

Ship Breaking Industry- Challenges Ahead

July 31, 2018 | Ratings

Contact:

Yogesh Shah

Director – Corporate Ratings
yogesh.shah@careratings.com
91-79- 4026 5603

Akhil Goyal

Senior Manager
akhil.goyal@careratings.com
91-79-4026 5621

Digant Rupalkar

Analyst
digant.rupalkar@careratings.com
91-79-4026 5644

Anam Shah

Analyst
anam.shah@careratings.com
91-79-4026 5622

Mradul Mishra (Media Contact)

mradul.mishra@careratings.com
91-022-6754 3515

Disclaimer: This report is prepared by CARE Ratings Ltd. CARE Ratings has taken utmost care to ensure accuracy and objectivity while developing this report based on information available in public domain. However, neither the accuracy nor completeness of information contained in this report is guaranteed. CARE Ratings is not responsible for any errors or omissions in analysis/inferences/views or for results obtained from the use of information contained in this report and especially states that CARE Ratings has no financial liability whatsoever to the user of this report

Overview

Ship breaking industry or Ship recycling industry has seen a major shift to Asian counterparts over the period owing to the environment concerns. On one hand, ship breaking is a green process wherein a ship at end of its life cycle is being dismantled and each part is sent further for reuse, but on the other hand, the complex process of dismantling involves issues like labour safety and health and further it poses challenges on environment as well, which is a matter for criticism. However, the ship breaking activity is being recognized as major source of steel for re-rolling steel plants.

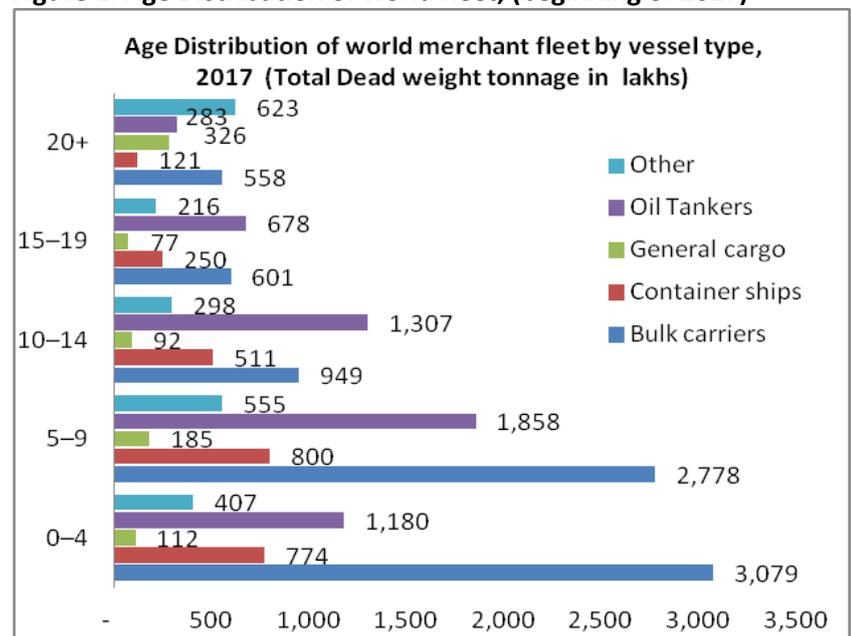
Ship ageing and factors determining ship recycling

Ships can be classified in six types and their ageing is tabulated in table 1 as follows:

Table 1: Different Types of ships and their Lifespan

Types	Tonnage Range ('000 MT)	Approximate Lifespan
General Cargo	5-25	25-30 years
Bulk Carriers	15-40	25-30 years
Oil Tankers	10-55	27-32 years
Passenger Ship	5.2-22.5	25-30 years
Drill Ships	-	10-25 years
War Ships	1.5-35	30-35 years

Figure 1: Age Distribution of world fleet, (beginning of 2017)



