

Sethusamudram Canal and the Hinterland Logistics

Prof Philbert Suresh

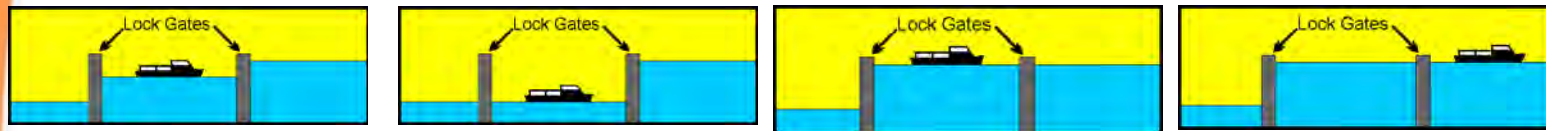
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Intelligent Friends in the University Network

Gates and Locks in Canals



Rideau Canal, Eastern Ontario



**A boater's paradise
A visitor's delight**

Sethusamudaram Canal and The Hinterland Logistics

- **‘You cannot change your destination overnight, but you can change your direction overnight’ -**
- Port Cities, Logistics Pathways and Networks are very complex process and more so in Hinterland Logistics .
- So let us look at the horizon, see the end of the finish line and allow your project to move on to its next goal.

Like the fabled city of Atlantis, the city is at risk of being submerged. Autumn and winter high tides flood city streets and raise water levels on the canals, making it difficult or impossible for boats to squeeze under the bridges. The high tides, called aqua alta, are also eroding the foundations of buildings, which are tightly packed along the edge of the canals and the city's outer shores



Venice – Canals: Heritage Site of UNESCO

Port Cities Détermines Global Trade Flow

- Port cities have to assimilate and accommodate advances in **logistics** to sustain their competitive status as **key interfaces** in the building of smooth **global trade flows**'.
- The **logistics environment** creastes a high degree of **uncertainty** and leavces port managers and city officials with the question how to **respond effectively** to **market dynamics**

MORE On Port Cities

- What can be done to insert port cities in global supply chains is the focus of the current research endeavour of students at IMU (Indian Maritime University)
- Interesting prospect will be high lighted in today's session on **Sethusamudaram Canal and The Hinterland Logistics**



What are Port Cities??

- The modern container port is a collection of separate terminals. Each with different clients, distinctive handling methods and managed by different companies with divergent policy objectives

