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Essar Ports: Green Ports Are the Future of the Industry

Srihari Nair-B.Tech-III-YEAR

Maritime industry stakeholders all over the world are increasing their contribution for the reduction of carbon footprint. While shipping companies decided to modify their vessels in order to comply with the upcoming 2020 Sulphur Cap regulation, the port industries took their own measures to cut pollution. One of these is India's second-largest, private-sector port and terminal company by capacity and throughput, Essar Ports, that has a total operational capacity of 110 MTPA in India.

Speaking to World Maritime News, the company's CEO & MD, Rajiv Agarwal, said that Essar Ports believes that green ports "are truly the future of the industry."

Agarwal explained that the company had taken numerous steps and has invested in reduction of the carbon footprint at all of its four terminals by implementing technologies such as cold-fog system, sprinkling systems for dust and pollution control, completely mechanized handling facilities ensuring zero spillage and covering the entire conveyor system.

He added that these measures "have been pivotal in our vision of developing environmental friendly facilities."

Additionally, developing deeper draft ports and terminals enabled operations with larger parcel size "which further the initiative in lowering carbon footprint. We will continue to invest in modern technologies which ensure cargo handling through environmental friendly means."

Essar Ports' terminals are focused on bulk and dry bulk cargoes that are primarily used as raw material in core sector industries, like steel, power and cement.

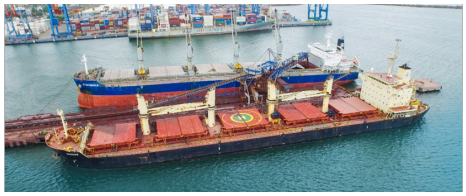
So far, the company has invested more than USD 1.6 billion in the development of port terminal facilities in India. Essar Ports said that its terminals are not only capable of handling the biggest ships sailing today "but also provide one of the best turnaround times in India," contributed by the modernization and development of the company's Vizag iron ore handling complex.

The iron ore handling complex can now berth Super Capesize vessels up to 200,000 dwt, with a depth of 20 metres. The 24-million-tonne terminal has seen a growth rate of 45% in overall cargo throughput driven by a sharp increase in new customers, the company explained.

Speaking about Essar Ports' future plans, the CEO noted that the company is always on the lookout for opportunities to grow its businesses as the four terminals have further expansion possibilities.

"Our target is to grow at a rate of more than 20% in the near future. To achieve this growth we have put a strategy in place to expand our customer base in the near future. The focus is now on increasing revenue, diversifying cargo base, optimizing costs, and improving our operational and financial performance."

During the first quarter of the year, Essar Ports reported a 17.4% growth in cargo volumes across its four terminals. The combined throughput stood at 13.5 million tonnes, up from 11.5 million tonnes in the



World Maritime News Staff; Image Courtesy: Essar Ports (Hazira Port)

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same period of 2018. Of the four terminals, the Salaya and Vizag terminal showcased a strong performance in cargo handling with a striking increase in third-party cargo utilization thereby helping the company achieve its target of handling 60 million tonnes of cargo by the end of the current financial year.

courtesy:
www.maritimenews.com

Cadets of RLINS Receiving the Appreciation Award

Cadets of RLINS receiving the trophy for donating maximum number of units of blood in the year 2019 . Also seen in the picture are OICS ,PRO and official from Meenakshi Mission Hospital ,Madurai.

Pass Out Batch of GME (2018-2019) of RLINS. Sitting at the centre is Dr.R.Lakshmipathy, President, RLINS.

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Active Submarines in Indian Navy

HEMANT ATTREYA-B.TECH-III

Submarines are important for the Navy because they help a nation to carry out sub-surface wars most effectively. The submarine arm of the Indian Navy has been there for more than 50 years. The first Indian Submarine was INS Kalvari, which was inducted in the Indian Navy fleet back on December 8, 1967, under Cdr KS Subramanian. With passage of time, Indian Navy has expanded its sub-surface fleet, which now includes Nuclear-powered submarines and Diesel-electric submarines (including both Conventional and Ballistic Missile submarines). The recent submarine launched by the Indian Navy is the third Scorpene class submarine Karanj. On the occasion of the launch in early-2019, Navy chief Admiral Sunil Lanba said that it will go through rigorous tests for the coming 1-year before being commissioned.

