

GROUND VIEW

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vessel-related
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*Sagarmala
initiative*

**INDIA
WATERWAYS**

**TURNING
THE CORNER**

GROUND VIEW Vol 6. Issue 4. 1 - 30 JUN 2019

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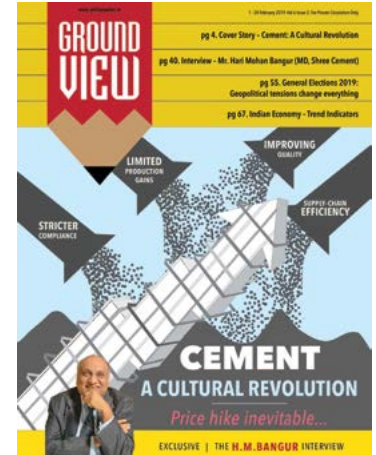
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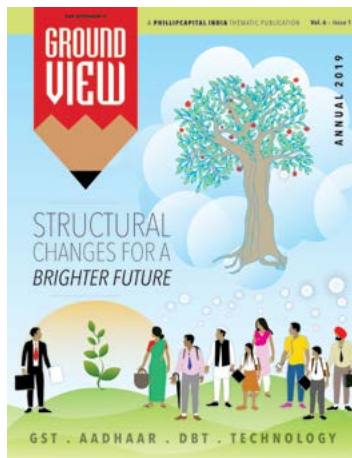
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Letter from the MD

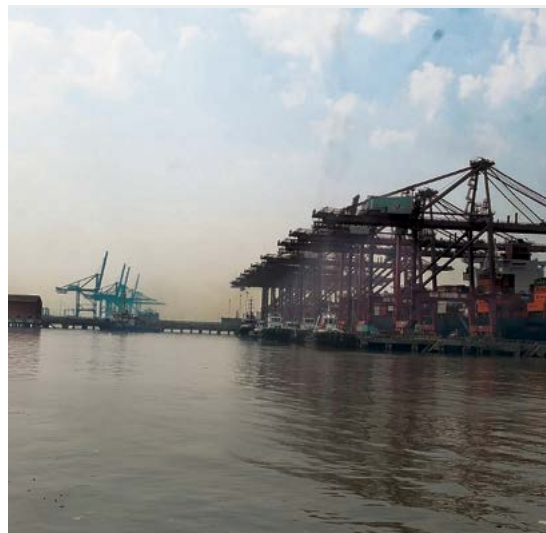
The government's focus on developing India's rich and varied natural water resources by promoting waterways for commercial use have started showing results. Cargo and passenger movement through coastal and inland waterways is beneficial for the country, as it is cheaper than any other form of transport, safer, and more environment friendly. Efforts to double the share of waterways in total cargo movement are expected to create opportunities in dredging, vessel operation, terminal development and operations, and shipbuilding. Multimodal cargo movement is gaining ground with consolidation of warehouses into larger spaces after implementation of GST. Proper mix of road, rail, and water movement will bring down logistics cost for India and increase the country's export competitiveness.

To understand coastal and inland waterways, our logistics analyst Vikram Suryavanshi visited inland waterways and terminals and coastal ports, and met industry experts and operators, and government officials. He found that strong policy initiatives taken over past 5-6 years to develop waterways and stricter compliance such as e-way bill has turned the corner for cargo movement. With consistency in government policy and persistence, implementation of projects will be much faster.

Coastal shipping and inland waterways will go a long way towards strengthening India's transport infrastructure, particularly when synergised with road and rail transport. Vikram, the author of this edition, takes you through opportunities and concerns in the development of waterways. He has also interviewed Mr V K Singh Managing Director of Shreyas Shipping which is largest player in coastal shipping in India. Hope you enjoy this insightful piece and happy reading!

Vineet Bhatnagar

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COVER STORY

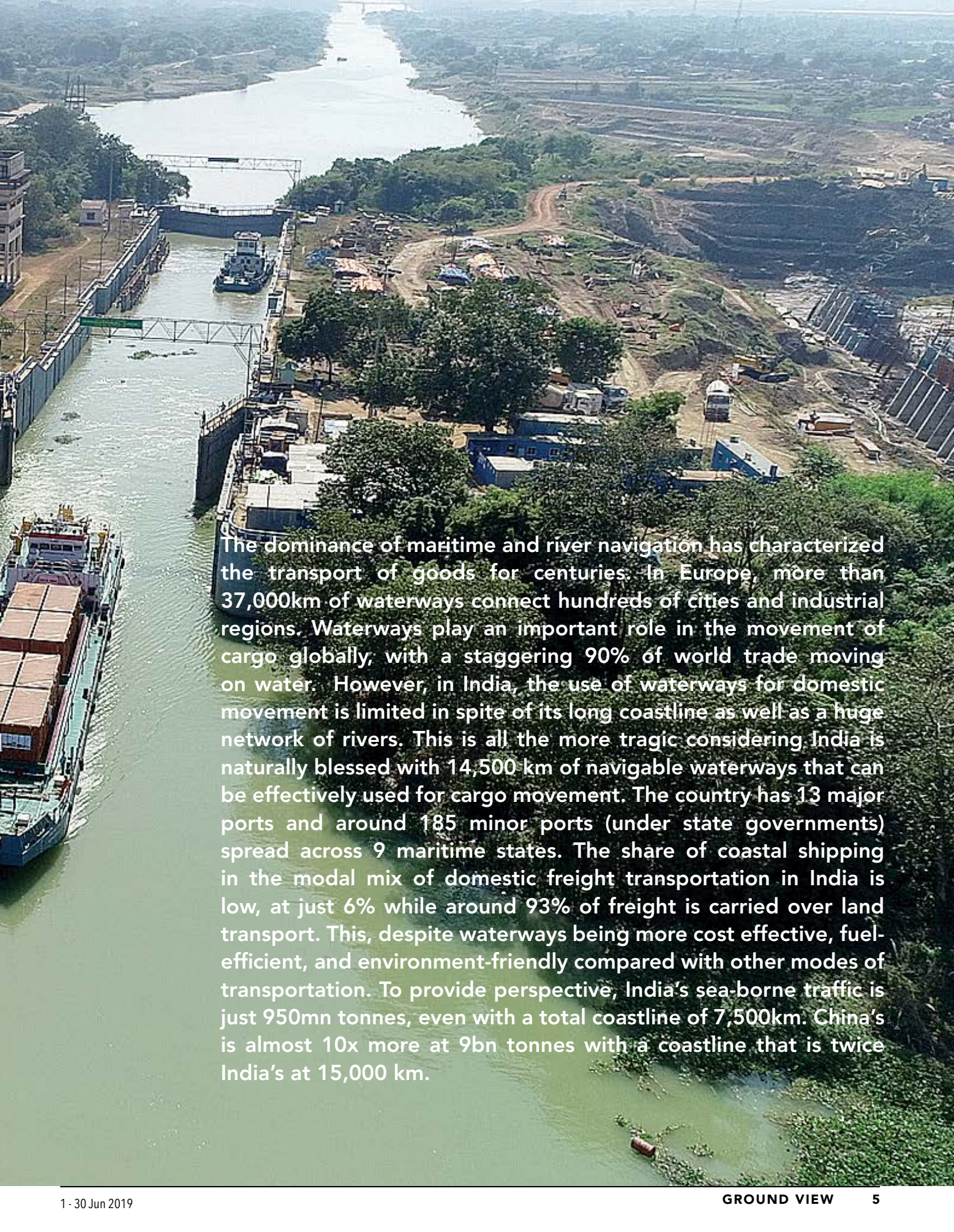
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INDIA WATERWAYS: TURNING *THE* CORNER

IWAI Vessel Carrying Pepsico cargo across Farakka lock on River Ganga



The dominance of maritime and river navigation has characterized the transport of goods for centuries. In Europe, more than 37,000km of waterways connect hundreds of cities and industrial regions. Waterways play an important role in the movement of cargo globally, with a staggering 90% of world trade moving on water. However, in India, the use of waterways for domestic movement is limited in spite of its long coastline as well as a huge network of rivers. This is all the more tragic considering India is naturally blessed with 14,500 km of navigable waterways that can be effectively used for cargo movement. The country has 13 major ports and around 185 minor ports (under state governments) spread across 9 maritime states. The share of coastal shipping in the modal mix of domestic freight transportation in India is low, at just 6% while around 93% of freight is carried over land transport. This, despite waterways being more cost effective, fuel-efficient, and environment-friendly compared with other modes of transportation. To provide perspective, India's sea-borne traffic is just 950mn tonnes, even with a total coastline of 7,500km. China's is almost 10x more at 9bn tonnes with a coastline that is twice India's at 15,000 km.



Container handling terminal

However, hope floats. The government has been making a strong push for developing coastal shipping and inland waterways over the past few years, and this has started showing results. Prime Minister Narendra Modi inaugurated India's first multimodal terminal at Varanasi for inland waterways late 2018. On that day, this terminal received India's first container movement on an inland waterway since Independence. Meanwhile, a ferry service for cargo and passengers (RoPAX) between both Ghogha and Dahej under the Sagarmala initiative has reduced the travel time between Saurashtra and South Gujarat to just over an hour (from 7-8 hours) and the distance is down to just 31km from 360km. Cargo movement in the northeast through NW-2 and Bangladesh protocol is also picking up.

Government initiatives to promote coastal cargo – through reduction of tax on bunker (which is any fuel poured into a ship's bunkers to power its engines), relaxation of Cabotage Law, simplification of manning requirements, and concessions on vessel-related charges at

ports with priority and separate coastal berths at major ports – are expected to benefit the sector. Relaxation of cabotage rules is likely to develop transshipment opportunities for shipping players. Out of the total 17.5mn TEU container traffic in India, around 20% is transhipped; of this, about 40% volume is handled at Colombo alone. Coastal shipping and inland waterways offer huge potential in bulk transportation (125mtpa of coal transport for thermal power plants and 40-45mtpa of other commodities).

With 111 declared waterways, the scope has indeed increased and the government aims to increase the share of waterways to 12% of total cargo volume from current 6%, with cargo rising to 150mn tonnes from 70mn at present. Waterways will not only reduce the burden on roads and railways, but also boost the economy and save the environment. Though the sector offers attractive opportunities for a modal shift, last-leg connectivity remains very important and much of its success hinges on the kind of efficiency that can be brought into first- and last-leg distribution.

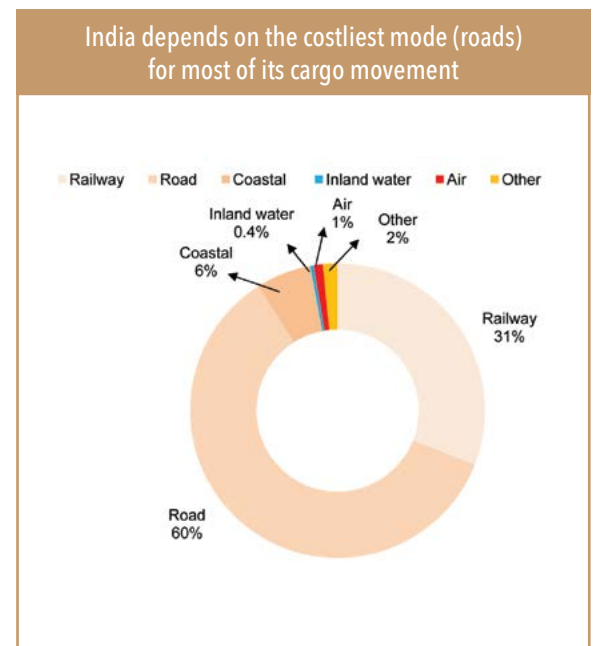
Promoting a 'blue' economy

Neglected for many years, water transport has gathered momentum with the government's support and improvement in port infrastructure



India's geography favours waterways - with many rivers and a large coastline

Moving cargo and passengers through waterways is cheaper than roads and railways, and more environment friendly. However, so far in India, regulatory and infrastructure related issues have not been conducive to the efficient use of waterways. The statistics are disheartening. As of 2017, the share of water transport (including coastal and inland waterways) was a little more than 6%; conversely, roads was 60% and railways was 31% (Source: Report from National Transport Development Policy Committee , 2017).



Source: Industry, PhillipCapital India Research

Government wants to up the share of water-based transport to 10-12% from 6%

India's planning commission wants to increase the share of low-cost transport (rail and water) to reduce the country's overall transportation costs. Most countries have efficiently developed their waterways for cargo and passenger movement. For example, 14% of US' domestic cargo moves through waterways; the figures are – 30% for China, 40% for Japan, and a low 7% for the EU.

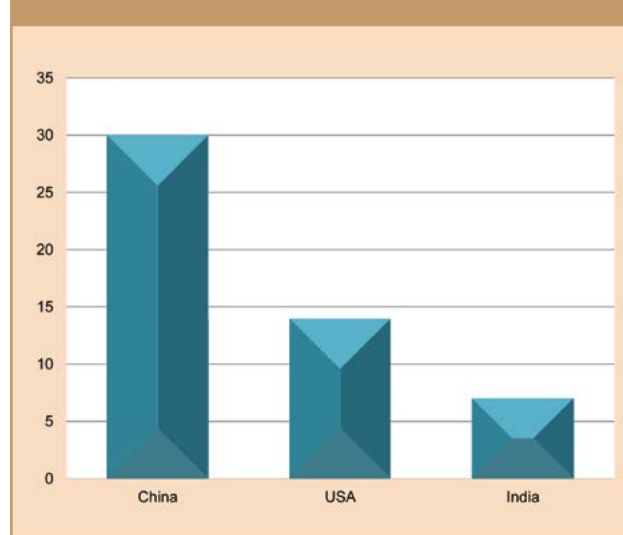
Waterways offer a powerful environment-friendly solution to road congestion

Inland waterways network in Europe



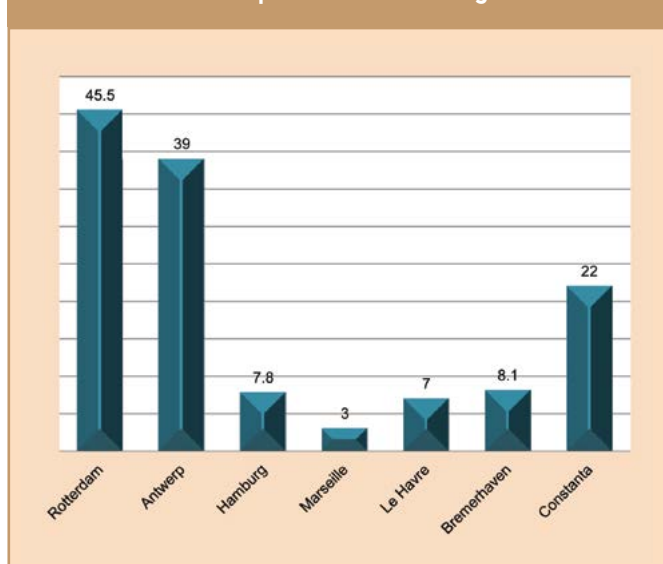
Source: Eurostat, Destatis, VNF, Moselle Commission, CCNR analysis

Share of water transport in domestic cargo movement



Source: Industry, PhillipCapital India Research




Share of water transport in domestic cargo movement



Source: INE Inland Navigation Europe

While the overall share of waterways in the European Union appears low at c.7% of freight volume (with 40,000 km of navigable waterways), it is considerably higher in individual countries with good waterway infrastructure – such as Germany at 12%, Belgium at 15%, and Netherlands at a whopping 37%. Some of Europe's largest seaports use inland waterways because of increasing congestion. Rotterdam, for instance, avoids using almost 100,000 daily truck movements because of the use of inland waterways (Source INE - Inland Navigation Europe).

Waterways are suitable for heavy cargo over relatively longer distances

 <p>Waterways</p>	 <p>Roadways</p>	 <p>Railways</p>
Low operating cost	High operating cost	Low operating cost
High fixed cost , investment	Low capital investment	High capex
Long-term contracts	Smaller parcel size	Large parcel size
Avg speed: 10-20km per hour	Avg speed: 30-50km per hour	Avg speed: 30km per hour
Seasonal. Point-to-point. Higher cost of last leg and additional handling	End-to-end.	Point-to-point. Higher cost of last leg and additional handling.
Safe and suitable for over-dimensional and hazardous cargo. Historically suitable only for long distance haul of large, regular flows of low value density goods between fixed origin/destination points with less fragmentation.	Prone to accidents and theft. Suitable for lighter cargo. Offers greater flexibility in terms of final destination and volume of goods to be transported.	Safe and suitable for long-distance haul of large, regular flows of low-value density goods between fixed origin/ destination points with less fragmentation.
Distance 500km+	0-500km	500km +
Low pollution	High pollution	Low pollution

Sagarmala: Looking at the bigger picture

This is a government initiative to promote coastal development and waterways

Key highlights

- Sagarmala is aimed at bringing about a big change in India's logistics sector's performance by unlocking the full potential of India's coastline and waterways.
- Current logistics system in India fall far short of international standards

in terms of cost, efficiency, sustainability and safety. This eventually contributes to higher cost of doing business and higher prices of goods and services in the economy. For example, for power plants that are more than 1,000km from coal mines, the cost of coal transportation alone could contribute 30-35% of total cost of power produced (source: Ministry of Shipping, GOI).

- Sagarmala's vision: To reduce logistics costs by a huge Rs 350-400bn for both domestic and EXIM cargo with optimized infrastructure investments.
- Some of these results would come about through direct cost savings,

while others would happen through lower inventory-handling costs due to time (and reduced variability) in transportation of goods, particularly containers.

- These cost savings apply to current industrial capacities as well as future coast-proximate capacities for energy, material, marine, and discrete industries that could come up through port-linked industrialisation.
- Sagarmala also aspires to reduce carbon emissions from transportation by 12.5 MT/annum.