Port City - Defined

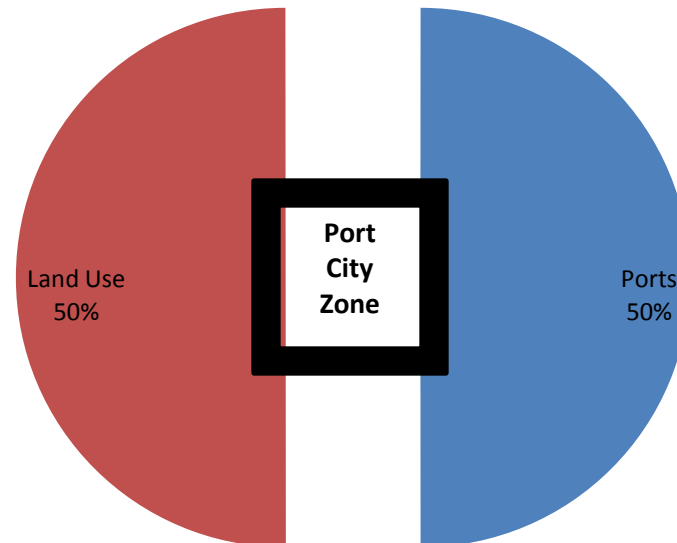


Jean Paul Rodrigue

Transport Geography 2004

Evolution of Porty City

Port Migration
Industrial migration
Land use competition
Water Use competition

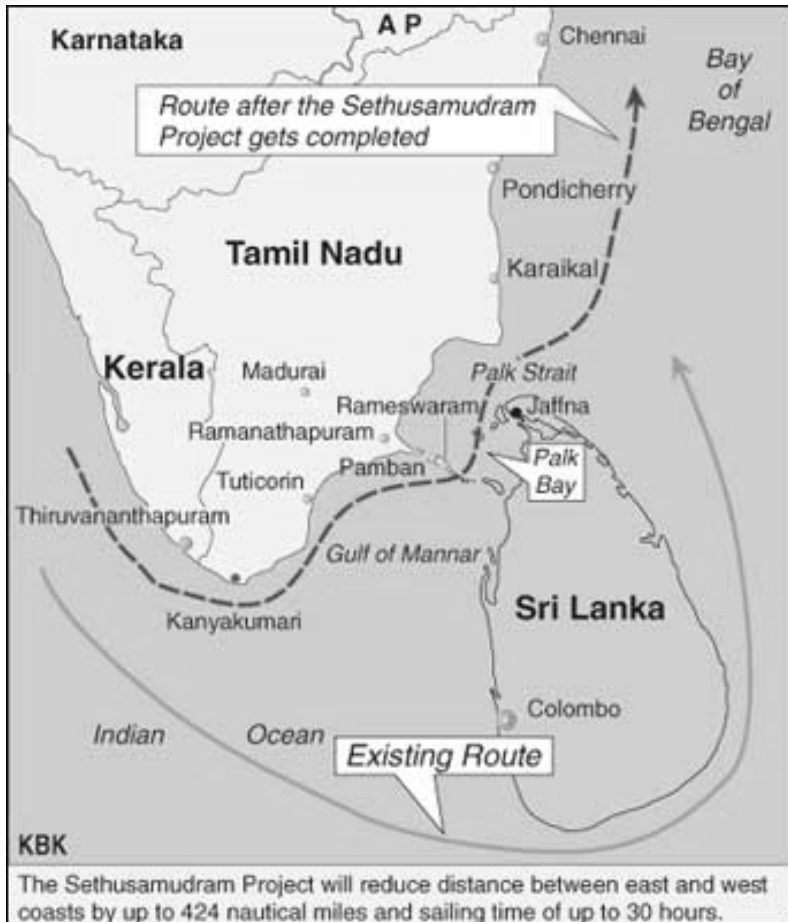


Environmental Zone

Importance of Global Commodity Chains (GCC) in a Global Supply Chain (GSC)

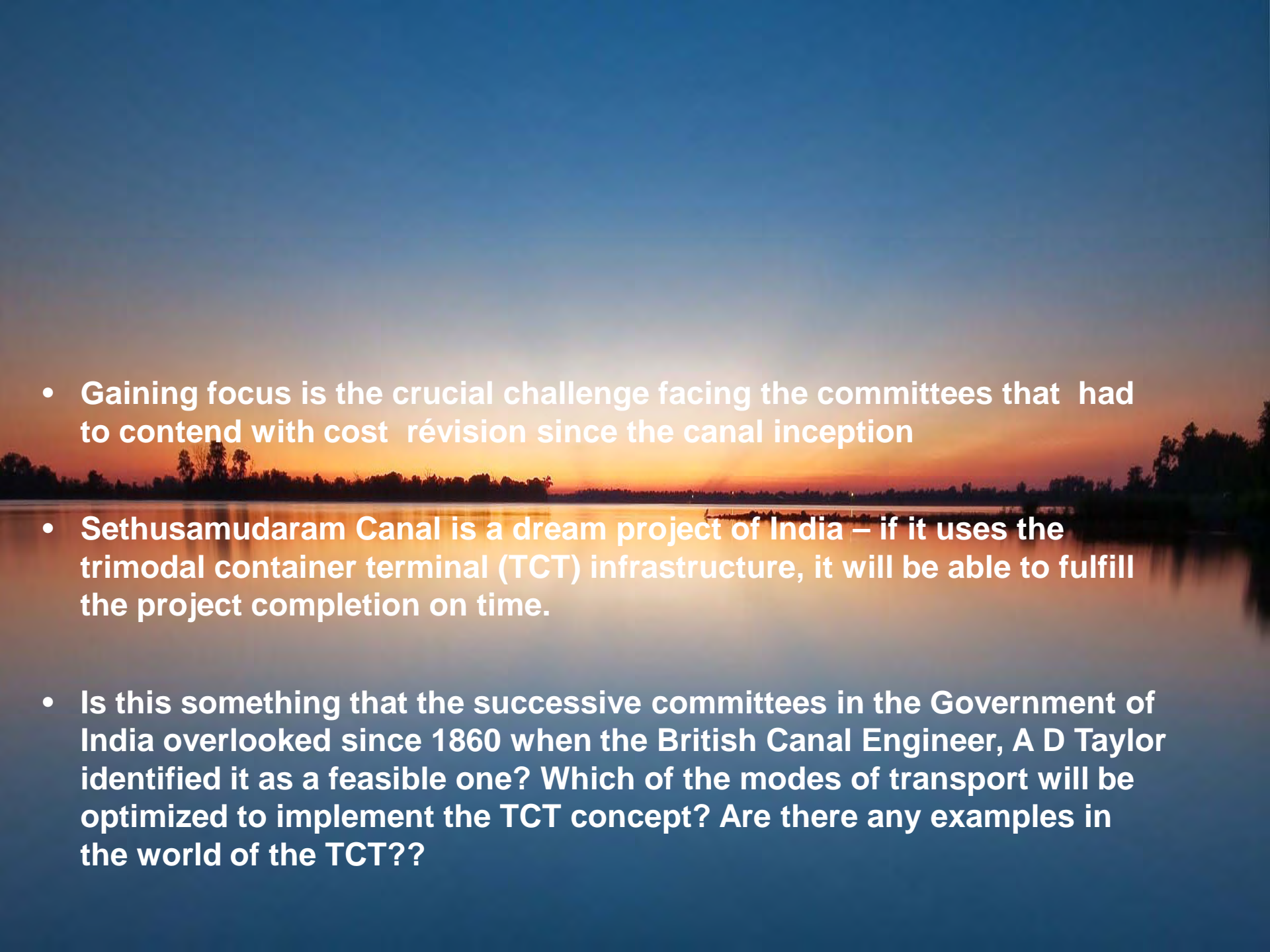
- Landward extension of GCC – port gateways and restructuring of physical and organizational relationships redefines port hinterlands
- New spatial infrastructures are established in port hinterland – a process of port regionalization – where inland freight distribution centres which are physically and logistically linked to ports have been established to GCC

The Bone of Contention at the SSCP Ship Canal



SSCP site is located in a globally significant marine ecosystem – the Gulf of Mannar Biosphere Reserve, one of world's richest marine biological resources.