Source: UNCTAD/RMT/2017- UN Review on Marine Transport

Table 2: Long-term trends in average age, by vessel type based on dwt

Year\Type of vessel	Tankers	Bulk carriers	General cargo	Containerships	Other	All Ships
1987	12.10	10.70	13.70	NA	NA	11.70
1997	14.90	14.60	17.30	12.00	15.30	14.90
2007	10.00	12.90	17.40	9.10	15.10	12.00
2017	9.90	7.95	18.29	8.72	15.58	9.90

Source: UNCTAD/RMT/2007 & UNCTAD/RMT/2017- UN Review on Marine Transport

The decision to send the ship for the purpose of recycling depends on the life of the ship and how quickly does the ship become obsolete. The ship can be considered to have become obsolete on the basis of following 3 parameters:

Physical Obsolescence	<ul style="list-style-type: none"> Indicates the physical condition of the ship and deterioration with time. Spend an increased amount on repairs and maintenance. Recycling of ship becomes a cheaper option and results in positive cash flows.
Technical Obsolescence	<ul style="list-style-type: none"> Being physically sound, but no longer profitable to remain in service due to increased competitiveness by a more efficient ship.
Regulatory Obsolescence	<ul style="list-style-type: none"> Scrapping of ships due to regulatory requirements. Issues such as port state controls, vetting inspections and statutory surveys and other regulatory requirements lead to believe that scrapping the ship is more convenient than maintaining the ship and adhering to regulatory requirements.

Methods of Ship Recycling/Ship Breaking

There are 4 methods used globally for the purpose of recycling of ships.

Name	Beaching	Slipway	Alongside/Buoy Method	Drydock
Process	Ship is dismantled at intertidal zone of the beach. With the help of high tidal waves ships are gradually pulled higher on to the beach with the help of cranes and heavy steel wires.	Similar to beaching method but without the help of tides. The ships are beached against the shore and then pulled with the use of a concrete slipway about 400-700 feet long.	Used to dismantle ships which are afloat and cut systematically using cranes and automated cutting gear in vertical direction. Starting from top of navigation deck and subsequently reaching double bottom. The cutting peripheries do not come in contact with sea water.	Ships are dismantled at a drydock, floating dock, or a slipway that has a lock gate and an impermeable floor structure.
Place	Chittagong in Bangladesh, Alang in India and Gadani in Pakistan.	Turkey & few locations in UK and US.	China, United States & Belgium.	UK
Issues/benefit	The dismantling of ships on tidal mudflats leads to washing away of oil spills and other hazardous materials with the tide into the water.	This method prevents accidental oil spillages preventing such materials to get mixed with sea water.	Due to no tidal dispersal, local impact of pollution is likely to increase.	Method is the safest and cleanest way of recycling a ship because chances of polluting surrounding waters by accident are virtually nil as everything is contained within the dock.

Source: CARE Research

Process of ship procurement for recycling

A ship owner can choose either of two options: either sell the ship directly to a ship recycling yard or sell it through a cash buyer. Most ship owners prefer to choose the latter strategy because cash buyers pay a lump sum to the ship owners in cash in advance, and charge approximately 3% commission to close the deal. The role of cash buyers is negotiation and bearing financial risk since they sign a contract and pay the owner till they get paid for delivering a ship to a recycling yard. The price offered to a ship owner is in terms of USD per light displacement tonnes (LDT).¹

Global trend of ship recycling

Until 20th century, ship recycling used to be carried out in industrialized ports including in USA and UK. Thereafter, the major centers of the Ship

Breaking and Recycling Industry (SBRI) first moved from Europe and North America to East Asia and, since the 1980s, to South Asia. At present, global ship breaking industry is