Infrastructure investment mobilisation under Sagarmala (₹bn)

Port modernization	650
New mega ports	300
Existing ports	350
Connectivity	2206
Road	1600
Rail	500
Pipeline	50
Inland waterways	50
Warehouse/ ICD	6
Port Led industrialization	1050
Manufacturing	400
Materials	350
Energy	300
Coastal Community development	50

Sagarmala expected to mobilise investment of around Rs 4tn in India

The concept of Sagarmala was approved by the Union Cabinet on 25th March 2015. As part of the programme, a National Perspective Plan (NPP) for the comprehensive development of India's coastline and maritime sector WAS prepared and released at the Maritime India Summit 2016



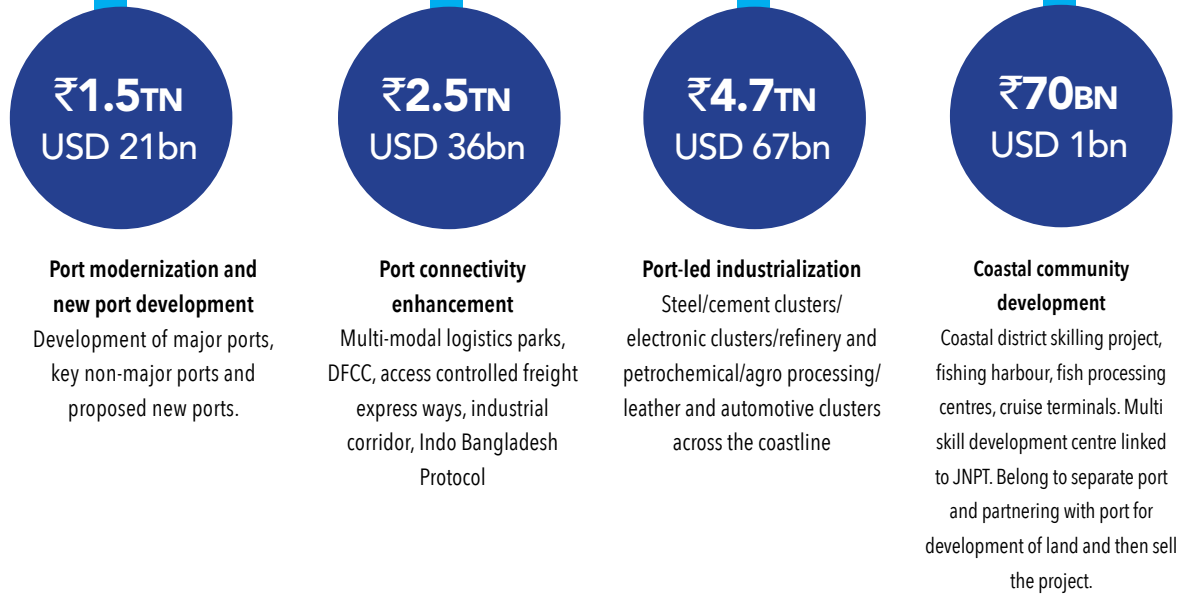
About Sagarmala Development Company

- Promoted in 2016 and operational from 2018. Cabinet approved an initial authorised capital of Rs 10bn for SDCL. Endeavours to increase the scope of participation of private sector players for the projects under development.
- Under the Ministry of Shipping. Has a full-time MD and Director (Projects) from September 2018.
- KPMG is its programme management consultant.
- Co-ordinates with 65 different departments within the government for port-led development.
- Developing fourteen coastal economic zones with 2000-3000 acre land each.
- Projects will include like port development, modernization, and berth development, port connectivity through pipeline, rail and road and sea planes.
- Its first railway line connectivity project phase-I of 21km double line between Krishnapatnam port and Venkatachalam is operational and phase-II of 95km single line between Venkatachalam and Obulavaripalle is complete and is expected to be operational soon after government approval.

The government has appointed an exclusive joint secretary to monitor the progress of Sagarmala projects. It will make equity investments of up to 49% in these projects through SPVs and undertake pre-feasibility studies, the cost of which would be considered an equity contribution. While there are no restrictions on the type of projects, the projects that are financed are likely to have IRRs of more than 12%.

FOUR PILLARS OF SAGARMALA

Total public and private investment under Sagarmala Projects



About Sagarmala projects

- As part of Sagarmala Programme, more than 604 projects at a cost of Rs 8.8tn have been identified for implementation during 2015-2035 across port modernization and new port development, port connectivity enhancement, port-linked industrialization, and coastal community development.
- As of September 2018, 522 projects worth Rs 4.32tn were under various stages of implementation, development, and completion.

The Coastal Berth Scheme

- The Coastal Berth Scheme is a key initiative under the Sagarmala Programme to promote the development of dedicated infrastructure for coastal shipping of goods and passengers across India's major and non-major ports.
- The scheme provides financial aid for projects that promote coastal shipping at Indian ports.

- So far, 41 projects have been provided financial assistance of Rs 6.3bn under this scheme.
- The scheme has been extended up to March 2020 and its scope has been expanded to cover the cost of preparation of DPR and capital dredging at major Ports.
- Cochin Port has added a fourth cement terminal in a move aimed at directing a modal shift in the movement of cement, from road and rail to the sea, in a order to promote coastal shipping as a cost-effective and environment friendly means of transportation.
- 'Penna Suraksha' carrying 25,000 tonnes of cement from Krishnapatnam arrived at Q6 berth at Ernakulum Wharf, from the 4th cement terminal of the Cochin Port. As cement is a high-volume and lower-cost product, its movement through water transport could be a more viable option. Currently around 117mn tonnes cement moves through railways and a significant part of this can move through coastal waterways.

Coastal Economic zones under Sagarmala

S.No.	CEZ	State	Districts Covered	Linkage Ports
1	Kachch	Gujarat	Kachchh	Deen Dayal, Mundra
2	Saurashtra	Gujarat	Junagarh, Amreli, Bhavnagar, Ahmedabad	Pipavav, Sikka
3	Suryapur	Gujarat	Bharuch, Surat, Navsari, Valsad	Dahej, Hazira
4	North Konkan	Maharashtra	Nashik, Thane, Mumbai, Pune, Raigarh	JNPT, Mumbai
5	South Konkan	Maharashtra, Goa	Ratnagiri, Sindhudurg, North Goa, South Goa	Dighi, Jaigarh, Mormugao
6	Dakshin Kanara	Karnataka	Udupi, Dakshin Kannada, Kodagu, Mysore	New Mangalore
7	Malabar	Kerala	Ernakulam, Alappuzha Kollam, Thiruvananthapuram	Cochin
8	Mannar	Tamil Nadu	Kanyakumari, Tirunelveli, Thoothukudi	VOCPT (Tuticorin)
9	Poompuhar	Tamil Nadu	Cuddalore, Perambalur, Ariyalur, Tiruchirappallu, Thanjavur, Thiruvarur, Nagapattinam	Cuddalore
10	VCIC South	Tamil Nadu	Thiruvallur, Chennai, Kancheepuram	Chennai, Kamarajar, Katupalli
11	VCIC Central	Andhra Pradesh	Chittoor, Nellore	Krishnapatnam
12	VCIC North	Andhra Pradesh	Guntur, Krishna, West Godavari, East Godavari, Visakhapatnam, Vizianagaram, Srikakulam	Vizag, Kakinada
13	Kalinga	Odisha	Puri, Jagatsinghpur, Cuttack, Kendrapara, Jajapur, Bhadrak	Paradip, Dhamara
14	Gaud	West Bengal	Purba Medinipur, South twenty Parganas	Kolkata, Haldia

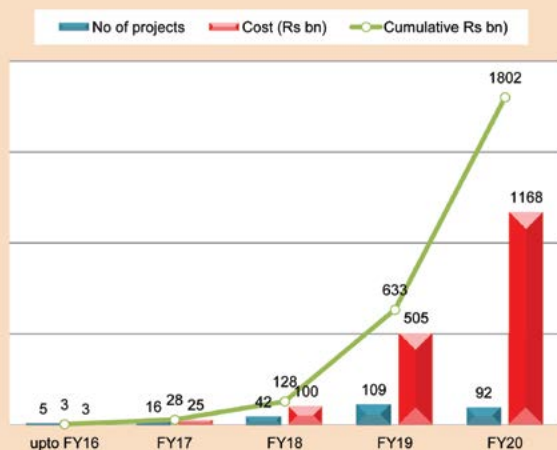
Source: Sagarmala, GOI

Projects and expenditure under Sagarmala

Rs bn	Till 2017-18		2018-19		2019-20		2021-25		2025-35		Total	
	No	Cost	No	Cost	No	Cost	No	Cost	No	Cost	No	Cost
Port Modernization	107	380	100	337	15	86	36	540	8	107	266	1,451
Port Connectivity	82	631	69	482	46	358	13	1,035	3	4	213	2,509
Port led Industrialization	18	1,369	1	111	5	43	33	3,226	0	0	57	4,749
Coastal Community Development	28	22	34	43	6	7	0	0	0	0	68	72
Total	235	2,402	204	973	72	495	82	4,801	11	111	604	8,781

Source: Sagarmala, GOI

Only a third of the 265 projects scheduled for completion by 2020 are actually complete



Source: Sagarmala, GOI, PhilipCapital India Research

Government studies under Sagarmala show that two optimization levers could lead to potential savings:

1. Reduction in transit time could save Rs 50-60bn per annum in inventory cost
2. A shift in model – to rail and waterways from road – could save Rs 300-340bn per annum of the fuel import bill.

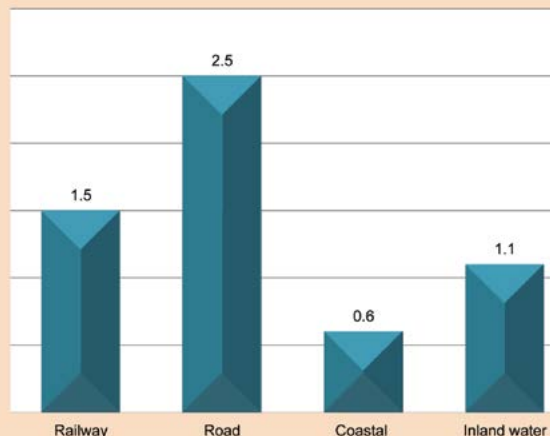
Coastal opportunities in India

India has large coastline of 7,500km (mainland: 5,400km; island territories: 2,100km) mostly in its southern half, providing an opportunity for movement of from its west coast to its east coast. The immediate area for coastal trade comprises of 40 districts in five states on the west coast and four on the east coast. The hinterland covers an area of c.380,000 sq. km. Lakshadweep and Andaman and Nicobar group of islands in the Arabian Sea and the Bay of Bengal also form a part of the coastal area, dependent on coastal shipping for movement of cargo and passengers to the main land and for inter-island movement. The hinterland districts possess rich silica and minerals such as bauxite iron-ore, manganese-ore, and limestone, providing opportunities for coastal shipping. The distribution of minerals shows that there is a rich concentration of iron ore in Goa, in the Ratnagiri district of

Maharashtra, the North Kanara district of Karnataka, the Calicut district in Kerala, Ongole district in Andhra Pradesh, and Cuttack district of Orissa. Lime stone is available on the coastal districts of Gujarat; Maharashtra and Orissa have rich deposits of bauxite.

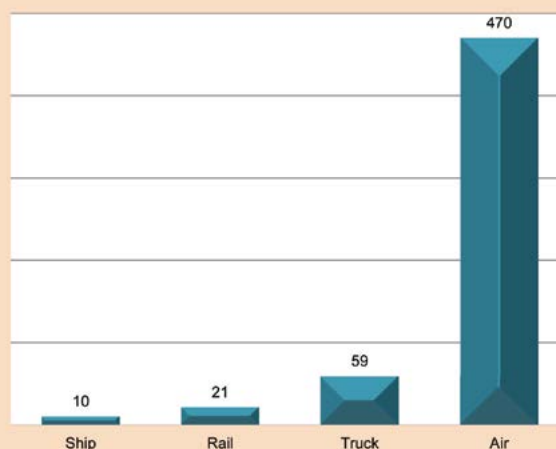
While road freight movement cost is Rs 2-4 per tonne per km, it is Rs 1.4-2.0 by rail, and as low as Rs 0.60-1.25 by waterways

Cost per tonne per km



Source: Industry, PhilipCapital India Research

Grams of carbon dioxide to carry one tonne per km



Source: Industry, PhilipCapital India Research

One liter fuel can move

24

Tonne-km
on road



85

Tonne-km
on rail



105

Tonne-km
on waterways



The National Perspective Plan of Sagarmala envisions a potential saving of Rs 210-270bn through coastal shipping of 220-230 MMTPA in key commodities such as coal, cement, fertilizers, iron & steel, food grains, and POL by 2025

Sectors that will benefit from Sagarmala

- Under the Sagarmala initiative, the government has identified nine commodities – steel, marbles, tiles, cement, automobiles, fertilisers, food grains, salt, and sugar, suitable for coastal shipping.
- To promote transportation of fertilizers through waterways under Sagarmala, the Nutrient Based Subsidy Policy was extended to coastal shipping and inland water transportation of fertilizers in November 2016, for reimbursement of freight. The subsidy was earlier only applicable to the movement of fertilizers by rail from plants or ports to rake points (railway stations) that are nearest to dealers in various districts for distribution.
- While rail is currently the primary long-distance

mode of transport, government (shipping ministry) analysis indicates that a modal mix shift towards waterways can lead to a saving of c.Rs 9-10bn annually, assuming movement of c.10mn tonnes by 2025.

- Coastal plants in Andhra Pradesh and Gujarat have potential to move their products through coastal shipping (IFFCO and RINL are assumed highest potential).

Benefits for the coal industry

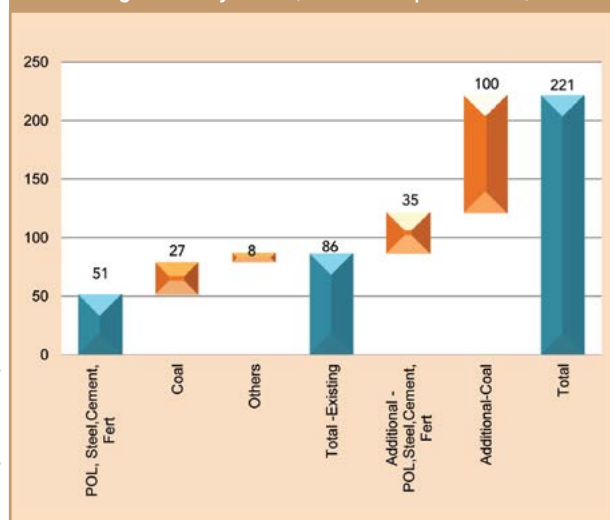
- Out of annual movement of c.750mn tonne coal in the country, only c.35mn tonne is moved through waterways while most of the remaining is moved through rail. More than 90 % of the rail routes relevant to coal are running at full capacity.
- Coastal movement of coal has a potential of c.65mtpa per annum from current 32mtpa for power plants located near ports and up to 400km from the ports.
- Most of the movement is on the east coast from mines of Mahanadi Coalfields (MCL) via Paradip and Dhamra ports for power plants in the south. In the long term, additional coastal coal volume of c.30mtpa is likely from power plants with MCL linkage in Maharashtra and Gujarat and c.15mtpa from partial import substitution.
- With the expected ramp-up in domestic coal production, India may need to move 1.0-1.2bn tonnes per annum by 2025, creating pressure on the already congested railways.
- It is estimated that using the right infrastructure and institutional support, India can move 155-160 mtpa of coal, and save around Rs 65bn per annum.
- Since logistics contribute 30-35% of the cost of power generation, this initiative will also directly cut power costs by 50 paise per unit for coastal power plants. A similar comparison of logistics costs for five other key commodities — POL, steel, cement, fertilizers, and food grains – revealed a total potential of 70-80 mtpa coastal movement, with a potential savings of Rs 45-56bn per annum. The National Perspective Plan of Sagarmala envisions the potential to save around Rs 210-270bn by 2025 through coastal shipping of 230-280 mtpa of these commodities.

The industry had demanded that the government should offer financial incentive of Rs 0.50 to Rs 1.0 per tonne per km to shipping companies to promote shifting cargo to waterways from roads and rail. Industry experts said that the government (specifically, the shipping ministry) came out with an incentive scheme of Rs 1 per tonne (up to 500km) in 2013, which was withdrawn immediately due to financial problems

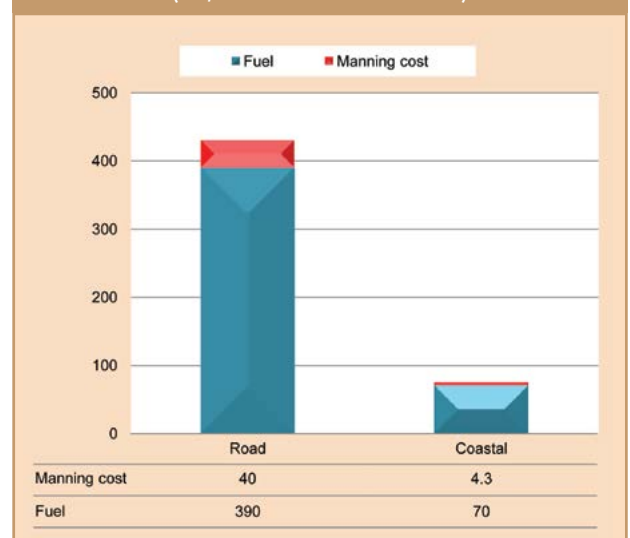
Cost dynamics of costal shipping: Low voyage cost, last leg is expensive

Shipping provides better operating leverage than roads and railways in transportation of cargo. The operating costs of shipping are significantly low in terms of fuel cost and manning costs per tonne of cargo carried. The fuel costs for container ships carrying 800 TEU over around 600km is around Rs 1.4mn compared to Rs 7.8mn for carrying the same cargo by road, saving around Rs 6.4mn in fuel per trip. Ships can carry around 20,000 tonne cargo in one voyage with around 10-15 employees, while it would require around 800 trucks (assuming per truck load of 25 tonnes) with 800+ drivers for the same cargo. Fuel accounts for around 25-30% of total operating costs for shipping, while for road transport it is around 35-50% of total cost.