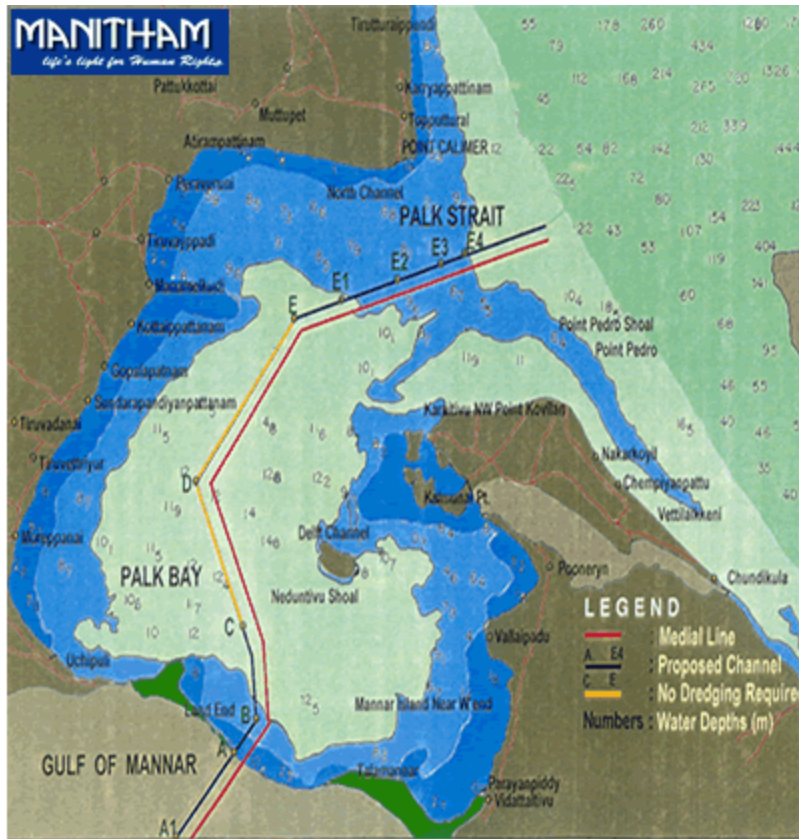
42 MBA students researched this aspect as an assignment for MBA program in Indian Maritime University, Chennai, India = April 2010

- 
- **Gaining focus is the crucial challenge facing the committees that had to contend with cost révision since the canal inception**
 - **Sethusamudram Canal is a dream project of India – if it uses the trimodal container terminal (TCT) infrastructure, it will be able to fulfill the project completion on time.**
 - **Is this something that the successive committees in the Government of India overlooked since 1860 when the British Canal Engineer, A D Taylor identified it as a feasible one? Which of the modes of transport will be optimized to implement the TCT concept? Are there any examples in the world of the TCT??**



- As observed all three ports in Southern Cities of India (Chennai, Tuticorin and Cochin) have a significant number of container vessels using its facilities.
- Containerization grows rapidly and becomes a dominant technique in the general cargo trade.
- The Intermodal transportation system expands while improving its operation at sea, on land, and at the interfaces between different modes of transportation.
- *The demands that containerization place on the major segments of the system – ships, terminals and inland carriers – lead to the establishment of the load center (Hayut.Y).*

Sethusamudram Canal and The Hinterland Logistics



The Alignment of the Proposed Channel

Whatever may be the reason, it is found that the design of the project is not well planned which may cause adverse effect on the economy and ecology of the nation. So it is advisable to go for a re-planning of the project and find some best alternate solution.



Ports and Governments

The relationship between ports and governments has changed profoundly over the past quarter of a century.

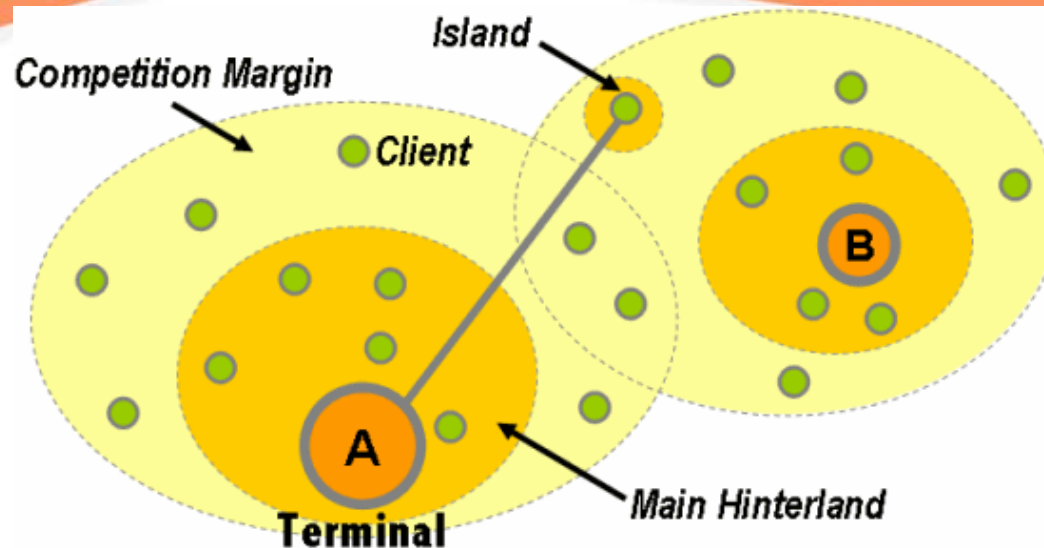
Many governments have sought to extract themselves from the business of port operations and, in many cases, the provision of port services has devolved to local governments, communities or private management and administration.

