

EAST COAST CANAL SYSTEM, AND ITS RELEVANCE IN EASTERN WATERWAYS GRID-ENHANCING CONNECTIVITY TO SOUTH ASIA



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AGENDA OF THE PRESENTATION

- ▶ **Section-I** : What is ECC?, it's importance in colonial Odisha with a brief description.
- ▶ **Section-II** : Importance of ECC in 21st century with perspective to a vibrant transportation network.
- ▶ **Section-III** : Relevance of ECC in Eastern Waterways Grid with regional connectivity to South Asia.
- ▶ **Section-IV** : Development strategy for revival of ECC with NW-5 for a sustainable navigation system.

SECTION-I

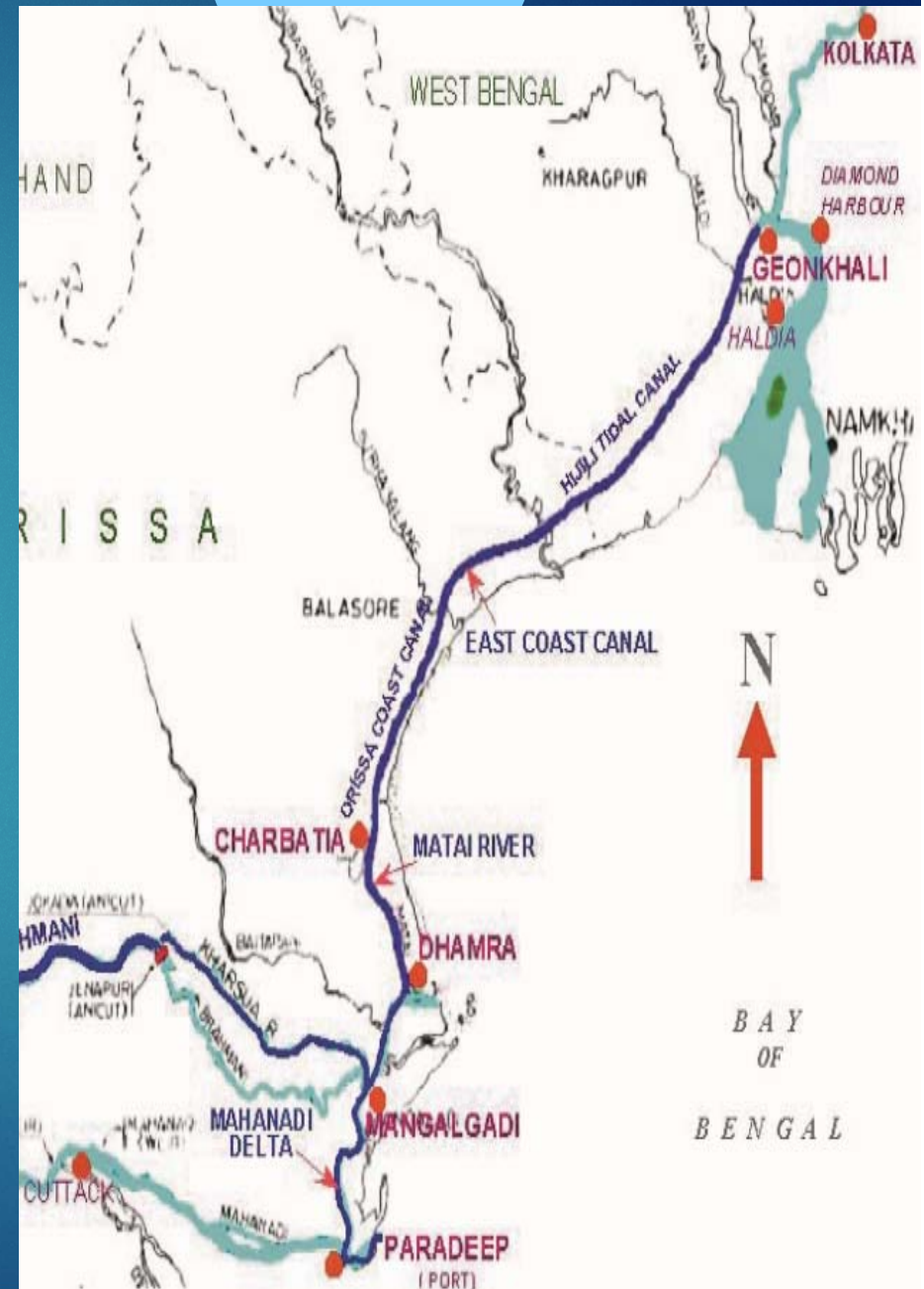
- What is ECC (East Coast Canal System)?
- Its importance in colonial Odisha and brief description.