Waterways cargo traffic growth expected under Sagarmala by 2025 (mn tonnes per annum)



Cost per tonne through shipping vs. road transport (20,000 tonnes over 600km)

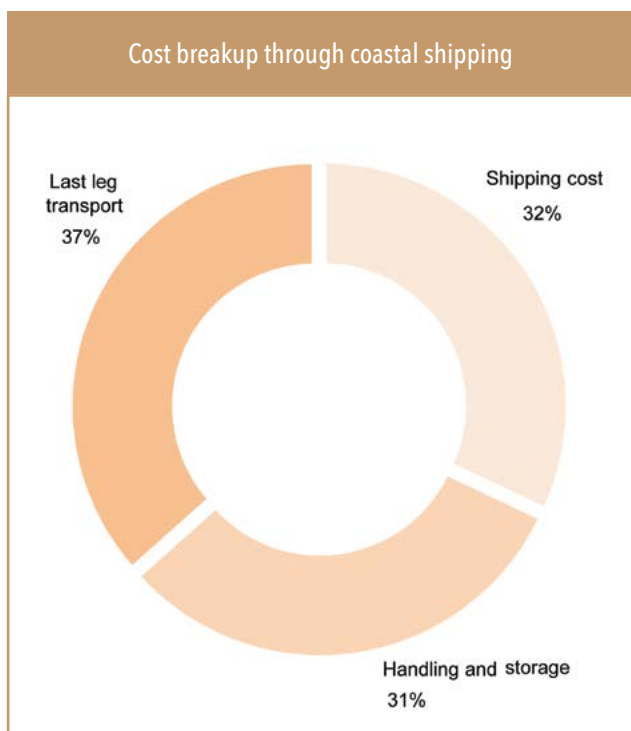


Source: Sagarmala, Industry

Source: PhillipCapital India Research

Last leg of movement is the 'Game Changer'

Though savings in voyage costs through shipping are huge, the major cost is in cargo handling and storage and providing last-mile delivery through coastal shipping. In most cases, the coastal cargo movement is limited to catchment areas of up to 100-150km from port locations due to limitations of rail connectivity or inefficient road network. Total cost of delivery in coastal shipping comes to Rs 1.6-1.8 per tonne km when we include the end-to-end cost of up to c.100-200km from ports, while by road it comes to Rs 2.0-2.5. Ships need to pay port charges, which include vessel-related costs and handling costs, which are around 31% of total costs. Another major cost is first and last leg transportation by road, which is around 37% of total cost. In most cases, transportation is more expensive in smaller ports as it is difficult to find truck availability to evacuate large parcels on time. The transport rate for trucks is also high in cases where there is no return cargo for ports from the hinterland or vice versa. "We target cargo within 50-150km around ports for coastal shipping, beyond which it is not viable and the charges are around Rs 600-900 per tonne," said a senior management person of a shipping company operating on India's west coast.



Coastal shipping is a low-hanging fruit and can be promoted with marginal investment, while inland waterways will require large investment and take time to evolve

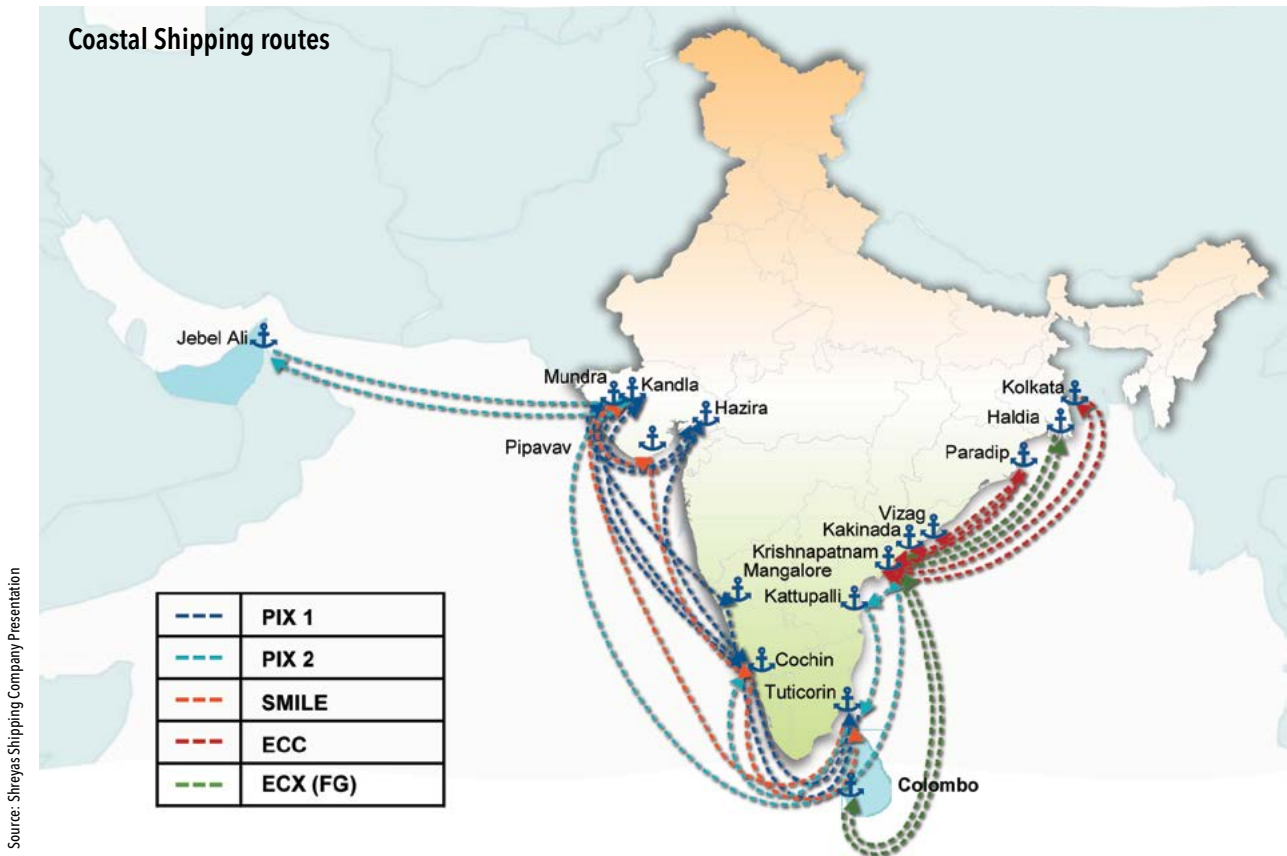
Industry's experience in coastal shipping

Industry experts in coastal shipping in India said that after years of low growth they expect a sea change ahead based on policy support from the government and improvement in port infrastructure.

It has begun...

The sector has long-term growth potential and a number of companies such as Reliance Industries, JSW, Ambuja Cements, Narmada Cements, Kribcho, and NTPC (National Thermal Power Corporation) are already using the coastal mode for some of their cargo movement. Concor has started coastal shipping services from January 2019 between Kandla and Tuticorin ports with stops at New Mangalore and Cochin (two ships, weekly service). It has been able to scale up operations fast and was able to develop a new market for coastal shipping with around 400 containers per trip on a 700 TEU capacity ship. It is planning to increase services on India's east coast to Bangladesh. Other listed companies with exposure to coastal shipping are Shipping Corporation of India (SCI), Shreyas shipping, Allcargo, and TCI seaways. However, Shreyas Shipping has been able to increase its cargo and fleet over the past five years, while Allcargo and Gati have reduced exposure to the sector. In this segment, the success of players largely depends on the type of cargo they cater to. Ideally, it should have a good mix of exim and domestic operations, asset profile, and route rationalization.

Coastal Shipping routes



Source: Shreyas Shipping Company Presentation

...but problems need to be overcome for it to gain momentum

While the government promoted carrying cars through coastal movement, after some trial runs, it did not take off. This was because the frequency and delivery schedule was difficult to match with road transport.

The problems:

- Most dealers need delivery in a short time and visibility in tracking the cargo movement.
- Due to the very large order size for shipping and higher transit time, storage requirement increases significantly for the logistic chain, and inventory costs for dealers rise.
- For auto distribution, existing road operators are already quite well established and they provide flexible pricing for cargo movement.
- Initial high investment in shipping is also a limiting factor, without long-term contract and policy visibility private players are reluctant to invest.

Costs remain prohibitive, especially for transportation of vehicles

For roll on-roll off vessels port dues are calculated based on Gross Registered Tonnage (GRT). The GRT for normal vessels is around 66% of DWT (dead weight tonnage) but for Ro-Ro vessels, GRT is at times 400% more than DWT, which makes it very costly for carrying vehicles through ships. In Indian ports, dues for specialised vessels like a car carriers are among the highest in the world. However, the Chennai Port Trust offers 'wharfage' at an economical rate of Rs 500 per unit as against the actual rate of Rs 1,200.



Typical RoRo ship in which vehicles and trucks with cargo can drive in and out.

The EU has a concessional rate for RoRo vessels, while in India, most ports charge based on GRT (expensive)

An under-developed transport market at smaller ports and poor connectivity are major issues for coastal movements. "We will not shift (from road to ships) just for saving 10-20% in transportation cost, as reliability and inventory cost is a major issue for coastal shipping," said one SCM (Supply Chain Management) Head. With improvement in road infrastructure, travel time by road is the same or sometimes better than coastal movement, largely due to delays at ports.

Experts in coastal shipping said that another issue in Ro-Ro vessel movement through coastal shipping is the strong lobby of road transporters. Road transport in India is not strictly monitored and companies were able to move cargo with under-reporting of invoices and paying duty on only 10-20% of cargo value, which is not possible via shipping.

Also, familiarity with officials helps transporters to overload cargo, which is also not possible in shipping.

"We started Ro-Ro service from Cochin to Gujarat and vice versa with a loading capacity of c.120 trucks per voyage, but the ship can take a maximum 100 trucks only during actual operations," said a promoter of a domestic shipping line. There is a high level of transparency in shipping movement while it is fairly murky in road movement. In shipping, all cargo-related documents are checked, and overloading is strictly not allowed, but via road, it is quite common especially by unorganised transporters.

Using RoRo ships for moving trucks reduces the wear and tear of tyres and engines and saves fuel; but most truck drivers prefer to travel by road as they get additional income on the way by carrying passengers and also through fuel theft due to which drivers are not keen on using coastal mode.

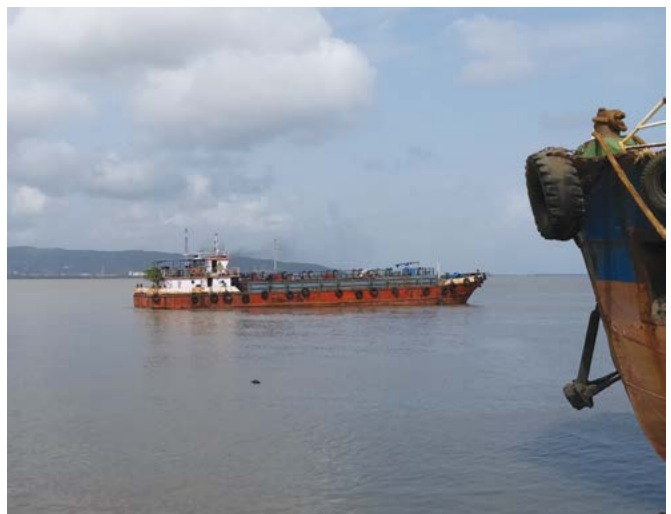
Going forward, industry experts anticipate strong regulation follow up (which is relatively easy now post GST and e-way bill) on the road side movement is also important as it create unfair competition.

However, implementation of GST and E-way bill has now renewed hopes for stricter compliance in road transport, which can reduce under-invoicing significantly. The implementation of BS-6 norms and AC cabins in trucks are also expected to increase road-transport costs, which can help coastal shipping to grow.

Cargo handling needs to be improved

Ports and berths are custom notified and cargo handling is performed under the surveillance of customs. Berth availability for coastal shipping and segregation of domestic and exim cargo is a major concern for many ports in India. Most of the success of coastal cargo in the EU is due to the handing of cargo in small exclusive ports with efficient hinterland connectivity. In China, ports are developed along rail and road connectivity with a network of inland waterways, which provide efficient evacuation of cargo. In India's largest container port, JNPT, the share of rail movement is only 15-18% and the share of coastal movement is negligible.

Industry experts believe coastal movement between JNPT and Mumbai Port could provide a viable solution for storage and distribution of cargo for Mumbai City. "Due to poor infrastructure at Mumbai port and restrictive labour norms, no private player is interested," said a retired senior officer. Most cargo meant for Mumbai City is moved by trucks from JNPT to Bhivandi for storage. Basically, it needs to cross the city by road for distribution. This not only increases logistics cost, but also causes pollution and congestion in the city. A viable solution would be to move cargo directly from JNPT Port to Mumbai Port via sea.



Cargo movement at Mumbai port

Unfair competition from foreign players in coastal shipping

Indian operations on voyage-to-voyage basis are 32% costlier than similar services provided by foreign shipping companies operating in India, mainly due to difference in taxes and bunker, manning, and finance costs.

- Tax difference: Indian flag ships need to recruit Indian crew as per manning norms prescribed by the Director General of Shipping (DG Shipping). However, Indian people working on foreign flags do not pay income tax while on Indian ships they have to pay income tax. Due to this, Indian ship owners have to pay higher salary to compensate for the tax output and find it difficult to get a good skilled crew.
- Finance for shipping needs to be long-term specialised: There is no specialised or dedicated institution to provide finance for shipping in India and traditional banks treat these as industrial loans with tenures of 6-7 years, while the life of a ship is around 20-25 years. Cash-flow pressure on domestic players is higher compared with foreign players, who receive loans for 10-12 years. Therefore, there is a

Government initiatives to encourage coastal shipping

The government has taken steps to encourage coastal shipping – including reducing GST on bunker used in Indian vessels to 5% in April 2018 from 18% earlier and providing 40% discount on cargo related and vessel related charges for coastal ships (except for coal and iron ore). To promote RoRo vessels (coastal car and truck movement), the government offered 80% discount on vessel and cargo related charges for two years, priority berthing, and green-channel clearance for faster evacuation at major ports. It also allowed reimbursement of freight subsidy on primary movement of subsidised urea.

Key policy initiatives to promote coastal shipping

- Moderating the manning and technical requirements for vessels operating within Indian territorial waters through a River Sea Vessel notification.
- Declaring the inland vessel limits for facilitating coastal trade operations.
- Issuing coastal shipping rules for coastal vessels operating within 20 miles off the coast.
- Exempting Customs and Central Excise duty on bunker fuels (IFO 180 and IFO 380 CST) by Indian flagged coastal container vessels. Post GST regime, tax rate reduced to 5% from 18%.
- Discount raised to 80% from 40% for marine charges for two years to promote RoRo movement. Vessel related charges or marine charges include port dues, berth hire, and pilotage.
- Bringing abatement of service tax at 70% for coastal shipping at par with road and rail. Including abatement of service tax in coastal shipping, fertilizer movement through railways, roadways along with inland waterways and shipping, 80% of tax relaxation for vessels and development of cruise ships.
- Simplification of customs procedures.
- Green-channel facility provided at major ports for faster evacuation of coastal cargo. Major ports have been directed to provide priority berthing to coastal vessels to reduce waiting times of such vessels at the major ports. Major ports are required to accord priority berthing (at least one berth), irrespective of origin and destination of cargo.
- Cabotage relaxation for specialised vessel and select cargo.
- Proposed cargo preference for coastal shipping if vessel is built in India.

Government policy changes that have had a significant impact on coastal shipping are:

- (1) Reduction in duty on fuel.
- (2) Permission to mix exim and domestic cargo during voyage.
- (3) Relaxation of Cabotage law and right of refusal.
- (4) Concession in port-related charges for coastal shipping with priority berthing at major ports.

Duty benefit on bunker fuel

The duty reduction on fuel used for coastal shipping was a long-awaited demand from the sector, as it accounts for around 25-30% of the voyage cost. Earlier, due to very high tax difference, bunker cost for domestic operations was almost double the bunker cost for foreign-going ships. Fuel for foreign-going vessels was exempt from custom and excise duty while duties were applicable for coastal shipping. The government removed this disparity by providing exemption to coastal shipping as well.

However, while the government has provided tax benefit for bunker and reduced GST to 5% from 18%, OMCs (oil marketing companies) in India keep prices for bunker high compared to fuel prices prevailing in the international market. Reliance and Essar do not supply bunker, only PSU OMCs – IOC, BPCL and HPCL – do. Indian players suffer a 20% disadvantage to foreign vessels in term of fuel purchase cost. In April 2019, bunker price for Indian flag vessels was US\$ 468 per tonne vs. US\$ 439 per tonne for foreign ships buying fuel outside i.e. Singapore or other ports and come to India, as per an industry source.

Allowing to mix exim and domestic cargo

Coastal ships were restricted from mixing domestic and exim cargo, resulting in lower utilization of ships and making coastal operation unviable. The Central Board of Indirect Taxes and Customs (CBIC) now permit Indian-flag vessels to make calls en-route at Sri Lankan and Bangladeshi ports during their domestic services. "Earlier Indian vessels were not permitted to make calls into foreign ports, even when such ports were on their domestic-service routes between the east and west coast ports of India. So Indian ships engaged on such trades were unable to make optimum use of their space and were incurring higher cost of transportation

on both export-import and domestic coastal cargoes," said CEO of Indian National shipping association.

Relaxation of the Cabotage rule

India's domestic shipping industry was given preference to move coastal cargo through right of first refusal (ROFR) clause under Cabotage rule – this gives Indian shippers a chance to match the lowest rate offered by foreign ships as well as restricts select operations to only Indian flag vessels. In May 2018, the Indian Shipping Ministry changed its Cabotage rules so that foreign-flagged ships would no longer be required to obtain a special licence to perform coastal operations in India. Previously, these licences would only be offered if there were no Indian ships available to carry out tasks. Since this relaxation, international shipping companies have been able to move export and import containers along the country's coasts.

Protecting cargo for domestic shipping is global practice

- According to industry survey, 37 maritime countries provide cargo support. About 40% of all the cargo carried by US ships was preference cargo made available under US regulations.
- The Japanese steel industry controls c.200mn tonnes of cargo per year and most of this is made available for carriage to Japanese ship-owners.
- Chinese and EEC steel industries also exercise control over shipment of large volumes of cargo through free on-board terms of purchase.
- In many developed countries, the right to channelize cargo to shipping lines of their choice is retained through control over terms of shipment, buying free on-board (FOB), and selling on-cost insurance and freight (CIF).
- In FOB freight, buyers pay for the costs of ocean freight, insurance, unloading, and transportation – from the arrival port to the final destination. Most buyers choose domestic companies.

