Innovations in Inland Waterways Transport and Challenges for India

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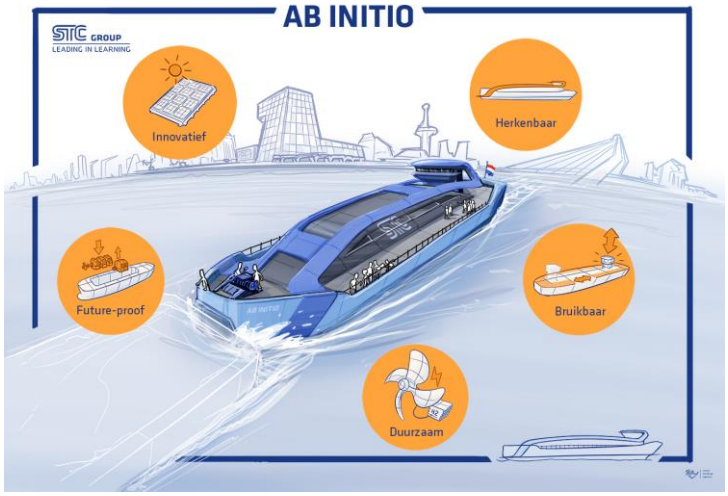


STC's new training vessel

STC NESTRA

IWT: a highly innovative system, but perceived differently in many countries

- Still a niche market, industries are fragmented, with low public visibility
- Focusing at a limited number of market segments, with few exceptions (e.g. Rhine, China, Vietnam, Mississippi)
- With unexplored potential (counts for most of the waterways throughout the world!)
- Experiences in mature markets show that IWT can serve more (all) cargo types, can be competitive at short distances, on small waterways, in city logistics, is clean and safe
- Multimodality is underdeveloped (IWT operates as a stand-alone mode)
- Waterways are not yet seen as economic corridors
- Vessels have a long lifetime, the average age of vessel and engine is high, diesel is the main fuel, resulting in high energy use, high emission levels
- But:
  - Innovative approaches show results, good practices developed in one waterway can be adopted to others
  - New markets will not develop by itself, a pro-active approach is needed

➢ Need to innovate, adopt new insights, strategic vision, smart solutions

Stages in IWT project approaches

Conventional approach

This did not work

Followed by

This also did not work

And today

This has led to proven results in many river basins

Note: there is no blueprint: programmes have to be region and market specific

A modern and complete IWT project

New insights require:

- Infrastructure development taking into account the working with nature principles, and is future proof (adaptation to climate change)
- (Future) cargo flows considered from supply chain perspective, and are multimodal in nature
- To balance the different values of the waterways (navigation, irrigation, hydropower, drinking water, flood prevention, industrial use, ..)
- (Pro)active development from involved public entities (transport policy department, waterway manager, local authorities responsible for urban planning)
- Active stakeholder participation in all stages of the process

➢ Fit-for-future IWT

Fit-for-future IWT

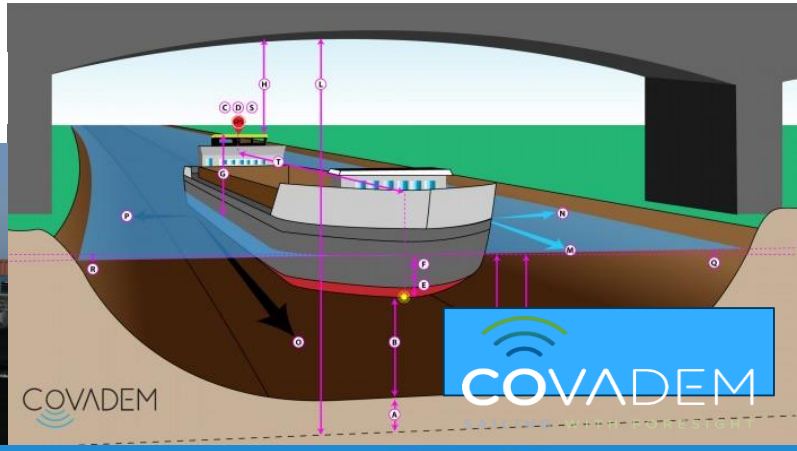
Vision jointly developed by

The physical network

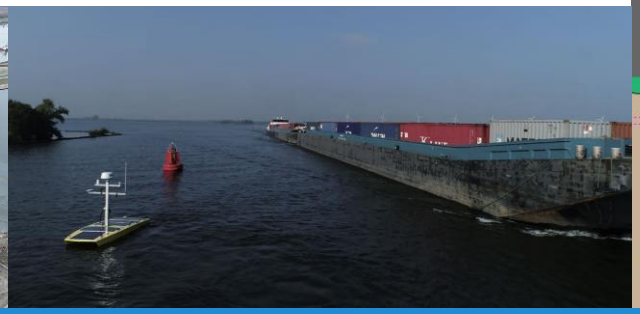
- Infrastructure remains backbone for IWT
- Multiple functions of waterways
- Waterways as link to industries
- Adaptation to climate change

