The Impact of the Plastic Shopping Bag Ban on the Philippine Plastics Industry Downstream Sector

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Abstract

Policies have either intended or unintended consequences. Since 2010, various local government units (LGUs) nationwide have passed ordinances imposing stricter regulations on or completely banning the use of plastic shopping bags (PSB). Other LGUs have pending ordinances on this matter or are still in the process of reviewing them. Thus, very soon, the number of LGUs that will regulate or ban plastic shopping bags will definitely increase. In Metro Manila alone, 10 out of 17 municipalities and cities have already enforced the regulation or ban of PSBs. This resulted in the closure of some PSB manufacturing plants, drops in sales volumes, the demoralization of PSB workers, reduced number of work hours per day, reduced number of work days per week, decreased income, and worst of all, loss of jobs for many PSB workers. Considering the magnitude of the problem, there is a need for an integrated approach to resolve the complex issues and challenges the PSB subsector is facing. Protecting the environment is everyone's concern. Instead of an outright ban, PSBs should be managed and consumers should be

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given a choice. Governments both at the national and local levels, the plastic industry, and the whole community have significant and interlocking roles in ensuring that waste is disposed of properly. The national government should be cognizant of the fact that there is an urgent need to pass a national industrial policy on this matter. Equally important and urgent is for all Filipinos to start changing habits, behaviors and mindsets.

Keywords: Philippine plastic industry, plastic shopping bags

Introduction

The regulation and/or ban on the use of plastic shopping bags (PSBs) by various local government units (LGUs) was a big blow to the plastics industry of the country, specifically the Downstream Sector. PSBs were cited as the culprit in the massive flooding that occurred when 'Ondoy' and the southwest monsoon 'Habagat' hit Metro Manila, Central and Southern Luzon in 2009 and 2012 respectively. This triggered, if not strengthened, the clamor to ban/regulate the use of PSBs.

These two natural calamities also fueled people's negative perception of plastics as environmentally destructive. Because of this, local policy makers were frantic to come up with ordinances they thought would significantly help solve the problem. One solution was simply to regulate or ban the use of PSBs in their localities.

This paper looked into the impact of the regulation and/or ban on the use of PSBs on both the PSB manufacturers and its labor force. In addition, key issues and challenges confronting the Philippine Plastics Industry in general were also identified and discussed.

The data for this study were sourced using various methods, namely: review and analysis of public documents, reports from the Philippine Plastics Industry Association (PPIA) and books and documents from various websites; interviews with key informants; and focus group discussions (FGD) with PSB workers.

Some parts of this paper appeared in an unpublished work by the author in 2012 entitled, "Deconstructing the Philippine Plastics

Industry," which was funded by the LO/FTF Project through the Philippine Employer-Labor Social Partners, Inc. (PELSPI).

The Philippine Plastics Industry

The plastics industry in the country grew in the mid-1960s when the technology for injection, extrusion and blow molding became available locally. According to an article that appeared in the PPIA Directory 2006-2007, the Mabuhay Vinyl Corporation and the Philippine Vinyl Consortium were the first two companies to set up plants in the country. The former established the first synthetic thermoplastic and resin plant in Mindanao, while the latter established a plant for the production of Vinyl Chloride Monomer (VCM).

Structure. The structure of the industry is classified based on manufacturing activities. The Upstream Sector, currently dominated by Petron, manufactures monomers, which is the basic raw material from a refinery by-product called naptha. This sector extracts ethylene and propylene from petroleum.

The Midstream Sector takes in the monomers to produce polymers or plastic resin. Here, ethylene and propylene are processed to produce synthetic resin, polyvinyl chloride (PVC), polystyrene (PS), polypropylene (PP), and polyethylene (PE). This sector is represented by the Association of Petrochemical Manufacturers of the Philippines (APMP).

From the Midstream, the Downstream Sector produces various packaging, industrial, and consumer plastic products from polymer or plastic resin. This sector, where most of the enterprises are medium-scale, is represented by the Philippine Plastics Industry Association (PPIA).The following figure illustrates the manufacturing stages of the industry from the Upstream Sector to the Downstream Sector.

Figure 1: The manufacturing stages in the Philippine plastics industry

Source: PPIA Country Report 2012-2013.

Labor market. The biggest chunk of the labor market in the plastics industry comes from the Downstream Sector. There are more than 1,200 plastic fabricators and converters producing finished and semi-finished plastic products in the country (PPIA Country Report, 2012). In the Downstream Sector, the total labor force is more than 650,000 composed of direct and indirect workers. Of this number, 140,000 of them work in PSB plants.

