Philippines in the Shipbuilding Global Value Chain

Highlights

- The Philippines is in a unique position in the shipbuilding GVC as it has both demand for (smaller) vessels in the domestic market and it is an exporter of large, commercial ships for the international market.
- From a global perspective, the Philippines has been the fourth largest ship producer (based on gross tonnage) since 2010.
- The industry employs 48,000 workers and is geographically concentrated in the greater Manila area and Cebu.
- A key advantage as well as constraint for the Philippines is related to the workforce. The abundant, cost-competitive and hard-working workforce often goes overseas to earn higher wages. Meanwhile, graduates of education and training programs that match primary occupation in shipbuilding often do not mean international standards.
- Moving forward, the Philippines is in a good position to expand global market share in the export-oriented segment, by increasing global awareness and proactively targeting new foreign-owned shipbuilders and suppliers seeking more cost-effective locations.

Global Shipbuilding Global Value Chain

In 2016, the global shipbuilding industry was valued at $80.2 billion, with exports in 2015 at approximately $117 billion. The industry, while in a current state of overcapacity with a young (average age) global fleet, still sees demand for newbuilds, as well as conversions and repairs, particularly due to increasing environmental regulations. Four key aspects of the shipbuilding GVC should be highlighted:

First, final assembly is concentrated in a few countries and offshore production in this industry is not common. In particular, China, Korea, and Japan account for over 90 percent of production based on gross tonnage (GT).

Second, there are two main segments of the industry: commercial shipbuilding (focused on transporting) and the offshore segment (activities that occur at sea; primarily related to oil). Within each segment, there is a wide mix of vessel types, which share some common materials and equipment, although several...
inputs depend on the intended purpose of the vessel. Global market share (in terms of producing countries and vessel types) also varies depending on the unit of measurement (volume/weight, value, number of vessels, and production versus exports). Furthermore, shipbuilders often specialize in one or a few ship types.

Third, national/domestic support plays a pivotal role in developing the industry. Support comes from domestic demand such as government purchases, domestically-owned shipping companies or local content requirements, and financial assistance through government-backed loans or state-ownership.

Fourth, international safety and environmental standards are high for oceangoing vessels, while vessels for domestic waterways are subject to national requirements. Therefore, the ability to meet international standards can be a significant barrier to entry for new shipyards.

The Philippines in the Shipbuilding Global Value Chain

The Philippines is in a distinct position in the shipbuilding GVC because it serves the demand for (smaller) vessels in the domestic market and exports large, commercial ships to the international market. Since 1994, export-oriented shipbuilding has played a significant role in the country’s economy. In 2015, it accounted for 2.6% of total exports, valued at US$1.5 billion while the total estimated revenue in shipbuilding and repair was pegged at approximately $1.6 billion. In terms of ship production, the Philippines ranked fourth based on GT since 2010. Meanwhile in 2015, it accounted for 2.8% of world ship completions (based on GT) and 1.3% of ship exports.

For export, the Philippines primarily produces bulk carriers, containerships, and some tankers. The country’s leading exporters are two large foreign-owned shipbuilders, Hanjin and Tsuneishi. The two other notable foreign-owned firms are Austal – for small aluminum passenger/mixed-use ships - and Keppel – for ship repair. On the other hand, domestic shipyards primarily engage in domestic ship repair, which accounts for 90% of domestic shipyard revenue. There are approximately 17 large or medium-sized domestic shipyards, 90+ smaller yards, as well as service and afloat contractors. Domestic yards involved in shipbuilding build small vessels for domestic use, such as for fishing, government, some passenger/cargo.

The industry employs 48,000 workers and is geographically concentrated in the greater Manila area and Cebu. Although domestic firms account for the largest share of the industry based on the number of yards (95%), the two largest foreign-owned exporters account for nearly all exports, 75% of employment, and 97% of revenue. In both segments, backward linkages to materials and equipment are nascent, and almost all inputs are imported directly or sourced from distributors.