Mixed reactions to relaxing Cabotage norms

The industry's experience about relaxation of the Cabotage rule is mixed.

- People supporting relaxation of Cabotage believe that the domestic fleet growth was not in line with cargo opportunities and that there is a shortage of domestic capacity to carry cargo, which is why foreign players need to step in. "Coastal shipping is bound to increase over a period with the government's announcement on the relaxation of Cabotage law," said one operator.
- The government has been giving a 'No-Objection Certification' for in-chartering of over 150 vessels into the country each year, since domestic players are not in a position to provide ships for coastal and inland water transport in such a big way.
- The move is also expected to address the issue of empty containers accumulating at certain Indian ports, while others face shortages. Sources in the sector have said that foreign shippers would be able to allay the costs that would otherwise be involved with repositioning these empty containers and will increase transshipment cargo.

Coastal shipping is bound to increase over a period with the government's announcement on the relaxation of Cabotage law," - An operator

- Market players said that shipping lines were able to redirect c.95,000 TEU (loaded 83,000 TEU) of containerized freight to Indian ports through transshipment in February 2019, which was the highest monthly incremental gain since the relaxation of the Cabotage rule.
- The pricing flexibility at minor ports with better infrastructure is expected to increase the role of minor ports in developing coastal shipping and transshipment. The success story of Krishnapatnam Port in south is an example. At 112 nautical miles north of Chennai Port, it is emerging alternative private port for transshipment. Out of a total record throughput of 506,000 TEU at Krishnapatnam during FY19, as much

as 230,682 TEU came from transshipment movement.

- DP World's International Container Transshipment Terminal (ICTT), or Vallarpadam Terminal, at Cochin Port also ended FY19 on a solid note, with volume up 7% yoy to 594,592 TEU.

"India's domestic shipping industry needs to be given a level playing field on all operating parameters, on par with foreign shipping companies, especially in all aspects of taxation and law,"

- Mr. Anil Devli CEO INSA

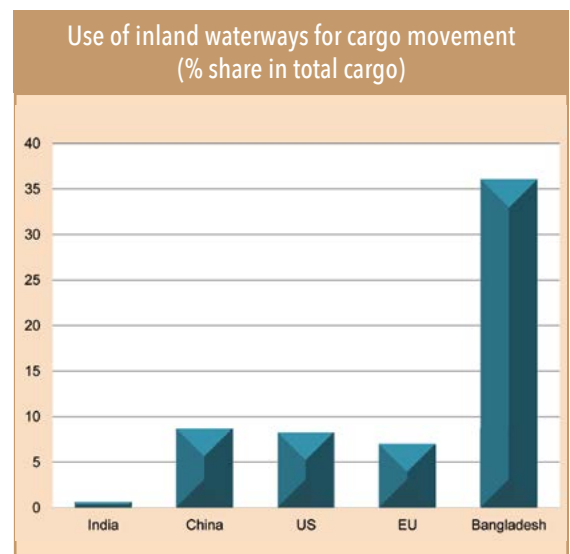
- Indian players have opposed this move and the matter is under review.
- Indian shipping is able to compete with foreign shipping companies on all international trades, but is unable to compete on the Indian coast due to non-availability of a level playing field.
- Domestic players pointed out that all countries with a long coastline, including the US, do not encourage foreign ships to ply their trade along their coast. They believe that the relaxation in Cabotage may be considered only on a case-to-case basis and only in case Indian ship owners are not able to move the cargo.
- "Foreign companies have only moved empty containers from JNPT to Mundra port and from Chennai to Vizag," said the MD of a domestic shipping company. Indian-registered shipping companies say that the move has helped private ports in India, while domestic shippers are at a disadvantage.
- "India's domestic shipping industry needs to be given a level playing field on all operating parameters, on par with foreign shipping companies, especially in all aspects of taxation and law" said Mr. Anil Devli CEO of INSA. "This will lead to greater FDI in Indian shipping leading to growth of tonnage, taxes and employment".

An emerging opportunity



Inland water terminal work on Ganga River at Varanasi

India has a network of inland waterways in the form of rivers, canals, backwaters and creeks, which is quite poorly developed. Though the Ganga River was declared a national waterway (NW-1) in 1982, it took around 36 years for its first commercial container movement to take place – in November 2018 from Haldia to Varanasi over a distance of 1,600km. Globally, domestic waterways are found to be one of the most cost-effective and environmentally friendly means of transport. Only 5,200 km (36%) of major rivers and 485 km (3%) of canals of navigable inland waterways are used for cargo movement, underutilised compared with countries and regions like the United States, China, and the European Union. Only 0.6% of India's cargo traffic is handled by inland water-transport, compared to China at 8.7%, the US at 8.3%, Bangladesh 36% and Europe at 7% (Source: KPMG).



Source: Industry, PhillipCapital India Research

National waterways in India

While navigation in rivers, lakes and other water bodies has been around since centuries, this has been more in the form of smaller vessels, connecting places not too far from each other. In some cases, especially near ports and coastal areas, it did evolve into more large-scale, commercial shipping. The Government has declared 111 National Waterways (NWs), which include five National Waterways, declared earlier, under the National Waterways Act, 2016. In fact, National Waterways -1 (NW-1) was declared a national waterway in 1982 well before formation of Inland Waterways Authority of India (IWAI). NW-1 with a length of 1,620 km is the longest in India; the Ganga-Bhagirathi-Hoogly river system from Allahabad to Haldia. The 111 waterways pass through 24 states and two Union Territories (20,274 km) and involve 138 river systems, creeks, estuaries and canal systems, and also cut through around 20 wildlife protected areas.



INLAND WATERWAYS AUTHORITY OF INDIA

- Formed in 1986 for development and regulation of inland waterways for commercial navigation.
- It is an apex body for development and regulation of inland waterways under the Ministry of Shipping, Government of India.
- Role: Provider, facilitator, and regulator of the inland waterways in India.
- Working on developing and renovating rivers and enhancing their navigational potential.
- Monitors waterways through regular surveys and channel inspections.
- Conducts fortnightly hydro-graphic surveys to determine available depth and possible shoal formations in a channel and to note obstructions and clearances available at cross structures.
- Keeps a constant vigil on river behaviour; accordingly, plans fairways for safe movements of vessels.
- Based on observations during channel inspections, River Notices are issued and placed on the IWAI website with details on Least Available Depth (LAD), clearances at bridge structures, etc., along with any specific information to be conveyed to shippers.

IWAI's development work provides business opportunities to players in the following fields:

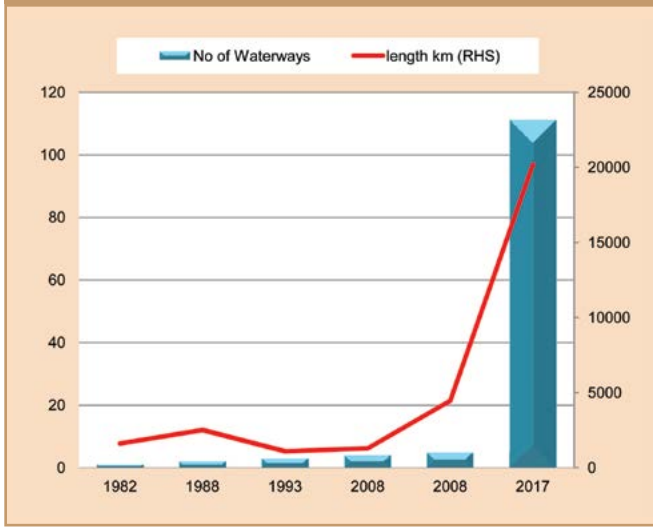
- Cargo movement
- Dredging works
- Construction, operations, and maintenance of terminals
- Barge construction and operations
- Navigation aids
- Hydrographic surveys
- Manpower supply for vessels & terminals. Training of vessel crews
- Stevedoring and forwarding
- Cruise operations
- Consultancy services for techno-economic feasibility, environmental & social impact and market analysis studies, and preparation of DPRs.
- Project management consultancy.
- Construction supervision.
- Proof checking of design.
- Model studies.

Number of national waterways under IWAI

There is significant potential for waterways for containers and bulk cargo. The scope of work for inland waterways has increased significantly after 106 waterways were declared in 2016. Development work is on-going on eight waterways while around 42 are being studied (primary) for potential cargo movement. The government commitment to increase the share of waterways and strong follow up by the inland waterways authority is expected to bring success for inland waterways over the long term.

Sharp increase in the number of waterways since 2017

Source: IWAI



Current developments in waterways

- The waterways are complex to develop compared to coastal shipping and require huge data collection to understand the behaviour of river in different seasons, speed of water flows and soil accumulation.
- IWAI has started the development work on 8 new National Waterways in FY18.
- Strong preparatory work for NW 1 to 5 and active initiative by IWAI to develop new waterways has started to show results.
- Out of the total 111 waterways, NW-1, 2, and 3 are already operational and are used for cargo and passenger vessels. Companies such as Pepsico, Emami Agrotech, IFFCO fertilizer and Dabur India have moved their cargo on NW-1. These three waterways are partially developed with fairways, navigational aids, jetties, and terminals. They also have mechanized equipment handling facilities for loading and unloading cargo.

- Two barges carrying fly ash sailed from Kahalgaon (Bihar) for Pandu island (Assam) –one of the longest hauls in India’s inland waterways, covering 2,085 km. Crossing three waterways – NW-1, 2, and the Indo-Bangladesh Protocol Route – this journey signalled the beginning of integrated movement through multiple waterways.
- IWAI has signed an agreement with Cochin Shipyard Limited for construction and supply of 10 Ro-Ro/Ro-Pax vessels at a cost of Rs 1.1bn in July 2018. The vessels will be delivered between June to December, 2019 for deployment on NW-1, 2, and 3.
- A detailed project report for development of NW-4 and 5 was completed in 2010 and these waterways are being developed for commercial navigation.
- For the newly declared 106 waterways, techno-economic feasibility studies have been initiated. Detailed project report for development of Kosi (NW-58), Gandak (NW-37), Ghaghra (NW-40), Mandovi (NW-68), Zuari (NW -111), and Cumberjua (NW-27) have been prepared.
- Jal Marg Vikas Project (JMVP) started in 2014 on NW-1 for commercial navigation on the Varanasi-Haldia stretch of the Ganga River. It has seen completion of c.Rs 20bn of work, out of a planned capital expenditure of Rs 53.7bn (with technical and financial assistance of World Bank).

Connecting cargo owners and shippers

The IWAI launched a dedicated portal to connect cargo owners and shippers with real time data on availability of vessels. The landmark e-connect measure will enable direct interaction among the vessel operators, shippers and cargo owners as currently, there is no platform for information on the availability of vessels in the market. It has been designed and developed by the in-house IT Department and the Traffic Wing of IWAI as part of its preparedness for optimal use of its on-going capacity development on various National Waterways. Named as the Forum of Cargo-Owners and Logistics-Operators (FOCAL), the link of the portal is available on the homepage of IWAI website www.iwai.nic.in.

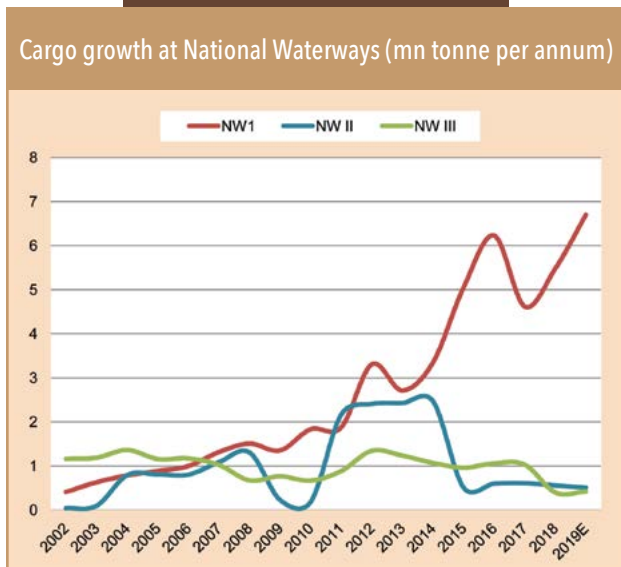
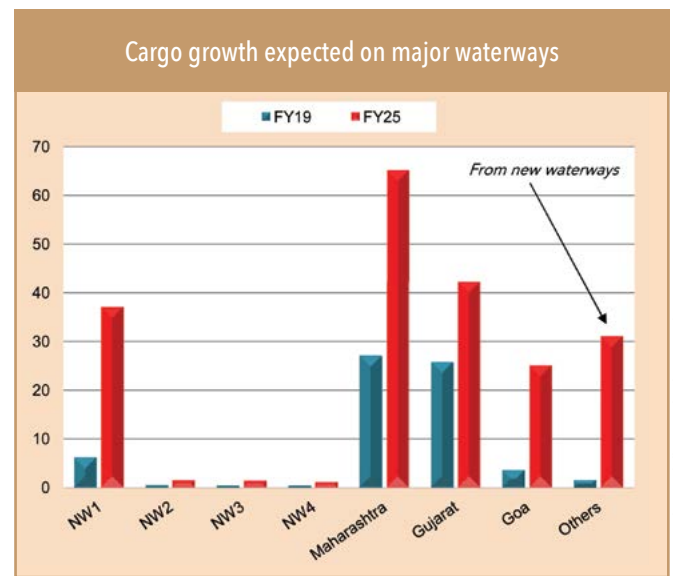
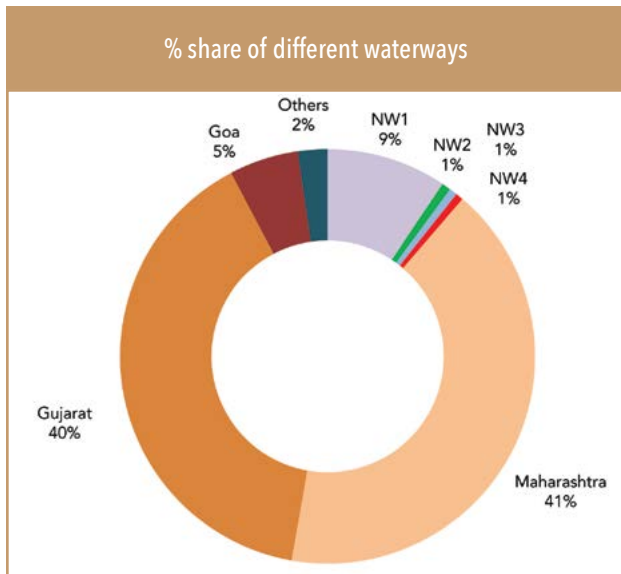
Cargo potential on key waterways

Current statistics

- Maharashtra and Gujarat constitute a large chunk of the total cargo carried through inland waterways in India. Out of the total 71 mtpa, 39% is through Maharashtra waterways (NW-10; NW-83 and NW -85) and 36% is through Gujarat (NW-73 and NW -100).
- The share of NW-1, 2, and 3 is around 10%, mainly from NW-1.
- Share of Goa waterways (NW-68 and NW -111) has come down substantially – to an annual volume of 3.6mn tonne in FY19 from 55mn tonne in FY11.

Demand to increase to c.200mn tonne by 2025; major on NW-1

As per an industry study, demand for cargo on national waterways is expected to increase to c.200mn tonne by 2025 from 71mtpa currently. Major growth is seen on NW-1 with cargo volume of c.37mn tonne per annum by 2025 (current 6.5mn). Major growth is likely from a shift from roads to rails, generating additional c.21mn tonne annual cargo movement on NW-1. Construction material is expected to contribute around 48% of total cargo on NW-1 and coal 22%; minerals and foods are estimated to contribute 6% each. Around 30mn tonne is expected to be generated on newly developed waterways.

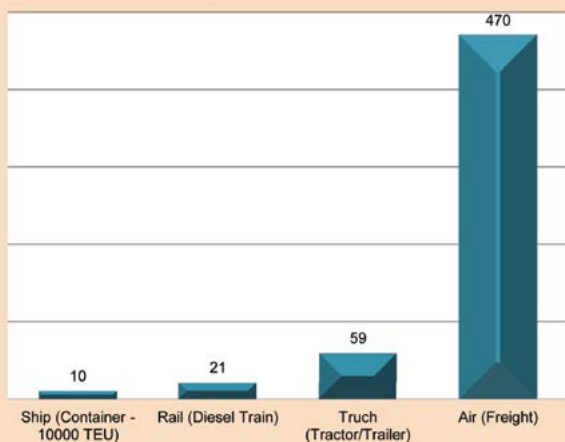


VARIOUS ADVANTAGES OF TRANSPORT VIA WATERWAYS

- IWT provides a supplementary mode of transport, which is cost effective, fuel efficient and environment friendly.
- Low emissions; CO2 emission is 50% of trucks: CO2 equivalent greenhouse gases emission per tonne-km of cargo transportation is 15g by IWT, 28g by rail, and 64g by road transport
- Negligible land requirement
- Safe mode for hazardous and over-dimensional cargo

- **Low energy consumption: 1 HP can carry 4000 kg load in water, 500 kg by rail, and 150 kg on road.**
- **Low fuel cost: 1-litre fuel can move 105 tonne-km by IWT, 85 tonne-km by rail, and 24 tonne-km of freight by road.**
- **Cost of developing waterways much lower than rail and road**
- **IWT can provide an optimal modal mix by integrating river transport with other modes, thereby reducing total logistics cost.**
- **It eases congestion on road and rail networks.**
- **IWT requires very little land acquisition as compared to road and rail modes. Caters to the needs of the relatively under-developed hinterland.**

Air pollution through different mode of transport



Source: Industry

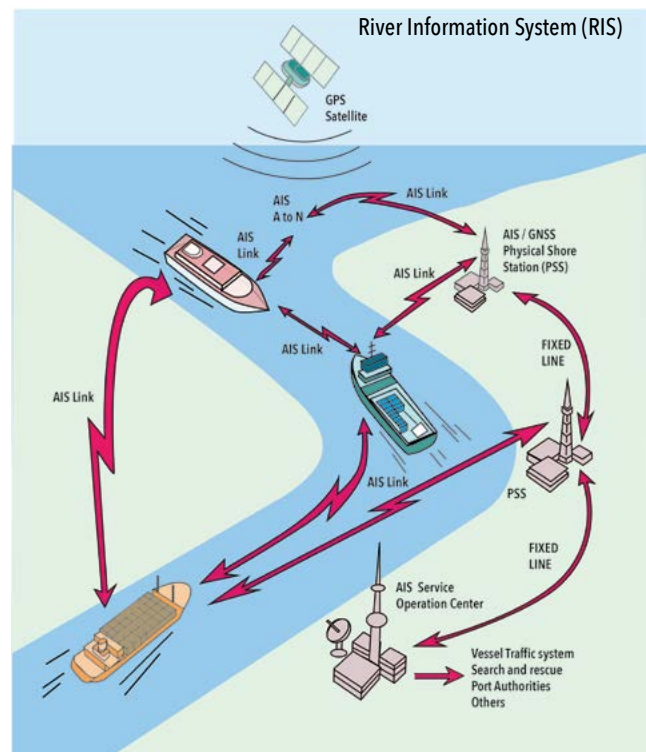
Jal Marg Vikas Project: Success story of NW-1

Jal Marg Vikas is a unique project where government, public, and private sectors joined hands to provide an alternative mode of transport on national waterways -1. The government is developing NW-1 (River Ganga) under the Jal Marg Vikas Project (JMVP) – from Haldia to Varanasi with technical and financial assistance from the World Bank at an estimated cost of Rs 54bn. Inland Waterways Authority of India (IWAI) is the project Implementing Agency. The project envisages various sub-projects such as fairway development, navigational aids, construction of multi-modal terminals at Varanasi, Sahibganj,

and Haldia, construction of new navigational lock at Farakka, bank protection work, movement of LNG vessels, LNG bunkering facilities etc.