List of Submarines in Indian Navy

There are currently two nuclear-powered submarines and fourteen Diesel-electric submarines in service. While one Nuclear submarine and two Diesel-electric submarines are undergoing sea trials, two Nuclear-powered and three Diesel-electric submarines are under construction. Till now, ten submarines have been decommissioned; out of which one was Nuclear-powered Attack submarine and nine Diesel-electric submarines.

List of Active (or Commissioned) Submarines in the Indian Navy

There are 2 active Nuclear-powered submarines:

1. INS Chakra (S71): It is a Chakra (Akula II) class attack submarine that has been leased from Russia under a 10-year lease. This nuclear power submarine (having 12,770 tonnes vessel) was commissioned on April 4 at a ceremony in Visakhapatnam.
2. INS Arihant (SSBN 80): This is a nuclear-powered Ballistic missile submarine that comes with a 6,000 tonnes vessel. It belongs to the Arihant class submarine that was commissioned in August 2016.

There are 14 active Diesel-electric submarines:

1. INS Shishumar (S44): Indian Navy commissioned INS Shishumar diesel-electric submarine on September 22, 1986. This Shishumar class attack submarine comes with a 1,850 tonnes lead vessel and is scheduled for upgrades by 2020-21.
2. INS Shankush (S45): This is yet another Shishumar class attack submarine that is scheduled for upgrades by 2020-21. S45 also comes with a 1,850 tonnes submerged displacement vessel.
3. INS Shalki (S46): It was the first ever submarine built in India. This Shishumar-class Indian Navy submarine was commissioned on February 7, 1992. This 1,850 tonnes submerged displacement vessel is armed with 14 × AEG-SUT Mod 1 wire-guided active/passive torpedoes and 24 × external strap-on mines.
4. INS Shankul (S44): INS Shankul diesel-electric submarine also belongs to the Shishumar-class and was the second submarine to be built in India. This 1,850 tonnes submerged displacement vessel was commissioned on May 24, 1994.
5. INS Kalvari (S21): S21 is the first of the 6 Kalvari class submarines available to the Indian Navy. The other five are either undergoing sea trials or are under construction. DCNS or French naval defence and energy company designed this diesel-electric attack submarine and it was manufactured at Mumbai's Mazagon Dock Limited. This 1,775 tonnes submerged displacement vessel was commissioned on December 14, 2017.
6. INS Sindhughosh (S55): It belongs to the Sindhughosh class and was commissioned on April 30, 1986, in Latvia's Riga. This is the first ever Indian Navy submarine that comes with the Klub ZM-54E SS-N-27 antiship cruise missiles (having a range of 220 kilometers). S55 has 3076 tons (submerged displacement) vessel with a maximum 300 meters diving depth.
7. INS Sindhudhvaj (S56): INS Sindhudhvaj also belongs to the Sindhughosh class and was commissioned on June 12, 1987. It has 3076 tons submerged displacement vessel that has the endurance of up to 45 days with a 52 member crew.
8. INS Sindhuraj (S57): S57 submarine of the Indian Navy belongs to Sindhughosh-class diesel-electric submarines. It was commissioned on October 20, 1987. INS Sindhuraj is currently undergoing mid-life refit.
9. INS Sindhuvir (S58): This diesel-electric submarine belongs to the Sindhughosh-class. It was commissioned on August 26, 1988. INS

Sindhuvir comes with 3076 tons submerged displacement vessel. Its maximum and operational depths are 300 meters and 240 meters respectively.

10. INS Sindhuratna (S59): This Sindhughosh-class diesel-electric submarine was commissioned on December 22, 1988. It is equipped with armaments such as 9M36 Strela-3 (SA-N-8) SAM launcher Klub-S (3M-54E) ASCM, TEST 71/76 anti-submarine, active-passive homing torpedo, Type 53-65 passive wake homing torpedo, and 24 DM-1 mines in lieu of torpedo tube.

11. INS Sindhukesari (S60): INS Sindhukesari is still active in service and was commissioned on February 16, 1989. S60 is currently undergoing mid-life refit.

12. INS Sindhukirti (S61): S61 is Indian Navy's 7th Sindhughosh-class submarine. It was commissioned on January 4, 1990. It went on a medium refit on June 2006 (at Visakhapatnam's Hindustan Shipyard) and was recommissioned on May 23, 2015. INS Sindhukirti comes with a 3,100 tons (3,400 short tons) submerged displacement vessel with 45-days endurance.

