Global Collaboration Responding to Global Challenges

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The maritime ecosystem is unique

- **Oldest** and **largest sharing economy**
- **Global**
- **Flat**
- **Self-organized**
- **Federated** and **democratic governance**
- **Asset intensive** with high demands on **optimized resource utilization**
- **Not allowing for one owner**
- **Episodic interactions**

"To INNOVATE the maritime ecosystem: a diverse group of thinkers and doers co-creating solutions to drive improvements in the value chain, industry, or ecosystem they belong to"

This talk highlights:

Two global challenges as examples when the self-organized ecosystem need to come together: CDM and Maritime Decarbonization

"Today's world faces global challenges that require co-creation and collaboration and the self-organising ecosystem of interdependent actors in the transport industry needs to contribute its fair share."

Collaboration is a game changer

			Creation of joint efficiencies for …		
High	Degree of scope and complexity	Ecosystem	partners in a cross-industry value chain	peers in cross-industry value chains	partners and peers in cross-industry value chains
		Industry	partners in an industry value chain	peers in industry value chains	partners and peers in industry value chains
Low		Chain	partners in a company value chain	peers in parallel company value chains	partners and peers in company value chains
			Vertical	Horizontal	Diagonal
			Degree of integration and complexity		
			Low		**High**

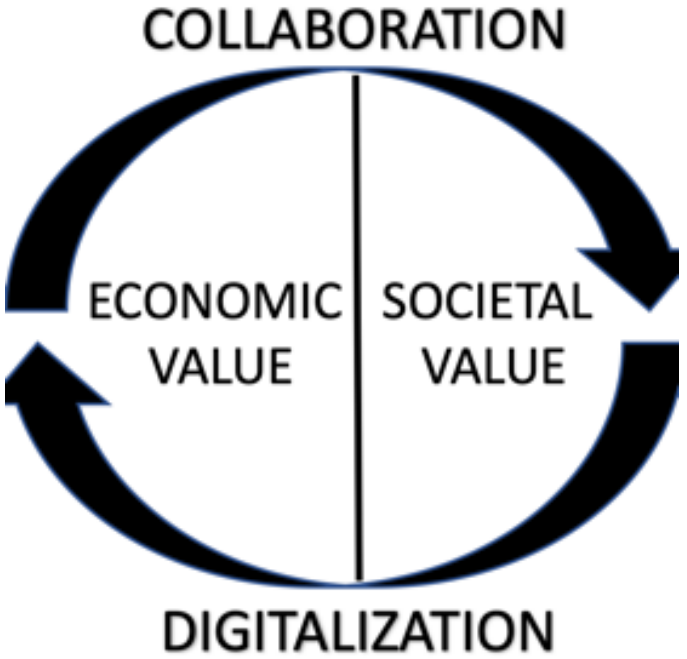
CDES: A New Paradigm for Navigating an Increasingly Complex World

Collaborative Decision Making (CDM)

- Expanded planning horizons for enhanced predictability
- Common situational awareness
- Agreement on what data to share with whom and when
- Applied in different areas: AirportCDM, SeaportCDM, RailwayCDM, e2eCDM

Digitalisation and collaboration operating in symbiosis

All industries need to place greater emphasis on the interrelationship between *collaboration* (c) and *digitalization* (d), as this powerful duo impacts *economic* (e) and *societal* (s) success through enhancing human and social capital and preserving and restoring natural capital. Focusing only on one of both dimensions of each pair, either on collaboration or digitalization, or on economic or societal value, leads to suboptimal results.