Under the project:

- o 3 multimodal terminals (Varanasi, Sahebganj, and Haldia)
- o 2 intermodal terminals
- o 5 roll on-roll off (ro-ro) terminal pairs
- o A new navigation lock at Farakka
- o Assured depth dredging
- o Integrated vessel repair and maintenance facility
- o Differential Global Positioning System (DGPS)
- o River Information System (RIS)
- o River training
- o River conservancy works
- o Repair & Maintenance facilities; slipways; dry-docking and fuelling facilities
- o Night navigation facilities for 24x7 navigation



River Information Services (RIS - Phase 1)

RIS has the goal of safe and efficient transport by avoiding the following risk:

- Ship-to-ship collisions
- Ship - Bridge collisions
- Groundings
- Improved efficiency



IWAI terminal visit at Varanasi

The Varanasi Multimodal Terminal and Freight village

This was inaugurated by Prime Minister Narendra Modi on 12 November 2018 on the day it received its first container cargo. The MMT has a capacity of 1.26mn tonnes per annum of cargo and is built on an area of 34 hectares. Varanasi is the first of the three multimodal terminals and two inter-modal terminals being constructed on the Ganga River. IWAI transported its first container cargo belonging to PepsiCo (India) from Kolkata to Varanasi on NW-1 on 30 October 2018 – the 1,500-dwt vessel, named MV Rabindranath Tagore, carried 16 containers of 9 tonne weight and took 12 days to sail. This was the

first container movement on an inland waterway in India after Independence. After development of night navigation facilities on the entire stretch, travel time from Varanasi to Haldia can come down to 4-5 days from current 12-14 days, a significant advantage for cargo movement on the NW-1.

The terminal has imported two cranes for bulk and container handling at a cost of c.Rs 4.9bn. Since the approach road is not yet developed and cargo movement frequency is very low, the driver (crane operator) is called from Kolkata when required. "It (the terminal) will have a permanent driver once it will start regular service," said a local employee.

Proposed Cost	Rs2bn
Capacity	1.26mn tonne per annum
Contractor	AFCONs
Major Commodities	Container, Construction material, Food grains and Fertilizer
Inaugurated	12 November 2018

NW-1

- NW-1 is being developed for navigation of large vessels of up to 3,000 tonnes of weight by maintaining a draft of 2-3 metres.
- Multi-Modal Terminal and Freight Village at Varanasi are likely to generate direct employment for 500 people and create more than 2,000 indirect employment opportunities.
- The objective is to promote inland waterways as a cheaper and more environment friendly means of transport, especially for cargo movement.
- The inland waterways terminal at Varanasi has a natural draft of 15mtr and both sides have sharp turn, which restricts sand accumulation – so maintenance-dredging cost is



Cargo handling crane at Varanasi terminal

very low for terminal.

- The cost of developing the first phase is Rs 1.70bn with an additional cost of Rs 200mn for constructing the connecting road.
- Varanasi freight village will be developed on 100 acre land with cargo projection of 3.21mn tonne including aggregation and transshipment. Project cost is Rs 5bn (50% from private players).
- DIB approval received while Cabinet approval is pending.
- "Ganaga River is very dynamic with around 5-6mn tonne annual silt generation and carry around 250m³ silt annually with its flow and depending on size and speed of water, siltation keeps changing," said a technical member at government agency. "Initially we thought auction of river sand can reduce the dredging cost for the inland waterways while during interaction with officers we come to know that river sand is not very useful as it is too fine and it is the property of the state government under the state mineral policy", he added.
- Total dredging cost for NW-1 is estimated at Rs 22bn and dredging is divided in three sections: (1) Haldia to Farakka given to Dredging Corporation of India (DCI); (2) Farakka to Barh given to Adani, and (3) Barh to Varanasi is in the tender stage.

RIS and VTSM systems on the Ganga River

IWAI has installed the River Information System (RIS) and Vessel Traffic Management System (VTMS)

on the Farakka to Patna stretch of the Ganga River. As a part of the project, six base stations and one control station have been installed in Bihar. The route will be navigable for the entire year (against only for six months currently). The project has depth of 3mtr for navigation, which will increase the cargo handling capacity of vessels to 1,200-3,000 dead weight tonnage (DWT). The development is also attracting one the biggest-ever dredging investment for maintaining least available depth of three metres all along the route round the year.

With the night navigation facility from Haldia to Varanasi (once complete), the travel time for vessels will come down to 4-5 days from current 12-14 days

Major cargo demand

There are around 11 major power plants located on the banks of NW1 with a cumulative capacity of 12,000 MW. Total coal requirement for the proposed power plants located on NW-1 is about 52mtpa, which can translate into a demand of c.10mtpa, assuming 20% imported coal is transported through NW-1. NTPC has already started a project for transportation of 21mt of imported coal over seven years from Haldia to Farakka for NTPC on NW-1. Apart from coal, major cargo on NW-1 is expected is containers, cement, fertilizer, fly ash, hot rolled steel, coils, tyres, machinery, jute, spare parts, stone, chips, HSD oil, soybean extracts, lube, oil, sand, manganese ore, coke.

Standardization in ship design for the Ganga River

- In August 2018, IWAI made public 13 standardised state-of-the-art ship designs suitable for large barge haulage on river Ganga (National Waterway-1).
- For the shipbuilding industry, the new designs will translate into a savings of Rs 3-5mn in the building of a vessel.
- Available free on the IWAI website, the designs remove ambiguity on the class and type of vessels that can sail on river Ganga with efficient manoeuvrability.
- These vessels will sail even in depths of about two metres carrying about 350 cars on a five-deck car carrier. Some of the designs would enable movement of bulk cargo carriers with capacity of 2500 tonnes at three metres depth, thereby, removing almost 150 truckloads of pressure from the road or one full rail rake with the plying of just one such vessel.
- The new designs for various categories of dry and liquid bulk carrier, Ro-Ro vessels, car carrier, container carrier, LNG carrier, Tug Barge flotilla have been made by DST, a German company that specialises in low-draft and high-carrying-capacity vessels. The model testing of the designs was done at Duisburg, Germany.
- IWAI has had 15 successful pilot movements on various stretches of NWs.
- In July 2018, it launched a dedicated portal 'FOCAL' to connect cargo owners and shippers with real-time data on availability of vessels.

IWAI Vessel MV RN Tagore at Ghazipur carrying the country's first riverine containerised cargo on National Waterway-1, River Ganga - from Kolkata to Varanasi in November 2018.



CONCERNS AND LIMITATIONS

- River transport increases the length of travel in most cases due to bends and diversions. Road distance between Allahabad and Haldia is 900 km but it is 1,600 km by waterways. For Deendayal Port (i.e Kandla) to Paradip Port, the rail route is approximately 2,000 km but the sea route will include a journey around Sri Lanka, with a total length of approximately 4,000 km.
- Road transport has higher travel speed (c.20km per hour) compared with coastal shipping (c.7km per hour) taking in account all delays and average night halts.
- Tantighai / Kani River on NW-5 has 24 bends on 45 km length and the radius of curvature in these bends varies from 190mtr to 620mtr; against this requirement for Class-4 Waterways is 700mtr, which makes navigation difficult and increase the cost of dredging).
- "River navigation depends on water levels, which vary during seasons and there is no formal arrangement for the use of water for cargo movement," said the senior officer in a government agency. The discharge available in the river Brahmani from Talcher to Jokadia works out to 55 cumecs (cubic meters per second) during the lean season while c.110 cumecs is required to ensure a navigable depth of 2m in a channel of 45m bed width. IWAI has proposed five barrages from Talcher to Jakodia to ensure 2m depth of water.
- River development takes a lot of time compared to coastal development. Setting up night navigation and river information systems is costly. The dynamic nature of rivers need detailed study and a longer history. The changes in water levels and speed of water have huge variation on season as well as on a daily basis. The speed of water in the Ganga River doubles from c.3 meters per second to c.7 meters per second in a very short span.
- Soil accumulation changes, with speed and flow of water, create challenges for dredging and navigation on waterways. "Soil accumulation keeps changing with seasons and due to the difference in water flow. We are studying specific locations to reduce the cost of dredging; many locations don't need dredging," said an officer at the IWAI. Dredging is one of the major costs for the inland waterways. IWAI has moved to a model of maintenance of guaranteed (assured) minimum depth for a period of five years, which is estimated to lead to cost savings of c.Rs 5.5-7.0bn annually for India, compared to quantity-based dredging. Outsourcing of dredging from private players is likely to increase the output to 0.4mn m3 per year compared to in-house dredgers' capacity of 0.18mn m3. NW-1 is divided into three stages for dredging and work has been awarded to Adani for assured depth (3 metres) dredging between Farakka to Kahalgaon.
- Tough absolute cost of coastal movement from port to port is quite less compared to road and rail movement, it is not so simple and one to one equation. Road transport is able to give point-to-point solutions. On the other hand, coastal and railway movements needs road transport for providing last-mile delivery, which makes it complex and costly – involving multiple modes and handling. Coastal waterways also have longer transit times and could prove less reliable than trucks (due to weather and port delays) making them inappropriate for time-sensitive transportation. For west coast to east coast journeys, ships need to circumnavigate Sri Lanka, increasing the transit time by around two days.
- Economic viability of a waterway to carry traffic as an alternative to rail and road depends on its length which should be a minimum 500 km and 250 km for both cases respectively. It should have a large hinterland coverage area and potential in order to generate enough traffic on routes.

Northeast proximity increasing

Cargo connectivity to the northeast is expected to improve significantly with the use of inland waterways. Cargo movement through NW-2 in the northeast is already operational and is being developed for improving terminal infrastructure. The development of waterways is playing big role in connectivity to northeast India mainly through:

- (1) Indo Bangladesh protocol
- (2) Kaladan multi modal project.

INDO-BANGLADESH PROTOCOL ROUTE

What is it?

- The Protocol is an agreement between India and Bangladesh. It was first signed in 1972 and is valid up to 5th June 2020. It is a mutually beneficial arrangement for using waterways for commercial purposes. The two sides agreed to consider inclusion of Rupnarayanriver (National Waterway-86) from Geonkhali to Kolaghat in the protocol route recently and to declare Kolaghat in West Bengal as new Port of Call. India has proposed for an extension of the protocol routes from Kolkata up to Silchar in Assam. Day to day protocol permissions are issued by IWAJ to barges to sail in the designated port of calls in India and Bangladesh.

What will it do?

- The new arrangement will facilitate movement of flyash, cement, construction materials, etc., from India to Bangladesh through IWT on Rupnarayanriver.

- Currently 3.5 MMT cargo is transported on protocol routes through inland waterways, which is expected to increase substantially after the declaration of additional Ports of Call and extension of protocol routes.
- The North Eastern states would be connected directly to the ports of Kolkata and Haldia in India and Mongla in Bangladesh through waterways, which would facilitate movement EXIM cargo and reduce logistics costs.

Indo Bangladesh Protocol on IWT

- This is an inland water transit and trade protocol between India and Bangladesh.
- Under this, inland vessels of one country can transit through specific routes of the other.
- Existing protocol routes: Kolkatta – Silghat – Kolkatta, Kolkatta – Karimganj - Kolkatta, Rajshahi – Dhulian – Rajshahi, Silghat – Karimganji - Silghat.
- The protocol also allows trade through IWT.
- Five ports of call have been designated in each country. These are – Haldia, Kolkatta, Pandu, Karimganj and Silghat in India and Narayanganj, Khulna, Mongla Sirajganj and Ashuganj in Bangladesh.
- More than 1.5mn tonne of fly ash is transported between Kolkatta / Haldia and Bangladesh every year

under this protocol.

- Recently, 90 consignments of project material for ONGC's Palatana Power Plant (being constructed near Agartala in Tripura) moved through inland waterways under the Indo Bangladesh Protocol.

KALADAN MULTI-MODAL TRANSIT TRANSPORT PROJECT

What is it?

- It will connect the eastern Indian seaport of Kolkata with Sittwe seaport in Rakhine State, Myanmar by sea. In Myanmar, it will then link Sittwe seaport to Paletwa in Chin State via the Kaladan riverboat route, and then from Paletwa by road to Mizoram state in Northeast India.
- Under this, the Ministry of external affairs (MEA) will provide alternate connectivity from Mizoram to Kolkata ports through river Kaladan in Myanmar coast and IWT from Sittwe to Paletwa in Myanmar and thereafter by road to Mizoram.
- It is a US\$ 484mn project.
- Originally, the project was scheduled to be completed by 2014, but is now expected to be operational only by 2019-20. All components of the project, including Sittwe port and power, river dredging, Paletwa jetty, are complete, except the under construction Zorinpui-Paletwaa road whose construction commenced in April 2018.

Other notable developments

Indigo Seaways Pvt. Ltd SPV

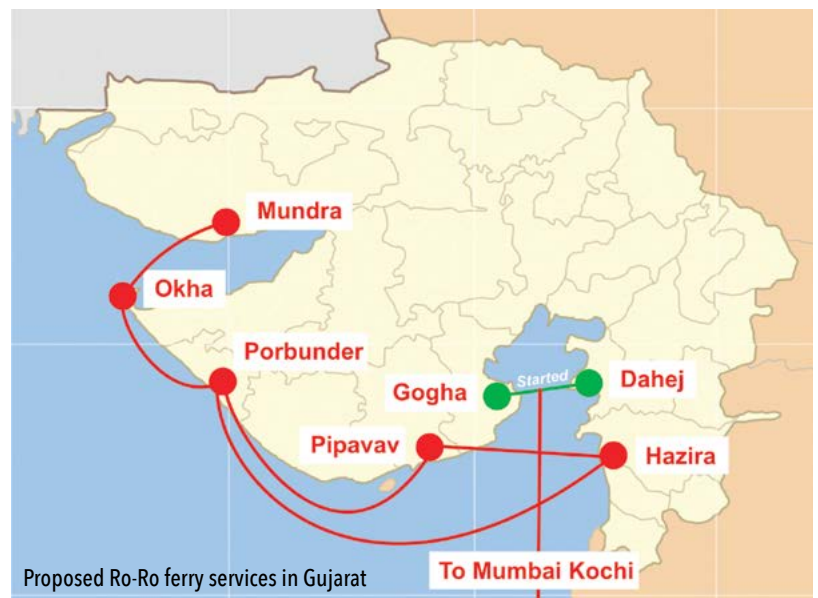
It is floated by Detox group in Surat for India's first roll on-roll off services in the Gulf of Cambay on the Public Private Partnership (PPP) model. Indigo Seaway Pvt Ltd. and Gujarat Maritime Board (GMB) had entered into an agreement to run the Roll On-Roll Off (Ro-Ro) ferry service. The ferry service started in October 2018.

- This ferry service project cost stands at Rs 6.14bn.
- For this project, the central government has allocated Rs 1.17bn for dredging work at both Ghogha and Dahej under the Sagarmala initiative.
- The service has reduced the travel time between Ghogha in Saurashtra and Dahej in South Gujarat from about seven or eight hours to just over an hour. The distance between the two places is reduced to just 31km from the current distance of 360km.
- Ship is 2015 built in Korea with 110mtr length and operates with draft of 3.8mtr and speed of 16-18 knots per hr.
- It is currently doing four trips daily, two from Dahej and two from Ghogha with around 115-130 vehicles and 450-500 passengers per trip. The ferry vessel with carrying capacity of 500 passengers and 100-150 vehicles needs maximum draft of 4.50 m while service speed is ~20 knots (40 km/hour). Total sailing time is around 60 minutes, excluding birthing and unberthing time. The estimated



Fare charges

Cars	Rs 1000/ car
Bikes	Rs 200/ bike
Executive Class	Rs 350/ person
Business Class	Rs 500/person
Economy Class	Rs 200/ person



demand between two terminals is estimated ~ 600 vehicles per day, and vehicle carrying capacity is 100 vehicles, the vessel can have 6 departures per day from one side. GMB has decided to opt for 150 vehicles per trip and four departures per day.

Goa Waterways

Waterways in Goa have been declared as National Waterways (NWs) under the National Waterways Act, 2016. Development of these waterways is undertaken through various measures including dredging based on the recommendations in feasibility/ Detailed Project Reports (DPRs). These reports for NWs on Mandovi and Zuari rivers have been completed. In order to minimize the adverse impact of developmental works on the marine ecology, if any, the recommendations of detailed Environment Impact Assessment (EIA)/ Environment Management Plan (EMP)/ Coastal Regulation Zone (CRZ) and Wild Life Clearance studies commissioned for NW-68 and NW-111 would be taken into account.