Industrial Strategy

Smart maintenance and operation of waterways based on big data



Deployment of flying and aquatic drones



NESTRA

Fit-for-future IWT

The digital network

- Digitalization to support Greening Strategy
- Data and 5G for connected and automated waterways and services
- Harmonized standards for information systems and cybersecurity

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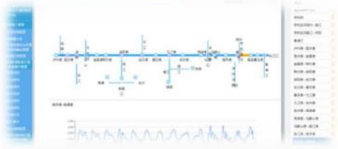
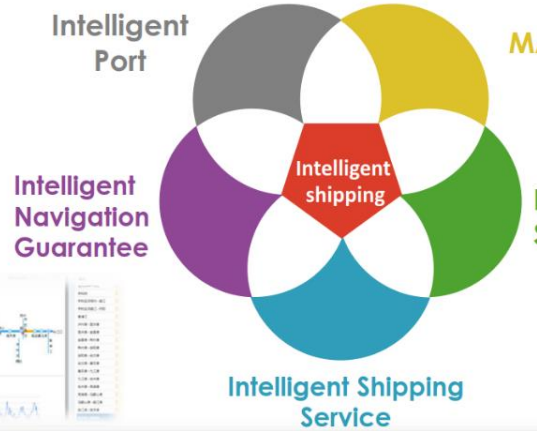
SMASH!

Smart Shipping

https://smashnederland.nl/english/





Source: China Waterborne Transport Institute

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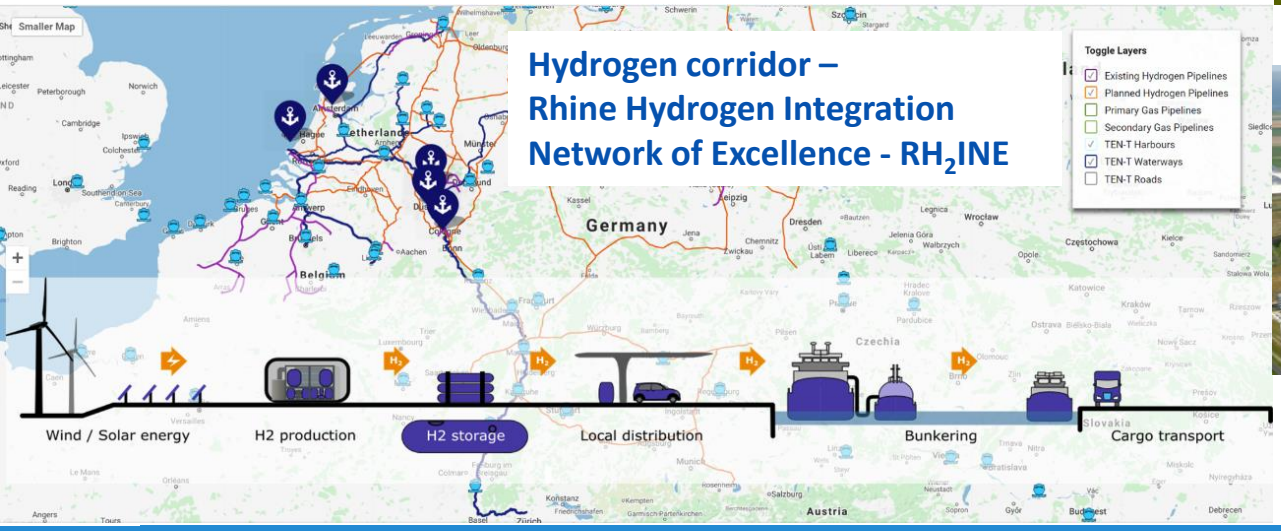
Fit-for-future IWT

The green energy network

- Smart energy corridors and hubs
- Multi-fuel (transition) network
- Waterway infrastructure towards climate neutrality