IMPORTANCE OF ECC FOR COLONIAL ODISHA DURING 19th CENTURY

- ❖ A manmade canal of 217 kms is named as Hijli Tidal canal for 93 kms in West Bengal and Odisha coast canal for 124 kms in Odisha.
- ❖ Provided connectivity of Kolkata port with Cuttack and other trade centre through Inland Water Transport for trade & commerce.
- ❖ IWT was the first surface mode for the transport connectivity from 1887-88 reason being :
 - **NO ROAD** (Jagannath sadak existed from 1700 non- metaled and without bridges over the rivers).
 - **NO RAIL** (B. N. Rly commenced operation only during 1898-99).
 - **UNDER DEVELOPED COASTAL SHIPPING** with poor port & transport infrastructure.

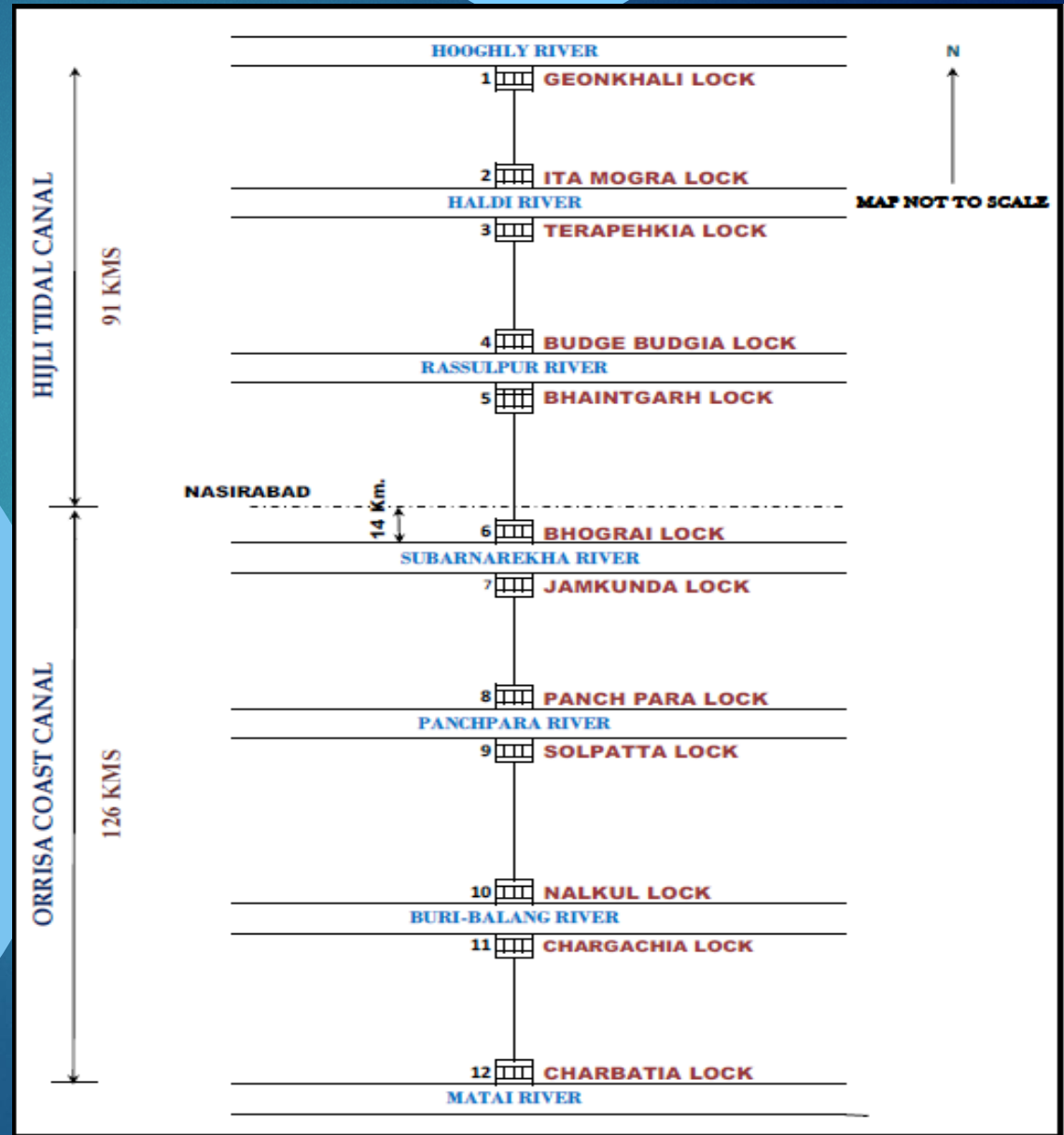
BRIEF DESCRIPTION ON ECC SYSTEM

- ECC originates from Goenkhali on river Hooghly 70 kms downstream of Kolkata Port and joins Matai river at Charbatia, Odisha.
- Connected to Cuttack & trade centre of Odisha through delta rivers, irrigation canals and creeks.
- Distance from Kolkata to Cuttack via Bhadrak 507 km & Paradeep 532 km.
- Important Trade centres are Kendrapara, Aul, Marshaghai, Patamundai, Bhadrak, Jajpur, Balasore etc.
- Irrigation canal system are mainly Taltanda, Kendrapada, Patamundai, Machhgaon, high level and Gobari.
- Delta rivers of Mahanadi, Brahmani & Baitarani system are Matai, Dhamra, Hansua, Kharnasi etc.