List of Goa waterways

1. Mandovi River: NW-68. from Bridge at Usgoan to confluence of Mandovi River with Arabian Sea at Reis Magos. 41 km.
2. Zuari River: NW-111. From Sanvordem Bridge to Marmugao Port. 50 km.
3. Chapora River: NW-25. From Bridge at State Highway No 124 (1 km from Maneri village) to confluence of Chapora river with Arabian Sea at Morjim. 33 km.
4. Cumberjua Canal (NW-27) – from Confluence of Cumberjua and Zuari rivers near Cortalim ferry terminal to confluence of Cumberjua and Mandovi rivers near Sao Martias VidhanParishad (17 km).
5. Mapusa River (NW-71) – from Bridge on

National Highway – 17 at Mapusa to confluence point of Mapusa and Mandovi Rivers at Porvorim (27 km).

6. Sal River (NW-88) – from Orlim Deusa Bridge to confluence with Arabian Sea at Mobor (14 km).

India Nepal trade through NW-1

- India is actively pursuing development of inland waterways from Kolkata to Indian states of Uttar Pradesh and Bihar. Nepal will use the Indian facilities to import and export cargos via its two rivers — Koshi and Gandak — to reach Haldia port in Kolkata. Officials from both countries have held meetings to review and revisit the bilateral transit and trade treaties.
- During the meeting in New Delhi, the Nepali side had proposed using two Indian transit points for inland water navigation: Sahibgunj (Jharkhand) and Kalughat (Bihar) via Haldia port up to Nepali border and then use the Koshi and Narayani (called Gandak in India) rivers respectively to reach the Nepali destination.

List and status of waterways in India

National Waterway	Description	States	Length (km)	Operational: Y/N/P (partial)
NW-1	Stretch of the Ganga-Bhagirathi-Hooghly Rivers	UP, Bihar, Jharkhand, West Bengal	1620	Y
NW-2	Sadiya-Dhubri stretch of Brahmaputra River	Assam	891	Y
NW-3	Kollam-Kottappuram stretch of West Coast Canal and Champakara canal and Udyogmandal canal	Kerala	205	Y
NW-4	Kakinada-Puducherry stretch of canals and the Kaluvelly tank, Bhadrachalam-Rajahmundry stretch of river Godavari and Wazirabad - Vijayawada stretch of river Krishna	Tamil Nadu, Andhra Pradesh, Telangana	2890	Y
NW-5	(a) Talcher-Dhamra stretch of Brahmani River-Kharsua River-Tantighai River-Pandua Nala-Dudhei Nala-Kani Dhamra River. (b) Geonkhali-Charbatia stretch of East Coast Canal. (c) Harbatia-Dhamra stretch of Matai River and Mahanadi Delta Rivers	Odisha, West Bengal	623	Y
NW-6	Aai River	Assam	71	P
NW-7	Ajoy River	West Bengal	96	N
NW-8	Alappuzha-Changanassery Canal	Kerala	28	N
NW-9	Alappuzha-Kottayam-Athirampuzha Canal	Kerala	38	P
NW-10	Amba River	Maharashtra	45	Y
NW-11	Arunavati River-Aran River	Maharashtra	98	Y
NW-12	Asi River	UP	5.5	N
NW-13	AVM Canal	Tamil Nadu	11	N
NW-14	Baitarani River	Odisha	49	N
NW-15	Bakreshwar River-Mayurakshi River	West Bengal	137	N
NW-16	Barak River	Assam	121	P
NW-17	Beas River	HP & Punjab	191	N
NW-18	Beki River	Assam	73	N
NW-19	Betwa River	UP	68	N
NW-20	Bhavani River	Tamil Nadu	94	N
NW-21	Bhima River	Telangana Karnataka	139	N
NW-22	Birupa River-Badi River-Genguti River-Brahmani River	Odisha	156	N
NW-23	Budhabalanga River	Odisha	56	N
NW-24	Chambal River	UP	60	N
NW-25	Chapora River	Goa	33	N
NW-26	Chenab River	J&K & Punjab	53	N
NW-27	Cumbarjua River	Goa	17	P
NW-28	Dabhol creek-Vashishti River	Maharashtra	45	P
NW-29	Damodar River	West Bengal	135	N
NW-30	Dihing River	Assam	114	N
NW-31	Dhansiri River-Chathe River	Assam	110	N

NW-32	Dikhu River	Assam	63	N
NW-33	Doyans River	Assam	61	N
NW-34	DVC canal	West Bengal	130	N
NW-35	Dwarakeswar River	West Bengal	113	N
NW-36	Dwarka River	West Bengal	121	N
NW-37	Gandak River	Bihar & UP	277	P
NW-38	Gangadhar River	Assam & West Bengal	62	N
NW-39	Ganol River	Meghalaya	49	N
NW-40	Ghaghara River	Bihar & UP	340	N
NW-41	Ghataprabha River	Karnataka	112	N
NW-42	Gomti River	UP	518	N
NW-43	Gurupura River	Karnataka	10	N
NW-44	Ichamati River	West Bengal	64	N
NW-45	Indira Gandhi Canal	Haryana, Punjab & Rajasthan	650	N
NW-46	Indus River	J&K	35	N
NW-47	Jalangi River	West Bengal	131	N
NW-48	Jawai River-Luni River and Rann of Kutch	Rajasthan & Gujarat	590	N
NW-49	Jhelum River	J&K	110	N
NW-50	Jinjiram River	Meghalaya & Assam	43	N
NW-51	Kabini River	Karnataka	23	N
NW-52	Kali River	Karnataka	54	N
NW-53	Kalyan-Thane-Mumbai Waterway, Vasai Creek and Ulhas River	Maharashtra	145	N
NW-54	Karmanasa River	UP & Bihar	86	N
NW-55	Kaveri River-Kollidam River	Tamil Nadu	364	N
NW-56	Kharkai River	Jharkhand	23	N
NW-57	Kopili River	Assam	46	N
NW-58	Kosi River	Bihar	236	N
NW-59	Kottayam-Vaikom Canal	Kerala	28	N
NW-60	Kumari River	West Bengal	77	N
NW-61	Kumari River	Meghalaya	28	N
NW-62	Lohit River	Assam	100	N
NW-63	Luni River	Rajasthan	327	N
NW-64	Mahanadi River	Odisha	425	N
NW-65	Mahananda River	West Bengal	81	N
NW-66	Mahi River	Gujarat	248	N
NW-67	Malaprabha River	Karnataka	94	N
NW-68	Mandovi River	Goa	41	N
NW-69	Manimuthar River	Tamil Nadu	5	N
NW-70	Manjara River	Maharashtra, &Telangana	242	N
NW-71	Mapusa River-Moide River	Goa	27	N

NW-72	Nag River	Maharashtra	60	N
NW-73	Narmada River	Gujarat	227	Y
NW-74	Netravati River	Karnataka	78	N
NW-75	Palar River	Tamil Nadu	141	N
NW-76	Panchagangavalli River (Panchagangoli)	Karnataka	23	N
NW-77	Pazhyar River	Tamil Nadu	20	N
NW-78	Painganga River-Wardha River	Maharashtra & Telangana	265	N
NW-79	Penna River	Andhra Pradesh	29	N
NW-80	Ponnaiyar River	Tamil Nadu	125	N
NW-81	Punpun River	Bihar	35	N
NW-82	Puthimari River	Assam	72	N
NW-83	Rajpuri creek	Maharashtra	31	Y
NW-84	Ravi River	HP & J&K	42	N
NW-85	Revdanda creek & Kundalika River	Maharashtra	31	Y
NW-86	Rupnarayan River	West Bengal	72	P
NW-87	Sabarmati River	Gujarat	212	N
NW-88	Sal River	Goa	14	N
NW-89	Savitri River & Bankot creek	Maharashtra	46	N
NW-90	Sharavati river	Karnataka	29	N
NW-91	Shastri River-Jaigad Fort creek	Maharashtra	52	Y
NW-92	Shilabati River	West Bengal	26	N
NW-93	Simsang River	Meghalaya	62	N
NW-94	Son River	Bihar	160	N
NW-95	Subansiri River	Assam	111	N
NW-96	Subarnarekha River	Jharkhand, West Bengal & Odisha	314	N
NW-97	Sunderbans waterways	West Bengal	654	Y
NW-98	Sutlej River	Punjab & HP	377	N
NW-99	Thamirabarani River	Tamil Nadu	64	N
NW-100	Tapi River	Maharashtra & Gujarat	436	Y
NW-101	Tizu River and Zungki River	Nagaland	42	N
NW-102	Tlwan River	Mizoram	86	N
NW-103	Tons River	UP	73	N
NW-104	Tungabhadra River	Telangana, Karnataka & AP	230	N
NW-105	Udayavara River	Karnataka	16	N
NW-106	Umngot River	Meghalaya	20	N
NW-107	Vaigai River	Tamil Nadu	45	N
NW-108	Varuna River	UP	53	N
NW-109	Wainganga River-Pranahita River	Maharashtra & Telangana	164	N
NW-110	Yamuna River	Haryana, UP & Delhi	1089	P
NW-111	Zuari River	Goa	50	Y

Source: Industry, IWA



INTERVIEW

We met Mr. V K Singh, Managing Director, Shreyas Shipping Ltd to discuss opportunities in coastal shipping. Shreyas has been in the shipping business for more than 24 years. It is a pioneer in the coastal shipping in India, and dominates the container cargo business with highest market share.

How has business grown for Shreyas Shipping over the years, and what are the key focus areas for the company?

Shreyas Shipping and Logistics is a part of the 40-year-old global conglomerate Transworld Group. We are a pioneer and market leader in domestic coastal container shipping services, and transshipment services. We offer door-to-door logistics support services through our associate entity – Avana Global Logistics. Over FY15-19, our shipping revenue CAGR was 21% to Rs 6.3bn from Rs 3bn. We currently operate 13 vessels with a total container capacity of 24,519 TEU – which has grown by around three times from 8,295 TEU capacity in FY15 at which time we had six vessels. We operate services on the west and east coast, including Colombo and Jebel Ali. In FY18, we enhanced our service offerings into break-bulk cargo shipping.

How is the utilisation rate for the fleet and availability of return cargo? Any new services planned?

Utilization levels on all services from North to South and West to East remained at around 90%, and 70% on the reverse leg were during 4QFY19. The government has allowed a mix of domestic and EXIM containers, which has helped the company to improve utilization. Apart from chartering out our vessels (which are large sized), we are also chartering in smaller-sized vessels to fit the cargo requirements on certain trade lanes. We are also operating joint services with other players in coastal shipping to

increase capacity without owning vessels.

How is the impact of fuel costs? Any impact of IMO sulphur regulation?

International Maritime Organization regulation for low sulphur will be applicable from 1 January 2020 to control the pollution produced by the shipping industry. It will increase costs for shipping companies as they need to shift to using low-sulphur fuel oil (LSFO) from the heavy oil that they are presently using, which will cost about US\$ 75-125 more per tonne. Another option is to install exhaust gas cleaning systems called “scrubbers”; by doing so, they can continue to use high-sulphur fuel oil (HSFO). Scrubber installation will increase capital expenditure and allow companies to use low-cost HSFO fuel oil. Those with bigger ships will go for scrubbers, because their fuel consumption is significantly higher due to longer voyages.

What is the impact of Cabotage Law on coastal shipping in general and on Shreyas Shipping?

The Cabotage relaxation is not going to affect Indian players. Foreign players may benefit in limited ways, but there are other operational challenges. Unless we deal with these effectively, Cabotage is not going to help trans-shipment. Main lines are not going to shift here and main lines are not going to call all these ports. It may affect domestic cargo movement, as revenue generated from EXIM containers on reverse legs helps in subsidising costs for domestic movements. Absence of such EXIM movement may

increase costs for domestic movement.

What are the concerns in the sector and any regulatory or policy support needed to boost the sector?

Operating costs in India are significantly higher due to taxes and duty and availability of low-cost funding. The government has rationalised duty on bunker, which is positive step for the sector. We are also looking at inland waterways development and support from the government, as it is a natural extension to our business. We welcome the recent policy of the government to allow Indian vessels to call at ports of Colombo and Chittagong with domestic cargo on board.

We currently operate 13 vessels with a total container capacity of 24,519 TEU – which has grown by around three times from 8,295 TEU capacity in FY15 at which time we had six vessels

Shipping is a cyclical business. Where are we in term of asset value and freight rates, considering historical cycles?

We have acquired all vessels at a low market value; hence, we are in a very comfortable position in terms of asset value. Freight rates are generally governed by market forces, both on coastal and international businesses.

How is competition evolving in coastal shipping over the past few years, and what are the strategies to maintain leadership in the container trade?

The way forward to maintain leadership is to ensure reduced cost of operation and be competitive to maintain business share. This can only be achieved by larger vessels and larger volumes, which we are adopting. We are also having mix of charter in and charter out of vessels depending on the market condition.

What are the opportunities in coastal shipping in India and what kind of capacity addition have you planned?

Over the years, we have increased our presence across the entire Indian coastline, covering most ports and container terminals. Out of the four fixed routes that we operate in, three are domestic. We reach out to ports like Mundra, Kandla, Pipavav, Cochin, Tuticorin, Mangalore, Krishnapatnam, Chennai, Paradip, Hazira, and Kolkata. About half of our cargo constitutes heavy construction material like cement, tiles, and marbles, and the rest is fertilizers, food grains, cotton, and others. We have increased our fleet from 6 vessels in FY14 to 13 currently, and majority of vessels that we added have been larger capacity ones, to provide economies of scale. In FY18, we acquired four vessels in one financial year for the first time in our history! Two container vessels, and two are multi-purpose ones, which we purchased to support the start of our break-bulk cargo business. We are planning to increase our fleet to 25 vessels to support growth, and with the acquisitions of more higher-capacity vessels, our company will enjoy significant economies of scale and reduced cost of operations.

Indian Economy – Trend Indicators

Monthly Economic Indicators

Growth Rates (%)	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19
IIP	4.5	3.8	7.0	6.5	4.8	4.6	8.4	0.2	2.5	1.6	0.1	0.4	3.4	0.0
PMI	51.6	51.2	53.1	52.3	51.7	52.2	53.1	54.0	53.2	53.9	54.3	52.6	51.8	52.7
Core sector	4.7	4.1	7.8	7.3	4.7	4.3	4.8	3.3	2.1	1.5	2.2	4.9	2.6	0.0
WPI	3.6	4.8	5.7	5.3	4.6	5.2	5.5	4.5	3.5	2.8	2.9	3.1	3.1	2.5
CPI	4.6	4.9	5.0	4.2	3.7	3.8	3.3	2.3	2.1	2.0	2.6	2.9	3.0	3.0
Money Supply	10.6	10.7	9.8	9.9	10.8	9.4	9.6	10.4	10.2	10.4	10.8	10.6	9.6	0.0
Deposit	8.8	8.0	7.1	7.6	9.1	7.6	8.5	8.9	8.6	9.2	9.7	9.6	9.2	0.0
Credit	12.6	13.1	12.8	12.4	14.4	12.5	14.6	15.1	15.1	14.6	14.4	12.9	12.7	0.0
Exports	5.2	20.2	17.6	14.3	16.9	-2.2	17.9	0.8	0.4	3.7	2.5	11.0	0.6	3.9
Imports	4.6	14.9	21.3	28.8	25.4	10.5	17.6	4.3	-2.4	0.0	-5.4	1.4	4.5	4.3
Trade deficit ^(USD Bn)	3.6	5.6	28.1	57.4	49.4	48.9	22.2	10.4	-12.1	-9.6	-22.1	-19.3	11.7	5.1
Net FDI ^(USD Bn)	4.3	3.9	1.7	1.9	1.8	3.9	3.7	0.9	3.0	3.7	2.4	2.4	4.4	0.0
FII ^(USD Bn)	3.2	-4.1	-4.2	0.3	0.1	-2.1	-5.1	1.8	1.2	-0.4	1.0	9.6	0.0	0.0
ECB ^(USD Bn)	3.9	1.3	2.7	2.2	4.8	1.7	1.4	2.1	3.8	2.4	2.8	12.7	3.2	0.0
Dollar-Rupee	65.7	67.6	67.8	68.7	69.6	72.3	73.6	71.8	70.7	70.7	71.2	69.5	69.4	69.8
FOREX Reserves ^(USD Bn)	420.4	412.8	406.1	404.2	400.1	400.5	392.1	393.7	393.4	398.2	399.2	411.9	418.5	420.0
NRI Deposits ^(USD Bn)	124.6	123.5	124.3	124.9	123.0	121.9	121.5	125.7	125.8	125.2	125.6	130.4	130.9	0.0

Quarterly Economic Indicators

Balance of Payment ^(USD Bn)	Q3FY17	Q4FY17	Q1FY18	Q2FY18	Q3FY18	Q4FY18	Q1FY19	Q2FY19	Q3FY19
Exports	68.8	77.4	73.1	76.1	77.5	82.2	83.4	83.4	83.1
Imports	102.0	107.1	115.1	108.5	121.6	123.8	129.1	133.4	132.6
Trade deficit	-33.3	-29.7	-41.9	-32.5	-44.0	-41.6	-45.8	-50.0	-49.5
Net Invisibles	25.3	26.3	27.0	25.5	30.3	28.6	29.9	30.9	32.6
CAD	-8.0	-3.5	-15.0	-7.0	-13.7	-13.1	-15.9	-19.1	-16.9
CAD (% of GDP)	1.4	0.6	2.5	1.1	2.1	1.9	2.4	2.9	2.5
Capital Account	6.1	10.4	26.9	16.9	22.5	25.0	5.0	16.7	13.6
BoP	-1.2	7.3	11.4	9.5	9.4	13.2	-11.3	-1.9	-4.3

