The Philippine Petrochemical Industry

A Strategic Roadmap Towards A Productive Future
OUTLINE OF THE PRESENTATION

- What are petrochemicals
- Environmental advantages
- Industry Structure and Major Investments
- Industry Vision and Objectives
- Domestic Demand and Growth Projections
- SWOT Analysis
- Latest Updates / Issues
- Actions requested
What are petrochemicals?

Petrochemicals are petroleum or natural gas by-products used for the production of various products like plastics, solvents, synthetic fibers and other essential commodities.
Petrochemicals - a Strategic Basic Industry

<table>
<thead>
<tr>
<th>Products of the Petrochemical Industry - Plastics and Petrochemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
</tr>
<tr>
<td>Electronics &amp; Computer</td>
</tr>
<tr>
<td>Medical Services</td>
</tr>
<tr>
<td>Transportation</td>
</tr>
<tr>
<td>Packaging</td>
</tr>
<tr>
<td>Education</td>
</tr>
</tbody>
</table>

Petrochemical Products are used by everyone!
Petrochemicals are needed by Industries

- Transportation
- Textile / Bullet proof vests (Kevlar)
- Packaging
Petrochemicals are needed by Industries

- Construction
- Electronics & Computers
- Medical Services
- Telecommunications
- Furniture
Petrochemicals are largely used for farming, agriculture and fishing

Sacks for rice, sugar, cement, fertilizer, etc

Fishing nets

Plastic films for greenhouses

Water distribution and Irrigation

Poultry
## Environment Friendly

### Fossil Fuel Consumption

<table>
<thead>
<tr>
<th>Producing 1 liter of</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aluminum</strong></td>
<td>15 kg of oil</td>
</tr>
<tr>
<td><strong>Steel</strong></td>
<td>5 kg of oil</td>
</tr>
<tr>
<td><strong>Plastic</strong></td>
<td>1.5 kg of oil</td>
</tr>
</tbody>
</table>
Environment Friendly

Transportation Cost Savings

Glass
- 36.2% packaging
- 63.8% product

Plastics
- 3.5% packaging
- 96.5% product

More products can be transported thanks to tailor-made and particularly thin-wall packaging solutions.

Thanks to their light weight, plastic packaging allows the full use of loading space without exceeding the permitted weight, which is beneficial for the transport of beverages. The result: more goods per journey can be transported.

Source: BASF
INDUSTRY STRUCTURE AND LINKAGES

- PRESENT INDUSTRY STRUCTURE – current [resin-based]
  
  **UPSTREAM**
  **INTERMEDIATE**
  **MIDSTREAM**
  **DOWNSTREAM**

  naphtha from local petroleum refineries

  Import naphtha

  NAPHTHA CRACKER
  POLYMERIZATION PLANTS (PP, PE, PS, PVC)
  PLASTIC PROCESSORS FABRICATORS

  EDC/VCM CHLOR-ALKALI STYRENE, ETC.

  EXISTING FACILITY
  PROPOSED FACILITY

  AGRICULTURE
  MANUFACTURING
  CONSTRUCTION
  UTILITIES
  SERVICES
Polypropylene/Polyethylene
Total Investment : $350M
Location: Batangas City
Polyvinyl Chloride
Total Investment : $60M
Location: Mariveles, Bataan
Polystyrene
Unsaturated Polyester
Polymer emulsion
Methyl ester

Total Investment: $37M
Location: Quezon City
Petron Corporation
Propylene, Benzene, Toluene, Mixed Xylene

Investment : $ 300 M
Location : Bataan
Polypropylene
Total investment: $180M
Location: Mariveles, Bataan
NPC Alliance Corporation
Formerly Bataan Polyethylene Corporation
Presently operating line No. 1 of 2 lines