CONFIGURATION OF ECC AND PASSING THROUGH THE RIVERS

- ▶ ECC traverses parallel to sea coast & crosses six rivers as per the figure given.
- ▶ Each river except Hooghly and Matai river has two navigation lock on each bank with the following dimensions:
 - 60-65m (L) X 6 -7.5m (B)
 - On irrigation canal 30.48m (L) X 5.18m (B)
- ▶ Bed width of channel :
 - Within canal 12m to 21.33m in different range.
 - River - 32m
- ▶ Depth of channel
 - Average 8 ft. (2.43m) to 10 ft. (3.04m)



BRIEF DESCRIPTION ON ECC SYSTEM (Contd.)

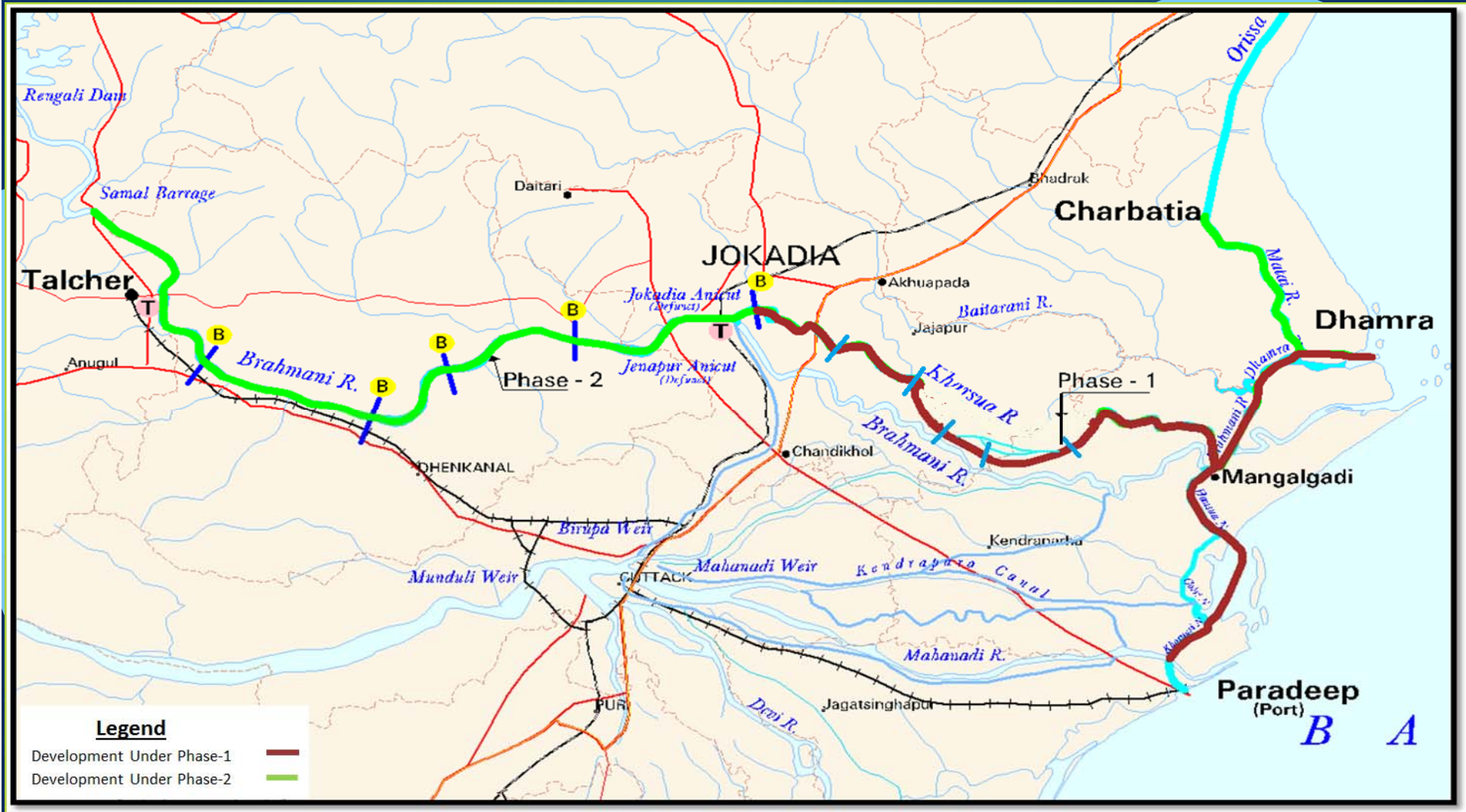
- Steamer boats of higher capacity used to ply for both freight and passenger movement between Kolkata and Chandbali / False point harbor.
- Country boat or smaller steamers connects Cuttack & other locations.
- Fleet size of over 4000 on ECC, operated by mostly private operators including two British giants ISGNR (India Steam General Navigation & Railway) & Mc Noeid Co.
- Fleet of equal number operated on irrigation canal system.
- Yearly passenger movement around 50,000.
- Yearly cargo movement during 1886 to 1905 varied from 14 to 6 lakh maunds (5.225 to 2.240 MMT) being **1 maund : 37.324 kg.**
- Coastal & Riverine ports : Balasore, Chandipur, Chandbali, Dhamra, Mangaljodi & False Point harbor.