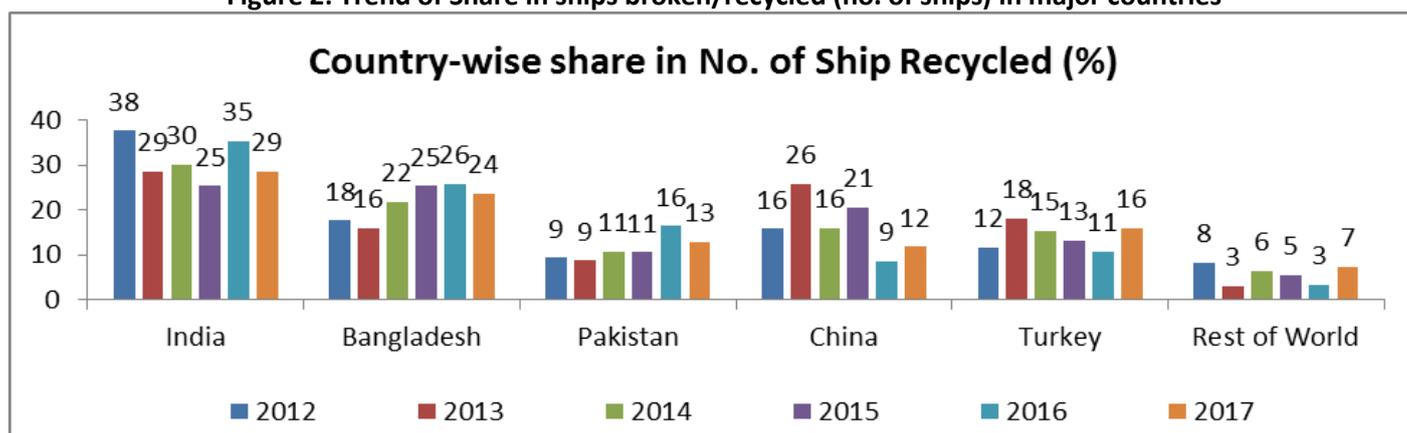
Table 3: Major Location Cluster

Sr. No.	Country	Location Yard
1	India	Alang in state of Gujarat*.
2	Pakistan	Near Karachi at Gadani beach situated Balochistan.
3	Bangladesh	Sitakunda coastal strip situated north port of Chittagong.
4	Turkey	Aliaga, a town situated on Aegean Sea, north of Izmir port.
5	China	Yard located along the Yangtze river, close to Shanghai and yard located along the Pearl river in Guangdong province. Some of yards also located at Tianjin, North of Shanghai.

**Alang contributes 98% total ship-breaking in India and other locations include Bypore, Azchical*

concentrated mainly in five countries, namely India, Pakistan, Bangladesh, China and Turkey. The level of activities in these countries varies from year-to-year and depends on availability of ships for scrapping. The ship recycling in five major countries are clustered in particular region.

Figure 2: Trend of Share in ships broken/recycled (no. of ships) in major countries



Source: Annual report of NGO Shipbreaking platform, Note: Total 835 ships were recycled in 2017

As Indicated by the figure 2 above, India has remained a major contributor to the ship breaking industry over the past 6 years albeit the activities has shown decreasing trend in India due to competition from Bangladesh and Pakistan offering better prices. India had a market share of 38% in 2012 which declined to 29% in 2017, simultaneously market shares of

¹ LDT – light displacement tonnage; a measure of ship’s weight when it is empty

Bangladesh and Pakistan have improved from 18% and 9% in 2012 to 24% and 13% in 2017 respectively. Decline in share of China is primarily on account of its protective policy to reduce pollution.