Over the last decade, investment in new shipyards has been stagnant but the upside is its low exit rate. Builders that have invested in the Philippines have remained, with several operations dating back to the late 1970s and 1980s. These firms have continued to grow and expand due to the quality of the workforce and satisfaction with incentives.

A key advantage as well as constraint for the Philippines is related to issues with its workforce. While workers are generally abundant, cost competitive, and hard-working, the top segment often goes overseas to work in shipyards in the Middle East or Singapore to earn higher wages. In addition, graduates of education and training programs for welders that match the primary occupation in shipbuilding usually do not meet international standards.
The Philippines in the Shipbuilding Global Value Chain

Advantages

The country’s competitive advantages – workforce, ideal location and geography, and government incentives in place - strengthen country positioning to expand global market share in the export-oriented segment. The country can stand to benefit from these advantages by increasing global awareness and proactively targeting new foreign-owned shipbuilders and suppliers seeking more cost-effective locations.

The workforce. Human capital is undoubtedly a vital competitive factor of the country across many of its industries. For shipbuilding, this applies to the workforce at all levels, particularly for operators. The country has readily available and trainable workforce, with good work ethic and generally lower wages compared to competing nations (Japan, Korea, Singapore, and China).

Geography and location. The country’s strategic geographical location is a fundamental advantage as it lies along key Southeast Asian trade routes, making it a natural destination for ship repairs. The Philippines’ abundant stretch of coastlines provides ocean access for building and repair while the considerable water depth allows the building of large ships. Likewise, the island configurations make it feasible to set up a number or a cluster of shipyards in a single location. The province of Cebu for instance, has a canyon strait where sea trials can be conducted. It can also provide protection from typhoons, rough seas and strong winds. Moreover, the country is in close proximity to East Asia where shipbuilding is concentrated in three East Asian countries.

Incentives. Government incentives have historically served as a driver of foreign investment. These include tax and non-tax incentives for capital investments as well as import duty exemptions.

Challenges

The country’s bid to expand the shipbuilding industry is hampered by lack of industry certifications, subcontractors and workforce efficiency. Besides, the industry would largely benefit from a unified strategy among stakeholders.

Lack of local manufacturers of materials and equipment. All materials utilized to construct export-oriented vessels must pass IACS standards. Marine grade materials and equipment with IACS class approval are not produced in or by the Philippines. These are directly imported by the shipyard, or purchased from a local distributor. While there are a few domestic manufacturers, they are not qualified to pass the standards of the classification societies.
**Lack of service providers (subcontractors):** Subcontractors have to be reliable and must be able to meet international standards of export-oriented shipyards. Additionally, a readily available supply of high quality machinery, equipment, spare parts and service providers i.e. painting, blasting, machining, etc. near shipyards, specifically in the greater Manila area would be ideal.

**Workforce:** Efficiency, skill levels, and ability to retain talent: Graduates from TESDA programs possess the welding skills for domestic repair needs, but a more advanced level of the program, or more graduates from NC Level IV when available, are needed to meet international standards. The industry requires workers who have the knowledge of properties of the materials (i.e. steel), and why materials behave a certain way.

Higher wages offered in the Middle East and Singapore has also resulted to a dwindling pool of skilled and available workers at the operator stage or at the engineering and management levels. The lack of workers qualified for the engineering and management levels limits upgrading opportunities into higher value products and new markets.

**Domestic facilities do not meet IACS standards or do not have ISO certifications.** Non-compliance with international standards prevents the participation of domestic yards in any segment of the global value chain. This includes exporting new ships, repairing or converting ships used in international commerce, and producing materials or equipment used on ships in other countries.

