.2258	Even	2.9602	Even
Manufacture of plastic products	2.3650	Even	2.1011	Even
Manufacture of plastics in primary form and of synthetic rubber	2.5763	Even	2.9602	Even

Table 17. Global Backward and Forward Linkages Coefficients of Variation, 2000 and 2006

Industry	2000				2006			
	Backward Coefficient		Forward Coefficient		Backward Coefficient		Forward Coefficient	
Plastic products	2.4051	Uneven	1.8397	Even	2.3650	Even	2.9602	Even
Plastic furniture					2.2258	Even	2.1011	Even
Plastic resins	2.4149	Uneven	1.7257	Even	2.5763	Even	2.9602	Even

All the plastic-related industries have *weak domestic backward and forward linkages*. This is because these industries produce final finished goods and consider imported inputs as a major component of production.

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Table 18. Domestic Backward and Forward Linkages Rankings

Domestic Backward Linkage			Domestic Forward Linkage		
Rank	Industry	Index	Rank	Industry	Index
004	Agricultural, Forestry and Fishing Activities and Services	1.4136	002	Wholesale and retail trade	20.5426
005	Slaughtering and meat packing	1.3966	003	Generation, collection and distribution of electricity	5.5673
006	Railway transport	1.3777	004	Manufacture of refined petroleum products	5.5255
007	Production, processing and preserving of meat and meat products	1.3264	005	Real Estate Activities	3.5961
008	Postal and courier activities	1.3177	006	Banking Institutions	3.4470
009	Production of prepared animal feeds	1.3009	007	Palay	2.8237
145	Manufacture of plastic furniture	0.9540	008	Rice/corn milling	2.7736
168	Manufacture of plastic products	0.9076	009	Ownership of Dwellings	2.7273
169	Manufacture of plastics in primary forms and of synthetic rubber	0.9066	47	Manufacture of plastic products	0.9435
			156	Manufacture of plastic furniture	0.5133
			195	Manufacture of plastics in primary forms and of synthetic rubber	0.4803

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Table 19. Domestic Backward and Forward Linkages Rankings Comparison, 2000 and 2006

Industry	2000				2006			
	Backward Linkage		Forward Linkage		Backward Linkage		Forward Linkage	
Plastic products	0.8533	Weak	0.9930	Weak	0.9067	Weak	0.9435	Weak
Plastic furniture					0.9540	Weak	0.5133	Weak
Plastic resins	0.8587	Weak	0.7660	Weak	0.9066	Weak	0.4803	Weak

With the exception of the manufacture of plastics and synthetic fiber, all the plastics sub-industries have *evenly dispersed linkages*, which means these industries benefit *more* other industries in terms of its backward linkages. The same is true with these industries' domestic forward linkages which are all evenly dispersed.

Table 20. Domestic Backward and Forward Linkages Coefficients of Variation

Industry	Backward Linkage Coefficient of Variation	Dispersion	Forward Linkage Coefficient of Variation	Dispersion
Manufacture of plastic furniture	2.2258	Even	2.9602	Even
Manufacture of plastic products	2.3650	Even	2.1011	Even
Manufacture of plastics in primary forms and of synthetic fiber	2.5763	Uneven	2.9602	Even

Table 21. Domestic Backward and Forward Linkages Coefficients of Variation, 2000 and 2006

Industry	2000				2006			
	Backward Coefficient		Forward Coefficient		Backward Coefficient		Forward Coefficient	
Plastic products	2.8567	Uneven	2.6103	Even	2.3650	Even	2.011	Even
Plastic furniture					2.2258	Even	2.9602	Even
Plastic resins	2.8216	Uneven	2.9365	Even	2.5763	Uneven	2.9602	Even

Global Total Household Income Multipliers. The global total household income multiplier represents the effect of an industry on household incomes. Accounting for domestic and imported inputs, the global total household income multiplier for the manufacture of plastic furniture is 0.390606, where this amount means the *potential* increase in the household income after a one peso increase in final demand to this industry. Among the 240 industries, the industry occupies the 94th spot. This same industry also topped the list in the 2000 I-O results, although with a lower ranking at 181st and a multiplier of 0.329881.

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Table 22. Global Total Household Income Multiplier and Multiplier Effects

Rank	Industry	Global Total Household Income Multiplier	Assumed Increase in Demand (in pesos)	Total Multiplier Effects
005	Agricultural, Forestry and Fishing Activities and Services	0.904719	100,000,000	90,471,900
006	Postal and courier activities	0.832204	100,000,000	83,220,400
007	Rubber	0.785083	100,000,000	78,508,300
008	Railway transport	0.714274	100,000,000	71,427,400
009	Private education services	0.704302	100,000,000	70,430,200
010	Labor recruitment and provision of personnel	0.683302	100,000,000	68,330,200
094	<i>Manufacture of plastic furniture</i>	<i>0.390606</i>	<i>100,000,000</i>	<i>39,060,600</i>
172	<i>Manufacture of plastics in primary forms and of synthetic rubber</i>	<i>0.310118</i>	<i>100,000,000</i>	<i>31,011,800</i>
207	<i>Manufacture of plastic products</i>	<i>0.262572</i>	<i>100,000,000</i>	<i>26,257,200</i>

Table 23. Global Total Household Income Multiplier Comparison, 2000 and 2006

Industry	2000		2006	
	Multiplier	Multiplier Effects	Multiplier	Multiplier Effects
Plastic products	0.329881	32,988,1000	0.262572	26,257.200
Plastic furniture			0.39606	39,060,600
Plastic resins	0.304228	30,422,800	0.310118	31,011,800

Domestic Total Household Income Multipliers. Without the imported inputs, the domestic total household income multiplier for the manufacture of plastic furniture 0.25. This suggests that a one-peso increase in final demand would generate a corresponding 0.25 increase in household income. Compared its global ranking, the plastic furniture went down from 94th to 141st spot. And with respect to the 2000 I-O results, the industry had a further lower multiplier (0.210768) and ranking (201st).