Industry performance. The overall standing of the general value added of the industry in the third quarter of 2013 is a testament to its considerable contribution to the gross domestic product of the country. Rubber and plastic products rank 12th out of the 22 listed industry groups in Table 1. They outranked many industry groups such as tobacco manufacturers, footwear and leather products, wood, bamboo, cane and rattan articles, paper and paper products, publishing and printing, fabricated metal products, machinery and equipment except electrical, and office, accounting and computing machinery.

Table 1. Gross Value added in Manufacturing by Industry Group (1st to 3rd quarter of 2013)
Unit in million pesos

Industry/Industry Group	2011				2012				2013			First to Third Quarter		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	2011	2012	2013
Food manufacturers	232,133	195,953	151,574	306,045	261,860	213,466	173,511	341,412	294,190	221,812	179,728	579,660	648,838	695,730
Beverage indutries	13,984	17,174	23,350	26,060	14,541	17,555	24,287	26,922	15,209	17,408	26,823	54,508	56,383	59,439
Tobacco manufactures	594	949	2,596	2,316	680	1,075	2,564	1,868	637	931	2,923	4,139	4,318	4,490
Textile manufactures	11,762	13,984	11,431	13,096	10,752	15,224	10,359	12,299	9,667	12,178	11,357	37,176	36,336	33,202
Wearing apparel	10,903	12,446	16,229	20,121	16,345	21,616	25,329	22,504	18,708	20.118	19,693	39,578	63,290	58,519
Footwear and leather and leather products	1,425	1,176	2,007	3,313	1,278	1,746	2,127	4,150	1,682	1,340	2,596	4,609	5,151	5,619
Wood, bamboo, cane and rattan articles	3,402	4,646	3,559	7,388	3,384	5,742	3,043	6,915	2,804	5,209	3,174	11,607	12,169	11,188
Paper and paper products	3,313	4,250	5,228	2,830	3,339	3,899	4,666	3,026	3,059	3,353	4,041	12,791	11,904	10,453
Publishing and printing	2,921	4,458	1,481	4,897	3,427	4,461	1,750	5,280	3,085	4,577	1,866	8,861	9,638	9,529
Petroleum and other fuel products	36,970	35,918	34,157	43,258	44,066	31,384	30,710	45,623	32,982	30,789	31,547	107,045	106,160	95,318
Chemical & chemial products	24,296	27,901	34,983	49,529	24,268	30,422	35,562	49,610	27,672	52,528	79,220	87,179	90,251	159,420
Rubber and plastic products	6,828	6,577	8,446	9,568	7,478	7,095	9,448	7,199	7,424	6,627	9,418	21,851	24,021	23,469
Non-metallic mineral products	9,682	12,030	12,631	18,083	11,011	13,623	15,479	18,569	11,951	16,050	18,442	34,343	40,112	46,443
Basic metal industries	13,976	10,101	17,763	9,848	9,462	5,286	13,051	10,718	12,756	8,183	16,592	41,840	27,799	37,532
Fabricated metal products	3,271	7,658	3,854	5,912	2,824	7,454	3,689	5,290	2,717	7,177	3,414	14,782	13,967	13,308
Machinery & equipment except electrical	6,087	5,514	7,190	7,098	6,348	5,727	7,427	6,872	6,417	5,519	7,029	18,790	19,502	18,965
Office, accounting & computing machinery	3,448	3,598	8,045	4,980	4,066	3,712	11,305	5,649	3,711	3,552	9,518	15,090	19,083	16,781
Electrical machinery and apparatus	9,442	8,996	8,493	11,812	11,418	10,781	9,113	9,079	8,083	11,161	7,979	26,930	31,312	27,223
Radio, television and communication equipment and apparatus	72,738	69,470	81,743	51,569	68,894	61,908	73,571	54,960	74,458	64,284	74,574	223,951	204,373	213,316
Transport equipment	7,378	7,787	11,316	10,829	7,486	9,933	13,189	12,102	7,691	5,664	8,465	26,481	30,608	21,820
Furniture and fixtures	4,260	3,360	3,622	8,801	6,866	5,558	3,657	8,016	6,148	5,397	4,878	11,242	16,082	16,422
Miscellaneous manufactures	13,063	11,796	12,393	10,661	10,877	9,642	10,424	10,614	12,033	8,297	9,025	37,251	30,943	29,355
GROSS VALUE ADDED IN MANUFACTURING	491,875	465,741	462,089	628,013	530,670	487,308	484,261	668,679	563,085	512,154	532,303	1,419,706	1,502,239	1,607,541