JOURNEY OF DEVELOPING ECC SYSTEM

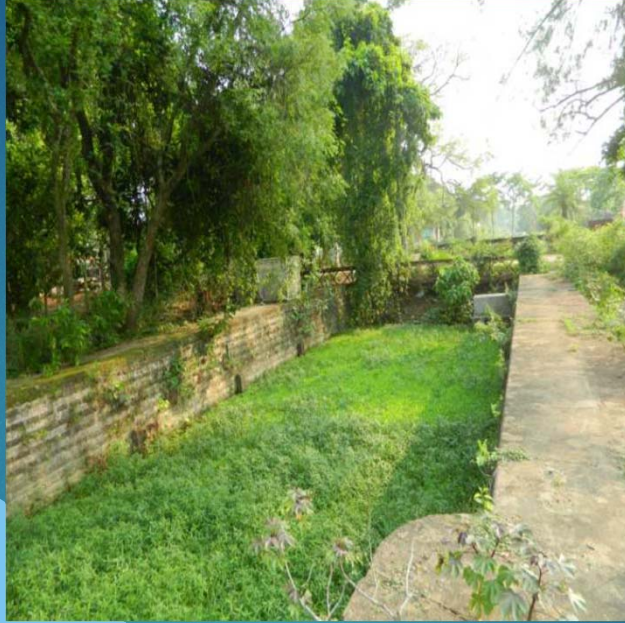
- Sir (Col) Cotton Arthur recommended in 1858 for developing canal system on Mahanadi & Birupa for irrigation & navigation and subsequent linking Cuttack with Kolkata Port Trust (KOPT) through a separate canal system.
- Land mark decision of Sir George Campbell as chairman of famine (**No Onko Durbhiko**) commission during 1866 with huge loss of life in absence of transport system in 1868 was speedy development of transport infrastructure with connectivity to Kolkata & Madras through development of ECC, GT Road and Bengal-Nagpur RLY.
- Development of Hijli Tidal Canal commenced in 1869 & completed in 1872-73.
- Odisha Coast Canal (OCC) commenced in 1881 and completed in 1886-87 making entire ECC operational.
- On development of road and rail mode, importance of ECC declined and operation to Kolkata suspended since 1928.
- Navigation continued in part of ECC till 1970s and later completely abandoned.
- On 2008 Brahmani & Mahanadi delta river system along with ECC declared as NW-5 for reviving navigation.
- River stretch for 323 km connecting Talcher and Kalinganagar with Paradeep Port and Dhamra Port Company Ltd. considered for development by signing MoU among Odisha Government, ports & IWAI.

JOURNEY OF DEVELOPING ECC SYSTEM (Contd.)

- Currently development proposal of river stretch abandoned because of high investment for navigation through barrage & lock system.
- No action for development of ECC yet.



PRESENT STATUS OF ECC



REASONS BEHIND DOWNFALL OF ECC

Besides development of rail & road mode of transport, other main reasons are:

- **Uneconomical IWT operation.**
 - **More lockage time for crossing each navigation lock system.**
 - **Absence of fairway for round the year navigation because of;**
 - ❖ **Dependent on tide.**
 - ❖ **Inadequate depth during dry season.**
 - ❖ **Non-alignment of the lock system on each river.**
 - ❖ **Frequent shifting of channel on river, siltation and delay in distillation.**
 - ❖ **Multiple handling of cargo in absence of direct boat operation from Kolkata to Cuttack & vice versa.**
 - ❖ **More operational period.**
- **Absence of hinterlands with dedicated cargo.**
- **Absence of standard and economical size boats.**
- **Absence of legal and regulatory framework.**

SECTION-II

- Importance of ECC in 21st century with perspective to a vibrant transport network