Table 24. Domestic Total Household Income Multiplier and Multiplier Effects

Rank	Industry	Global Total Household Income Multiplier	Assumed Increase in Demand (in pesos)	Total Multiplier Effects
004	Agricultural, Forestry and Fishing Activities and Services	0.820506	100,000,000	82,050,600
006	Postal and courier activities	0.719670	100,000,000	71,967,000
007	Rubber	0.705578	100,000,000	70,557,800
008	Railway transport	0.627910	100,000,000	62,791,000
009	Private education services	0.618353	100,000,000	61,835,300
010	Labor recruitment and provision of personnel	0.611125	100,000,000	61,112,500
141	<i>Manufacture of plastic furniture</i>	<i>0.255869</i>	<i>100,000,000</i>	<i>25,586,900</i>
176	<i>Manufacture of plastics in primary forms and of synthetic rubber</i>	<i>0.214673</i>	<i>100,000,000</i>	<i>21,467,300</i>
218	<i>Manufacture of plastic products</i>	<i>0.149307</i>	<i>100,000,000</i>	<i>14,930,700</i>

Table 25. Domestic Total Household Income Multiplier Comparison, 2000 and 2006

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Industry	2000		2006	
	Multiplier	Multiplier Effects	Multiplier	Multiplier Effects
Plastic products	0.210768	21,076,800	0.149307	14,930,700
Plastic furniture			0.255869	25,586,900
Plastic resins	0.202189	20,218,900	0.214673	21,467,300

Global Employment Multiplier Effects. Employment multiplier effects refer to the additional direct, indirect, and induced employment generated in the economy due to a one-peso change in final demand. Table 26 shows the employment effect or the number of potential workers plastic-related industries and the entire plastic industry after a one-peso increase in its final demand. The plastics industry ranks 185th among the 240 industries analyzed, thus a peso increase in final demand for plastic products accordingly generates a 1,411 jobs. The manufacture of plastics furniture, meanwhile, has the highest employment effect among the three plastics sub-industries.

Table 26. Global Employment Multiplier Effect Rankings

Rank	Industry	Employment Effect
094	Manufacture of plastic furniture	1,999
172	Manufacture of plastics in primary forms and of synthetic rubber	1,588
207	Manufacture of plastic products	1,344

Table 27. Global Employment Multiplier Effect Comparison, 2000 and 2006

Industry	2000	2006
	Employment Effect	Employment Effect
Plastic products	2,232	1,344
Plastic furniture		1,588
Plastic resins	2,058	1,999

Domestic Employment Multiplier Effects. Table 28 shows the employment effect or the number of potential workers for the plastics-related industries after a one-peso increase in final demand. The plastics industry further lowered in ranking from 185th to 191st. As such, a one-peso increase in final demand for plastic products would now only generate a total of 929 jobs.

Table 28. Domestic Employment Multiplier Effect Rankings

Rank	Industry	Employment Effect
141	Manufacture of plastic furniture	1,310
176	Manufacture of plastics in primary forms and of synthetic rubber	1,099
218	Manufacture of plastic products	764

Table 29. Domestic Employment Multiplier Effect Comparison, 2000 and 2006

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Industry	2000	2006
	Employment Effect	Employment Effect
Plastic products	1,426	764
Plastic furniture		1,310
Plastic resins	1,368	1,099

The manufacture of plastic furniture topped the lists for all the multiplier categories. Currently, most of the plastic companies in the Philippines are engaged in the manufacture of plastic packaging (e.g. plastic bags), which is why the industry is greatly affected by any plastic ban.

C. OUTLOOK AND CHALLENGES

Industry Cost. Numerous concerns arise when looking at the cost of doing business here in the Philippines as far as the plastics industry is concerned. High production costs are bad for competitiveness. The cost of electricity in the Philippines is reported to be the highest in Southeast Asia, and 2nd highest in Asia. The availability of local raw materials is also unstable, and its pricing, being a commodity item, is volatile. Labor cost is also considered high vis-à-vis competitor countries, with the average industry sector compensation at Php 14,000.0.

Technical. Standards are available for some plastic products (e.g. PVC pipes, chairs, etc.) and having the PS (product standard) mark safeguards consumers against substandard goods whether local or imported. It not only creates a level playing field for manufacturers, but could also be considered as a non-tariff barrier against cheap goods from overseas. The standards should be enhanced to cover more locally manufactured products and a mechanism must be in place to assist small manufacturers to avail of the PS mark to remain competitive. More importantly, approved standards in the form of a PS Mark or an ICC (Industry Commodity Clearance) for imported goods in the market must be strictly implemented. Heavier penalties should be assessed to products that do not comply.

Research and Development for new products is a key component to finding niche markets through innovation. For example, the Ministry of Commerce in Thailand and Chulalongkorn University is currently embarking on extensive studies on converting feedstock commodities to value added products such as Polylactic Acid (PLA) for bioplastics to benefit its national economy and stimulate technological process advancements. Although the Philippines has a similar program through the Department of Science and Technology's Industrial Technology Development Institute, Material Science Department (DOST-ITDI-MSD), the involvement of the academic community coupled with partnerships with the industry could strengthen this.

Market. While the local market could be considered big with Philippine population at 92.3 million, Filipino purchasing power remains low. Smuggled products proliferate in the market and authorities

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tend to just look the other way. Local manufacturers find themselves crowding and fighting for specific segments.

The industry estimates that the plastic bag and polystyrene paper (PSP) manufacturing sector accounts for around 30% of domestic activities. Current regulations or banning of plastic bags and PS “Styro” food packaging materials had led to a shift to paper bags and coated or laminated paper alternatives by large fastfood chains or quick service restaurants, department stores, supermarkets and other commercial establishments. The local paper manufacturing industry was not prepared for the increased demand and this resulted to an increase in paper and paper products under Tariff headings 4819 and 4823. Data from the International Trade Department of the NSO show a 45% increase from 25,007 metric tons to 36,196 metric tons from 2010 to 2011. The increased cost is eventually passed on to the consuming public, thus affecting their purchasing power.

The ban had resulted to a significant reduction in the industry’s contracted workers and the replacement of a typical 6-day, 12 hour work week to a 4 to 5-day 6 to 8-hour work week rotation for its regular workers from these sectors. Local plastic bans run inconsistent with national laws on banning of non-environmentally acceptable products under RA 9003 or the Ecological Solid Waste Management Act of 2000 in which scientific, fact-based approach is required before a product could be considered as an environmental threat. Unfounded and inconsistent policies like these would eventually lead to massive layoffs and plant closures that may jeopardize up to 175,000 employees belonging to this local industry’s sub-sectors. Unless a national bill is enacted to supersede these local ordinances, these industry groups may collapse leading to irreparable damages.