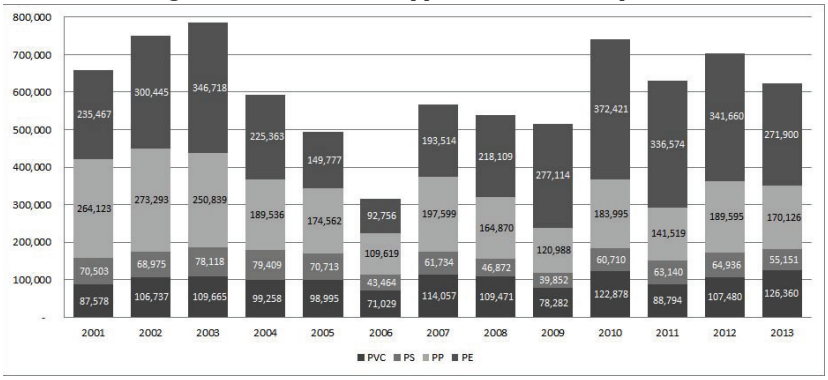
Source: National Statistical Coordination Board.

Inside the plastics industry, no competition exists in the Upstream Sector as it is basically dominated by Petron. In the Midstream Sector, JG Summit faces competition from foreign suppliers. According to the International Trade Department of the National Statistics Office, more than 60 percent of the synthetic resin supply in the Philippines such as polyethylene and polypropylene are imported from Singapore, Malaysia, Indonesia, Thailand, Vietnam, China, South Korea and Middle East countries, among others. Polyethylene terephthalate is 100 percent imported while polyvinyl chloride and polystyrene are mostly locally made.

Competition is very, very stiff in the Downstream Sector. It is composed of small and medium enterprises. Their main products are woven bags, regular film bags, PVC pipes, industrial crates, bottles and housewares. These products are for consumer and industrial use. Thus, the primary markets of the Downstream Sector are the manufacturers and producers of sugar and rice millers, supermarkets, contractors, hardware, restaurants, fish dealers, bakeries, soft drink manufacturers, cosmetics, health care, food and pharmaceutical industries, consumers, wholesalers and retailers.

Based on resin consumption, the Downstream Sector enjoyed its peak in 2003, as shown in Figure 1. However, it suffered a downturn in 2006 because of tariff distortion, but the sector started to pick up the following years.

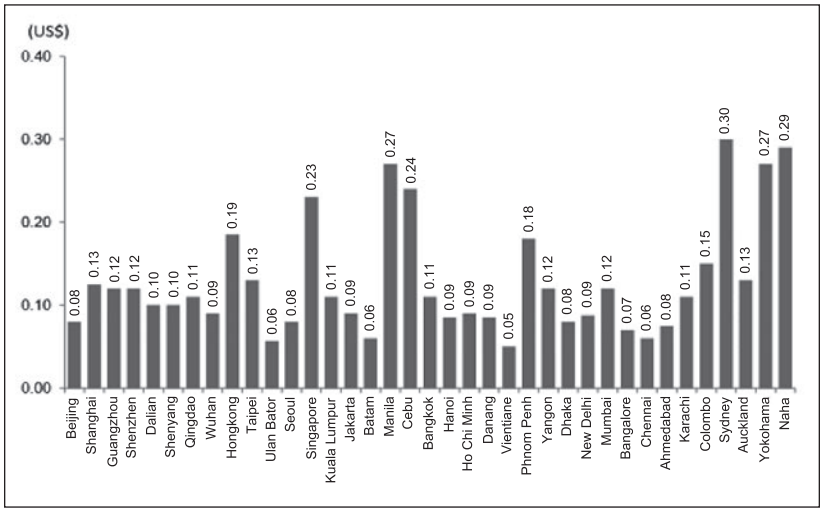
Figure 1. 2001-2013 Philippine Resin Consumption



Issues and Challenges Confronting the Plastics Industry

High cost of doing business. The plastics industry is burdened with the high cost of doing business in the country. This can be attributed to high energy cost and labor cost. In the 23rd survey of investment related costs in Asia and Oceania conducted by the Japan External Trade Organization (JETRO) for FY 2012, it appeared that the Philippines has one of the highest power rates in the region. The electricity rate of Metro Cebu is even higher than Auckland, Hongkong, Seoul and Singapore.

Figure 2. Electricity Rate for General Use (per kWh) in Asia and Oceania



Source: Overseas Research Department, Japan External Trade Organization (2013).