As such devolution implies a **change in governance model**, this trend raises questions about consequent performance.

Devolution: Governance of Ports

- Devolution examines the changed port management environment, focusing particularly on government policies such as devolution, regulatory reform and newly imposed governance models, all of which have exerted a significant influence over the nature of that changed environment.
- The devolution is structured so as to first explore the devolution and port reform approaches for **14 countries or regions**, before examining how ports are governed and what the choice of governance might mean for their performance.
- A good example is the **16**

Load Centre and Port Hinterland



The load center implies a concentration of container traffic at a limited number of larger ports. Two principal participants play dominant roles in the concentration process- the port and the carriers. In Sethu Canal Project, **Tuticorin Port and Port of Jaffna** will play a role

The concentration of container traffic can be explained in terms of transport –carrier economies in the **three geographical sectors** of operations: maritime , inland (hinterland) and port terminal activities.

Operation Freedom – Iraq

In times of Iraq war, the ports in Kuwait had high container traffic beyond its physical infrastructure would allow them to handle efficiently,

Concentration of fleet at its port were a great concern Among the factors that contribute to the concentration of container traffic in a limited number of port, the most important appear to be: the economics of containership operation (particularly the time costs of port visits), the economies of large-scale container terminal operations, and the tendency to channel the inland distribution of containers into high volume truck routes (for example land routes to Saudi Arabia, Syria and Jordan common facilities. “(Dr Jean Paul Rodrique

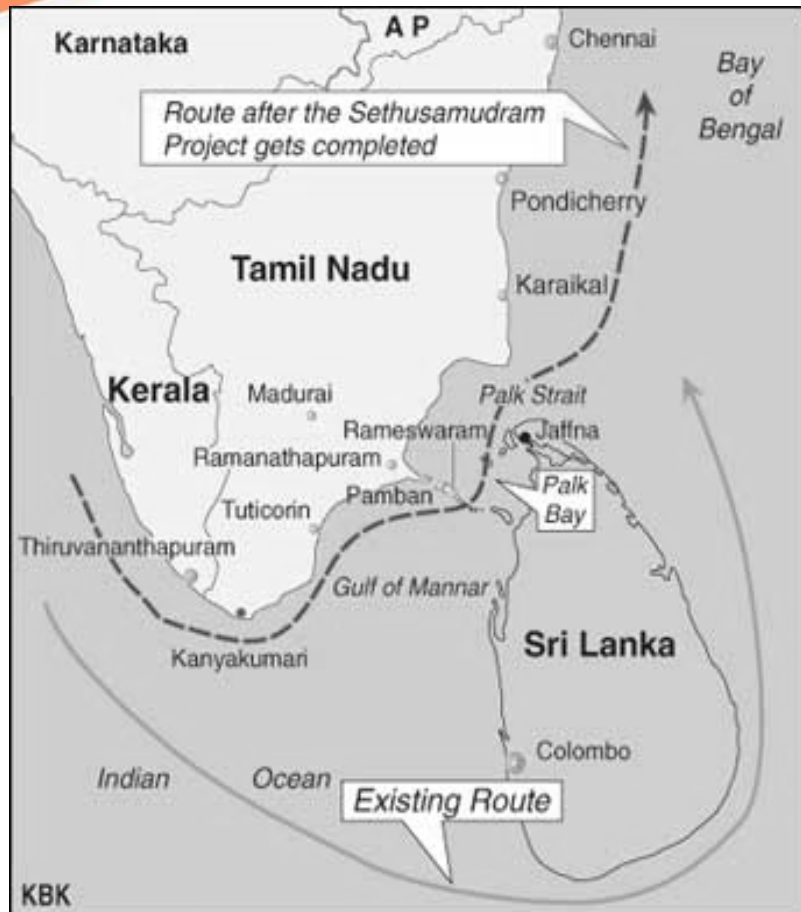


Extent to which transport modes currently satisfy the requirements of container flows through the port

	Average	Standard dev.	No. of observations
Road	8.1	1.63	25
Rail	6.8	2.73	18
Inland waterway	5.8	2.86	5
Short sea shipping	7.6	2.59	10
Coastal shipping	7.3	2.83	10

(for average, 1 = very inefficient, 10 = very efficient)

Ports and Governments



The Sethusamudram Project will reduce distance between east and west coasts by up to 424 nautical miles and sailing time of up to 30 hours

167 km long shipping canal

Located in a globally significant marine ecosystem – the Gulf of Mannar Biosphere Reserve, one of world's richest marine biological resources.

The project will also adversely affect the Palk Strait between India and Ceylon which is about 75 km-wide, with a water depth of 9-13 m, except where local coral reefs rise above the sea level. The Palk Strait is an inlet of the Bay of Bengal. The Palk Strait is 64 km to 137 km wide and 137 km long.