13. INS Sindhuvijay (S62): It is Indian Navy's Sindhughosh-class diesel-electric submarine that was commissioned on March 8, 1991. This submarine comes with a 3076 tons submerged displacement vessel having operational and maximum depths of 240 meter and 300 meter respectively.

14. INS Sindhurashtra (S65): This Indian Navy submarine belongs to the Sindhughosh-class diesel-electric category. S65 was commissioned on July 19, 2000 and it is still active in service. Indian Navy Submarines Undergoing Sea Trials

Currently, there are three Indian Navy submarines that are undergoing sea trials. While one of them is a nuclear submarine, the other two are diesel-electric submarines.

INS Arighat: It is a Arihant class Ballistic missile submarine that was launched on November 19, 2017. It is estimated to be commissioned in 2019. INS Arighat is built at Visakhapatnam's Shipbuilding Centre (SBC). Reports say this submarine will have a more powerful reactor and twice as many missile hatches as INS Arihant. The two diesel-electric submarines that are currently undergoing sea trials are INS Khanderi and INS Karanj. Both are Kalvari class attack submarines that are designed by French naval defence and energy group DCNS at Mumbai's Mazagon Dock Limited.

Indian Navy Submarines under Construction

Currently, 5 Indian Navy submarines are under construction. While two are nuclear-powered, three are diesel-electric submarines. The two under-construction nuclear submarines are S 75 and S 76. Both of them are Arihant class Ballistic missile submarines. The three other under-construction diesel-electric submarines are INS Vela (S 53), INS Vagir (S 54), and INS Vagsheer (S 55). All of them are Kalvari class attack submarines.

Indian Navy Decommissioned Submarines Till now ten Indian Navy submarines have been decommissioned. While 1 is Nuclear-powered Attack submarine, the others are Diesel-electric submarines. The nuclear-powered attack submarine decommissioned by the Indian Navy is INS Chakra (K-43). It is a Charlie class submarine that was decommissioned in January 1991.

The 9 diesel-electric submarines that were decommissioned by the Indian Navy are INS Kalvari (S23), INS Khanderi (S22), INS Karanj (S21), INS Kursura (S20), INS Vela (S40), INS Vagir (S41), INS Vagli (S42), INS Vagsheer (S43), and INS Sindhurakshak (S63).

Courtesy: maps of india.com

KNOW YOUR OCEANS - THE MARINE SEDIMENTS

Meenakshi Sundaram B – Sr. Faculty

MARINE SEDIMENTS

Marine Sediments are any deposit of insoluble material, primarily rock and soil particles, transported from land areas to the ocean by wind, ice, and rivers, as well as the remains of marine organisms, products of submarine volcanic activity, and chemical precipitates from seawater that accumulate on the seafloor. Marine sediments vary widely in composition and physical characteristics

The types and patterns of distribution of the sediments are controlled by three factors and their interaction such as the rate of continental runoff and sediment supply, the intensity and direction of marine transporting agents, such as waves, tidal currents, and wind; and the rate and direction of sea level changes. There are four basic types of marine sediments, all of which are grouped and ordered by the origin of their particles, the grain sizes, and where they are deposited.

Lithogenous sediments

These are formed by the weathering

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process and are made up of small particles of weathered rocks and oceanic volcanoes. There are two types of lithogenous sediments; terrigenous and "red clay" and they are different because of the process behind their existences. Terrigenous sediments are produced as a result of the weathering process of rocks above the water and are carried by the wind and other natural means to the oceans and are deposited at the bottom. Red clay lithogenous sediment, is reddish-brown (hence the name) and is a combination of terrigenous material and volcanic ash. It is transported to the oceans by currents and wind and it settles in deep places along the ocean floor.

Biogenous sediments

These are formed from the insoluble remains of past life forms and parts such as bones and teeth. In many areas where the water is shallow, a majority of these sediments are the remains of shells or fragments from shelled sea creatures as well as corals. In the deep sea where there is no such a high concentration of these life forms, biogenous sediment is made from the microscopic shells that are deposited by tiny plants, animals, and plankton that live on the water's surface and eventually make their way down to the ocean floor.