Polyethylene
Total Investment : $330 M
Location: Mariveles, Bataan
JG SUMMIT OLEFINS CORP.
NAPHTHA CRACKER PLANT
INVESTMENT : $ 800 MILLION
LOCATION : Batangas City
<table>
<thead>
<tr>
<th>Company</th>
<th>Products</th>
<th>Investors</th>
<th>Original Investment</th>
<th>Technology</th>
<th>Start of Commercial Operation</th>
<th>Capacity (MT/Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JG Summit Olefins Corporation (JGSOOC)</td>
<td>• Ethylene</td>
<td>JG Summit Holdings, Inc.</td>
<td>US$800 M</td>
<td>CB&amp;I Lummus</td>
<td>November 2014</td>
<td>• 320,000 MT</td>
</tr>
<tr>
<td></td>
<td>• Propylene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 190,000 MT</td>
</tr>
<tr>
<td></td>
<td>• Pygas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 216,000 MT</td>
</tr>
<tr>
<td></td>
<td>• Mixed C4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 138,000 MT</td>
</tr>
<tr>
<td></td>
<td>• Polypropylene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 190,000 MT</td>
</tr>
<tr>
<td>Philippine Resins Industries, Inc. (PRII)</td>
<td>• Polynvinyl Chloride (suspension-type)</td>
<td>Tosoh Corp. Mitsubishi Corp.</td>
<td>US$60 M</td>
<td>Tosoh ISO 9001:2008 ISO 14001:2004</td>
<td>January 1, 1999</td>
<td>• 100,000 MT (for expansion to 180,000-200,000 MT)</td>
</tr>
<tr>
<td></td>
<td>• Unsaturated Polyester</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 10,200 MT</td>
</tr>
<tr>
<td></td>
<td>• Polymer Emulsions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 14,400 MT</td>
</tr>
<tr>
<td></td>
<td>• Methyl Ester</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 90,000 MT</td>
</tr>
<tr>
<td>Petron Corporation</td>
<td>• Propylene</td>
<td>SMC Ashmore Group Various Petron Corp.</td>
<td>US$300 M</td>
<td>ISO 14001</td>
<td>April 2008 3Q 2009 3Q 2009 1999 &amp; 3Q 2009 May 1, 1998</td>
<td>• 390,000 MT</td>
</tr>
<tr>
<td></td>
<td>• Benzene</td>
<td></td>
<td>US$180 M</td>
<td>BASF, ISO 9002</td>
<td></td>
<td>• 20,000 MT</td>
</tr>
<tr>
<td></td>
<td>• Toluene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 150,000 MT</td>
</tr>
<tr>
<td></td>
<td>• Mixed Xylene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 220,000 MT</td>
</tr>
<tr>
<td></td>
<td>• Polypropylene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 160,000 MT</td>
</tr>
<tr>
<td>NPC Alliance Corp. (formerly Bataan Polyethylene Corp. (BPC))</td>
<td>• Polyethylene</td>
<td>Nat’l Petrochemical Corp. (Iran) Polymax Worldwide Ltd.</td>
<td>US$330 M</td>
<td>British Petroleum ISO 9002</td>
<td>February 1, 2001</td>
<td>• 250,000 MT</td>
</tr>
</tbody>
</table>

**Total Original Investment**: US$2,057 M

**Total Capacity**: 2,808,600 MT/Y
Benefits to the Country of the Local Petrochemical Industry

- **INVESTMENTS**: Over ₱85 billion in state-of-the-art polymer plants, including naphtha cracker plant ($800 million)
- **FOREIGN EXCHANGE SAVINGS**: US$70-100 million/year
- **ANNUAL TAXES**: ₱250 million (local and national governments)
- **VALUE ADDED TAX (VAT)**: ₱1.2 Billion (2007)
- **EMPLOYMENT OPPORTUNITIES**: 5,000 Filipinos with annual expenditures for salaries and local services of half a billion pesos, as well as opportunities for the country’s engineers, chemists and technicians.
- **POTENTIAL TO DEPLOY FURTHER INVESTMENTS**: ₱50-75 billion in additional backward and forward integration projects.
INDUSTRY VISION

Short- to Medium-Term: to provide the vital resin requirements of the country in a competitive, efficient and timely manner so as to catalyze sustainable and dynamic manufacturing activities fueling growth across all user-industries.

Medium- to Long-Term: to harness the tremendous potential of the entire petrochemical streams (over 2,000 industrial/chemical products) which should provide a formidable backbone for Philippine industrialization.
INDUSTRY OBJECTIVES

To achieve self-sufficiency in strategic resin supply and increase the sector’s contribution to total Philippine GDP from Php 44 B in 2010 to Php 113 B in 2018 and Php 215 B by 2025 through progressive integration of upstream, midstream and downstream components of the sector.

Such progressive integration will involve entry into various other petrochemical branches that will provide exponential value-addition in different industries, spurring domestic and export growth and potentially contributing 5%-10% of GDP by 2025.
Domestic Demand & Growth Projections

• Total domestic capacity for resins presently exceed local demand and remain underutilized due to intense competition from imports, limitation in domestic monomer production and intermittent supply constraints for feedstocks or monomer.

• Opening up of domestic market through tariff liberalization allow imported resins to corner over 50% of domestic demand.

• Full integration with the upstream naphtha cracker will greatly address the supply issue for monomers and will dramatically improve plant utilization rates.
Domestic Demand & Growth Projections

- The scenario for growth in the long-term shows significant potential given the relatively low per-capita consumption at present. The annual per-capita resin consumption of selected countries are shown below:

<table>
<thead>
<tr>
<th>Country</th>
<th>Per capita consumption (kgs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>125.0</td>
</tr>
<tr>
<td>Taiwan</td>
<td>144.0</td>
</tr>
<tr>
<td>Japan</td>
<td>110.0</td>
</tr>
<tr>
<td>Singapore</td>
<td>105.5</td>
</tr>
<tr>
<td>South Korea</td>
<td>79.4</td>
</tr>
<tr>
<td>Malaysia</td>
<td>60.0</td>
</tr>
<tr>
<td>Thailand</td>
<td>32.0</td>
</tr>
<tr>
<td>Vietnam</td>
<td>30.0</td>
</tr>
<tr>
<td>China</td>
<td>28.9</td>
</tr>
<tr>
<td>Philippines</td>
<td>11.0</td>
</tr>
<tr>
<td>India</td>
<td>10.5</td>
</tr>
<tr>
<td>Indonesia</td>
<td>10.0</td>
</tr>
</tbody>
</table>
SWOT Analysis