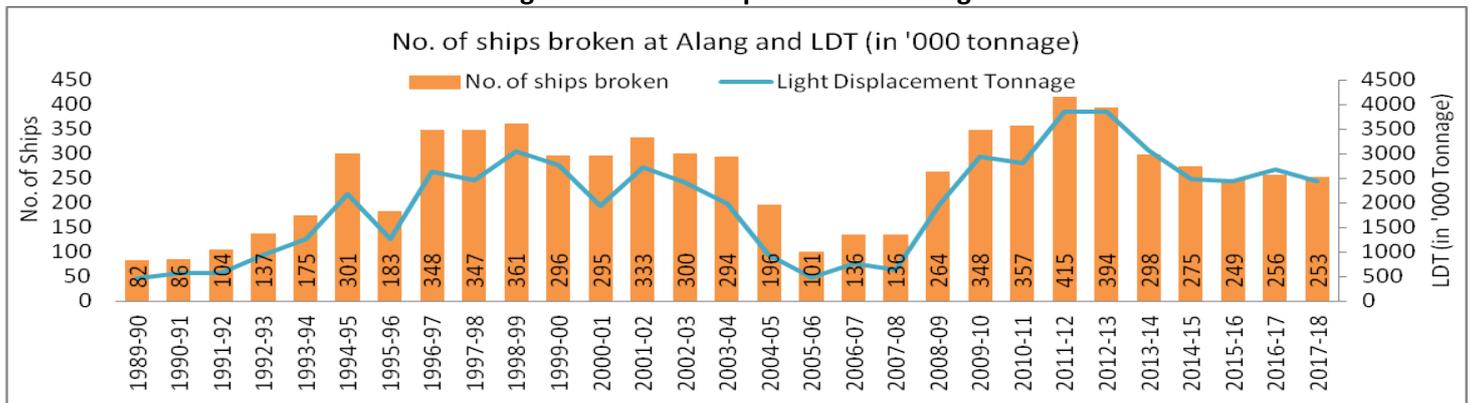
A small number of ship breaking companies are also scattered in the United Kingdom, United States, Canada, and European countries, such as Spain, Belgium, Netherlands, etc. specializing in breaking warships, fishing vessels and other high value vessels but do not pose any competition to Asian ship breakers due to high labour costs, lack of a ready market for recycled material and stringent environmental regulations. The size of a recycling yard is generally determined by its annual dismantling capacity, which varies from one country to another. For example, yard sizes in the Indian subcontinent are in the range of 20,000–150,000 LDT per year. The size of the yards in Turkey is in the range of 50,000–100,000 LDT per year whereas, in China, yard sizes vary from 30,000 LDT to 1.2 million LDT.

Indian Ship-recycling Industry

In India, full-fledged ship breaking practices started around 1980s in Mumbai and Kolkata and later Alang in Bhavnagar district, Gujarat was developed for ship breaking owing to its various advantages listed below and is considered the world’s largest ship breaking facility. Alang became centre of ship breaking activities in the world post 1991-92. From 1991-92 to 2016-17, Alang has been a consistent player in ship breaking, demolishing close to 6899 ships. It accounts for 98% of total ships recycled in India.

1. The site falls in the high tide zone where the highest tide reaches up to 10 to 11 meters. This is considered to be most favorable for beaching purpose.
2. This site is located in the Gulf of Khambhat and whose harbors are protected areas during rainy season which allows ship breaking activity.
3. The coast of Alang is sloping and has a long dry area which facilities reaching up vessels.
4. The seabed at Alang dries up very quickly even during monsoon, thus facilitating the handling as all kinds of material and equipment.
5. The area along the coast as Alang is free from other competitive users, like merchant shipping, fishing and salt work.

Figure 3: Nos. of Ships broken at Alang



Source: Gujarat Maritime Board, CARE Research

Recyclable material classification and its proportion in various types of ships

The revenue generated by a ship recycling yard depends on what types of materials can be extracted from a ship and out of those extracted, what and how much can be classified and sold as recyclable material and reusable material. Such classification mainly depends on applicable local and international regulations and local market for reusable goods and scrap metals, such as steel, nonferrous metals, etc. The markets for reusable goods and scrap products differ from one country to another. In the advanced European countries, steel scrap is generally completely melted down to make new steel products whereas in the East and Indian subcontinent, steel scrap is sometimes simply heated and rerolled in reinforcing rods for use in the construction industry.