The organic group is chiefly represented by a kind of liquid mud, which is known as ooze. The oozes contain shells of several kinds of organisms. In some oozes, the shell is made of calcium carbonate, while in others it is made of silica. Therefore, there are two main kinds of oozes: Calcareous ooze and the Siliceous ooze. Radiolarian ooze is dirty grey powder, siliceous remains of radiolarian shells. It is the characteristic of deep water and abundant in the tropical regions of the Pacific Ocean. Diatom ooze is the plant shells of very microscopic size and made of silica. It is yellow or cream colored. It occurs in high latitudes.

Hydrogenous sediments

These are formed by precipitation of minerals from the ocean's water or can be formed as a new mineral as a result of chemical reactions between the water of the ocean and sediments that already exist on the ocean floor. Sea water contains dissolved ions. When sea water undergoes extensive evaporation, in bays or even large seas that are restricted from communicating with "Open Ocean", the concentration of ions can increase to the point where they are saturated with respect to certain solids called Salts. Most important of which is NaCl (Halite) and $CaSO_4\ 2H_2O$. (Gypsum). Salts precipitate from "Super saturated sea water in restricted basins and are deposited on the sea floor.

Manganese Nodules are oxides of metals like Manganese (Mn) and Iron (Fe). They also contains minor amounts of Copper (Cu), Cobalt (Co), and Nickel (Ni). Manganese nodules occur as nodules and crusts, primarily in deepest oceans and near mid oceanic ridges. The metals are derived as dissolved species or as sediments from land. They are mostly originated from Volcanic Activity, hydrothermal alteration of ocean crust at mid oceanic ridges. (Black Smokers).

Cosmogenous sediments

These are extraterrestrial in nature and are generally like meteorites. These sediments are the remains of impacts of large bodies of space material (such as comets and asteroids). They are comprised of silicates and mixtures of different metals. There is a constant "rain of these materials that falls to earth daily.

Major Ports of India

Anjali Tibrewal –B.Tech-II

India being surrounded mostly by water in its southern regions has one of the largest peninsulas in the world. It spans about 7516.6 kilometres of coastline. As per the reports of Ministry of Shipping, 70% of India's trading by value and 95% by volume is carried out through maritime transport. We have 12 major ports in India, besides 200 other ports.

Below are 12 major ports, dotting the lower parts of the country.

1.**Kandla Port:** Also known as Deendayal Port and Kandla Port, it is located in Kutch District, Gujarat. It was Constructed in the 1950s as the chief port for western India. In the FY 2016-17, it handled cargo of 105.44 million tonnes which makes it the busiest major port of India. This port mainly handles crude oil imports. However, it is also looking forward to handling non-POL cargo.

2.**Mumbai Port Trust:** This port lies on the country's west coast in Maharashtra. It is administered by the government-owned Mumbai Port Trust (MbPT). Mostly used for

bulk goods, it handled 63.05 million tonnes of cargo in the FY 2016-17. It primarily handles petroleum products and Crude, in addition to, liquid chemicals.

3.**Jawaharlal Nehru Port (JNPT)**: Located in Navi Mumbai, Maharashtra, this is country's largest container port. In the FY 2016-17, it handled 62.15 million tonnes of cargo. Most of its cargo traffic comes from states like Karnataka, Gujarat, Madhya Pradesh, and Maharashtra. It carries out the export of carpets, boneless meat, sporting goods, pharmaceuticals, chemicals, textile machinery, and textiles. Major imports include vegetable oils, electrical machinery, plastics, machinery, chemicals, a few non-ferrous metals, like aluminium and more.

4. **Mormugao Port Trust:** Lying on the western coast of India, this port is located in Goa. It handled 33.18 million tonnes of cargo in the FY 2016-17. Besides being a leading port for exporting iron ore, it is also a major exporter of pharmaceutical products, pig iron, iron casting, liquor, and frozen fish. Its main imports are steel turning, potassium carbonate, shredded scrap, and heavy melting scrap.

5.**New Mangalore Port:** This port is an all-weather, deep-water port located in Mangaluru, Karnataka. Opened in 1974, this one is operated by New Mangaluru Port Trust (NMPT). It handled 39.95 million tonnes of cargo in the FY 2016-17. The major exports of this port are cashew, coffee, granite stones, manganese, iron ore fines, iron ore concentrates, and pellets. Major imports include finished fertilisers, timber logs, wood pulp, LPG, crude, petroleum products and liquid chemicals like phosphoric acid, liquid ammonia, etc.