PPIA maintains that the right approach should be towards creating a recovery for recycling system that would lead to proper waste management. The group looks forward to address the policy gaps brought about by local ordinances with the help of government agencies through this roadmap. A recovery for recycling system coupled with incentives would surely enhance the plastics recycling sector, providing jobs and much needed government revenues.

Export opportunities await the sector as more and more global players are shifting their operations out of China due to increasing costs. Aside from improving our country’s cost competitiveness and creating a one-stop shop to eliminate, if not minimize, red tape to encourage more players, the establishment of a forward purchase system for US dollars may be considered and established to protect exporters from fluctuating currencies.

Institutional. Government support for existing industries is lacking in the Philippines to allow expansion and growth. Incentives provided to exporters by the country’s various investment promotion agencies (BOI, PEZA, et.al.) should be reviewed, promoted and enhanced to minimize red tape that leads to corruption.

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Smuggling remains a main issue to local manufacturers, including plastics. While efforts are being instituted to curb this, smuggled goods remain rampant in the local market. Unless this concern is addressed, it would continually pose challenges to the local industries.

Taxation is another main concern. In a joint report released by the Doing Business Initiative of the World Bank, International Finance Corporation (IFC) and PricewaterhouseCoopers (PwC), the Philippines ranked 143rd out of 185 economies in terms of “Paying Taxes”. The report also cited high tax cost and burden of compliance based on three indicators namely total tax rate, time needed to comply with major taxes and the number of tax payments. On the average, local companies pay a tax rate of 46.6% of their commercial profit, higher than the global average of 44.7%. Taxpayers also have to process payments 47 times a year, more than the global average of 27.2 payments. Businessmen also cited instances of redundant taxation with provisions on local government taxation under the Local Government Code (RA 7160), such as the capital equipment taxes imposed on machinery and equipment, making it more costly to invest and expand business operations. It was also reported that an average business would need to go through 47 tax payments taking a total of 195 hours.

Graft and Corruption, although minimized to a certain extent, remains prevalent.

Box 3. Competition in the Plastics Industry

Competition starts in the midstream and downstream sectors since no Philippine firm operates in the upstream industry. Only JG Summit Petrochemical Corporation exists in the midstream industry, and it faces severe competition from Thailand, Vietnam and Sri Lanka in the supply of synthetic resins.

Companies in the downstream industry compete very stiffly when it comes to price. Pirating staff from competitors is being done. When a company is unable to meet the requirements of its clients, enterprises engage in “competition.” Big companies sometimes outsource smaller companies and small companies group together to deliver the output required by big companies.

On the other hand, even with the decreased tariff rates, the Philippines will have a difficult time competing with its ASEAN neighbors. Variable costs are too high especially when it comes to electricity. In other countries such as Vietnam and China, a 50% discount is given for electricity use when operations are continued in the evening. In the Philippines, none of these incentives are available. In terms of wages, the Philippines can provide cheap labor. Wages in the Philippines are lower compared to wages in Malaysia, South Korea, and Singapore.

The Philippines may have a competitive edge in labor cost but its production costs are higher than those of ASEAN countries. Thus local business people find it difficult to match international prices.

IV. POLICY ENVIRONMENT FOR INDUSTRY DEVELOPMENT

A. HISTORY OF GOVERNMENT PROGRAMS

The plastics industry is an important contributor to employment in the country, with an estimated total employment of 650,000. The industry then becomes a strategic sector for employment generation. But because of inconsistencies in our laws and policies, the industry is losing its stature. The plastics banning by LGUs, for instance, which is unfounded and inconsistent with our national laws, has been negatively affecting the industry, shrinking industry employment by about 40%.

Until now, there are no government programs specifically targeted to assist the local plastics industry. Through the BOI's strategy towards integrating allied industries, the plastics industry is now included under the Chemicals Industry Cluster. BOI facilitates the technical working group (TWG) for this cluster in order to allow industry players discuss their issues and concerns and work together and with government to resolve them.

B. CURRENT POLICIES

At present, there is not enough government support programs designed for existing industries to promote expansion of manufacturing operations, particularly that of the plastics industry. While a lot of promotions are geared towards attracting foreign investments, the Board of Investments should look into dedicated programs for expanding manufacturing industries in the plastics sector, apart from existing capital equipment tax incentives.

Present Industry Activities. The plastics industry wants to cultivate and grow the recycling industry. Fiscal and non-fiscal incentives could and would help in many ways to strengthen the local plastics recycling industry, and allow it to modernize their manufacturing capabilities and waste treatment facilities, which would not only benefit the plastics industry, but as well as the solid waste programs as well. It would also allow an increased availability of recycled materials for plastic manufacturers. In a report made by Plastics Europe entitled "Plastics: Too valuable to be thrown away, Recovery, Recycling and Resource conservation," it discusses plastics as a high commodity item that needs to be recycled

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in any way possible. Some basic facts include: Recycling a ton of plastic bottles can save about 3.8 barrels of oil and two soft drink bottles can be made into fiber that will be able to produce a baseball cap. There are what industry refers to as low value recyclables such as plastic bags and PS “Styro” products where the challenge is that of recovery and transportation to existing recycling facilities.

Technical Working Group (TWGs) for the Chemicals Cluster. The Board of Investments (BOI) facilitated the establishment of sectoral TWGs as a coordinating mechanism through which industry concerns could be addressed. To address the issues being faced by the different chemical sub-industries (including the plastics industry) under the chemicals industry core TWG group, four action task groups have been further organized, namely:

- FOR TRADE & INVESTMENT MATTERS – the issues regarding industry clustering, tariff concerns, smuggling, and trade and investment promotions.
- FOR TALENT DEVELOPMENT & INNOVATION – the issues on skills development and introduction of innovation and process.
- FOR EASE OF DOING BUSINESS – the issue on the assistance that the government could provide the industry on streamlining the permit and documentary requirements which overlaps among various agencies.
- FOR ENVIRONMENTAL PRACTICES – the issue on plastic banning, life cycle assessment (LCA) and the use of the same as basis of scientific and technological studies in crafting laws that would affect the industries which are deemed should be institutionalized.