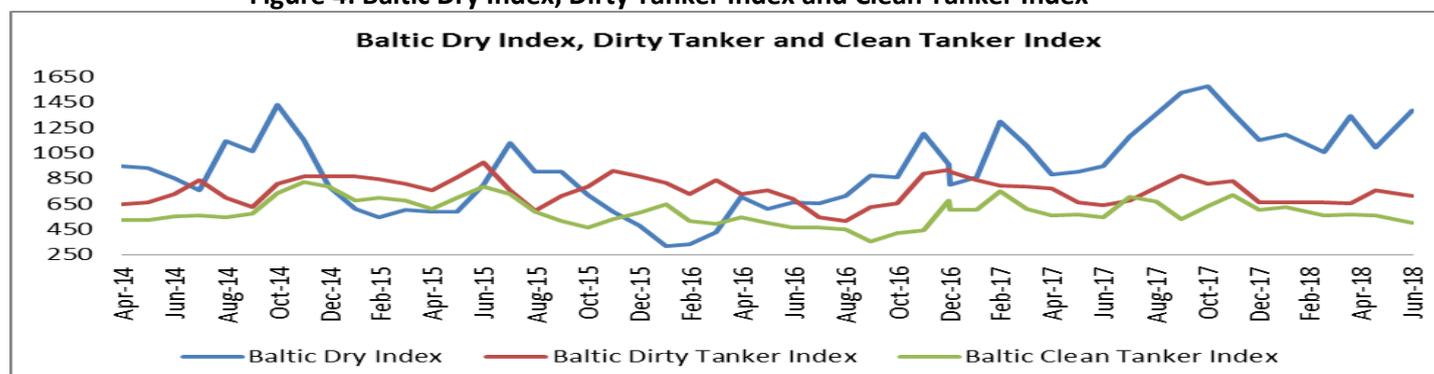
Table 4: Inventory of Recyclables according to type of ships

Material Recovered	General Cargo	Bulk Carriers	Oil Tankers
Re-Rollable Ferrous Sheets	56-70%	61-75%	72-81%
Meltable Ferrous Scrap	10%	8-10%	5-7%
Cast Iron Scrap	1.5-5%	1.5-2.5%	1.5-3%
Non-ferrous Metals	0.5-1%	0.50%	0.5-2%
Weight Loss	9-15%	10-16%	10-12%
Machinery	4-8%	1-6%	0.5-2%
Wooden Furniture and Fittings / Fixtures	5%	1-5%	1.5-2%

Factors Affecting Indian Ship-recycling Industry:

- 1. Movement in Freight Prices:** Majorly, the current earnings and future expectations drive the ship recycling industry. The movement in the freight prices is indicated by the Baltic Dry Index (BDI). BDI is basically shipping and a trade index created by London Based Baltic Index. Other index include Baltic Dirty Tanker Index and Baltic Clean tanker index which is linked to freight prices of Oil tankers. These indexes specify the cost of transportation to ship owners. The cyclicity in the ship breaking industry is inherent with its negative correlation with the Baltic indexes. Better availability of ships are expected at the time of recession when the freight rates are lower as ship owners find it economical to send the ship for the purpose of recycling rather than using the ship further. Ship breaking at Alang had declined significantly in FY14 (refers to the period April 01 to March 31) over FY13 impacted by the availability of ship with rise in Baltic Indexes.

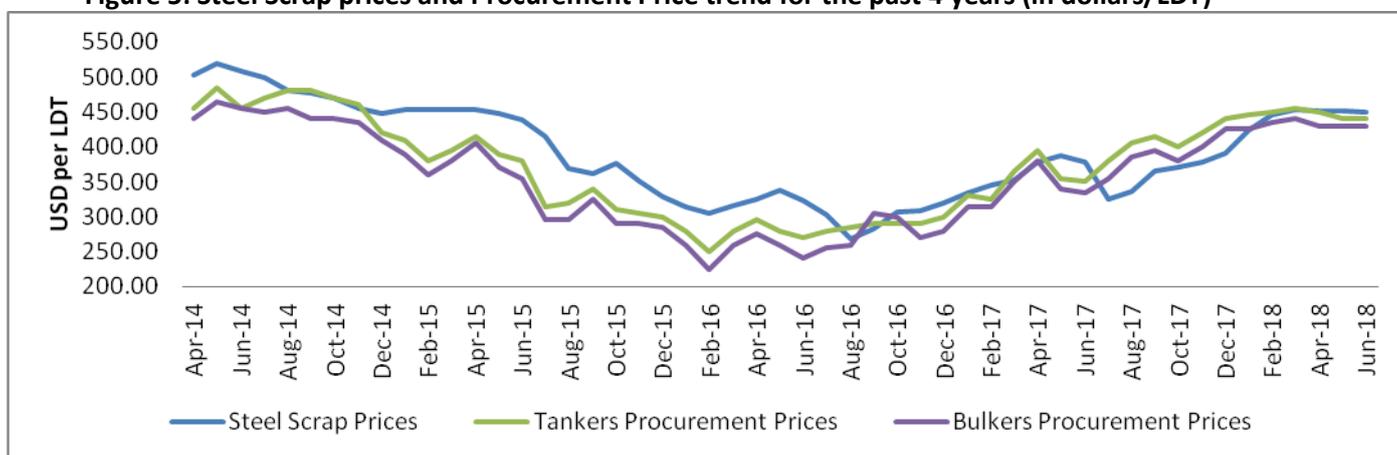
Figure 4: Baltic Dry Index, Dirty Tanker Index and Clean Tanker Index