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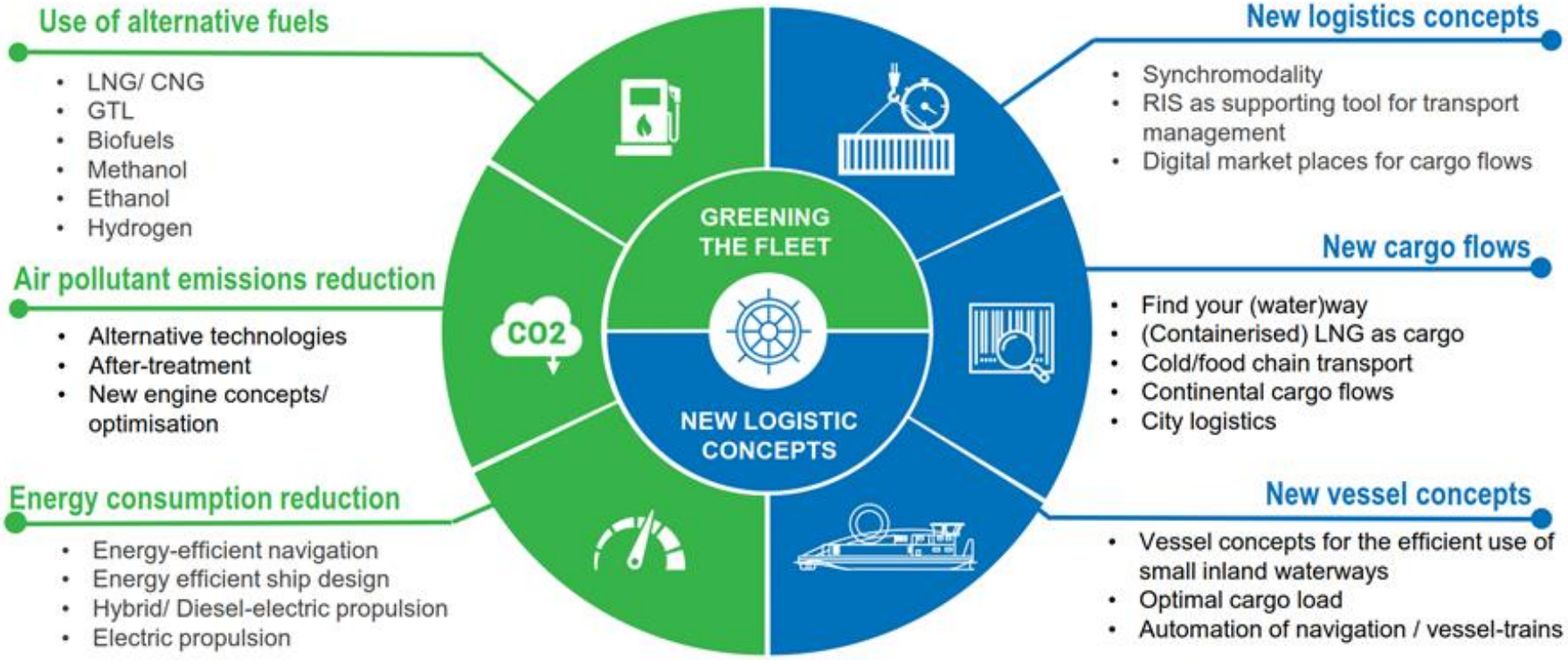
Renewable waterfront

NESTRA

Greening strategies



(EIBIP, source NAIADES II CEG meeting, see also: https://eibip.eu/)

India IWT viewed from international perspective (esp. JMVP)

Capacity augmentation:

- Flexibility in finding solutions, in adapting good international practices to Indian characteristics
- Starting with 3 m LAD target for entire National Waterway 1, towards lower LAD in some stretches following market study results, engineering analysis and technical innovations
- Adopting the working with nature principle: minimize physical interventions, accept the natural conditions of the waterway as much as possible
- Providing additional and accompanying infrastructures such as multimodal terminals, improved ship-lock, and RIS

India IWT viewed from international perspective (esp. JMVP)

Pro-active approach to market development:

- Promotional events for stakeholders in the industry, awareness raising, roadshows
- Established pilot schemes
- The attention for logistics, supply chains and multimodality

Environment and safety:

- Dredging with safeguards, performance based contracting, monitoring
- Emergency response plan
- Traffic management system via RIS
- Waste management
- Studies on effects on nature

India IWT viewed from international perspective (esp. JMVP)

Understanding that accompanying and supporting actions are needed to lower barriers for potential IWT entrants and users:

- Innovative vessel designs (shallow draught) that were given to the market
- Study the logistic zone / freight village concept

The waterway authority going beyond its traditional boundary of developing and managing the waterway

The integrated vision on IWT: infrastructure + governance + markets + production means + jobs & skills

Challenges for India IWT

- Upgrading and greening the fleet, and connected financing of vessels, requirements to develop smart funding solutions
- Capacity building, education and training, R&D: creation of an IWT Education and research cluster (centre/cluster of excellence)
- Study developments in the field of greening, smart shipping and smart ports and possible applications in India
- Continued and pro-active market development, promotion and support, preferably by a dedicated promotion unit
- Strengthening of the functions of inland ports and terminals, taking advantage of logistic zones / freight villages and freight bundling
- Develop the waterway as a green economic and social corridor (Arth Ganga)
- Application of the experiences in JMVP/NW1 in other waterways

knowledge sharing

contributing to wider use of IWT
which is cleaner, safer and more efficient

sharing knowledge	benefitting all water basins	future-proof	sustainable	expertise & innovation
				

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