In other countries, government supports the various industries. Based on a report by the Department of International Trade Promotion Ministry of Thailand, in Vietnam and China, a 50 percent discount is given for electricity consumed whenever operations are continued at night. In relation to government support, Crispian Lao, Commissioner of the National Solid Waste Management Commission, said that in Thailand, government financed their plastics industry in order for them to convert their plastics into bioplastics.

In terms of labor cost, the Philippines has the highest wage rate, particularly in Metro Manila, compared to its Asian neighbors like Cambodia, Myanmar, Vietnam, Indonesia, Bangkok, Thailand and Malaysia.

Table 2. Comparative Wages in ASEAN Countries in US$ (As of 31 March 2014)

	Daily M.W.	Monthly M.W.
Myanmar	1.70 - 2.04	51.12 – 61.34
Cambodia	2.67	80.00
Vietnam	2.96 – 4.21	88.91 – 126.35
Indonesia	3.53 – 7.19	105.96 – 215.57
Thailand/Bangkok	9.21	276.36
Malaysia	8.17 – 9.19	245.19 – 275.84
Philippines (Metro Manila)	9.56 – 10.38	286.80 – 311.53

Source: National Wages and Productivity Commission (2012).

Volatile global price of plastic resin. Raw materials used by the Midstream Sector to produce polystyrene, polypropylene and polyethylene are imported. As such, both Midstream and Downstream Sectors are vulnerable to foreign exchange fluctuations. As shown in the Table 3, there is a 23 percent increase in the price of plastic resin in 2013, compared to 2010. However, there is a slight decrease in the price of plastic resin from 2011 to 2012. This instability in the prices of plastic resin directly affects the cost of production in the plastics industry.

Table 3. Estimated Yearly Plastic Resin Price in SEA 2009-2013
Estimated Yearly Plastics Resin Price Report in SEA from 2009 to 2013 (US$ per Metric Ton)

	2009	2010	2011	2012	2013
Polyethylene (PE)	1,307	1,210	1,432	1,273	1,491
HDPE FILM	1300	1060	1380	1293	1467
LDPE	1315	1285	1565	1255	1473
LLDPE	1305	1285	1350	1272	1532
Polypropylene (PP) Film	1225	1200	1550	1380	1507

Source: PPIA Country Report 2012-2013.

Cheap products from China. Lao revealed that imported products offer serious and major competition in the industry. Very cheap products coming from China compete with locally made

products. These products are ubiquitous, and are often sold in sidewalks, Divisoria and in *'tiangge'* stores. This does not encourage local manufacturers of recycled products, because a significant share of their market is eaten by imported China products. In terms of price, Filipino manufacturers cannot compete because of the high cost of production. Peter T. Quintana, PPIA President, explained that fair trade affects the industry, because multilateral agreements allow imported products to come into our country.

Tariff distortion. According to the PPIA, as early as 2004, the industry has been hounded by the issue of tariff distortion (Table 4). This means that the price of raw materials for plastics is higher than the price of the imported finished goods. This unfair market competition resulted in the stunted growth of the industry, a three-billion loss in government revenue, an increase in imported plastic from ASEAN, an increase in the cost of imports with plastic packaging, layoffs of workers, and plant closures. Alcan Packaging, Solvic Industrial Corporation, Allied Molding Corporation, Armstrong Plastic Manufacturing, Hong Tai Plastic Manufacturing Philippines Ltd. and Vic-Ly Development Corporation were among the many plants that closed.

Table 4. Changing Schedule of Tariff from 2001-2011
*RM - Raw Materials FG-Finished Goods

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
ASEAN RM*	15%		10%			5%		10%		0%	0%
ASEAN FG*	3-5%		0-7%			0-5%		0-5%		0%	0%
MFN RM	15%		15%			15%		15%		15%	10%
MFN FG	25%		15%			15%		15%		15%	15%
Executive Orders	EO 234		EO 161			EO 486		Suspended due court injunction		EO 850	EO 61
PH Resin Cons (MTPY)	657,670	749,450	786,340	583,565	494,047	316,868	566,868	539,322	516,236	740,004	630,027

Source: PPIA Country Report 2012-2013.

In 2011, however, government passed EO 61, reducing the tariff for raw materials for Most Favored Nations (MFN). The tariff for MFN such as South Korea, Japan, Taiwan, Saudi Arabia, China, India and Kuwait became 10 percent for raw materials and 15 percent for finished goods. This gives the industry a level playing field at present. However, with the opening of the naptha cracker plant of JG Summit

Petrochemical Corporation (JGSPC) in the country, there is a threat that the 10 percent tariff for raw materials from MFN will be back to 15 percent. The APMP has a pending petition at the Tariff Commission on this matter.