GDP and its Components ^(YoY, %)	Q4FY17	Q1FY18	Q2FY18	Q3FY18	Q4FY18	Q1FY19	Q2FY19	Q3FY19	Q4FY19
Agriculture & allied activities	7.4	4.2	4.5	4.6	6.5	5.1	4.9	2.8	-0.1
Industry	7.7	-0.1	7.7	8.0	8.6	9.9	6.1	6.0	3.4
Mining & Quarrying	15.3	2.9	10.8	4.5	3.8	0.4	-2.2	1.8	4.2
Manufacturing	6.2	-1.7	7.1	8.6	9.5	12.1	6.9	6.4	3.1
Electricity, Gas & Water Supply	8.7	8.6	9.2	7.5	9.2	6.7	8.7	8.3	4.3
Services	6.1	8.6	6.5	8.0	8.0	7.5	7.5	7.6	8.2
Construction	0.9	3.3	4.8	8.0	6.4	9.6	8.5	9.7	7.1
Trade, Hotel, Transport and Communications	6.0	8.3	8.3	8.3	6.4	7.8	6.9	6.9	6.0
Finance, Insurance, Real-Estate & Business Services	3.3	7.8	4.8	6.8	5.5	6.5	7.0	7.2	9.5
Community, Social & Personal Services	14.7	14.8	8.8	9.2	15.2	7.5	8.6	7.5	10.7
GDP at FC	6.7	5.9	6.6	7.3	7.9	7.7	6.9	6.3	5.7

Annual Economic Indicators and Forecasts

Indicators	Units	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19E	FY20E	FY21E
Real GDP/GVA growth	%	6.7	6	5.6	7.1	7.9	6.6	6.5	6.8	7	7.4
Agriculture	%	5	1.5	4.2	-0.2	0.7	4.9	3.4	2.7	3.5	3.5
Industry	%	6.7	5	4.5	6.5	10.2	7	5.5	7.2	7.4	7.8
Services	%	7.1	6.1	8.2	9.4	9.1	6.9	7.6	7.6	7.7	8.1
Real GDP	₹ Bn	52475	85992	90844	97190	104905	111854	119762	129258	138306	148541
Real GDP	US\$ Bn	1096	1694	1581	1589	1603	1667	1858	1847	2004	2184
Nominal GDP	₹ Bn	87360	99466	112366	124451	136820	151837	167731	190540	211118	235333
Nominal GDP	US\$ Bn	1824	1828	1859	2035	2090	2264	2603	2722	3060	3461
WPI (Average)	%	8.7	7.4	6	2	-2.5	3.7	2.9	3.7	3.0-3.5	3.7-4.2
CPI (Average)	%	8.3	10.2	9.5	6.4	4.9	4.5	3.6	3.5	3.2-3.7	3.4-3.9
Money Supply	%	15.8	13.6	13.5	12	10.3	7.3	9.6	10	10.5	10
CRR	%	4.75	4	4	4	4	4	4	4	4	4
Repo rate	%	8.5	7.5	8	7.5	6.75	6.25	6	6.25	5.75-6	5.5-5.75
Reverse repo rate	%	7.5	6.5	7	6.5	5.75	5.75	5.75	6	5.5-5.75	5.25-5.5
Bank Deposit growth	%	13.5	14.2	14.6	12.1	9.7	11.2	6.2	9	9.5	9
Bank Credit growth	%	17	14.1	13.5	12.5	10.7	4.7	9.8	14	15	13
Centre Fiscal Deficit	₹ Bn	5160	5209	5245	5107	5328	5343	5911	6344	7389	7766
Centre Fiscal Deficit	% of GDP	5.7	5.2	4.6	4.1	3.9	3.5	3.5	3.4	3.5	3.3
State Fiscal Deficit	% of GDP	1.9	2	2.2	2.6	3.6	3	3.5	3.2	3.3	3.2
Consolidated Fiscal Deficit	% of GDP	7.6	6.9	7.1	6.6	7.5	6.5	7	6.6	6.8	6.5
Exports	US\$ Bn	309.8	306.6	318.6	316.7	266.4	280.1	309	335.2	350.3	339.8
YoY Growth	%	23.4	-1	3.9	-0.6	-15.9	5.2	10.3	8.5	4.5	-3
Imports	US\$ Bn	499.5	502.2	466.2	460.9	396.4	392.6	469	518.3	523.4	502.5
YoY Growth	%	31.1	0.5	-7.2	-1.1	-14	-1	19.5	10.5	1	-4
Trade Balance	US\$ Bn	-189.8	-195.6	-147.6	-144.2	-130.1	-112.4	-160	-183	-173.1	-162.7
Net Invisibles	US\$ Bn	111.6	107.5	115.2	116.2	107.9	97.1	111.3	124.2	128	129.5
Current Account Deficit	US\$ Bn	-78.2	-88.2	-32.4	-27.9	-22.2	-15.3	-48.7	-58.8	-45.1	-33.1
CAD (% of GDP)	%	-4.2	-4.7	-1.7	-1.4	-1.1	-0.7	-1.9	-2.2	-2.5	-1.5
Capital Account Balance	US\$ Bn	67.8	89.3	48.8	90	41.1	36.5	91.4	60.5	83.5	53.5
Dollar-Rupee (Average)		47.9	54.4	60.5	61.2	65.5	67	64.5	70	68	67-68

Source: RBI, CSO, CGA, Ministry of Agriculture, Ministry of commerce, Bloomberg, PhillipCapital India Research

PhillipCapital India Coverage Universe: Valuation Summary

Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)		P/E (x)		P/B (x)		EV/EBITDA (x)		ROE (%)			
				FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E
Maruti Suzuki	Automobiles	6,501	1,964	830,265	863,869	109,993	109,592	75,006	74,700	248	247	-2.9	-0.4	26.2	26.3	4.3	3.9	17.9	17.7	16.3	14.8	15.5	14.1
Bajaj Auto	Automobiles	2,840	822	295,673	283,577	49,820	47,397	43,332	41,723	150	144	5.7	-3.7	19.0	19.7	3.8	3.4	16.3	17.1	19.9	17.2	21.8	17.5
Mahindra & Mahindra	Automobiles	644	801	528,482	556,259	75,301	75,095	54,239	46,988	46	40	29.5	-13.4	14.1	16.3	2.2	2.0	10.5	10.8	15.5	12.3	14.5	11.3
Hero MotoCorp	Automobiles	2,587	517	337,788	372,864	51,381	58,479	35,556	39,360	178	197	-3.2	10.7	14.5	13.1	3.8	3.3	10.1	8.8	26.5	25.4	26.4	25.7
Tata Motors	Automobiles	160	503	3,019,384	3,285,173	318,542	416,716	12,986	96,300	-88	30	-490.2	-134.0	-1.8	5.4	0.9	0.7	4.1	3.9	2.2	13.9	-15.9	7.1
Ashok Leyland	Automobiles	86	253	286,140	330,708	31,331	37,306	20,381	20,970	7	7	29.0	2.9	12.4	12.1	3.1	2.5	8.4	6.7	25.2	20.9	24.8	21.7
Bharat Forge	Automobiles	446	208	101,457	108,437	20,556	21,767	10,553	12,283	23	26	24.2	16.4	19.7	16.9	3.9	3.2	11.5	10.4	19.6	19.0	14.1	14.7
Escorts	Automobiles	552	68	61,964	63,846	7,333	7,278	4,728	4,711	40	39	34.5	-0.3	13.9	14.0	2.2	1.9	9.3	8.9	15.6	13.6	15.8	13.6
Ceat	Automobiles	934	38	69,845	74,572	6,425	7,398	2,959	3,163	73	78	10.7	6.9	12.8	12.0	1.4	1.3	8.0	8.1	10.7	10.6	9.6	8.5
Asian Paints	Discretionary	1,367	1,311	193,415	224,832	35,245	46,026	21,595	28,365	23	30	9.7	31.4	60.7	46.2	14.0	12.3	37.2	28.4	23.1	26.7	22.3	25.9
Titan Company	Discretionary	1,313	1,166	189,644	224,133	21,843	27,227	15,820	19,513	18	22	26.1	23.3	73.7	59.7	18.6	15.2	52.7	41.9	25.3	25.4	26.8	29.2
Havells India	Discretionary	787	492	100,576	117,742	11,922	14,976	7,915	9,840	13	16	13.0	24.3	62.1	50.0	11.6	10.1	40.3	32.0	18.7	20.3	17.6	19.1
Volta	Discretionary	653	216	71,241	77,012	6,117	7,264	5,197	5,537	16	17	-6.2	6.5	41.5	39.0	5.3	4.8	35.3	29.2	12.6	12.3	14.0	13.5
Jubilant Foodworks	Discretionary	1,258	166	35,307	41,889	6,078	7,520	3,308	4,129	25	31	60.2	24.8	50.2	40.2	12.9	10.3	26.7	21.3	25.7	25.7	27.2	28.1
V-Guard Industries	Discretionary	248	106	25,665	29,449	2,195	2,730	1,656	2,043	4	5	24.4	23.4	64.0	51.9	11.8	10.0	47.9	38.5	18.4	19.3	19.2	20.0
Kajaria Ceramics	Discretionary	584	93	29,562	33,775	4,495	5,540	2,314	2,914	15	18	-1.2	25.9	40.1	31.9	5.9	5.4	20.3	16.6	14.7	16.8	14.0	15.9
Polycab	Discretionary	610	91	79,560	89,354	9,232	10,425	5,026	5,775	36	39	40.2	9.1	17.1	15.7	3.0	2.5	9.8	8.7	17.7	15.7	22.2	18.6
Finolex Cables	Discretionary	441	68	30,826	34,144	4,563	5,150	3,441	4,057	22	27	-3.9	17.9	19.6	16.6	2.8	2.5	14.7	12.9	14.1	14.7	14.4	15.2
Bajaj Electricals	Discretionary	511	52	66,732	61,978	3,484	4,145	1,671	1,949	17	19	-3.4	16.6	31.0	26.6	4.8	4.2	19.5	15.1	15.5	15.9	10.3	10.4
KEI Industries	Discretionary	476	38	42,310	49,239	4,405	5,159	1,807	2,368	23	30	24.8	31.0	20.6	15.8	4.8	3.7	9.8	8.4	23.2	23.7	17.6	19.1
Orient Electric Ltd	Discretionary	159	34	18,644	23,095	1,413	2,047	693	1,125	3	5	8.3	62.3	48.5	29.9	11.0	8.5	24.5	16.9	22.6	28.6	30.7	35.1
Somany Ceramics	Discretionary	415	18	17,175	19,494	1,658	1,927	488	723	12	17	-30.7	48.1	36.0	24.3	2.9	2.6	13.4	11.6	8.0	10.6	8.2	9.7

PhillipCapital India Coverage Universe: Valuation Summary

	CMP	Mkt Cap	Net Sales (₹ mn)	EBIDTA (₹ mn)	PAT (₹ mn)	EPS (₹)	EPS Growth (%)	P/E (x)	P/B (x)	EV/EBITDA (x)	ROE (%)	ROCE (%)										
Name of company	₹	₹ bn	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E										
Orient Paper & Industries	29	6	7,110	7,791	1,444	1,641	1,019	1,065	5	5	106.8	4.5	6.0	5.7	0.4	0.4	4.4	3.9	7.2	7.1	6.7	6.4
Thangamayil	321	4	14,544	17,477	711	867	285	385	21	28	24.7	34.9	15.4	11.4	2.3	2.0	7.9	6.8	15.0	17.4	22.6	24.2
Hindustan Unilever	1,753	3,794	339,260	376,600	72,760	86,370	52,990	62,630	25	29	44.9	18.2	71.4	60.4	53.5	51.1	51.7	43.5	74.9	84.5	65.5	69.5
ITC	277	3,390	444,327	504,413	173,055	198,526	124,643	138,348	10	11	15.3	11.0	27.2	24.5	6.1	5.7	19.3	16.7	22.5	23.2	22.5	23.2
Nestle	11,900	1,147	112,162	125,699	26,287	28,628	16,069	17,699	167	184	31.2	10.1	71.4	64.8	31.2	28.7	43.0	39.3	43.7	44.3	28.4	28.6
Britannia	2,773	666	109,735	124,730	17,334	20,547	11,591	12,853	48	53	15.4	10.9	57.5	51.8	16.1	13.9	38.2	32.1	28.1	26.9	29.9	29.5
Godrej Consumer Products	679	694	104,105	114,130	21,676	24,275	15,165	16,839	15	16	4.3	11.0	45.8	41.2	10.2	9.6	32.6	29.0	22.3	23.2	17.3	17.9
Dabur India	397	700	86,459	97,687	18,133	20,816	15,087	17,429	9	10	9.9	15.5	46.4	40.2	12.7	10.7	39.0	33.6	27.3	26.7	25.5	27.5
Marico Industries	373	482	73,340	83,790	12,810	15,940	11,180	11,468	9	9	37.3	2.6	43.1	42.0	16.5	14.5	37.5	30.0	38.4	34.6	41.1	36.9
Glaxo Smithkline Consumer	7,470	314	40,970	47,820	8,834	11,410	7,001	9,828	166	234	6.6	40.4	44.9	32.0	9.0	7.8	31.5	23.8	20.1	24.3	20.0	24.9
Colgate	1,129	307	44,557	49,706	12,455	14,505	7,432	8,770	27	32	8.5	18.0	41.3	35.0	20.7	21.3	24.3	20.8	50.1	60.7	45.4	57.7
Emami	306	139	27,014	30,891	7,531	8,569	3,285	4,134	7	9	6.9	25.9	42.3	33.6	6.5	6.4	18.5	15.9	15.5	19.2	16.3	19.1
Bajaj Corp	331	49	8,900	9,749	2,748	3,012	2,220	2,490	15	17	5.2	12.2	22.0	19.6	10.5	10.4	17.9	16.3	47.6	53.2	45.2	51.9
Agro Tech Foods	497	12	8,231	8,880	646	690	339	361	14	15	7.1	6.6	35.7	33.5	3.3	3.0	17.9	16.3	9.2	9.1	9.6	9.4
HDFC Bank	2,435	6,644	482,432	578,567	397,497	473,737	210,781	249,718	77	92	14.9	18.5	31.5	26.6	4.4	3.9	16.7	14.0	16.5	15.7	1.9	1.9
State Bank of India	356	3,175	865,140	985,952	578,481	655,740	58,367	275,507	7	29	-189.1	350.4	54.4	12.1	1.6	1.4	5.5	4.8	3.0	12.7	0.2	0.8
Kotak Mahindra Bank	1,480	2,825	112,590	140,497	83,478	104,611	48,650	60,591	26	32	18.7	24.5	58.0	46.5	6.6	5.9	33.8	27.0	12.1	13.3	1.7	1.8
ICICI Bank	436	2,814	270,148	312,591	234,377	261,342	33,633	129,996	5	20	-50.5	285.7	83.6	21.7	2.6	2.4	12.0	10.8	3.2	11.5	0.4	1.4
AXIS Bank	790	2,069	217,082	251,913	190,051	217,353	46,766	91,272	18	35	18.5	90.8	43.4	22.7	3.0	2.7	10.9	9.5	7.2	12.7	0.7	1.1
Indusind Bank	1,443	870	107,602	131,871	94,517	114,008	42,846	57,225	62	81	3.0	30.6	23.3	17.9	3.2	2.7	9.2	7.6	15.7	16.5	1.8	1.9
Bank of Baroda	120	409	186,838	219,497	134,868	153,285	4,335	58,196	1	19	-115.3	1,242.4	85.1	6.3	0.8	0.7	3.0	2.7	1.0	11.8	0.1	0.7
Punjab National Bank	77	354	175,407	197,594	122,160	133,489	-50,340	30,539	-11	7	-74.8	-160.7	-6.9	11.3	0.7	0.6	2.9	2.6	-11.9	6.3	-0.7	0.4

PhillipCapital India Coverage Universe: Valuation Summary

Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)		P/E (x)		P/B (x)		EV/EBITDA (x)		ROE (%)		ROCE (%)	
				FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E
Yes Bank	Banks	110	256	98,090	113,928	81,349	73,249	17,207	24,797	7	9	-58.6	25.9	14.8	11.7	0.9	0.8	3.1	3.5	6.3	8.1	0.5	0.6
Canara Bank	Banks	273	205	142,172	160,439	91,740	106,012	11,217	24,810	12	28	-121.6	121.2	21.9	9.9	0.7	0.7	2.2	1.9	3.5	6.8	0.2	0.4
Indian Bank	Banks	264	130	70,181	79,948	48,806	56,312	3,219	15,386	7	32	-74.4	377.9	39.4	8.2	0.8	0.7	2.7	2.3	2.0	9.1	0.1	0.5
DCB Bank	Banks	239	74	11,493	13,974	6,466	8,484	3,254	4,221	11	13	32.0	21.2	22.8	18.8	2.4	1.9	11.5	8.7	11.0	11.7	1.0	1.1
HDFC Limited	NBFC	2,160	3,722	114,026	129,970	116,808	130,041	96,325	106,688	56	62	-14.4	10.8	38.6	34.9	4.8	4.4	31.9	28.6	15.4	15.1	2.0	2.0
LIC Housing Finance	NBFC	554	280	43,646	51,130	37,296	43,959	24,307	27,824	48	55	21.4	14.5	11.5	10.1	1.7	1.5	7.5	6.4	15.9	16.0	1.3	1.3
Indiabulls Housing Finance	NBFC	608	260	58,030	63,424	61,810	67,140	40,570	46,330	95	108	5.1	14.2	6.4	5.6	1.6	1.4	4.2	3.9	26.4	26.2	3.1	3.4
Muthoot Finance	NBFC	635	254	46,136	50,295	31,043	32,627	19,770	20,689	49	52	14.6	4.9	12.9	12.3	2.7	2.3	8.2	7.8	23.2	20.6	5.4	4.8
Shriram Transport Finance	NBFC	1,115	253	75,369	83,691	59,561	65,355	23,539	27,399	104	121	59.5	16.4	10.7	9.2	1.7	1.5	4.2	3.9	17.3	17.3	2.6	2.7
Mahindra & Mahindra Finance	NBFC	393	243	45,104	51,859	30,124	34,569	15,518	16,551	25	27	82.6	6.7	15.6	14.6	2.2	2.0	8.1	7.0	15.4	14.4	2.6	2.4
Cholamandalam Investment and Finance	NBFC	276	216	33,673	41,194	21,335	26,342	11,852	14,271	76	88	21.7	16.7	3.6	3.1	0.7	0.5	10.1	8.2	21.0	20.0	2.5	2.3
Manappuram Finance	NBFC	139	117	23,404	26,953	12,437	14,960	7,904	9,313	9	11	12.9	17.8	14.8	12.6	2.6	2.2	9.4	7.8	19.1	19.2	4.9	5.0
Shriram City Union Finance	NBFC	1,375	91	36,858	39,494	22,939	25,011	9,888	10,347	150	157	48.8	4.6	9.2	8.8	1.4	1.3	4.0	3.6	16.7	15.4	3.3	3.2
Magma Fincorp	NBFC	129	35	13,336	15,122	7,098	8,506	3,056	3,896	11	14	16.7	27.5	11.4	8.9	1.3	1.2	4.9	4.1	12.2	13.7	2.1	2.3
Repco Home Finance	NBFC	365	23	4,636	5,231	4,056	4,594	2,493	2,741	40	44	20.0	10.0	9.2	8.3	1.5	1.3	5.6	5.0	17.3	16.3	2.4	2.3
Dewan Housing Finance	NBFC	74	23	21,225	23,924	18,188	20,488	10,849	12,118	35	39	-7.4	11.7	2.2	1.9	0.2	0.2	1.3	1.1	11.7	11.8	1.1	1.2
Tata Consultancy	IT Services	2,255	8,462	1,464,630	1,595,499	395,050	436,009	314,760	341,616	84	91	24.1	8.5	26.9	24.8	9.2	7.7	21.2	19.1	34.4	31.0	34.0	32.8
Infosys Technologies	IT Services	746	3,257	826,760	896,108	208,890	219,165	159,750	164,300	37	38	8.9	2.8	20.3	19.8	5.0	4.6	14.1	13.3	24.6	23.3	23.3	24.0
Wipro	IT Services	285	1,722	584,883	633,815	116,502	133,987	88,340	103,461	20	23	10.4	17.1	14.5	12.4	2.4	2.2	15.1	13.0	16.7	17.7	15.4	16.5
HCL Technologies	IT Services	1,085	1,471	604,280	691,272	139,690	160,721	101,450	100,566	75	74	18.6	-0.9	14.5	14.6	3.5	3.0	10.5	9.0	24.3	20.7	23.5	19.7
Tech Mahindra	IT Services	727	715	347,421	370,473	63,369	64,938	43,631	44,754	49	51	13.9	2.6	14.7	14.4	3.2	2.8	11.1	10.8	21.5	19.5	15.5	14.8
L&T Infotech	IT Services	1,725	299	94,458	107,150	18,835	22,483	15,157	16,976	89	99	30.2	12.0	19.5	17.4	6.0	4.9	15.7	13.1	31.0	28.3	32.1	29.2