C. REGULATORY AGENCIES

A number of agencies have policies and programs that provide support to the plastics industry. These agencies and programs include the following:

Department of Trade and Industry (DTI) - Bureau of Product Standards (BPS). The BPS is responsible for implementing measures to ensure products in the market comply with government standards. Monobloc chairs, stools and tables are among the products that require certification from DTI before being sold. Also, DTI has listed 16 companies with their addresses and brand names of monobloc chairs, stools and tables to guide the public in buying products that are certified to have passed quality and safety standards (PPIA, 2014). In this way, the local plastics industry and consumers would be protected against cheaper, but substandard plastic products – mostly coming from China – from penetrating the market. The flow of these low quality plastic products from other countries have adversely affected the local plastics industry.

Board of Investments. (BOI) The BOI annually releases the Investments Priorities Plan (IPP) through which identified economic activities by eligible firms could avail of fiscal and non-fiscal incentives.

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Tariff Commission. By virtue of Republic Act 911, the Tariff Commission was created in June 1953 under the Office of the President with the following duties⁹:

- To investigate the administration, fiscal and industrial effects of tariff laws of the country;
- To investigate tariff relations between the Philippines and foreign countries, commercial treaties, preferential provisions, economic alliances, the effect of export bounties, and the volume of importation compared to domestic production; and
- To undertake a thorough study of the Philippine tariff system and submit its recommendation for its revision.

The removal of tariffs on plastic finished goods in 2010 put the plastics industry at a disadvantage compared to other countries which have cheaper goods to sell in the market. In order to level the playing field, PPIA is currently discussing with the government to also lower tariffs for their raw materials, such as for PE and PP.

National Solid Waste Management Commission (NSWMC) The industry stands firm that the cause of the clogging and flooding in the country is not the use of plastics, but because of the improper implementation of the Ecological Solid Waste Management Act of 2000. Thus, the banning of plastic use is not the solution, but the stricter implementation of laws on anti-littering, waste disposal, and recycling. PPIA has been calling for the establishment of National Ecology Center to enforce science-based legislation.

Local Government Units (LGUs). At least 15 cities and municipalities are implementing the plastic ban, which continues to paralyze the local plastics industry. These include Makati, Quezon City, Las Piñas, Marikina, and Pasig, among others.

V. GREENING THE PHILIPPINE DOWNSTREAM PLASTICS INDUSTRY ROADMAP

1. STATEMENT

Greening the roadmap will be a strategic element in modernizing and strengthening the competitiveness of the Philippine downstream plastics industry in the national, regional and global levels. This will be done thru technological and product innovation, developing and tapping new markets, and improving cost performance from higher resource productivity, with improved resilience in meeting the challenges of the climate change impacts. Economic growth will not be an obstacle in protecting the environment but will serve as a major pillar to deliver sustainable and inclusive growth.

⁹ Retrieved from <http://www.apeccp.org.tw/doc/Philippines/Organization/phorg1.html>, dated 29 September 2014.

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2. STRATEGIES

The industry will adopt the following strategic greening elements in strengthening our sectors competitiveness, namely:

2.1 Energy-Efficiency: in improving efficiency with reasonable investments while reducing the operational cost and mitigating GHG emissions.

2.2 Resource Use-Efficiency: by reducing operational wastes, efficient utilization of water resources, installing catch basins rainwater and recycling and waste treatment of these resources.

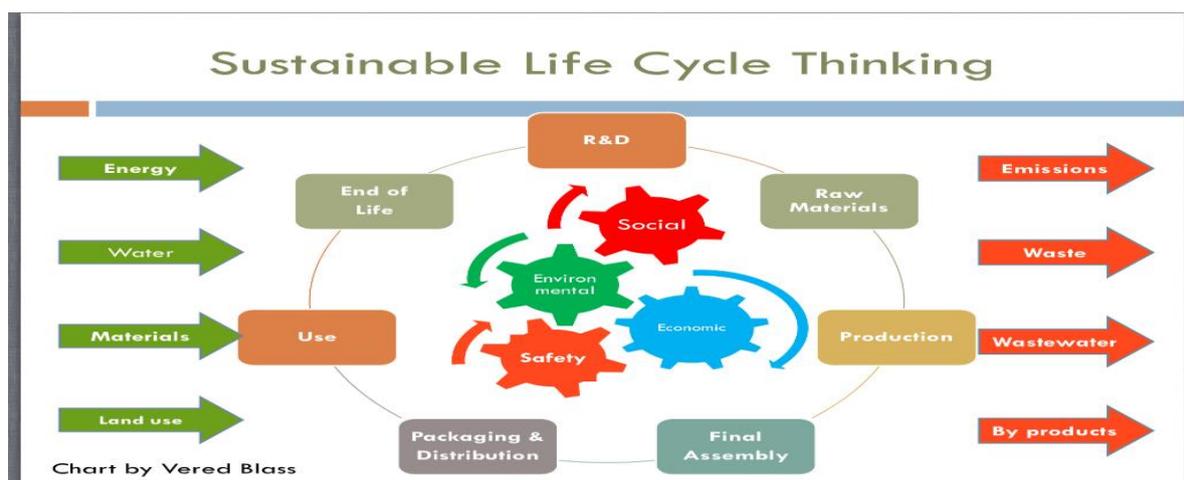
2.3 Promoting international standards: in production and process by adoption of an integrated ISO Environmental and Energy Management Systems.

2.4 Fostering innovations: in developing capacities like designs of green plastic products and processes.

2.5 Attracting foreign investments: not only as key driver in gaining competitiveness but also in tapping our renewable natural resources.

2.6 Fostering cooperation: with R & D Institutes on inter and intra plastics industry for cooperation including the ASEAN Federation of Plastics Inc, (or AFPI in the ASEAN region) and the world's plastics associations.

3. SUSTAINABLE LIFE CYCLE THINKING



PPIA: Sustainable Life Cycle Thinking

Nowadays, plastic packaging has been ignored and otherwise frowned as a reverse in the field of environmental solutions because of its perceived negative impact on solid waste, water pollution, and the like. The Philippine Plastics Industry Association (PPIA) hopes to change this view.

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In our environmental policy, we believe that looking into and understanding the bigger picture of this issue will help the businesses of our members the beneficial impact of our products in the environment. The enlightenment of this issue requires the involvement of all sectors- the government, the producers, the retailers, and the consumers.

Toward this end, we have geared our initiatives in the promotion of Life Cycle Assessment (LCA) Model. We have been enforcing its tenets throughout our association. By going beyond the means of production, our member companies surveyed, where and how their raw materials were gathered, and how their various products were used and disposed of.