Impact of Stricter Regulations and the Ban on PSBs

The main reason for the stricter regulations and the ban on the use of PSBs by LGUs is to protect the environment. The real issues, however, are not just environmental in nature. The problem in flooding and pollution is a combination of the following:

a) Rapid population growth—at present, the population of the country is more than 92 million;
b) Increasing population in Metro Manila as more and more people from the provinces migrate to Metro Manila—the Regional Development Council reported that the population of Metro Manila is about 11.5 million. During daytime, this number increases by two million to account for students, workers, and the transacting public, among others, who come to Metro Manila during daytime;
c) Lack of discipline as people throw garbage indiscriminately;
d) Clogged drainage in Metro Manila due to an interplay of social, cultural, institutional, economic and technical dimensions; and
e) Very poor implementation of the Solid Waste Management Act of 2000 as manifested by poor collection of garbage, wrong waste segregation, and poor or no facilities available to treat and dispose large amounts of garbage collected in Metro Manila.

According to Chaffee and Yaros (n.d.), there is no conclusive evidence yet that will prove that using paper bags instead of single-use plastic will decrease litter, and dependence on oil and solid waste going to landfills. Based on the life cycle analysis they made, polyethylene grocery bags consume less energy during manufacturing, less oil and potable water. The following table shows the impact to the environment of various bag types:

Table 5. Impact Summary of Various Bag Types

	Impact Summary of Various Bag Types (Carrying Capacity Equivalent to 1000 Paper Bags)		
	Paper (30% Recycled Fiber)	Compostable Plastic	Polyethylene
Total Energy Usage (MJ)	2622	2070	763
Fossil Fuel Use (kg)	23.2	41.5	14.9
Municipal Solid Waste (kg)	33.9	19.2	7.0
Greenhouse Gas Emissions (CO2 Equiv. Tons)	0.08	0.18	0.04
Fresh Water Usage (Gal)	1004	1017	58

Source: Chaffee and Yaros (n.d.)

Quintana said that countries that ban PSBs and polystyrene are third-world countries that have no technology on waste management. He explained that it is good that plastics are floaters because these can easily be taken out of water. He added that as a partner in protecting the environment, the Downstream Sector, spearheaded by the PPIA, has undertaken various programs, projects and activities such as:

- Information and education campaign (conducting exhibits, site visits, trainings and seminars on waste management at barangay levels, churches; giving handouts on recycling guidelines);
- Partnering with the Department of Science and Technology – Industrial Technology Development Institute (DOST-ITDI);
- Partnering with the Department of Trade and Industry (DTI) in establishing Philippine National Standards;
- Partnering with Ayala Foundation I-recycle Program (recovery bins in Ayala Malls);
- Dumpsite and estero cleanup and recovery program with the Department of Environmental Resources (DENR), National Solid Waste Management Commission (NSWMC), and National Water Resources Board (NWRB);
- Recovery program with Invisible Sisters;

- Ongoing dialogue with local government units, supermarkets and retail establishments (Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), Philippine Association of Supermarkets Incorporated (PASI), Shoemart (SM), etc.).

On August 31, 2012, in defense of the plastics industry, the 14 largest Philippine business and industry groups posted a full-page ad in major broadsheet newspapers, informing the public that the environment is worse off with the ban on plastic shopping bags. The ad explained that with the use of paper as an alternative to plastic shopping bags, more trees are cut, and more water and power are consumed.

However, despite efforts of the industry, the ban and regulation on the use of PSBs seem to be unabated. A considerable number of municipalities and provinces have either banned or regulated PSBs while others have draft ordinances ready to be acted upon anytime soon. These are so far considered to be the biggest challenge of the plastic shopping bag manufacturers of the Downstream Sector. According to Quintana, only 10 percent of the LGUs consulted the industry before passing the ordinance on this matter. He explained that there are inconsistencies between local and national policies, so it is imperative to align them. Lao added that local ordinances did not go through the process as mandated by RA 9003 or the Ecological Solid Waste Management Act of 2000, which requires that a representative from the manufacturing or packaging industry be part of the City and Municipal Solid Waste Management Board.