Ports and Governments

Vessels size analysis

Vessel Size	LOA (m)	Beam(m)	Draft (m)
30,000	190	30	10.5*
40,000	215	33	11.0*
50,000	267	38	12.5*

* draft restricted to 10 m

From the vessel size analysis, all vessels up to 20,000 DWT, about 75 per cent of 30,000 DWT, 10 per cent of vessels up to 40,000 DWT and 5 per cent of vessels up to 50,000 DWT, and all empty vessels will fall in this category and can pass through SSCP.

Channel & dredging quantities

Segment	Length (Km)	Dredge
Adam's		
Bridge	35	48
Palk Bay	78	No dredging
Palk Strait	54	34.5
Total	167	82.5

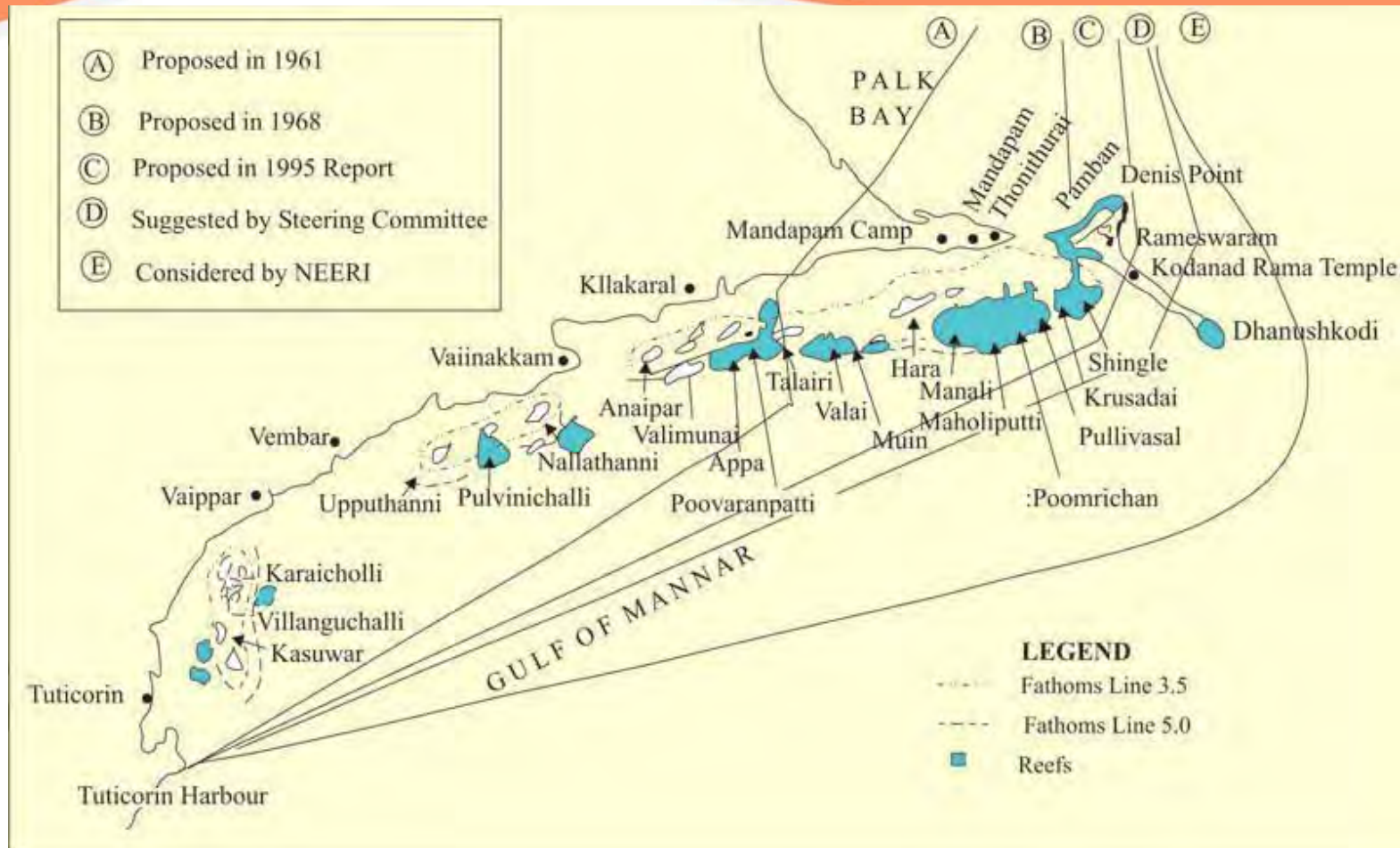
The dredging quantity estimation is done taking sections at every 100 m interval and integrating over the length of segment. Based on the model studies report, it is estimated the maintenance dredging to be 2 million cu.m in the first year, reduction to 1.4 million cu.m in 5 years and remaining constant thereafter.