The adoption and subsequent promotion of this model, influences positive and environmentally conscious responses to our member manufacturers and stakeholders. It would ensure that even before our products are made, their entire life cycle, from their resource until they reach the dumpsite, they would be carefully planned out, so that all possible negative impacts to the environment will be largely reduced or totally eliminated.

Though the Life Cycle Assessment model, we take its Core, and its Gears. By anchoring all our activities to these four gears, our industry association will not only become a vehicle in promoting environmentally friendly practices, but also as a medium of promoting corporate social responsibility to our members, while striving to the gears of becoming more competitive as an industry.

As the LCA model goes, each of our members has become a part of a bigger process that first looks at their inputs, and processes, towards sustainable output. This is not only about improvement, but more so about survival. On this end, our association members have initiated and participated in a wide array of undertakings in line with the LCA model- keeping the integrity of the entire life cycle in mind.

Since the plastics industry uses large amounts of energy, collaborations with power companies in conducting forums on power cost reduction programs, time-on-use and direct connections, were made to enlighten members how to streamline the use of electricity in their businesses and on effective ways to save power consumptions.

Taking resource saving a step further, we have been promoting with frugality the use of other resources such as water to our members. A model we promoted on this is the rain collection pond of Manly Plastics, Inc.'s in Malabon City. This reservoir is made from their own plastic liners that saves water in their recycling processes e.g. in running the cooling tower.

When it comes to emissions, the plastic industry is primarily limited to heating and melting processes which have no air emissions. Even with the production of materials such as Styrofoam, all our member companies have stopped using CFCs in their manufacturing since 1992 (under the Kyoto-protocol).

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To showcase the Social gear, our association has been abiding not only with environmental laws, but also with others such as the Labour Laws, including the strict adherence to minimum wage. This is further extended by conducting reach out activities like medical and dental mission projects.

When survival was mentioned earlier, it was referring to the Economic gear as embodied by our association's partnership with SPIK, with the making the "Philippine Chemical Master Plan" road map for the better of all the concerned industries in the country. Economic growth following the

With different industry organizations, the PPIA hosted, promoted, and joined, to put together a slew of projects, in line with Blass' LCA model, which helped the industry achieve in its advocacy on anti-smuggling efforts and campaigns on the removal of tariff distortion.

The first R&D stage is represented in a number of events and seminars, and one event was the hosting of the Ecolabelling Programme of the Philippines (ELP) that helped disseminate information on ecolabelling standards for plastic packaging.

A second R & D event ties in to the next stage of the LCA is on raw materials. The PPIA collaborated with the ICIS (international monitoring entity) on the overlook of the resin market trends in Asia so that the member companies would have better formulate their products. A separate seminar detailing Oxo-biodegradable master batches was also conducted to give our members more information on the proper acquisition of raw materials.

The production stage of the LCA is integral to the plastics industry, as generation of quality products is an important aspect of the life cycle. A partner of PPIA on this front is the Global-Link MP Events International, Inc. that organize the yearly plastic exhibitions called "Plastics Philippines" and in tying up the industry's product showcase with other international events such as machinery, technology and services. Keeping product information up to date is an important element in the cycle, especially in an industry such as this.

For the stages of use and end of life, which are crucial to the plastic industry, the PPIA put heavy emphasis on cleaning drives and recycling campaigns. To tackle the use stage, we conducted a number of Information and Education Campaigns (IEC), partnering with non-government organizations, church organizations, the academe, and government under the banner of RA 9003 (Ecological Solid Waste Management Act of 2003).

Drastically reducing the amount of solid waste the plastic industry produces a major and constant goal for our association. It is very important for us to get our members behind this model. While the industry still has a long way to go in terms of sustainable development, the PPIA believes that by following the Life Cycle Assessment model and providing guidance and outlets for our member manufacturers to

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align their company policies with this model, we will continue to see a vast improvement in the quality and environmental integrity of production, more reductions in waste output, and a better standard of living in the Philippines.

4. EXPECTED MILESTONES

4.1. Initiate or support policy framework consistently in line with green modernization process and the effective implementation of this as well as the provision of comprehensive:

- Incentive/subsidies scheme for resource efficiency, fostering green modernization that develops green jobs
- Establishments of Eco-Industrial Zones and not plainly Eco-Zones
- Promote green procurement particularly for government offices

4.2. The Plastic Industry of the Philippines follows the principles of Responsible Care:

4.2.1 Following the global chemical industry's environmental, health and safety (EHS) initiative to go beyond legislative and regulatory compliance adopting cooperative and voluntary initiatives with government and other stakeholders.

4.2.2 Significantly adopt process and resources optimization and technological innovations to strengthen resource productivity that will reduce the volume and cost from wastage and production costs, decrease emissions and effluents, and increase efficiency in waste management that affects air, soil and water.

4.2.2.1 30% solid waste reduction of business-to-business transactions by reusing packaging materials i.e. using plastic crates for delivery of goods

4.2.2.2 Promote a proper delivery management system that should make deliveries more efficient thus creating savings and less usage of resources like fuel

4.2.3 Advocate for a Life Cycle Approach that includes GHG emissions from both production and consumption of products and materials, supported by LCA methodologies to assess the environmental impacts of products produced and technologies adopted.

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4.2.4 The industry brings successfully into practice the product stewardship by integrating health, safety and environmental protection as an integral part of the LCA.

4.2.5 To seek for strong cooperation to reduce physical and environmental risks of domestic and foreign investments.

4.2.6 Development of infrastructure that decreases vulnerability of productions site and logistics

4.2.6.1 Government incentives for companies to install rainwater collection or any “green” technology facilities all over the metro.

4.2.7 Strongly promote and urge government support on the development of the “green sector” and its strong proactive practice and policy of re-use and recycling.

4.2.8 Integrating tools such as LCA, Carbon and Water Foot Prints into its business practices.

4.2.8.1 Reduce of raw material consumption through correct product sizing based on results coming from scientific methods like the Life Cycle Assessment (LCA)

4.2.9 Encourage government to promote a level playing field for diverse energy sources, particularly the use of renewable energy, as well as and streamline procedures.

4.2.10 The government should assure the representation of the industry’s voice in environmental policies that hamper the growth and competitiveness particularly the compliance of SMEs in the plastics industry.

4.2.11 The Department of Trade and Industry (DTI) should encourage source suppliers to go into ISO certification 9001/14001/50001.