Of the 17 cities and municipalities in the National Capital Region (NCR), 10 have already enforced their ordinances. In 2010, Muntinlupa pioneered the banning on the use of PSBs, followed by Las Piñas, Pateros, Pasig, Mandaluyong and Marikina in 2011. In the same year, Quezon City and Pasay City implemented stricter rules on the use of PSBs. In 2013, Makati and Caloocan likewise banned the use of PSBs. Navotas, Parañaque, San Juan and Taguig have proposed ordinances on the matter. Manila and Malabon have PSB ordinances for review, while Valenzuela does not have any ordinance on the ban or regulation of PSBs.

Outside Metro Manila, the following localities have either banned or regulated PSBs:

Luzon: Quezon, Rizal, Antipolo City, Marinduque, Occidental Mindoro, Oriental Mindoro, Palawan, Romblon, Provinces of Albay, Nueva Ecija and Bulacan;

Visayas: Aklan, Antique, Bacolod, Capiz, Guimaras, Iloilo, Negros Occidental, Bohol, Cebu City, Negros Oriental, Siquijor, Biliran, Eastern Samar, Leyte, Northern Samar, Ormoc City, Samar, Southern Leyte, Tacloban; and

Mindanao: Isabela City, Zamboanga City, Zamboanga del Norte, Dipolog City, Zamboanga del Sur, Zamboanga Sibugay, Bukidnon, Cagayan de Oro, Camiguin, Iligan, Lanao del Norte, Misamis Occidental, Misamis Oriental, Compostela Valley, Davao City, Davao del Norte, Davao del Sur, Davao Oriental.

Indeed the regulation or ban on the use of PSBs in various localities nationwide adversely affected the PSB manufacturing plants by way of closures and drop in sales volumes. On the side of the PSB workers, this resulted in high demoralization, the constant threat of being laid off at any time, lesser income due to job rotation, and worst of all, loss of job.

Closure of PSB manufacturing plants. The local ordinances on the ban or regulation of PSBs severely affected the small scale PSB manufacturers, which are considered the most vulnerable. According to the PPIA, a PSB manufacturing plant based in Malabon has already closed shop more than a year ago. The workers in that plant were estimated to be around 50. Another PSB plant in the same area has also ceased operations.

Drop in sales volume. The drop in sales volume is reflected in the consumption of polyethylene and polypropylene as these are basic raw materials for the production of PSBs. Although the regulation or ban of PSBs started in 2010, its effect became evident in 2013. Using 2010 as the baseline year, there is a 27 percent drop in polyethylene consumption in 2013. There is also a decrease in polypropylene consumption by 10.26 percent from 2012 to 2013.

Table 6. Consumption of PE and PP in Metric Tons (PPIA)

Year	Polyethylene (PE)	Polypropylene (PP)
2010	372,421	183,995
2011	336,574	141,519
2012	341,660	189,595
2013	271,900	170,126

Source: PPIA Country Report 2012-2013.

Considering the significant drop in demand, Lao said that manufacturers of PSBs might go into other industries or even start producing paper if this is what is called for. He said that businessmen will always go where the market is.

During the FGD session, Noel, who works with United Polyresin, narrated:

> "*Sa* United Polyresin, *malaki ang binagsak ng aming* production…Last year, *ang* regular delivery *namin umaabot kami ng* 20 tons a day. *Ngayon po, suwerte na namin maka*-12 tons *kami sa isang araw. Ang* lowest *namin ay* 4 tons, regular day *po iyon. So ramdam na po namin ang malaking balakid sa pag-ban ng* plastic bag…50 percent *ng aming produkto ay pumapasok sa* grocery bag… *Ang talagang apektado kami ay sa mga sando bags.*"

Menchie from Robton observed that:

> "….*Ang* drop *sa* total sales *namin ay mga* 25 percent. *Sa amin ang mga* affected *ay sa mga* shopping malls…Mainly *ang malaking nawala sa* transaction *ay sa mga grocery talaga.*"

Based on her experience, Cecilia from Calypso recounted that:

> "…Around 30 percent *ang* decrease in delivery. Before 40-50 customers/day, *ngayon* 20-10 customers *nalang* per day *ng sando bags*…Before *pag* Christmas season, *may* overtime, up to *sawa* ang OT, *ngayon, wala na*. Before, *may* OT, *ngayon wala na*, eight hours *nalang. Ngayon wala na kaming tinatanggap na* contractuals *kagaya noong nakaraang mga* Christmas season."

Demoralization of PSB workers. Overall, demoralization is felt in the industry not only by employers but more so by the workers. During the FGD session, some participants cried as the threat of being out of work at any moment looms over their heads. As family breadwinners, they all expressed fear and confusion, not knowing how they are going to make both ends meet should they be out of work. Worse, some FGD participants revealed that there are married couples who both work at the same company. Considering their situation, the FGD participants were all one in asking how they and their families would survive if they were out of work.