STRENGTHS

1. Technology providers are renowned worldwide and global leaders in petrochemicals

2. Extensive product grade slate and with established capacity to tailor product formulations based on customer requirements

3. Availability of competent engineering personnel / supervisory talent and skills

4. Minimal wait period for delivery vs. indent purchases (Just-In-Time delivery)

5. Flexible supply and order quantities in increments less than a full container load

6. Availability of sales and technical service support teams for troubleshooting and product development
SWOT Analysis

WEAKNESSES

1. Absence of domestic feedstock supply forcing calibrated importation of raw materials
2. Non-integration with local feedstock supply exposes sector to plant downtime when monomer shipments are delayed
3. Continued vulnerability from smuggled materials
4. Lack of hard and soft infrastructure to support manufacturing in general and petrochemicals in particular
5. Turnover of trained employees for foreign employment
6. High utility cost (power, raw water, etc)
7. Cash tied up to tax credit certificates increases capital costs
OPPORTUNITIES

1. Operation of naphtha cracker plant will secure raw material supply for the polyolefin plants

2. New cracker start-ups worldwide may increase availability of olefins in the market

3. Growing domestic market and urbanization provide significant consumer-led growth

4. Low per-capita consumption of polymer in comparison to global consumption rate
SWOT Analysis

THREATS

1. Smuggling of plastic resins and plastic finished products
2. Non-implementation of reciprocal tariff treatment under free trade agreements
3. Pricing volatility due to fluctuating oil prices
4. Negative perception on plastic items particularly plastic bags, PVC and “styro” products
5. Lack of science-based approaches to environmental legislation leading to possible misuse or abuse of ambiguous standards
6. Tendency for un-reciprocated lowering of MFN tariffs and surrendering policy space increases vulnerability from resin imports
Latest Updates / Issues

• Challenges from LGU ordinances that ban or regulate the use of plastic bags and polystyrene products
• Petrochemical and its derivatives listed in 2014 IPP
• JG Summit Olefins Corp.’s $800 million naphtha cracker plant commenced operation in November 2014
• Petron’s refinery updated masterplan which includes the Propylene Recovery Unit with its BTX facilities
• Philippine Resins Industries Inc. (PRII) second line expansion for PVC under planning stage
• 3rd debottlenecking of PRII
Government Assistance / Action Requested

- **Anti-Smuggling Bill** – certify as priority by the President and immediately implement the measures therein
- **Customs Modernization and Tariff Bill** – to reform and modernize the Bureau of Customs for a more transparent and efficient customs procedures
- **Inward Foreign Manifest** – provide access to IFM so that import entries can be checked against manifest listing
- **Pre-shipment Inspection** – include containerized shipments in addition to bulk and break bulk
- **Product Description and Tariff Headings** – strict implementation to avoid “generic and substandard resins” from penetrating the local market
- **Tariff Review** – EO 61 (in light of the commercial operations of Petron’s PRU and the JGSOC’s naphtha cracker plant); Rationalize nomenclature and correct / clarify new tariff lines (e.g., HIPS, PP, LLDPE) in AHTN 2012
Government Assistance / Action Requested

- Implement EO 638 - reciprocal tariff treatment for AKFTA
- Expand non-local availability mechanism - include other resins (PE/PP/PS)
- 2014 IPP Listing of Midstream Petrochemicals - include expansion of existing midstream facilities and other vertical integration projects (update: petrochemical and its derivatives listed in 2014 IPP)
- Strengthen fiscal incentives for strategic industries serving the needs of the domestic market
- Tax Credit Certificates - facilitate/shorten processing time / rationalize BIR acceptance
- Constitute a Petrochemical Industry Development Board to implement the sector’s development plans
Government Assistance / Action Requested

- Clarification of the role of LGUs in legislating measures vis-à-vis the parameters required by national laws
- Fund and constitute the National Ecology Center mandated by the National Solid Waste Management Act (R.A. 9003) to coordinate and rationalize scientific-based analysis, data gathering, planning and integration of waste management solutions; mainstream scientific studies and methodologies should guide the legislative processes in Congress and local councils
- Establish National Industrial Development Plan with sectoral roadmaps and institutionalize planning and consultation infrastructure with business sector
WAY FORWARD

A STABLE PETROCHEMICAL INDUSTRY WILL GENERATE MORE INVESTMENTS AND OTHER ECONOMIC CONTRIBUTIONS WHEN THE RIGHT POLICY ENVIRONMENT IS IN PLACE .....
THANK YOU