Source: Lloyd's List

2. Scrap Prices vis-à-vis steel price movement: Profitability of ship breakers is susceptible to steel scrap prices which are linked to global steel prices while post ship purchase ship recycler/breaker have to bear the price risk. The scrap prices hold less importance for ship owner when it comes to deciding whether a ship should be scrapped or not. The ship breaking industry contribute small proportion to steel industry viz. around 1.5% of the steel requirement and so the scrap prices are affected by the market scrap steel price rather than demand and supply of ship. The volatility in steel prices driven by demand and supply conditions in the global as well as local markets exposes ship-recycling companies to any adverse price movement on the uncut ship inventory as well as unsold inventory of steel scrap held by them. In past steel scrap prices had remained volatile in nature. The trend of ship procurement price vis-à-vis steel scrap prices is given below:

Figure 5: Steel Scrap prices and Procurement Price trend for the past 4 years (in dollars/LDT)



Source: Athenian shipbrokers S.A., CMIE; Note: Steel scrap prices are taken for Bhavnagar Heavy Melting scrap prices and are converted into USD based on monthly average of exchange rate.

For ship breakers the procurement prices should be compared with steel scrap prices with lag of 1-2 months which is the normal time taken for processing and approval. Furthermore, the price trend reflects the challenging scenario ahead with decline in profitability with increasing competition.

3. Competition from the global peers: Indian ship-recycling yard face intense competition from the neighbor countries like Bangladesh and Pakistan due to availability of low wage labour, lax occupational health and environment related regulations, and partial enforcement. Furthermore, the currency also plays a key role in determining competitiveness of Indian ship breakers.

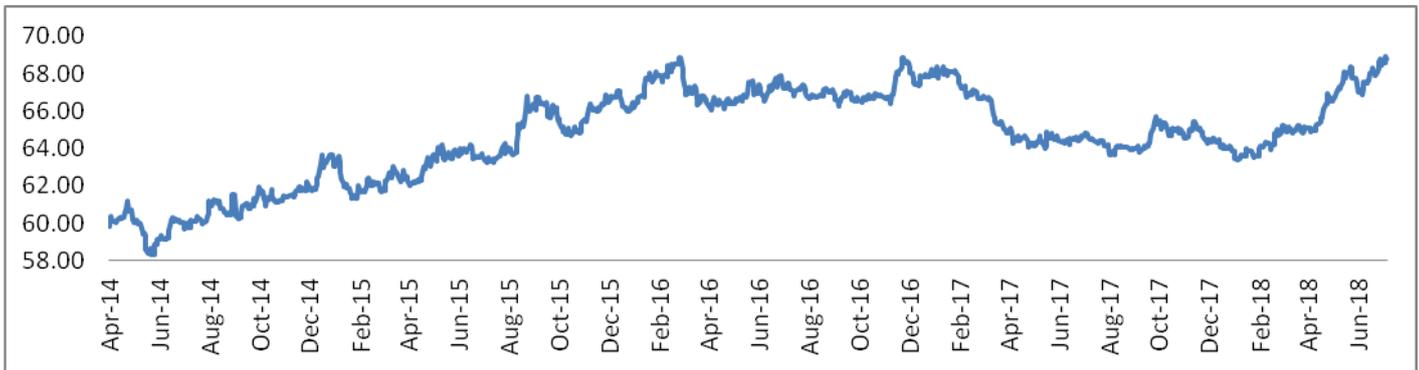
Table 5: Indicative Demolition Prices

Countries	Gen. Cargo	Tanker
India	USD 430/Lt Ldt	USD 435/Lt Ldt
Bangladesh	USD 425/Lt Ldt	USD 440/Lt Ldt
Pakistan	USD 415/Lt Ldt	USD 430/Lt Ldt
China	USD 260/Lt Ldt	USD 280/Lt Ldt
Turkey	USD 280/Lt Ldt	USD 290/Lt Ldt