IMPORTANCE OF ECC IN 21ST CENTURY

- ▶ Odisha under Port development Policy of 2004 have identified 14 potential sites on its coast of 480 km.
- ▶ Paradeep, Dhamra and Gopalpur Port are already developed.
- ▶ On signing of agreement with promoters, development of five ports are under progress.
- ▶ MoU also signed for two additional port sites.
- ▶ Studies for four more ports are under progress. (Details)



DEVELOPMENT OF PORTS IN ODISHA COAST

<u>NAME OF THE PORT</u>	<u>PROMOTER</u>	<u>CAPACITY IN MMTPA</u>	<u>TYPE OF PORT</u>	<u>REMARK</u>
Paradeep Port Trust	MOSP&W, GOI	110-Existing 325-Phase-II	Major Port	Operation since 1966
Dhamra Port Company Ltd	M/s Adani Port & SEZ Co Pvt Ltd	25 -Phase-I 100-Phase-II	Minor Port on BOOST basis	Since 2011
Gopalpur Port	M/s Shapoorji Pallonji Port &OSL	14-phase-I 45 –phase-II	-DO-	Since 2014
Subarnarakha Port Private Ltd, at Kirtania	M/s Tata Steel Ltd & M/s Creative	10-phase-I 40-Phase-II	-DO-	
Astaranga Port Pvt Ltd	M/s Navyug Infrastructure Pvt Ltd	25-Phase-I 70-phase-II	-DO-	

DEVELOPMENT OF PORTS IN ODISHA COAST

<u>NAME OF THE PORT</u>	<u>PROMOTER</u>	<u>CAPACITY IN MMTA</u>	<u>TYPE OF PORT</u>	<u>REMARK</u>
Chudamani	M/s Essel Mining & Industries Pvt Ltd, under Aditya Birla Group		-DO-	
Bichitrapur (Talsara)	M/s JSW Ltd	Under three phases from 10, 20 & 45 MMT	-DO-	
Mahanadi Riverine Port Ltd	RFP issued	18-Phase-I 45-Phase-II	-DO-	Additional port site
Jatadhari River Port	M/s JSW Steel Plant Pvt Ltd	13.2 MMT	-DO-	Additional site
Bahalpur, Inchudi and Chandipur	Under studies & many parties interested		Minor ports under BOOST basis	Defence clearance obtained shortly
Govt. of Bihar	Shown interest for captive port at the identified site			

IMPORTANCE OF ECC IN 21ST CENTURY (Contd.)

- Vast Hinterlands including Jharkhand, Bihar, MP and Chhattisgarh.
- Huge Traffic projection:
 - Mining Explorations on coal, iron ores, bauxites, chromates, gypsum etc.
 - Mineral based industries of over 12 steel plants, aluminum, thermal power stations etc.
 - Oil, chemical & fertilizers at Paradeep & other locations,
 - LNG & LPG hubs at Dhamra.
- Strengthen & ensure a vibrant transport network of Odisha with road & rail mode.
- Provide access to Eastern Waterways Grid enhancing connectivity to NE & Eastern states, Bangladesh-Bhutan-India & Nepal (BBIN) economic corridor including Myanmar.
- Assist in realising vision -2036 of Odisha to be an important maritime economy.

SECTION-III

- **Relevance of ECC in Eastern Waterways Grid with regional connectivity to South Asia**

EASTERN WATERWAYS GRID - ENHANCING THE REGIONAL CONNECTIVITY IN SOUTH ASIA

- ❑ World Bank recently proposed a study & development of Eastern Waterways Connectivity concept: A system of inter-connected waterways and coastal routes in India, Bangladesh and Myanmar to enhance regional connectivity.
- Eastern Integrated NW Transportation Grid for 4885 km conceptualized In 2013 for multi modal transportation consisting NW-1, NW-2, NW-5, NW-16 & IBP Routes where NW5 with ECC is an important constituent.
- Kaladan Multi Modal Transport & Transit (KMMT&T) project for an alternative access to north eastern region through Myanmar.
- Transit facilities to Nepal & Bhutan through waterways and road / rail (multimodal modes) on signing of recent agreements.