PhillipCapital India Coverage Universe: Valuation Summary

Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)		P/E (x)		P/B (x)		EV/EBITDA (x)		ROE (%)			
				FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E
L&T Technology Services	IT Services	1,730	180	50,783	58,190	9,146	11,322	7,684	8,499	75	83	51.2	10.6	23.0	20.8	7.1	5.7	19.8	16.0	31.0	27.6	32.7	29.0
Mindtree	IT Services	954	157	70,215	78,863	10,645	13,492	7,541	8,418	46	51	32.3	11.6	20.7	18.6	4.7	4.0	14.5	11.4	22.8	21.6	24.9	23.3
NIIT Technologies	IT Services	1,331	82	36,762	41,750	6,509	7,395	4,121	4,782	67	78	47.1	16.0	19.8	17.0	3.9	3.3	11.2	9.5	19.9	19.6	20.6	20.4
Cyient Limited	IT Services	548	61	46,175	50,704	6,444	6,983	4,886	5,179	44	47	16.0	6.5	12.4	11.6	2.4	2.1	8.5	7.4	19.1	17.9	18.2	17.4
Persistent Systems	IT Services	616	49	33,659	35,393	5,805	5,612	3,517	3,672	44	46	10.1	4.4	13.9	13.3	2.1	1.9	7.3	7.2	15.0	14.2	14.5	13.8
Intellect Design Arena	IT Services	265	35	14,575	17,301	1,472	2,023	1,313	1,320	10	10	167.8	0.5	26.6	26.4	3.7	3.2	24.4	17.9	-	-	10.8	13.3
Majesco	IT Services	532	15	9,881	11,062	931	1,282	548	820	19	29	-2,790.8	49.8	27.5	18.4	2.2	2.0	12.9	8.6	8.1	10.8	9.4	8.9
Ultratech Cement	Cement	4,600	1,263	383,209	491,490	65,383	89,333	22,884	34,272	83	119	-11.0	42.5	55.2	38.7	4.5	3.6	22.6	16.7	8.1	9.3	6.1	7.4
Shree Cement	Cement	21,763	758	119,963	147,398	28,024	33,991	13,117	15,581	377	447	-5.2	18.8	57.8	48.7	7.6	6.7	26.2	21.3	13.1	13.7	11.6	12.6
Ambuja Cement	Cement	218	432	267,822	283,283	42,805	49,261	17,375	20,725	9	10	41.4	19.3	24.9	20.9	2.1	2.0	8.8	7.7	8.3	9.4	8.4	9.7
ACC	Cement	1,571	295	156,663	162,698	20,980	23,146	12,976	13,932	56	69	13.6	23.3	28.1	22.8	2.8	2.6	12.2	11.5	10.0	11.3	10.2	10.7
Dalmia Bharat	Cement	1,066	206	92,979	101,813	23,856	25,127	5,849	6,711	66	75	9.2	14.7	16.2	14.2	1.4	1.3	10.5	10.3	8.9	9.3	7.6	6.5
JK Cement	Cement	1,022	79	48,918	51,024	8,089	8,492	2,507	2,398	32	31	-25.0	-4.3	31.5	32.9	3.0	2.9	12.4	13.1	9.7	8.9	7.6	6.8
Star Cement	Cement	121	51	17,973	20,264	4,984	5,337	3,194	3,284	8	8	-3.4	2.8	15.9	15.5	2.8	2.4	11.0	10.5	17.8	15.5	16.3	13.9
HeidelbergCement India	Cement	194	44	21,394	22,447	3,943	4,302	1,857	2,206	8	10	39.4	18.8	23.7	19.9	3.6	3.0	11.1	9.4	15.1	15.2	11.4	11.9
JK Lakshmi Cement	Cement	345	41	37,739	41,810	4,811	6,951	572	2,359	5	20	8.9	312.6	71.0	17.2	2.7	2.4	12.7	8.2	3.8	14.2	6.2	10.4
India Cement	Cement	105	33	56,402	62,467	6,789	8,661	497	1,805	2	6	-25.2	263.1	65.1	17.9	0.6	0.6	9.5	7.6	1.0	3.5	2.7	4.0
Sanghi Cement	Cement	61	15	11,507	13,305	1,892	2,531	158	474	1	2	-83.1	200.5	97.5	32.4	1.0	0.9	13.1	11.8	1.0	2.9	2.5	3.4
Mangalam Cement	Cement	250	7	10,765	11,339	1,027	1,423	222	482	8	18	95.0	117.3	30.1	13.8	1.2	1.1	9.5	6.4	4.0	8.1	5.5	7.8
Larsen & Toubro	Cap Goods	1,554	2,179	1,406,571	1,574,749	167,097	188,291	86,924	92,959	62	66	19.7	6.7	25.1	23.5	3.5	3.2	19.9	17.9	13.9	13.5	6.7	6.4
Siemens	Cap Goods	1,254	447	126,399	140,411	12,308	16,672	8,390	11,589	24	33	21.7	38.1	53.2	38.5	5.4	4.9	33.3	24.2	10.1	12.6	9.8	11.6
ABB India	Cap Goods	1,584	336	66,901	75,212	4,578	6,633	2,280	4,147	11	20	3.6	81.9	147.2	80.9	8.4	9.3	70.1	48.3	5.7	11.5	12.3	10.3

PhillipCapital India Coverage Universe: Valuation Summary

Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)		P/E (x)		P/B (x)		EV/EBITDA (x)		ROE (%)		ROCE (%)	
				FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E
Bharat Electronics	Cap Goods	115	280	120,846	135,553	28,621	29,320	19,273	18,602	8	8	31.0	-3.5	14.5	15.1	3.1	2.8	9.5	9.1	21.2	18.8	19.7	17.0
BHEL	Cap Goods	74	258	303,490	335,510	20,750	27,870	9,733	15,187	3	4	118.9	56.0	26.5	17.0	0.8	0.8	10.1	7.2	3.1	4.7	2.8	4.1
Hindustan Aeronautics	Cap Goods	716	240	182,158	202,808	25,081	27,685	15,225	19,079	46	57	-26.5	25.3	15.7	12.6	1.9	1.7	3.7	2.9	12.0	13.9	7.8	9.2
Cummins India	Cap Goods	762	211	110,005	127,530	11,499	13,266	4,864	6,057	19	24	8.2	22.2	39.5	32.3	8.0	6.6	19.7	17.4	20.0	20.4	15.9	15.7
Thermax	Cap Goods	1,064	127	59,732	63,845	4,574	5,280	3,244	3,561	27	30	39.7	9.8	39.1	35.6	4.2	3.9	27.4	23.6	10.8	10.9	10.1	10.2
KEC International	Cap Goods	316	81	110,005	127,530	11,499	13,266	4,864	6,057	19	24	3.4	24.5	16.7	13.4	3.3	2.7	8.4	7.6	20.0	20.4	15.9	15.7
Kalpataru power	Cap Goods	523	80	108,405	124,836	13,472	15,048	4,668	5,043	30	33	72.9	8.0	17.2	15.9	2.6	2.3	8.4	6.6	15.0	14.4	11.8	12.4
Engineers India	Cap Goods	123	77	24,443	30,629	3,840	4,452	3,762	4,217	6	7	10.4	12.1	20.6	18.4	3.4	3.2	13.2	11.6	16.5	17.2	18.8	20.4
GET&D	Cap Goods	238	61	44,963	45,699	4,579	4,996	2,519	3,038	10	12	3.5	20.6	24.1	20.0	4.4	3.7	11.9	10.4	18.3	18.7	23.4	23.3
Bharat Dynamics	Cap Goods	307	56	43,514	36,086	7,020	5,662	5,162	4,452	28	24	-11.8	-13.7	10.9	12.6	2.5	2.2	6.5	6.9	22.6	17.3	18.8	14.9
Cochin Shipyard	Cap Goods	375	49	29,622	32,563	5,717	6,102	4,812	4,711	37	36	22.9	-2.1	10.3	10.5	1.5	1.4	4.1	3.9	14.4	13.1	13.1	12.0
VA Tech Wabag	Cap Goods	303	17	27,810	33,431	2,148	3,059	1,185	1,367	22	25	-14.0	15.4	14.0	12.1	1.5	1.4	9.6	7.1	11.1	11.6	6.1	8.6
Adani Ports & SEZ	Infrastructure	412	854	109,254	125,698	70,675	81,515	44,920	45,659	22	22	8.3	1.6	19.0	18.7	3.5	3.0	15.1	13.2	18.3	15.8	10.4	10.3
NCC	Infrastructure	100	60	120,798	132,877	14,230	14,949	6,052	6,439	10	11	67.5	6.4	9.9	9.3	1.3	1.1	5.4	5.1	12.7	12.2	13.7	13.4
PNC InfraTech	Infrastructure	203	52	30,969	41,808	4,573	5,958	3,249	2,979	13	12	29.4	-8.3	16.0	17.5	2.5	2.2	11.5	9.1	16.6	13.2	16.3	13.3
Sadbhav Engineering	Infrastructure	250	43	35,492	40,816	4,279	4,694	1,861	2,068	11	12	-15.7	11.2	23.0	20.7	2.1	1.9	13.1	11.8	9.2	9.2	7.5	7.7
KMR Construction	Infrastructure	273	38	21,373	26,716	4,270	4,408	2,658	1,860	19	13	-2.3	-30.0	14.4	20.6	2.7	2.4	9.5	9.4	20.7	12.3	18.5	11.6
Ashoka Buildcon	Infrastructure	135	38	38,286	47,858	5,232	6,222	3,249	3,126	12	11	37.1	-3.8	11.6	12.1	1.7	1.5	8.5	7.8	14.7	12.5	13.8	12.9
IRB Infrastructure	Infrastructure	99	35	67,070	75,656	29,373	29,151	8,500	6,188	24	18	-7.6	-27.2	4.1	5.6	0.6	0.5	6.0	7.2	13.5	8.2	4.3	4.1
Ahluwalia Contracts	Infrastructure	330	22	17,522	20,150	2,163	2,670	1,173	1,529	18	23	1.6	30.4	18.9	14.5	3.0	2.5	9.5	7.4	17.3	18.8	17.8	19.2
ITD Cementation	Infrastructure	105	18	31,651	31,296	3,171	2,973	832	949	5	6	3.0	14.1	21.6	18.9	1.8	1.6	7.0	8.0	8.1	8.6	12.0	10.1
Sun Pharma	Pharma	399	957	286,863	332,251	63,076	74,645	38,798	47,551	16	20	21.8	22.6	24.7	20.1	2.3	2.1	15.7	12.8	9.4	10.4	8.1	9.2

PhillipCapital India Coverage Universe: Valuation Summary

Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)		P/E (x)	P/B (x)	EV/EBITDA (x)		ROE (%)		ROCE (%)			
				FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E			FY19E	FY20E	FY19E	FY20E		FY19E	FY20E	
Cipla	Pharma	555	448	163,624	185,127	30,973	35,174	15,277	18,793	19	23	3.8	23.0	29.2	23.7	3.0	2.7	15.6	13.3	10.2	11.3	8.1	9.2
Dr.Reddy's Labs.	Pharma	2,561	425	153,851	166,998	33,288	36,739	18,795	20,788	110	122	85.6	10.6	23.2	21.0	3.1	2.8	13.9	12.1	13.4	13.2	8.7	9.0
Div's Laboratories	Pharma	1,586	421	49,463	57,287	18,718	21,425	13,219	14,962	50	56	55.7	13.2	31.9	28.1	6.1	5.2	22.5	19.6	19.0	18.4	25.1	24.2
Aurobindo Pharma	Pharma	622	364	195,636	227,483	39,519	47,771	24,782	29,853	43	51	1.7	20.5	14.6	12.1	2.6	2.2	10.5	8.4	17.0	17.8	16.0	17.2
Lupin	Pharma	765	346	163,694	177,183	28,822	32,626	9,465	12,494	21	28	-30.0	32.0	36.6	27.7	2.5	2.4	14.6	12.8	4.4	8.5	9.6	10.5
Biocon	Pharma	250	300	55,144	71,180	13,937	19,601	7,065	11,270	12	19	144.2	59.5	21.2	13.3	2.5	2.1	22.3	15.8	14.8	15.3	10.3	14.4
Cadila Healthcare	Pharma	238	243	127,484	146,733	29,665	31,942	17,928	18,462	18	18	1.4	3.0	13.6	13.2	2.3	2.0	10.5	9.4	16.7	14.7	11.0	9.9
Glenmark Pharma	Pharma	460	130	97,051	107,978	15,858	18,830	6,558	8,833	23	31	-15.5	34.7	19.8	14.7	2.2	1.9	10.0	8.3	10.9	13.0	3.9	10.0
Ipsa Laboratories	Pharma	927	117	37,220	42,156	7,094	8,729	4,597	6,004	36	48	92.4	30.6	25.5	19.5	3.8	3.2	16.8	13.2	14.7	16.2	12.1	14.6
SRF	Sp Chemicals	2,975	171	76,927	82,543	13,790	16,344	6,654	8,248	114	141	60.0	23.9	26.2	21.1	4.2	3.6	14.6	12.2	15.5	16.9	10.3	11.4
Aarti Industries	Sp Chemicals	1,795	156	50,582	58,024	10,146	11,257	5,344	5,950	62	69	50.5	11.3	29.1	26.1	5.6	4.7	16.8	15.5	18.1	18.6	15.8	15.7
Atul	Sp Chemicals	3,954	117	40,378	46,653	7,668	8,957	4,253	5,322	143	179	51.2	25.1	27.6	22.1	4.4	3.7	14.9	12.3	16.3	16.8	23.8	23.9
Vinati Organics	Sp Chemicals	2,102	108	11,081	14,211	4,036	4,767	2,825	3,229	55	63	108.0	14.3	38.2	33.5	10.2	7.8	26.7	22.1	26.7	23.4	35.8	31.8
Camlin Fine Sciences	Sp Chemicals	52	6	8,922	11,753	694	1,481	106	584	1	5	-135.0	449.7	59.5	10.8	1.7	1.5	14.1	7.0	0.8	15.8	6.2	13.5
Container Corp Of India	Midcap	565	344	65,427	75,477	14,408	17,459	12,169	13,675	20	22	16.0	12.4	28.3	25.2	3.3	3.2	24.3	19.6	11.7	12.7	11.8	12.5
Praj Inds.	Midcap	139	25	11,410	13,975	792	1,563	591	1,083	3	6	96.5	83.1	42.1	23.0	3.3	3.0	30.9	15.0	7.9	13.2	7.9	13.6
VRL Logistics	Midcap	272	25	21,095	23,511	2,440	3,046	919	1,241	10	14	-0.7	35.0	26.7	19.8	3.8	3.3	10.6	8.7	14.2	16.6	12.2	14.1
Allcargo Logistics	Midcap	103	25	68,949	75,194	4,485	5,206	2,420	2,618	10	11	35.8	8.2	10.4	9.6	1.3	1.1	6.4	5.9	12.1	11.9	10.9	10.8
Gateway Distriparks	Midcap	129	14	4,306	12,882	824	2,364	847	1,019	8	9	1.9	20.3	16.5	13.7	1.1	1.0	26.8	9.4	6.4	7.5	5.9	8.1
Indo Count Industries	Midcap	34	7	19,342	20,862	1,867	2,242	908	1,076	5	5	-27.5	18.5	7.3	6.2	0.7	0.6	5.2	3.9	9.4	10.2	8.7	9.5
KDDL	Midcap	425	5	6,242	7,097	655	733	221	257	19	22	28.7	16.0	22.5	19.4	2.6	2.3	9.3	8.9	11.6	12.1	9.9	10.0
Navkar	Midcap	28	4	4,826	6,000	1,526	1,942	528	741	4	5	-47.7	40.2	7.9	5.7	0.2	0.2	5.9	4.1	3.0	4.0	3.7	4.5
Pennar Inds.	Midcap	33	4	20,698	23,096	1,742	2,203	623	840	5	7	8.5	34.9	6.3	4.7	0.6	0.6	3.8	3.0	9.7	11.9	12.7	14.6

Source: PhillipCapital India Research Estimates

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