Source: Athenian Shipbrokers S.A. Week 24 2018 (11th -15th June)

4. **Forex Risk and high hedging cost:** Majority of the ship breakers purchase ships by way of Letter of Credit (LC) and tenure for the same depends upon the size of the ships and its recycling period which normally ranges from anywhere between 90-270 days. Since, the transaction is denominated in foreign currency at time of purchase of ship and there is time lag in actual sales after ship breaking leading to exposure of their profitability to forex risk. Banks normally keep 10% as FD margin and require ship breakers to keep their sales receipts after meeting expenses as FD till full repayment. Furthermore, due to high hedging cost compared to low profitability, ship breakers are often resistant to hedge its cash flow.

Figure 6: USD to INR exchange rate trend



Source: Federal Reserve Economic Data

5. **Regulatory Risk:** The ship-breaking industry is highly regulated with strict working and safety standards to be maintained by the ship-breakers for their labourers and environmental compliance. Furthermore, the industry is prone to risks related to pollution as it involves dismantling of ships which contain various hazardous substances like lead, asbestos, acids, hazardous paints, etc. that have to be properly disposed-off as per the regulatory guidelines. The key areas include ground pollution, water pollution and health and safety of workforce. Over the period importance of green ship recycling procedures had

Certifications	Year of Establishment	Country of Origination	Certified Plot at Alang, Gujarat
Class NK (Nippon Kaiji Kyokai)	1899	Japan	18*
Class RINA (Registro Italiano Navale)	1861	Italy	45
Class IR	1975	India	As per HKC- 5 EU certification- 4 IR Class ISO -22

*May, 2018

increased significantly even for seller there are pressures for selling ships to the green certified yards. There are various certification agencies which certify the recycling facilities compliance to the Hong Kong International Convention guidelines.

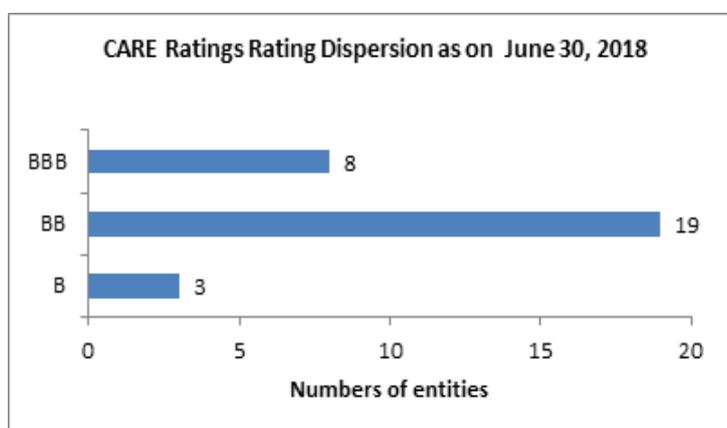
The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships adopted by the International Maritime Organization (IMO) in May 2009 and the European Regulation No. 1257 adopted by European

Parliament and Council in November 2013, provide a legally binding instrument which ensures that the process of ship recycling does not pose risks to human health, safety and to the environment. The table elaborates on the major certification agencies with prominence in Indian ship breaking industry.

Normally, above certifications are issued to ship-recycling facilities that they are in compliance with Hong Kong convention, after confirming the ship recycling facility plan meet the requirement of the convention. However, above certification agency have its guideline regarding the waste disposal, effluent treatment, safety of workers and maintenance of records.