Reduced number of work hours or days. The PPIA conducted a survey on the impact of the LGU ban in Metro Manila on the workers of the plastic bag sector from November 2013 to January 2014. Out of 51 PPIA member companies, only 15 responded. Of this number, three are large enterprises, four are medium-sized, and eight are small enterprises.

Based on the survey, there is a steady reduction in the number of work hours from 2010 to 2013. The reduced work hours means either a decrease in the number of work hours per day or the number of work days per week. However, in some cases, both work arrangements have to be implemented by respondent companies in order for them to retain their workers.

Out of 4,978 workers covered by the survey, 2,075 (41.6%) were affected by the reduced number of work hours per day; 1,396 (28.3%) workers were affected by the reduced number of work days per week; and 1,700 (34.1%) workers were affected by both work arrangements. In terms of company size, large enterprises ranked highest in implementing the reduced work hours per day. However, Table 7 also shows that it is workers in small companies who experience both a reduction in the number of hours per day and per week.

Table 7. Number of Workers Affected by Reduced Hours of Work

Year	Company Size	Reduced Hours of Work (Total no. of workers covered: 4,978)					
		Per day	%	Days per week	%	Both (per day & days/ week)	%
2010-2011	Large	213	4.3	152	3.1	125	2.5
	Medium	198	4	144	2.9	74	1.5
	Small	187	3.8	127	2.6	99	2
Subtotal		**598**	**12.1**	**423**	**8.6**	**298**	**6**
2012	Large	241	4.8	168	3.4	195	3.9
	Medium	226	4.5	159	3.2	199	4
	Small	219	4.4	153	3.1	201	4
Subtotal		**686**	**13.7**	**480**	**9.7**	**595**	**11.9**
2013	Large	285	5.7	177	3.6	250	5
	Medium	261	5.2	163	3.3	279	5.6
	Small	245	4.9	153	3.1	278	5.6
Subtotal		**791**	**15.8**	**493**	**10**	**807**	**16.2**
	TOTAL	**2,075**	**41.6**	**1,396**	**28.3**	**1,700**	**34.1**

Source: PPIA Country Report 2012-2013.

To date, some affected companies have already filed for the reduction of working hours and working days with DOLE.

Reduced income. Starting January 2014, the new minimum wage in Metro Manila as per Wage Order NCR – 18 is P466 per day. At eight hours of work per day, the hourly income of a wage earner is therefore P58.25. However, as a consequence of the new work arrangements, the income of the affected workers decreased. As Table 8 shows, the higher the number of reduced work hours, the lower their take-home pay. A PSB worker with work hours reduced by four can only take home a measly P233 in a day.

Table 8. Effect of Reduced Number of Work Hours on Income of PSB Workers

No. of reduced work hours	Income lost	Remaining wage
1	P 58.25	P 407.75
2	116.50	349.50
3	174.75	291.25
4	233.00	233.00

Source: PPIA Survey on Impact of LGU Ban on Plastics (2014).

Loss of job. The steady increase in the number of displaced workers since 2010 continues unabated. From 2010-2011, 142 or 2.9 percent workers were displaced. In 2012, the number went up to 487 (10.1%), and in 2013, it even went higher at 883 (20.2%). The real figures, though, could be even higher, considering that only 15 companies out of 51 member companies of PPIA responded to the survey, and only 4,978 out of 140,000 workers in the PSB subsector were covered in the survey.

Table 9. Number of displaced workers from 2010-2013

Year	Company Size	Displaced workers			
		Before the ban/ regulation	After the ban/ regulation	Difference	Percentage (%)
2010-2011	Large	2,103	2,055	48	1
	Medium	1,775	1,724	51	1
	Small	1,100	1,057	43	0.9
Subtotal		**4,978**	**4,836**	**142**	**2.9**
2012	Large	2,055	1,890	165	3.4
	Medium	1,724	1,580	144	3
	Small	1,057	879	178	3.7
Subtotal		**4,836**	**4,349**	**487**	**10.1**
2013	Large	1,890	1,571	319	7.3
	Medium	1,580	1,226	354	8.1
	Small	879	669	210	4.8
Subtotal		**4,349**	**3,466**	**883**	**20.2**

Source: PPIA Survey on Impact of LGU Ban on Plastics (2014).