Ports and Governments



*With draft restriction of 10 m in the SSCP, there could be a growth in number of ships specially built for the purpose of passing through SSCP, may be called **'SETHU MAX'**, similar to vessels being built like **Panamax** or **Suezmax** vessels after the development of Panama and Suez canals.*

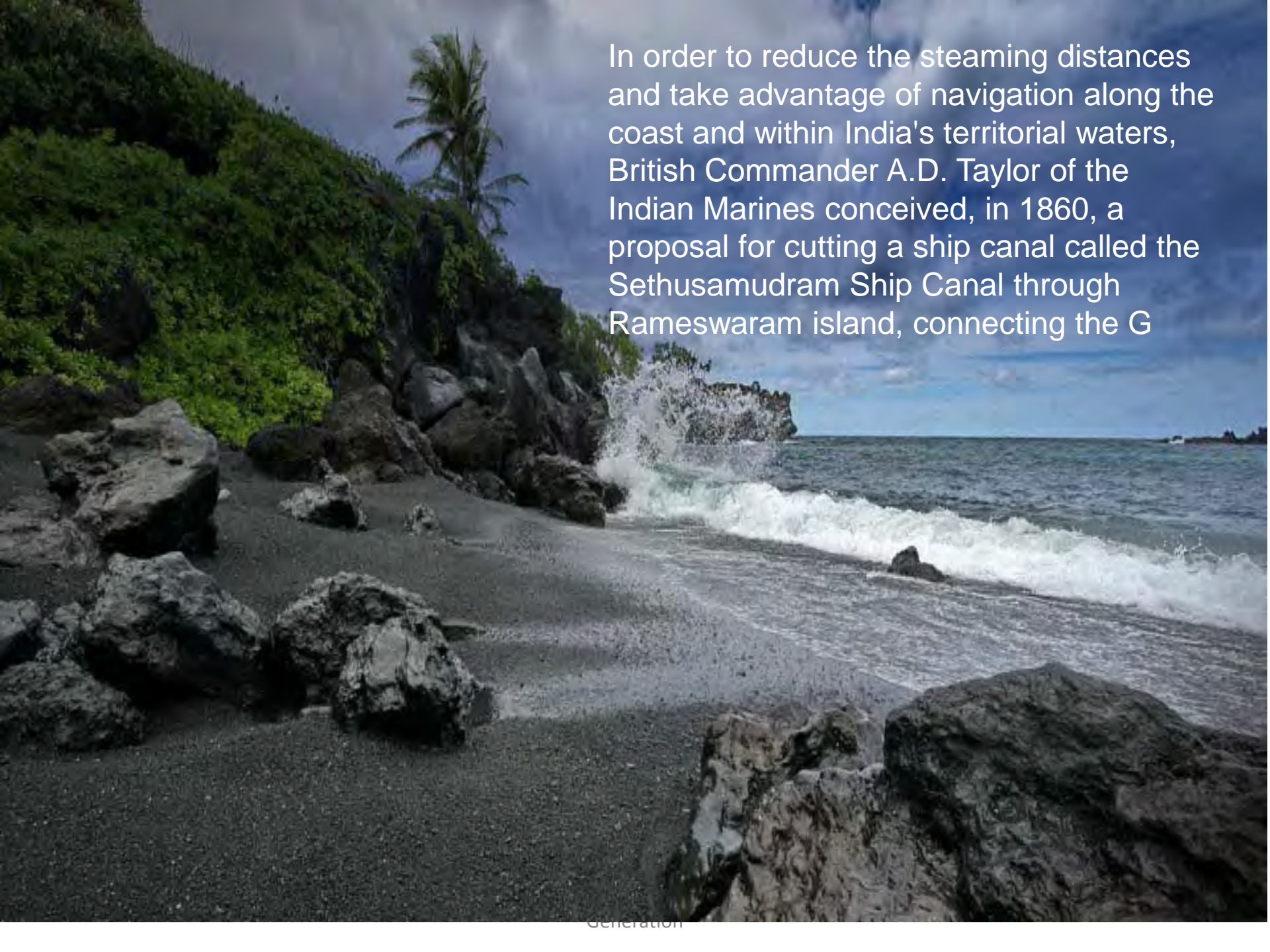
Ports and Governments



Ports and Governments

Ships from the east coast of India to the west coast have to circumnavigate Sri Lanka. This is because of a Sand Stone Reef called **Adam's bridge**, at Pamban, near Rameswaram, where the depth of the sea is hardly 11 feet.





In order to reduce the steaming distances and take advantage of navigation along the coast and within India's territorial waters, British Commander A.D. Taylor of the Indian Marines conceived, in 1860, a proposal for cutting a ship canal called the Sethusamudram Ship Canal through Rameswaram island, connecting the G

Ports and Governments

After Independence, the Indian government constituted the Sethusamudram Project Committee in 1955, with Sir Ramaswamy Mudaliyar as chairman. He pegged the initial capital outlay for the integrated Sethusamudram-cum-Tuticorin Port Scheme at Rs 998 lakh and contemplated a draft of 26 ft.

Ports and Governments

In 1963, Tuticorin Harbor Project was sanctioned but the government decided to include Sethusamudram Project for advance action.

In 1975, the Tuticorin Harbor Project was completed and the traffic exceeded the forecast made.

In January 1981, Ministry of Shipping and Transport (Port Wing) constituted a committee that estimated the cost of the project at Rs 282 crore.