Rating dispersion of Care Rated entities in Ship Recycling Industry

Of the ship breakers rated by CARE Ratings Limited, 73% are in below investment grade category ('BB' and below category) due to several factors such as modest and fluctuating profitability with moderately leveraged capital structure and debt coverage indicators, Exposure to volatile raw material prices and regulatory and environmental risk. Credit profile of CARE rated entities mainly remained stable during FY17 with marginal improvement in coverage indicators.



Recent Developments

- 1. China to Stop Recycling Foreign-Flagged Ships:** China has announced a ban on importing foreign-flagged vessels for recycling, applicable from January 1, 2019 as it toughens its stance on waste processing industries. This is expected to benefit other ship recycling countries.
- 2. India prepares to ratify and implement the Hong Kong Convention:** The main international laws include EU regulations and Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships. The Hong Kong convention was adopted by International Maritime Organization in 2009. Furthermore, In August 2014, the ship-breaking industry, so far under the Steel Ministry, was brought under control of the Shipping Ministry. This move was to attract more ships to Indian yards, including the world's largest — Alang in Gujarat — and get marketed well at international shipping forums. In furtherance to this, Government of India has now decided to ratify and implement the Hong Kong Convention. Towards that, the ministry has drafted legislation to make the ship recycling industry safe for its workers and the environment and to implement the Hong Kong Convention (HKC).

3. **Soft Loan Upgradation of Alang-Sosiya ship recycling shipyards:** GoI signed \$76 million loan deal with Japan International Cooperation Agency (JICA) for starting upgradation project related to environment management plan at Alang-Sosiya ship recycling shipyards. The project will be executed by Gujarat Maritime Board (GMB) and is likely to be completed by 2022. The total cost of project is \$111 million out of which \$76 million will be provided by JICA as soft loan. Out of remaining amount, \$25 million will be borne by Gujarat Government as taxes and fees and balance \$10 million will be shared by Ministry of Shipping. The components of project are outlined below:
- Upgrading 70 yards, providing impervious floors to prevent pollutants in subsoil. Improvement of the existing environmental facility (Effluent Treatment Plant (ETP)).
 - Introduction of mobile decontamination units (Pollution response equipment).
 - Introduction of large mobile cranes and beach cleaning wheel loaders and tank cleaning barge.

As per GMB Port policy discussion paper implementing the above plan, Alang would be able to get more vessels from OECD and western world as a result of which Alang would contribute to 51% of total global ship recycling volume from current share of 30%. This could translate into generation of additional revenue to the tune of US\$ 100 million over 20 years project cycle from case business services.

Prospects

Though, the size of the ship breaking industry is relatively small but its strong linkage with independent variables viz. environment regulations, freight prices and steel scrap prices sets it apart from other industries. Overall improvement in global trade and continued reliance on crude oil is expected to keep freight prices stable in medium-term while improvement in infrastructure activity in India and upward trend in steel prices is expected to be positive for Indian ship breaking industry. However, with increasing compliances and stringent regulations vis-à-vis global peers are expected to adversely affect the profit margins posing a challenge to the Indian ship breaking industry.

European Regulation on Ship Recycling (EUSRR) is scheduled to enter into effect on December 31, 2018 which means that large commercial seagoing vessels flying the flag of an EU member state will only be allowed to recycle in a ship recycling facility included in "European List of ship recycling facilities" which does not include any ship recycling facility in India, Bangladesh and Pakistan as per the list of May, 2018. If same is not expanded, it could have led to shortage of recycling capacity for ship-owners with EU-flagged vessels to dispose the end-of-life tonnage. India's steps for ratification and implementation of Hong Kong Convention and up gradation of Alang yard with cooperation of JICA is expected benefit in long run by adopting green recycling norms while addressing health and environmental concerns.

CARE Ratings Limited (Formerly known as Credit Analysis & Research Ltd)
 Corporate Office: 4th Floor, Godrej Coliseum, Somaiya Hospital Road, Off Eastern Express Highway, Sion (East), Mumbai - 400 022.
 Tel: +91-22-6754 3456 | Fax: +91-22-6754 3457 | E-mail: care@careratings.com | Website: www.careratings.com

Follow us on  /company/CARE Ratings
 /company/CARE Ratings