Eastern Integrated NWs Transportation Grid

NW-1 : 1620 Km
 NW-2 : 891 Km
 NW-5 : 588 km
 NW-16 : 121 km
 IBP Routes : 1785 Km
 Total length : 5005 km



KMMT&T (Kaladan Multi Modal Transport & Transit Project)

Coastal shipping : 539 Km
 Inland navigation : 158 km
 Road mode : 210 km
 Total length : 907 km



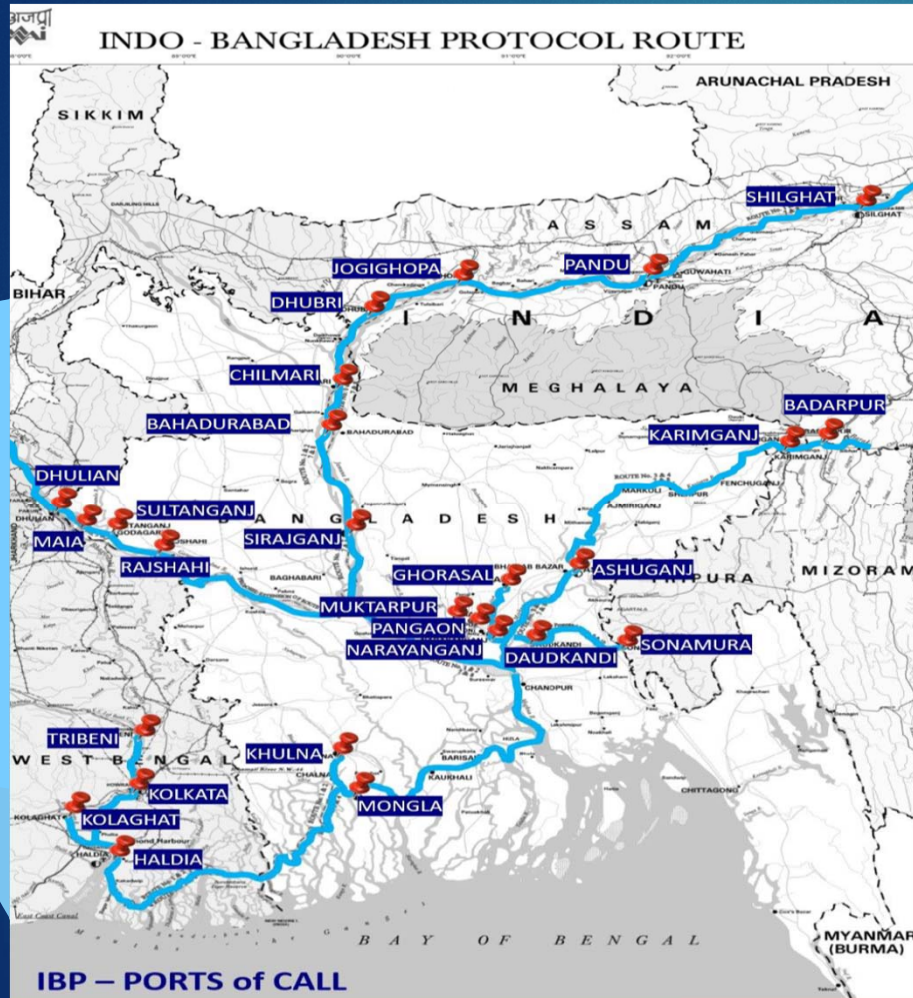
Joins East-West Corridor (NH-850) at Aizawl for an alternative access to NER.