4.2.11.1 There should be at least 3 member companies of PPIA getting accredited of any certifications mentioned above every year

4.2.11.2 2% savings in power cost through the implementation of any management systems mentioned above yearly

4.2.11.3 In line with ISO 14001 and 50001, PPIA members should have applicable knowledge on how to reduce GHG emissions.

4.2.11.4 PPIA members should be well educated and would be able to adapt to any environmental risk i.e. climate change

4.2.11.5 Promote and educate members of PPIA on the proper disposal of any kind of waste

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4.2.12. Fully tap skills training (TESDA), R &D recycling tech and product development (DOST) and strengthen the involvement of the Academe on this.

5. PEER RECOGNITION

In view of the cognizance of the Philippine Plastics Industry Association (PPIA) in the practice and advocacy of greening the industry, the PPIA for three (3) consecutive years (2012, 2013 & 2014) is a recipient of the Annual Sustainable Development Awards for Outstanding Sustainable Practices in the industry association category for its sustainable development initiatives, as conferred by the Federation of Philippine Industries (FPI), in recognition to the ff: categories:

- Most Outstanding Industry Association for the Optimum Use of Resources in 2012*
- Most Outstanding Industry Association for Implementing Corporate Social Responsibility (CSR) Programs in 2013, and*
- Most Outstanding Industry Association for the Practice of Waste Management in 2014.*

The panels of jurors of this award are composed of the following: the DENR Secretary (Chair) with Earth ay Network Philippines (EDNP), Solid Waste Management Association of the Philippines (SWAPP) and other environmental partners and private associations.

i The PPIA in partnership with the Board of Investments conducted the ISO 14001 (Environmental Management System) and ISO 50001 (Energy Management System) Training for the downstream plastics industry last 26 to 28 August 2015 and the Internal Management System Audit on 16 to 17 June 2015.

ii In fact, The Philippine Plastics Industry Association (PPIA) hosted the 5th annual meeting on Plastics and Sustainability on 08 to 10 December 2014 participated by 34 country signatories like : Australia, Belgium, Brazil, Bulgaria, Canada, Croatia, Denmark, Finland, Germany, Hungary, India, Italy, Japan, Malaysia, Mexico, Netherlands, Philippines, Portugal, So. Africa, Spain, Switzerland, USA, United Arab Emirates, United Kingdom, others with the American Chemistry Council Vice Pres and Exec. Director Plastics Europe, to foster commitments particularly on anti-marine litter. *"The plastics industry is firmly committed to the principle that plastics do not belong in the world's oceans and should not be littered -- plastics should be responsibly used, reused, recycled and finally recovered for their energy value. Another is the Operation Clean Sweep (OCS), is a product stewardship program of the ACC and SPI the goal of which is to help every plastic resin handling operation implement good housekeeping and pellet containment practices to work towards achieving zero pellet loss.*

V. SWOT ANALYSIS

Table 30. SWOT matrix of the Philippine Plastics Industry¹⁰

Strength	Weaknesses
<ul style="list-style-type: none"> • Large production capacities • Fast and reliable product delivery • Superior product quality • Easy adaptation to new technology advancements/updates • Availability of manpower and competent technical labor force 	<ul style="list-style-type: none"> • High cost of inputs: raw materials/power/labor • Difficulty of access to financing and working capital • Disruption of operation due to high manpower turnover
Opportunities	Threats
<ul style="list-style-type: none"> • Improving local demand • Potential export thru free trade agreements 	<ul style="list-style-type: none"> • Proliferation of sub-standard/low-cost imported products in the market. • Preference to imported products • Violation of IPR • Lack of government specific policies to support/develop the plastics industry • High logistical cost • Distorted tariff policies • Negative perception on plastics on health and environment • Poor credit rating by financial institutions

Actions for Addressing Issues Arising from the SWOT Analysis

Strategies for tapping into strengths to realize opportunities (S-O). The local plastics industry is known to be manufacturing only the products of superior quality, as most member-companies are ISO-certified. Thus, being at par with the global standard for plastic products, the Philippine plastics industry could take advantage of ASEAN integration in 2015 and other FTAs to find new markets for their products.

Most of the plastics manufacturers in the country are very flexible and could tailor-fit their production (eg. quantity, designs, etc) according to their customers’ wants and needs. Because of this capacity, the industry are at an advantage to be able to attract customers.

Strategies for overcoming weaknesses to realize opportunities (W-O). The industry is capital-intensive, where the energy cost’s share to over-all production ranges at about 30%-50%. It is then crucial to support initiatives that could lower energy cost, such as by providing incentives for the use of renewable energy, open access to transmission service, the establishment of power ecozones,

¹⁰ Through industry consultation with over the 200 members of PPIA, the industry was able to identify their common experiences. The result of their discussion is reflected in the SWOT analysis.

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among others. Also, there is a need to invest in R&D and develop machineries and processes to lower production costs.

The plastics industry is a small to medium enterprise (SMEs), so it would be easier to put up such kind of business if only there is less difficulty in financing and accessing capital in the country. Thus, there must be an appropriate mechanism to be able to tap the potential of these SMEs.

Strategies for tapping into strengths to minimize vulnerability to threats (S-T). Many industries have been complaining about the tremendous number of permits they have to comply with, with some merely redundant and unnecessary. There is an issue on the overlapping of government agencies requiring the chemicals industry with permits (PNP Explosive Division, PDEA, FDA, EMB), which ranges from 3 to 5 permits for one chemical, where processing of these permits would take 3 to 6 months. To address this concern, there is an ongoing TWG on the “Ease of Doing Business” which aims to streamline the issuance of permits among and between agencies, as well as possibly setting up a “one-go-center.”

In addition, reviewing EO 61 (or the Act of Modifying the Nomenclature and the Rates of Import Duty on Various Products under the Section 104 of the Tariff and Customs Code of 1978 (Presidential Decree No. 1464), as Amended) could be done by expanding the product scope of the CNLA scheme.

Strategies for preventing weaknesses from raising vulnerability to external threats (W-T). The plastics industry has been greatly affected by the LGUs’ plastics ban. As a result, some plastics companies have downsized their operations and have opted for the rotation of workers and have lesser days of operation. At present, there are already 250 cities and municipalities banning the use of plastic bags. PPIA is seeking assistance of either BOI or DOLE in order for Congress and the Senate to fast-track the approval of the bill seeking to establish a National Ecology Center.