6. **Cochin Port:** Also known as Kochi Port, it has completed 91 years being in operation. It is located in Kochi city on the sea-route of Arabian Sea – Laccadive Sea – Indian Ocean. In the FY 2016-17, it handled cargo of 25.01 million tonnes. This is also one of the largest ports in India. It is operated by government-established Cochin Port Trust (CPT).

7.**Tuticorin Port Trust:** This weather port is also known as V.O.Chidambaranar Port. It is located in Thoothukudi, Tamil Nadu. It handled 38.46 million tonnes of cargo in FY 2016-17. It mainly deals with commodities like iron ore, timber logs, fertiliser, copper concentrate, and industrial coal. The major exports are limonite ore, granite, sugar, liquid cargoes, building materials, and general cargo. The major imports are edible oils, petroleum coke, petroleum products, rock phosphate, raw fertiliser materials, fertilisers, cement, and coal.

8.**Ennore Port:** Also known as Kamarajar Port, this is located on the Coromandel Coast, Chennai. Opened in 2001, it is the first Indian port which comes under the public sector. It handled 30.02 million tonnes of cargo in the FY 2016-17. It handles rock mineral products, chemical, POL, LPG, project cargo, automobiles, and thermal coal.

9.**Chennai Port:** Opened in 1881, this port is also one of the oldest ones in India. For the FY 2016-17, it handled 50.21 million tonnes of cargo. It mainly handles commodities like petroleum products, fertilisers, coal, granite, and iron ore. Its major exports are cotton textiles, leather, and iron ore. The major imports include iron & steel, machinery, raw cotton, and wheat.

10.**Visakhapatnam:** This is the only major port located in Andhra Pradesh. In the FY 2016-17, it carried out cargo handling of 61.02 million tonnes. Opened in December 1933, it is owned by Ministry of Shipping, Government of India. It mainly handles commodities such as crude oil, coal, general cargo, steel products, manganese ore, and iron ore.

11.**Paradip Port:** Paradip port is a deep-water and natural port located in Jagatsinghpur district, Odisha. In the FY 2017-18, it carried out the dealing of cargo weighing 102.01 million tonnes. This port is administered by the government-owned Paradip Port Trust (PPT).

12.**Port of Kolkata:** Established in 1870, this port is the oldest in India. British East India Company constructed it to have it as a premier port in British India. In the FY 2016-17, it handled 50.95 million tonnes of cargo. It deals with petroleum products, fertilisers, coal, granite, and iron ore.

PM Modi Scheme of River-Linking Projects in India

Water is scarce in nature, it must be used judiciously. Nothing could go right without water on this Earth. It is a vital resource responsible for the existence of all the living beings. We call ourselves humans, and happily believe in the fact that we are 'rational creatures' who are continuously busy, depleting the very existence of water, which if once drained will take millions of years to renew.

Taking these parameters into consideration, PM Modi has launched certain programmes and strategies to fulfill the requirement of water all across India. The plight of India lies in the fact that farmers of our country lack basic modern amenities due to the shortage of financial resources. So, in order to overcome the problem of irrigation, Interlinking of Rivers (ILR) projects are planned to be undertaken by the Government of

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India to control droughts in the water shortage areas and floods in the water excess regions. The logic behind it is to reduce the farmers' dependency on uncertain monsoon rains. This ambitious river-linking project is estimated to involve a cost up to Rs 5.5 lakh crores.

Highlights of PM Modi's River-Linking Project:

1. This River-Linking project is a large-scale civil engineering project.
2. The project aims to link rivers via a network of canals and reservoirs all across India.
3. Living in a democratic setup, we must not only talk about equality on the basis of caste, colour, rights, creed and sex, but peace in our nation will reside when all its citizens have an equal access to its diverse resources.
4. The National Perspective Plan (NPP) is responsible for focusing on this project of 150 million acre feet (MAF), along with 185 billion cubic metres of shortage of water. This will involve building of inter-links.
5. The system that will be created for storage purposes will lead to the addition of approximately 170 million acre feet capacity of water. This stored water will then be used for beneficial purposes in various states.
6. Construction of large reservoirs will lead to the generation of 34 gigawatt of hydroelectric power.
7. Around 30 canals are proposed to be built, between 50 to 100 metres in width, and stretching up to 15,000 km.

Who will manage this project? And how will it progress strategically?