EASTERN WATERWAYS GRID - ENHANCING THE REGIONAL CONNECTIVITY IN SOUTH ASIA

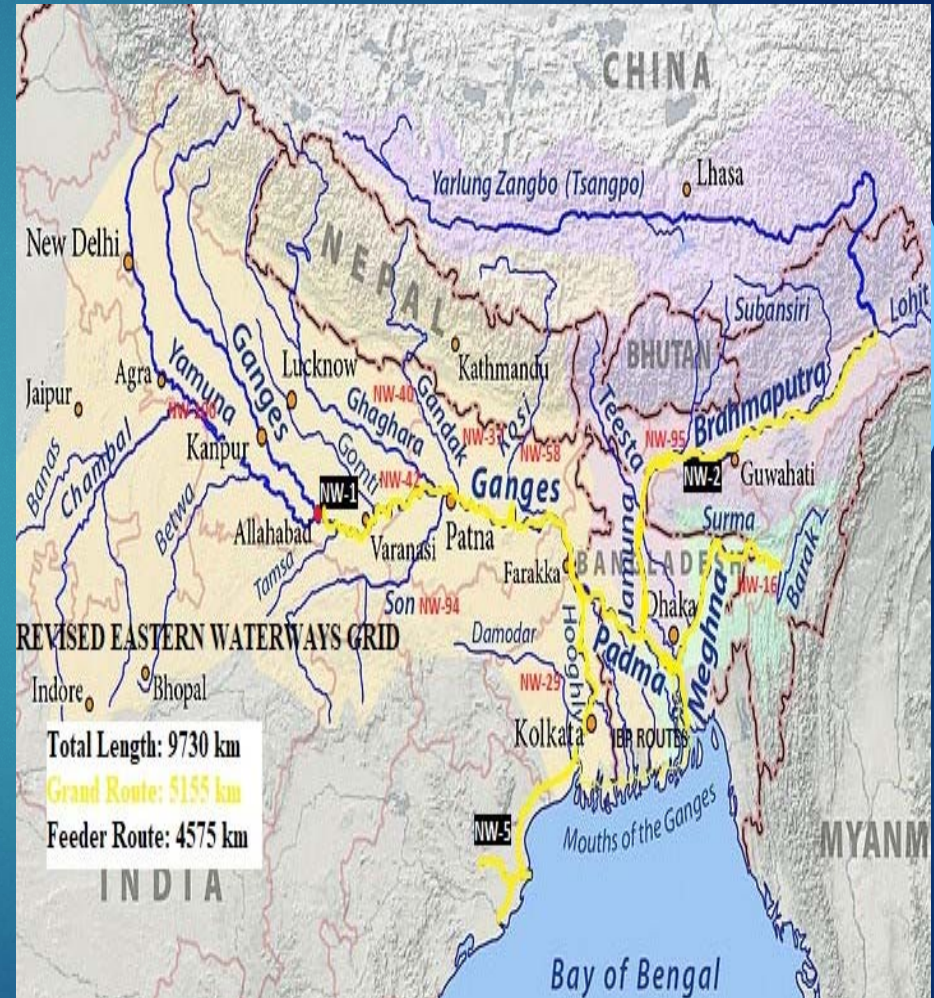


Courtesy: IWAI

EASTERN WATERWAYS GRID - ENHANCING THE REGIONAL CONNECTIVITY IN SOUTH ASIA



IBP Protocol Routes



Future NW Grid

Courtesy: IWA

AREAS OF OPPURTUNITIES



Enhancing regional trade: 20% of unrealized potential of US \$ 49 billion.



Significant Reduction in Logistics cost (~ 14% for SAR) .



Economic rejuvenation of North East India, Eastern India, Nepal, Bhutan and Bangladesh –about 600 million beneficiary.



Promoting 'Greener mode of Transport' -COP 21 and COP 26.



Scale factor benefit leading to leveraging private investment & boosting user confidence.

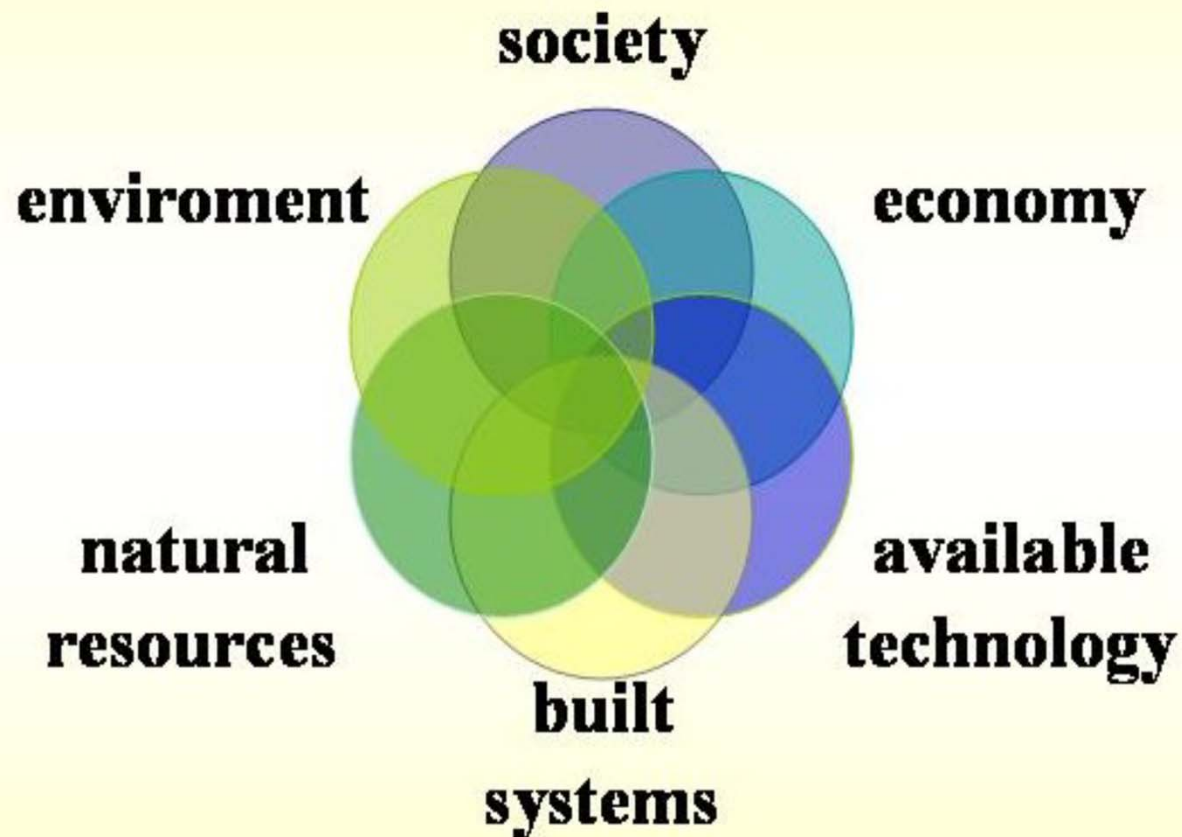
Courtesy: World Bank

SECTION-IV

- **Development strategy for revival of ECC with NW-5 for a sustainable navigation system**