The industry also supports a Science and Technology-based legislation policy through: (1) use of scientific studies and methodologies to guide legislative processes in Congress and local councils; (2) presence of technocrats as part of standing committees to craft policies and legislation for the industry; (3) legislate information dissemination programs for the public to fully understand the use and disposal of chemical products; and curb and eliminate tax evasion and smuggling through proper and strict implementation of laws.

Policy reforms to lower shipping cost is also an important strategy. Under the Constitution, international cargo vessels are not allowed to domestically transport imported products. A possible resolution to this is to lift cabotage in the country. DTI is currently coordinating with BOC, DOTC, and the private sector as to how to immediately address this issue.

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PPIA expressed its concern about the government's policy on procurement that seems to favor imported products rather than those locally manufactured. Based on the IRR of the Procurement Law, a company's bid could be favorably accepted if its cost is lower by 20%. However, there is also a provision that local produced products should meet the lowest price of the imported ones. PPIA is of the view that this is unfair to local producers considering that they are the ones contributing to the Philippine economy, and not foreign suppliers. PPIA is requesting that government add other criteria on imported products to favor those locally produced.

VI. RECOMMENDATIONS

Given the strengths, weaknesses, opportunities, and threats of the plastics industry while keeping in mind its state and strategic vision, mission, goals, and targets, the plastics industry could be more competitive with the following recommendations:

A. POLICY MATTERS

Establishment of the National Ecology Center. Implement the provisions of the Ecological Solid Waste Management Act of 2000 (RA 9003) on the establishment of the National Ecology Center (NEC), establishment of the LGU Material Recover Facility (MRF), Mandatory Segregation of Solid Wastes, and other important sections of the law.

Creation of a One-Stop Shop to help local plastic exporters streamline documentary and logistics requirements and minimize red tape.

Strengthen laws and policy to aid the stoppage of smuggling and proliferation of imported substandard plastic products in the domestic market.

Review tariffs and non-tariff barriers on FTAs, ASEAN and MFN on plastic products and raw materials to avoid tariff distortion and promotion of export facilitation.

Promote domestic market through the industry's (Federation of Filipino Chinese Chamber of Commerce and Industry Inc. and Federation of Philippine Industry) "*Buy-Pinoy Program*" and putting safeguards in place to ensure the procurement of local products by government through RA 9184 or the Government Procurement Reform Act.

Institute a mechanism for US Dollar Forward Purchase to protect exporters from currency fluctuation

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Specific Industry Programs:

- Representing industry to push for a National Legislation on Plastic Bag Regulation.
- Co-organizing annual exhibits and events to promote members' products (Plastics Philippines, Green Philippines, Eco-Products, SWAPP).
- Working with the DTI-BPS Technical Committees to develop standards for plastics, plastic products and biodegradable plastic bags.
- Development and Promotion of Recycling Technologies
 - Plastic Bag and PS “Styro” Melting Oven developed by DOST-ITDI
 - Mixed Plastic Waste for Asphalt Roads developed by DOST-ITDI
 - Waste to Fuel Project, a local invention by POLYGREEN Industries with existing facilities in Montalban, Rizal
 - Small Scale Waste to Fuel Systems, a local invention by SUKI Trading located at Cebu City
 - Mixed Plastic Residual Waste as Refuse Derived Fuel (RDF) by Cement Kilns in coordination with the Cement Manufacturers' Association of the Philippines (CEMAP)
 - Mixed Plastic Waste for School Chairs and Profiles developed by Envirotech Waster Recycling Inc. from Davao City
- Information and Education Campaign and Recovery Programs
 - Organizing forums and giving presentations on Recycling and Proper Waste Management of Plastics to both public and private audiences
 - Waste Markets Programs (e.g. SM “Trash for Cash”, Ayala “Recyclables Fair”, Greenhills Shopping Center “Cash for Scrap”)
 - Partnership with Community Groups such as the Archdioceses of Manila, Cubao and Novaliches; Home Owners' Associations;
 - Plastic Bag and PS Styro Recovery Program with the Archdiocese of Manila (ARCAM)
 - Organizing and supporting programs on Plastic Bag and PS “Styro” recovery (i.e. Plastic Mo Bigas Ko Program of the Rotary Club and City Government of Pangasinan; Krus na Ligas waste exchange programs with the Archdiocese of Cubao
- Livelihood Programs
 - Invisible Sisters' Social Enterprise to recover waste plastic bags and converting them into crocheted fashionable items

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B. ENHANCING THE MARKET FOR THE PLASTICS INDUSTRY

- Grant fiscal and non-fiscal incentives for the development of the plastics recycling industry.
- Improve/strengthen linkages on supply chain (recycling loop) including low value recyclable waste plastics from consumers/in-store-recovery-collectors-junkshops/ waste consolidators to recyclers and product processors.
- Develop and promote technologies for efficient recycling processes and facilities.
- Promotion of sustainable life cycle thinking – with emphasis on utilization of resources, reduction of production wastes, reduction of power consumption, and utilization of recycled/recyclable materials.
- Send male and female engineers and science graduates to Masteral and PhD programs in other countries.
- Develop technology and skills preparedness program for male and female high school graduates and industry specific training programs to enhance skills and acquire expertise/knowledge needed in the downstream plastic industry. Thus, the industry must develop skills for applied technology for new application products/indigenous materials/green products.
- Forge partnership with local and international institutions (public/private/academe) in the development of the plastic industry on skills training, product, molds and process/technology.