Conclusion

The PSB subsector in the Downstream Sector of the industry faces a herculean task in solving the problems it currently faces. Although there is still resistance to shifting to a different direction, as observed by Dr. Leslie Joy Diaz-Lanticse, Chairperson of the Department of Mining Metallurgical and Materials Engineering of the Philippines Diliman, this Sector must help itself in order to ensure its survival first and foremost. However, the survival of this Sector is in the hands of both the national and local governments, as well as the whole Filipino community who should start changing habits, behaviors and mind sets.

Recommendations

To ensure its survival, it is imperative for the PSB subsector of the plastics industry to take an integrated approach to the complex issues and challenges it is currently facing. Figure 3 shows the interlocking roles each major stakeholder must play so that each can harmoniously coexist.

The communities should:

- do their fair share for the environment by being responsible for their wastes. There must be proper segregation at the source, beginning from households. Filipinos should change their habit of disposing wastes indiscriminately. The crux of the matter is discipline;
- be encouraged to bring their used and old plastic shopping bags to groceries or malls in exchange for new ones. This is one indication that the 3R (Reduce, Reuse, Recyle) is being seriously followed; and
- patronize recycled products.

Figure 3. Interlocking Roles of Major Shareholders

The industry should:

- have more and better infrastructure for recycling that are strategically placed;
- seriously implement an intensified, continuous and strategic recovery program as part of their corporate social responsibility (CSR). One way is to provide garbage bins with proper labels in barangays, supermarkets and malls for easy recovery of recyclable plastic materials. There should be regular hauling of these waste materials to ensure that these will not add to if not cause visual pollution to the place. This will generate green jobs in the country as manpower will be needed for this task.
- sponsor more programs and activities related to health and the environment, such as marathons and tree-planting activities, among others;
- launch an intensified, systematic information and education campaign in media, social media, schools and organizations. Facts on the effects of plastics on the environment and on safety and health should be presented to the public. In addition to face-to-face lectures, the industry can disseminate information through video documentaries, brochures, banners, infomercials on TV and radio. The use of social media is another viable alternative considering that there are 30 million users of Facebook in the Philippines, according to Socialbakers Company. This makes us eighth in the ranking of the most number of Facebook users per country;

- according to Diaz-Lanticse, people are not conscious of what materials will dissolve or not in water. So one way to raise awareness of people is to put messages on plastic shopping bags, i.e., plastic myths and facts, proper waste disposal, etc. Make the product the medium in the information and education campaign to consumers. Products should have instructions on how to dispose of them properly;
- have an official PPIA website. There must be interactive communication between the industry and the different stakeholders. In this day and age, information and communication technology is very essential in reaching out to more people. This way, the public will feel the sincerity of the industry in reaching out to the public, and in the process helping enhance its image;
- be an advocate of product stewardship. According to the policy statement of the The Plastics Industry Trade Association in the US, product stewardship is "the process in which the health, safety, and environmental aspects of a product are identified and managed from its design through its disposal, reuse, or through recycling";
- engage in research and development by forging partnerships with the academe. The academe-industry partnerships will spur product development and innovation. This will help the industry develop new technologies that will enhance quality of products with lower environmental impacts. Aside from this, the accelerated product development and innovation will help make the industry globally competitive; and
- lobby to ensure representation in local and national policy-making bodies.

LGUs should:

- seriously and consistently implement RA 9003 or the Ecological Solid Waste Management Act. Wastes should be properly segregated at the source and these should be handled properly;
- help the industry in putting up infrastructure for recycling that are strategically located;

- regularly clean and maintain drainage networks, canals, etc. in their localities together with the help of Department of Public Works and Highways (DPWH), Metro Manila Development Authority (MMDA), etc.;
- conduct regular information and education campaign to its constituents on solid waste management. The barangays should be mobilized for this undertaking;
- educate garbage collectors on proper waste segregation;
- ensure that the plastics industry is represented and consulted during formulation of policies that affect them;
- look into the reduction of packaging materials for all types of consumer goods; and
- give consumers a choice whether to use or not to use PSBs.

The national government should:

- ensure the strict implementation of RA 9003;
- ensure that the plastics industry is represented and consulted during formulation of policies that affect them;
- require that topics on proper waste management be included in the K-12 curricula;
- launch public awareness campaigns on proper waste management;
- help the industry mitigate cost of production like amendment of the Electric Power Industry Reform Act (EPIRA) Law, 'tariff calibration' to ensure a level playing field that will protect the local industry;
- ensure that its agencies and instrumentalities strictly enforce anti-smuggling laws of the land so that there is fair competition in the market; and
- urgently pass a national industrial policy on the use of PSBs that gives the public a choice.

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