Ports and Governments

- In 1994, the Tamil Nadu government requested the Pallavan Transport Consultancy Services Ltd, Chennai, to appraise and revalidate a 1983 report as a result of which the latter submitted its report in March 1996. The cost estimates indicated in the report for:
 1. 30' draft Rs 685 crore
 2. 31' draft Rs 760 crore
 3. 35' draft Rs 1,200 crore

They added that it would be worthwhile to implement the project initially for 31 feet draft and increase it to 35 feet wherever the approach channels are deepened in Tuticorin and Haldia

Ports and Governments



Sethusamudaram Canal Since 1860

Possibly conceived in 1860 by Commander A. D. Taylor of the Indian Marines, the project has been reviewed **many times over the years** but no decision was ever made.

It is usually described as **150 years of Tamil's dream** to bring in Economic prospects for the Coastal districts of Tamil Nadu.

However successive governments since Indian Freedom did not implement this project though it was part of the **election manifestos of all political parties** during

Various Proposals for Linking

Canal Pre-Independence:

- 1) Commander Taylor's Proposal – 1860
- 2) Mr. Townshend's Proposal – 1861
- 3) Parliamentary Committee's Proposal – 1862
- 4) His Excellency Sir William Dennison's Proposal (Governor of Madras) – 1863
- 5) Mr. Robertson's (Harbour Engineer to the Govt. of India) Proposal – 1872
- 6) Sir John Code's Proposal – 1884
- 7) S.I. Railway Engineers Proposal – 1903
- 8) Sir Robert Bristo's (Harbour Engineer to the Govt. of India) Proposal - 1922

Reports **considered after Independence**

- 1) Sethusamudram Project Committee – 1956
- 2) Nagendra Singh Committee Report – 1967
- 3) Lakshminarayan Committee Report – 1981
- 4) Pallavan Transport Consultancy Services Report – 1996
- 5) Tuticorin Port Trust as Nodal Agency – 1997
- 6) DPR prepared by L&T T-Ramboll – 2004



Community Outreach

Sethusamudram Canal is a dream project of India – if it uses the trimodal container terminal (TCT) infrastructure, it will be able to fulfill the project completion on time.

Is this something that the successive committees in the Government of India overlooked since 1860 when the British Canal Engineer, A D Taylor identified it as a feasible one?

Which of the modes of transport will be optimized to implement the TCT concept? Are there any examples in the world of the TCT??

Ports and Governments

Outstanding examples of canal engineering and development of the infrastructure reveals the efficiency of Trimodal Container Terminals in Oresund (Sweden), Antwerp, Belgium and Welland Canal in the Niagara Region

These developments serve as a good model for Sethusamudram Canal embroiled in controversies – more politically rather than in effective transport economic

Examples of TCT for Hinterland Logistics

Trimodal Container Terminal Belgium

- Strategically situated between Antwerp and Brussels, the Trimodal Container Terminal Belgium (TCT Belgium) handles a substantial part of the logistics activities of its customers.
- The inland terminal on the Scheldt-Brussels Canal in Willebroek organizes both the transport of containers to and from the seaport and the on-demand pick-up and delivery right at the client's front door.
- Cargo is always available just-in-time.
- The impact of TCT is due to the development of intermodal transport network and logistics facilities on hinterland penetration of ports. The infrastructure and institutional problems that limit opportunities of ports in Asia to serve expanded hinterland, and policy guidelines to improve transport and logistics facilities in order to expand port hinterlands like those in Los Angeles, Brisbane, Tauranga, Duisburg and Vancouver

SSCP is not alone: Wedding of the Waterways

TCT in Belgium

- TCT Belgium is situated in the Willebroek area, a region that is quickly developing into a leading centre for European production and distribution.
- Located at the junction of **international transport axes**, TCT Belgium is the ideal link between the North Sea, the Willebroek region and the European market.
- Substantial service network - Thanks to its well-trained and highly motivated staff, TCT Belgium day in day out offers

Other Models for SSCP

- The impact of TCT is due to the development of **intermodal transport network and logistics facilities on hinterland penetration of ports.**
- The infrastructure and institutional problems that limit opportunities of ports in Asia to **serve expanded hinterland**, and policy guidelines to improve transport and logistics facilities in order to expand port hinterlands like those in **Los Angeles, Brisbane, Tauranga, Duisburg and Vancouver**