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APPENDIX

Finished Goods Imports from Top 3 Countries

Imported Finished Goods AHTN 3916 to 3926		
Largest Finished Goods Import Value (US\$) per Country of Origin: 2015 Import Data		
Product Group	Countries	Value (US\$)
39.16 - Monofilament: as adhesive, used for making ready articles by molding, founding, or compressing, nylon strings for sports goods, etc.	1- USA	2,360,413.00
	2- China	570,629.00
	3- Japan	486,181.00
39.17 - Tubes, pipes and hoses, and fittings- use for agriculture, food processing, etc.	1- Spain	23,560,474.00
	2- USA	19,456,122.00
	3 China	19,157,650.00
39.18 - Floor coverings of plastics e.g. plastic tiles	1- China	7,393,285.00
	2- S. Korea	2,022,400.00
	3- USA	1,800,498.00
39.19 - Self-adhesive plates, sheets, film, foil, tape, strip, tapes for telephonic or electric wires, cellophane adhesive tape	1- Japan	34,603,765.00
	2- .S Korea	15,723,650.00
	3- China	13,766,562.00
39.20 - Other plates, sheets, film, foil and strip-tapes for telephonic or electric wires, cellophane film, BOPP film, adhesive by melting, for safety glass, bakelite/corrugated sheets and plates, tapes for telephonic or electric wire, etc.	1- China	34,068,751.00
	2- Thailand	21,370,925.00
	3- Malaysia	13,570,696
39.21 - Other plates, sheets, film, foil and strip of plastics- tapes for telephonic or electric wire, plates and sheets, cellophane for adhesive tape.	1- Malaysia	24,643,878.00
	2- China	21,370,925.00
	3- Japan	18,584,749.00
39.22 - Baths, shower-baths, sinks and wash-basins including covers, lavatory/urinals pans.	1- China	2,755,831.00
	2-Thailand	588,172.00
	3- USA	172,782.00
39.23 - Boxes used for cinematographic films, tapes, disc, septic bags, toothpaste tubes container, sewing machines, textile mills, products for sewing, caps, etc.	1- China	21,927,914.00
	2-Japan	15,828,335.00
	3- Thailand	5,253,417.00
39.24 - Tableware and kitchenware, bed pans, urinals (portable type) and chamber-pots.	1- China	29,736,019.00
	2-Taiwan	1,647,753.00
	3- USA	1,299,009.00
39.25 - Reservoirs, tanks, vats and similar containers, doors, windows and their frames and thresholds for doors, shutters, blinds and similar articles and parts thereof.	1- China	8,376,472.00
	2-Thailand	5,375,529.00
	3- Taiwan	3,114,875.00
39.26 - School supplies, plastic erasers. loose leaf binders and dividers, index tabs and similar, raincoats, gloves, aprons and other articles of apparel, articles of	1- China	28,501,875.00
	2-Japan	3,310,522.00

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Imported Finished Goods AHTN 3916 to 3926 Largest Finished Goods Import Value (US\$) per Country of Origin: 2015 Import Data		
Product Group	Countries	Value (US\$)
protective mask and apparel, including belts, fittings for furniture, coachwork or the like, statuettes and other ornamental articles, floats for fishing nets, for fans and hand screens, frames and handles, products for medical/dental purposes, lifesaving cushions for protection for falling persons, reflectorized road signaling and pavement marking, pipe or thread sealing tape, transmission or conveyor belts or belting, other articles used in machinery, plastic J-hooks and bunch blocks for detonators, plastic nursing system, items for apparel or clothing accessories, poultry feeders, cards for jewelry or small objects of personal adornment; beads, shoe lasts, for jewelry or small objects of personal, racket strings, grain storage, accessories and parts, n.e.s., for electronic data, handbag frames and handles, articles for laboratory use, sheets to cut.	3-Taiwan	31,046,121.00

Source: PSA

Finished Goods Exports to Top 3 Countries of Destination (2015)

Imported Finished Goods AHTN 3916 to 3926 Largest Finished Goods Export Value (US\$) per Country of Destination: 2015 Export Data		
Product Group	Countries	Value (US\$)
39.16 - Monofilament: as adhesive, used for making ready articles by molding, founding, or compressing, nylon strings for sports goods, etc.	1- Japan	1,535.00
39.17 - Tubes, pipes and hoses, and fittings- use for agriculture, food processing, etc.	1-Japan	870,253.00
	2- Korea	171,083.00
	3-Indonesia	132,408.00
39.18 - Floor coverings of plastics e.g. plastic tiles	1- India	4,620.00
39.19 - Self-adhesive plates, sheets, film, foil, tape, strip, tapes for telephonic or electric wires, cellophane adhesive tape	1- Germany	271,857.00
	2-Singapore	260,345.00
	3-Thailand	125,374.00
39.20 - Other plates, sheets, film, foil and strip-tapes for telephonic or electric wires, cellophane film, BOPP film, adhesive by melting, for safety glass, bakelite/corrugated sheets and plates, tapes for telephonic or electric wire, etc.	1- Japan	457,646.00
	2- Hongkong	97,533.00
	3- Singapore	79,703.00
39.21 - Other plates, sheets, film, foil and strip of plastics- tapes for telephonic or electric wire, plates and sheets, cellophane for adhesive tape.	1- Taiwan, China	163,730.00
	2-Singapore	54,994.00
	3-Egypt, Arab Rep.	17,978.00
39.22 - Baths, shower-baths, sinks and wash-basins including covers, lavatory/urinals pans.	1- Japan	177,949.00
	2- China	1,186.00
39.23 - Boxes used for cinematographic films, tapes, disc, septic bags, toothpaste tubes container, sewing machines, textile mills, products for sewing, caps, etc.	1- Japan	2,304,932.00
	2- USA	1,555,462.00
	3-Indonesia	1,177,760
39.24 - Tableware and kitchenware, bed pans, urinals (portable type) and chamber-pots.	1-Japan	830,548.00
	2- USA	375,250.00
	3- New Zealand	266,927

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Imported Finished Goods AHTN 3916 to 3926 Largest Finished Goods Export Value (US\$) per Country of Destination: 2015 Export Data		
Product Group	Countries	Value (US\$)
39.25 - Reservoirs, tanks, vats and similar containers, doors, windows and their frames and thresholds for doors, shutters, blinds and similar articles and parts thereof.	1- Japan	830,548.00
	2-Taiwan	54,543.00
	3-Ireland	3,000.00
39.26 - School supplies, plastic erasers, loose leaf binders and dividers, index tabs and similar, raincoats, gloves, aprons and other articles of apparel, articles of protective mask and apparel, including belts, fittings for furniture, coachwork or the like, statuettes and other ornamental articles, floats for fishing nets, for fans and hand screens, frames and handles, products for medical/dental purposes, lifesaving cushions for protection for falling persons, reflectorized road signaling and pavement marking, pipe or thread sealing tape, transmission or conveyor belts or belting, other articles used in machinery, plastic J-hooks and bunch blocks for detonators, plastic nursing system, items for apparel or clothing accessories, poultry feeders, cards for jewelry or small objects of personal adornment; beads, shoe lasts, for jewelry or small objects of personal, racket strings, grain storage, accessories and parts, n.e.s., for electronic data, handbag frames and handles, articles for laboratory use, sheets to cut.	1- Japan	3,480,037.00
	2- USA	956,314.00