**Lack of cooperation and leadership from the supporting environment.** The shipbuilding and repair industry in the Philippines lacks a unified supporting infrastructure and voice. Promoting and sustaining the development of an effective ecosystem for shipbuilding and repair require sustained communication and coordination among government, industry associations, and the academe. Initiatives to establish this ecosystem include the practice of constant engagement between government agencies and industry associations; the coordination between TESDA, the universities, and government or firm-supported education/research institutions; and, the involvement of educational institutions in industry associations. Efforts to establish a single association is being advocated at the industry level, but the sheer geographic distance makes it difficult to realize. Relevant government organizations, such as MARINA, BOI and PEZA, also need to work together in harmonizing domestic regulations to create an environment that supports the needs of the industry. For example, regulations and policies that incentivize importing ships -rather than building these – hinder efforts to build up a domestic workforce.

**Global (or regional) awareness:** The strategic utilization of marketing tools and technology to effectively increase global awareness on the Philippine shipbuilding industry is recommended. While trade shows serve as valuable platforms for market engagement, the benefits are not maximized due to few domestic participants. Information on the potential and existing capabilities of the Philippines in the Shipbuilding/Ship Repair (SBSR) industry is also limited. Over half of the companies identified as participants in the industry have no Internet presence; the industry association does not have a website; and, information provided by educational institutions related to the “maritime” sector focuses mainly on seafarers.

**Potential Upgrading Trajectories**

Human capital and geographic location are advantages that increase the potential for the country to grow its global footprint in shipbuilding. The country can upgrade in the shipbuilding GVC through a number of pathways:

The first set of upgrading opportunities are FDI-led development to grow export-oriented, large commercial shipbuilding; the second, FDI or JV-driven
opportunities to enter the global market in post-production services; and the third, domestic (Filipino-owned) firm opportunities to enter the industry to fill domestic market needs, and eventually the GVC for smaller vessel types. Building a local supply base will generate local employment opportunities as well as prospects for domestic service providers to outsource or subcontract work to nearby MNCs.

FDI-led development to grow export-oriented, large commercial shipbuilding will require **product upgrading through the expansion and diversification of ship exports**. The Philippines is one of the few countries with sizeable foreign-invested shipyards that have been in the country for over two decades. While these companies have continued to expand production in the country, the industry has not registered new investors over the past decade. This may be due to the lack of a coordinated and focused national marketing initiative to attract new companies.

When possible, new investments should seek to expand the portfolio of ships produced in the Philippines to reduce risks associated with cyclical demand in the industry. Increasing the number of large foreign shipbuilders also leads to opportunities for domestic shipyards to enter the value chain as subcontractors.

Further, this first set of upgrading trajectories requires **establishing backward linkages**. At present, almost all physical inputs required to build and repair ships in the Philippines are imported. Given the Philippines’ proximity to key supplying countries such as China, Korea, and Japan, the relatively long lead time to build a commercial vessel, as well as having a supply base for some key inputs, would benefit existing and new shipbuilders. A domestic supply base will definitely shorten lead time, provide shipyards with a guaranteed, reliable and just-in-time (JIT) supply, and create additional jobs. The most expensive components for the types of ships currently produced for export in the Philippines are steel and engines. These tend to be the bulkier and heavier parts that benefit from local production in terms of shipping costs. More generic inputs, such as coatings and paint, should also be considered since these are needed for both building and repair. Suggestions for backward linkages include: steel products, paint, panels and furniture, electric cables, and pumps (Stürzebecher, 2014).

The second set of upgrading opportunities relate to entering the GVC in post-production services in ship repair, breaking and recycling. The repair activities currently undertaken in the country serve domestic customers. Entry into these segments – repair, breaking, recycling - in the global market will be initially driven by foreign investors, but the potential for JVs in repair is much higher since there are existing firms with the capacity to perform these activities. Foreign firms can provide further assistance by opening doors to global customers and help local firms understand and navigate the complex nature of standards and certifications of the SBSR international market.
The Philippines has opportunities for **functional upgrading in ship repair or conversion for international clients**. Ship repair, conversion or ship breaking/recycling are immediate opportunities for upgrading. Additionally, developing the local technical expertise for domestically or jointly owned ship repair facilities is another opportunity for the industry. While there is an increasing market for conversions and retrofitting, the ability of existing domestic shipyards to move into conversion activities may be limited due to their size. To address this, one option would be to combine several yards to create a larger one since most local shipyards are contiguous to one other (at least in the Cebu area). The lack of domestic inputs can be addressed as well with a breaking and recycling facility.