This inter-linking project is completely managed and controlled by India's National Water Development Agency (NWDA), which operates under the Union Ministry of Water Resources.

The project is bifurcated into 3 parts:

1. A northern Himalayan Rivers inter-link component.
2. A southern Peninsular component.
3. An intrastate rivers linking component.

So far, NWDA has gone through the project details and reports have been prepared on 14 inter-link projects of the Himalayan component, whereas 16 inter-link projects for the southern Peninsular component and 37 of intrastate river linking project reports have been completed.

Some major River-Linking projects include:

1. Damanganga

The name given to this River-Linking project is the Pinjal Link Project. This project has been proposed by the Government of India's National Water Development Authority (NWDA). The major idea behind the linkage of this project is to connect the Daman Ganga river to the Pinjal reservoir, located on the Pinjal river to the south. Through this project, the water will be diverted to Mumbai. Tripartite agreement was signed in 2010, between the government of Gujarat, Maharashtra and the Central government. Moreover, as of January 2015, Pinjal Link project was approved for implementation. Government has planned to complete this entire project within a period of 9 years. The cost involving this project, as per 2015-16, is around Rs 3,008 crores.

2. Par-Tapi

The name given to this project is Narmada Link Project. The Detailed Project Report (DPR) of Par-Tapi-Narmada link project was completed till August 2015 by National Water Development Agency (NWDA). It was submitted to the Government of Gujarat and Maharashtra. The basic idea behind this multipurpose project is to serve the irrigation needs. The round cost of this project is estimated to be Rs 10,211 crores (as per 2015-16).

3. Manas-Sankosh-Teesta-Ganga Link

This link project is initiated under the Himalayan component and is a part of National Perspective Plan (NPP). The basic idea behind this link is to divert the surplus waters of Sankosh and Manas rivers in order to control the flow of Ganga at Farakka. This will further lead to the transfer of water in the water-shortage areas such as Krishna, Cauvery and Pennar basins respectively. The logic behind this is to provide the best of irrigation facilities.

4. Mahanadi-Godavari Link Project

This is a link project based on a critical link of the nine link system. This includes Mahanadi-Godavari-Krishna-Pennar-Cauvery-Vaigai-Gundar under NPP. In August 1980, this project was prepared by the Ministry of Irrigation. The thought behind this link project was to transfer surplus water to the water deficit basins. The National Water Development Agency (NWDA) has identified a total of 30 links. This includes 16 links under the Peninsular component and 14 under the Himalayan component. All the Pre-Feasibility Reports (PFRs) are already prepared. Moreover, they have been circulated among the concerned state authorities.

5. Ken – Betwa Link Project

The Government of India has declared this link project as a national project. It will involve construction of a dam on the Ken river famously known as the Karnavati, situated in north-central India. This is a 22 km (14-mile) canal which is connecting the river to the shallow Betwa. The detailed proceedings and documents

of the public hearing under Phase 1 of Ken were submitted to Climate Change Authorities of Madhya Pradesh Pollution Control and Ministry of Environment and Forests in April 2015. Presently, clearances related to this link project are in advance stages. Government is all set to implement this national project. Moreover, they will be considering it as a part of the ILR programme.

6. Intra-State Links

The National Water Development Agency (NWDA), has already received 46 proposals from the intra-state links of 9 states. These include Gujarat, Maharashtra, Odisha, Jharkhand, Bihar, Tamil Nadu, Chhattisgarh, Karnataka and Bihar. As on March 2015, from the total of 46 proposals, Pre-Feasibility Reports (PFRs) of 35 intra-state links is already completed by NWDA.

List of Benefits involved:

1. This will lead to addition of 35 million hectares for irrigation.
2. It will increase the irrigation potential from 140 million hectares to around 175 million hectares.
3. These projects will lead to the generation of 34,000 megawatt power.
4. Other than the ones stated above, major benefits will also include navigation, water supply, salinity, flood control and pollution control.

Our nation is progressing, soon we will become a developed nation, which is a long awaited dream not only of our citizens but our PM's too. If projects like these are completed and implemented on time, then that day is not far when each one of us will enjoy the fruits of our nation's progress and development.

METIA Annual General Body Meeting at Chennai

METIA Annual General Body Meeting was held at Chennai on 31st August, 2019. Dr.R.Lakshmipathy, President,RLINS is sitting (at the centre)along with other representatives of various institutions from all over India.

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