SUSTAINABLE DEVELOPMENT OF NW-5 & ECC INTEGRATED WITH EASTERN WATERWAYS GRID

- ❖ Development of ECC only with delta river system (351km) or Entire NW-5
- ❖ Due to unique characteristic of the river stretch & ECC, strategy for development of a sustainable navigation system may satisfy following indicators:-



INDICATORS FOR A SUSTAINABLE DEVELOPMENT

❑ **Social**

- Minimum Social Impact with suitable mitigation measures.
- Maximum contribution of economy & safety to the local society.

❑ **Environment**

- Minimum Environment Impact with suitable mitigation measures.
- Pollution, noise etc.
- Ecology, flora & fauna.
- Forest & wild life.
- CRZ (Coastal Regulation Zone).

❑ **Natural Resources**

- To be optimized with less land acquisition with appropriate built system and available technology.

❑ **Built System:** Traditional method in development of fairway

❑ **Available Technology**

- Advance Inland waterways development technology for navigation on canal with modern navigation lock system, aqueduct structure etc integrated with other modes.

❑ **Economy**

- Most important indicator with favourable IRR, FIRR and influence on freight rate being competitive with rail & road mode.

MODERN WATERWAYS WITH AQUEDUCTS



Fig: Magdeburg Water bridge (Aqueduct) in Germany

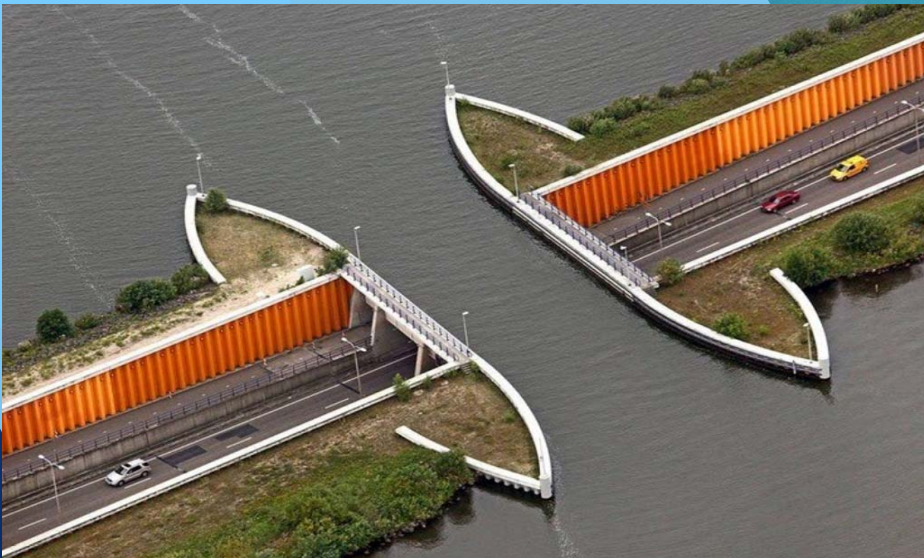


Fig: The road passing under Veluwemeer aqueduct in the Netherland.

NAVIGATION LOCK SYSTEM



WAY FORWARD

- Development of ECC with delta river system or entire NW-5
- ❑ Awareness on developing Coastal Waterways rather than Coastal Highways.
- ❑ Convincing MOS/IWAI for integrating NW-5 as well in Eastern Waterways Grid.
- ❑ TEF, DFS & DPR studies and modalities on Execution (PPP, JV or SPV).
- ❑ Fund allocation
 - External funding ADB, WB, JAICA
 - GBS
 - Public Funding
- ❑ Execution on detailed engineering etc. & management.
- Eastern waterways Grid & regional connectivity
- ❑ Establishing regional Framework, Institution, and shared management of the waterways.
- ❑ Trade Protocol to be enhanced.
- ❑ Harmonization on
 - Uniform Navigation standard (draft, air draft, berth size & terminal facilities)
 - Uniform vessels standard
 - Uniform Operational condition (RIS, A to N, Crew competency)
- ❑ Coastal-IWW integration- RSV & Inland vessels within Inshore Maritime Traffic Corridor/Zone of 5KN.

THE END.

THANK YOU FOR LISTENING

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QUESTIONS !!