**Entry into breaking and recycling** include opportunities for “green” facilities. Scrapping Japanese and European flagged ships could be a profitable niche for the Philippines, provided an aggressive marketing initiative establishes the country as preferred end of life service provider different from the South Asian yards. Such facilities would generate revenue and employment opportunities, and provide a much-needed domestic supply of inputs; equipment can be refurbished, and steel can be reused and/or recycled. Ship breaking activities may likely increase for ships prior to the end of their useful life (~25 years) to reduce global overcapacity. Also, while the average age of the global fleet is young, ship breaking - rather than converting - may be an option for ship owners with ‘middle-aged fleets’ (~12 years) to meet the emerging environmental regulations.

The third set of opportunities are for domestic firms to develop building and design capabilities to satisfy the demand of the domestic market, and this can lead to opportunities for entering the regional and global value chain in more niche markets.

**Entry and end market upgrading (domestic to export market)** is another opportunity to enter the regional and global value chain for smaller vessels such as RoRos, anchor handling tug supply (AHTS), and offshore vessels (OSV). There is domestic demand for these, and with the increasing trade within Asia, vessels such as these will be needed. The global RoRo fleet is among the oldest and is expected to enter a ‘build’ cycle in the near future. While it would take a considerable amount of time to get off the ground, this upgrading opportunity builds a supply chain in one location, provides a solution to a potential safety issue in the Philippines, and introduces a design standard for a new type of vessel that could be used in other locations.

The policy focus for **functional upgrading: ship design (smaller regional/domestic vessels)** would be on reforming existing regulations for domestic shipping, particularly in converting vessels for domestic use, rather than newbuilds. This would revise the useful life of a vessel, ensure the vessel’s safety to operate, and would require new technology to test the stability of existing vessels. Although this trajectory does not increase export-oriented opportunities for larger vessels, this upgrading can be implemented within the short term, with available skillset, and no need for extensive capital investment in facilities.

To support product upgrading into smaller vessels (initially short-haul RoRo transportation) for export, the industry’s capabilities in ship design and conversion for these vessels should be considered. These activities require workers with skills in engineering and college-educated workers with knowledge of software (CAD, etc.), and offer intersectoral upgrading opportunities for other transportation and construction industries. An overlap in educational programs that train students in this area could be applicable for multiple end markets.

The table below summarizes the potential upgrading trajectories for the Philippines as well as key benefits and challenges discussed in this brief. Further, the table provides specific and cross cutting recommendations that the Philippines can adopt to support its bid in the shipbuilding GVC.
## The Philippines in the Shipbuilding GVC: Upgrading and Policy Recommendations