Ports and Governments

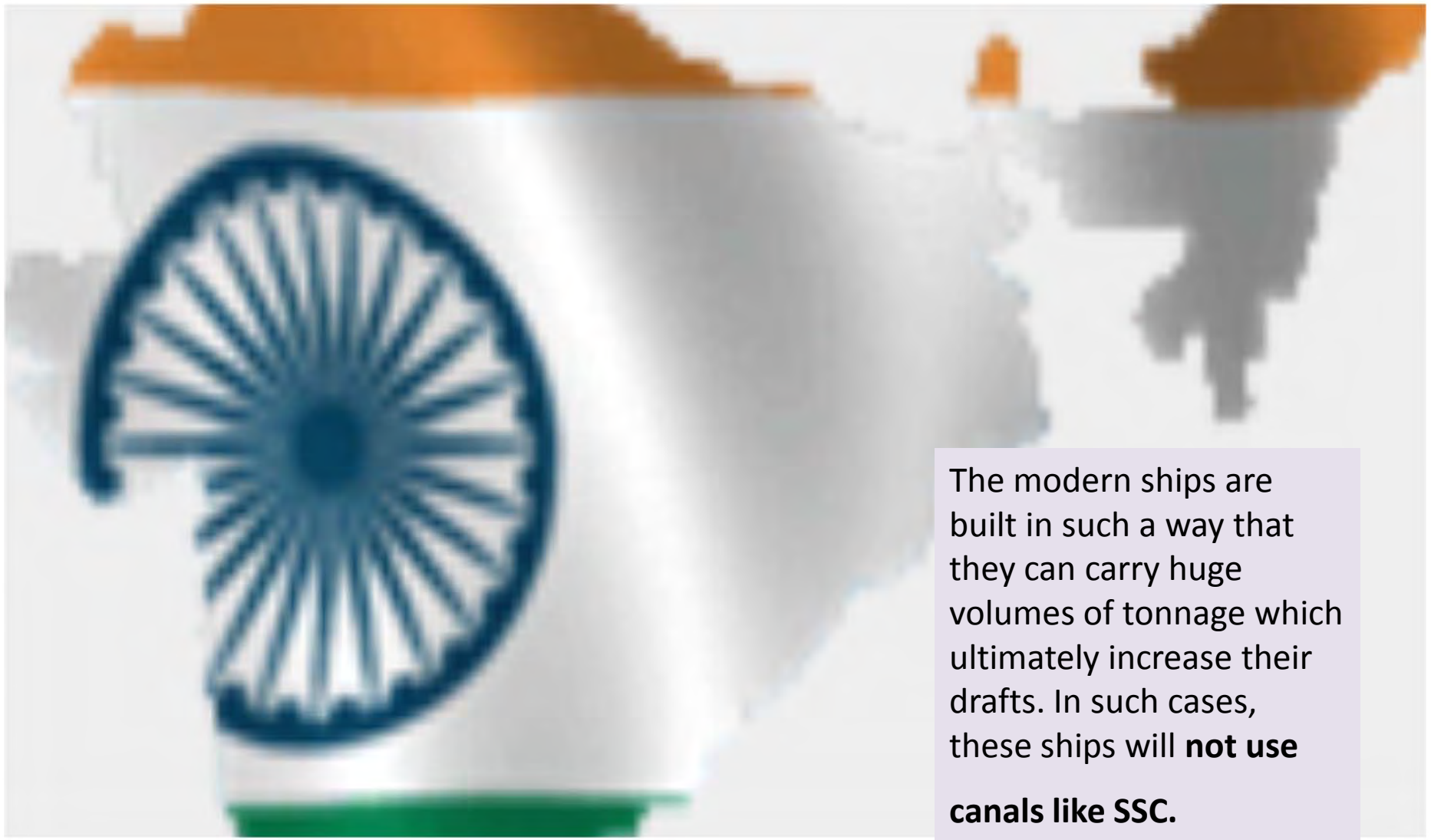


One can conclude that the project has not been adequately assessed for the **environmental impacts** to the **biodiversity** of the Palk Strait, Palk Bay and the Gulf of Mannar and will have serious impacts and cause **drastic changes to the biodiversity** of the region.

Final Conclusion

Any major development project has both benefits and disadvantages to the society. Many development projects have very high economic benefit and at the same time lead to environmental hazard. The poor design of the project, under-estimations of costs, and the poor assessment of risks, hazards and environmental impacts of the project.

Most importantly the project itself admits to the **loss of corals, sea fans, sponges, holothurians**, which are all **protected/scheduled species** under *the Wild Life (Protection) Act, 1972* for which the proponents failed to seek clearance from the Chief Wildlife Warden and Central Government as required by law



The modern ships are built in such a way that they can carry huge volumes of tonnage which ultimately increase their drafts. In such cases, these ships will **not use canals like SSC.**

It is likely to also cause major impacts and losses of fisheries and livelihoods to the region. Reviewing the current status of the implementation phase of the project, considerable environmental and economic damage has probably already been done.

Thanks for your time and kind attention 😊)

Sethusamudram Canal

TCT - India



- **Our goal** – is to cut the Gordian Knot and resolve Sethu Challenges through coordination of a TCT proposal based on the model in Antwerp and Duisburg

Sethusamudram Canal and Development of Hinterland Logistics

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A comparative study of canals for commercial shipping
The differences and similarities among Sethu, Suez and Panama Canals
Usefulness of Sethu for Coastal Shipping
Usefulness of hinterland in big emerging market
Connecting the world through bridges, tunnels and canals
Challenges and opportunities for Sethu Bridge (Admas Bridge)
Future research of internal terminal management and its connectivity for hinterland.

Prof. **Philbert Suresh** is an academic professional who combines 22 years of work experience in the industry worldwide with 12 years of teaching and training in Canada, UK, Saudi Arabia, UAE and Kuwait. He had piloted a new curriculum for Higher Colleges of Technology (HCT) in a business specialization supporting Logistics and Supply Chain Management between 1996 and 2002. For last 4 years he successfully managed a training consultancy in Dubai Knowledge Village as TransLogistique Canada just to extend professional development for HCT graduates and other working executives in the industry. In September, 2006, he crossed borders to Kuwait and support GUST (Gulf University of Science & Technology– a landscape where logistics is driven more by military considerations rather than trade and commerce. In 2009 September, the mission of GLF (GUST Logistics Forum) was transformed to that of i-FUN through Indian Maritime University (IMU)