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<th>Time Frames</th>
<th>Upgrading Trajectory</th>
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<th>Cross-Cutting</th>
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<tr>
<td>Short</td>
<td>Product upgrading: expand and diversify ship exports</td>
<td>• Remain relevant and competitive as industry innovates</td>
<td>• Industry dominated by MNCs; strategy developed in HQs outside Philippines.</td>
<td>• Target additional FDI</td>
<td>• Identify and develop technical level (NC Level IV) education programs</td>
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<td>• Increased product variety reduces risk to demand fluctuations in single product markets</td>
<td>• Competition with China</td>
<td>• Increase marketing</td>
<td>• Encourage increased interaction between the private sector and educational institutions to identify specific human capital needs</td>
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<td></td>
<td>• Competencies in technology frontiers increases long-term viability of sector</td>
<td>• Lack workforce skills, materials, and equipment suppliers.</td>
<td>• Incentivize investors to produce higher-value products in the Philippines</td>
<td>• Alignment on leadership roles of key stakeholders</td>
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<td></td>
<td>Backward linkages into parts and components</td>
<td>• Increased local content increases the economic impact in the economy in terms of employment, revenue and value added</td>
<td>• Capability low or absent in essential materials and equipment needed for shipbuilding</td>
<td>• Enhance access to阜lopment opportunities of parts/components</td>
<td>• Marketing</td>
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<td>Short to Medium</td>
<td>Functional upgrading into repair services</td>
<td>• ISS comprises approximately 30% of the value of a ship over its lifetime.</td>
<td>• Existing shipyards do not meet international standards.</td>
<td>• Partner with existing ship repair (Keppel) to upgrade training programs to meet international standards.</td>
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<td></td>
<td>• Increased demand for repair and conversion services due to fleet age and environmental regulations</td>
<td>• Existing/top talent goes abroad</td>
<td>• Recruit overseas workers; promote domestic ownership through JVs and managerial training</td>
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<td>• Strengthens supply chain for automotive, aerospace, and construction.</td>
<td>• Competition from other countries</td>
<td>• Require IACS standards for domestic ships to raise quality of domestic shipyards.</td>
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<td>Medium</td>
<td>Entry into disassembly and recycling</td>
<td>• Provides valuable steel scrap, which can be inputs for mini-mills with EAFs.</td>
<td>• No shipyards are dedicated to disassembly and scrapping</td>
<td>• Designate shipyard (THI) with adequate disassembly and scrapping capabilities</td>
<td>• Marketing</td>
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<td></td>
<td>• Steel materials for construction or re-rolling</td>
<td>• Philippines does not have a mini-mill</td>
<td>• Evaluate feasibility of a mini-mill located in the Philippines versus exporting scrap</td>
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<td></td>
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<td>• ISS comprises approximately 30% of the value of a ship over its lifetime.</td>
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<td>• Incentivize shipbuilders to purchase recycled inputs</td>
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<td>Medium to Long</td>
<td>Entry and end market upgrading (domestic to export market)</td>
<td>• Market opportunities for domestic shipbuilders to become lead firms</td>
<td>• Few domestic shipbuilders</td>
<td>• Evaluate export markets for ferries and RoRos to other islands (e.g., Indonesia, Caribbean)</td>
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<td>• Leverage domestic and regional demand to drive economies of scale</td>
<td>• Limited market information on global demand for smaller ships for which domestic shipbuilders can produce</td>
<td>• Encourage domestic shipping companies to build or convert ships in the Philippines</td>
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<td>• Entryway into GVC</td>
<td>• Minimal involvement in non-manufacturing segments of the chain</td>
<td>• Raise standards for domestic ships</td>
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<td>Medium to Long</td>
<td>Functional upgrading in ship design</td>
<td>• Cross-industry skillset</td>
<td>• Minimal involvement in non-manufacturing segments of the chain</td>
<td>• Expand educational programs at technical, BS and MS levels in computer engineering</td>
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<td>• Skilled employment; higher wage positions</td>
<td>• Minimal involvement in non-manufacturing segments of the chain</td>
<td>• Create an industry-government-academia association around CAD.</td>
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<td>• Expand service exports</td>
<td>• Minimal involvement in non-manufacturing segments of the chain</td>
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Note: short (1-2 years), medium (2-6 years) and long (> 6 years).
This policy brief highlights specific issues and policy implications cited in the study submitted by the authors Stacey Frederick and Lukas Brun of Duke Global Value Chains Center (GVCC) to the Department of Trade and Industry. The full study can be downloaded at www.industry.gov.ph.

The views and opinions expressed in this policy brief are of the author/s and do not necessarily reflect Philippine government policy.

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