Challenge #1: Transparent and resilient global supply chains

Engage the buyers of transport services in the change process

The shipper-driven terminal-centric

Virtual Watch Tower Network

Assisting Companies in Managing Disruptions and Risks in Global Supply Chains

Global launch of VWT@SMW'23

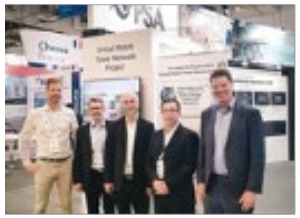
Initiated by

Sponsored by

Coordinated by

Advised and empowered by

www.virtualwatchtower.org



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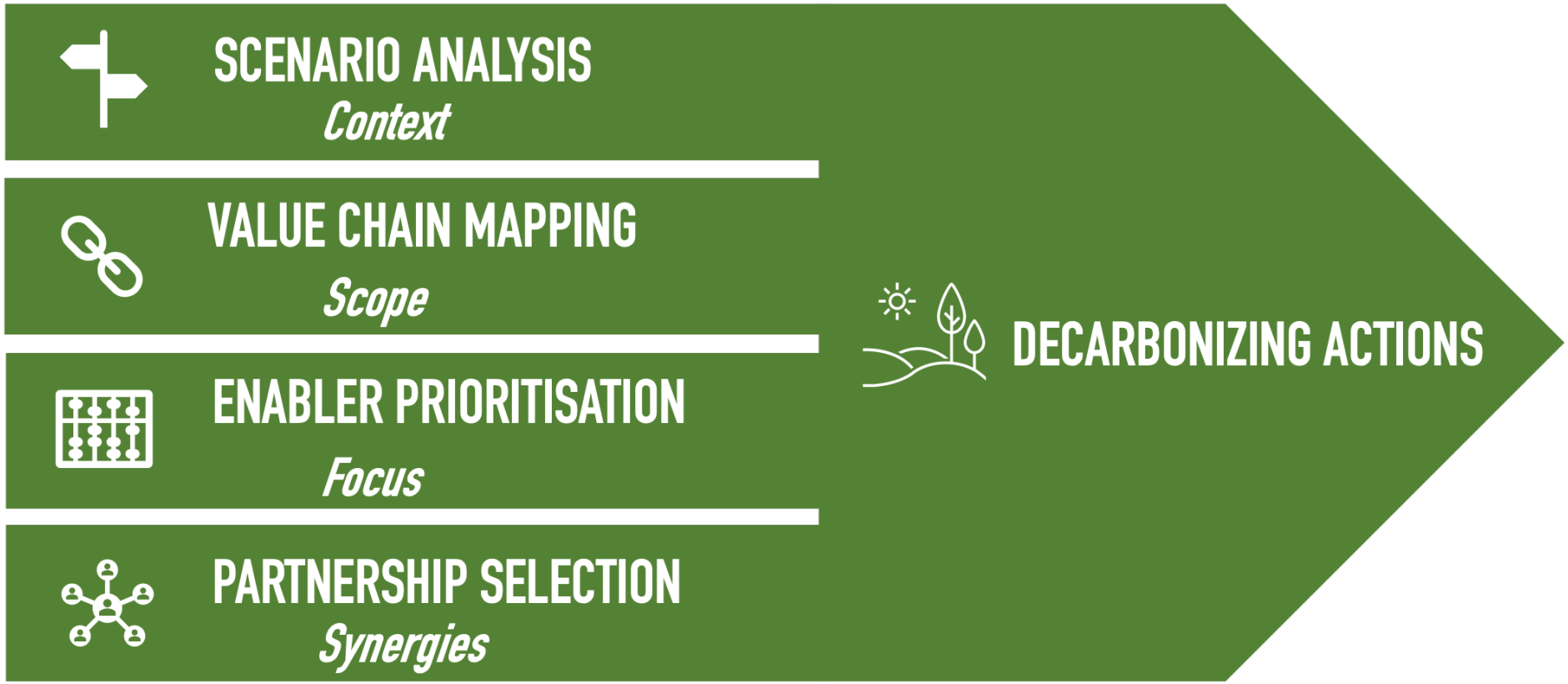
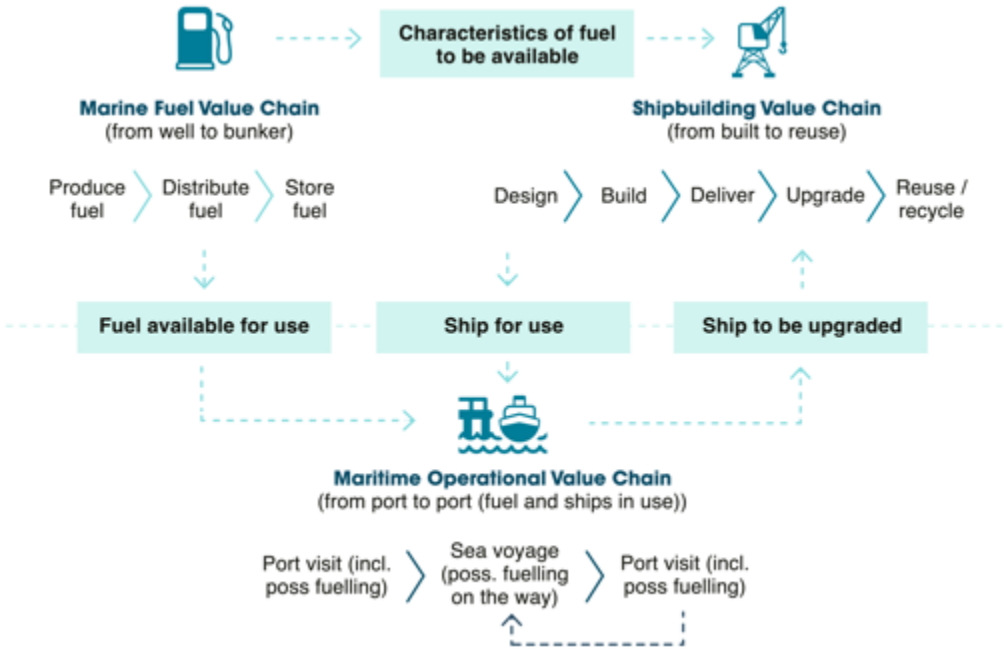
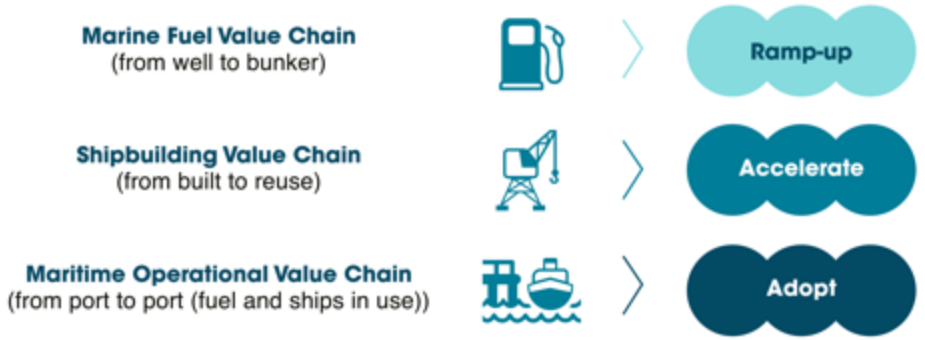
Challenge #2: Enabling Maritime Decarbonization

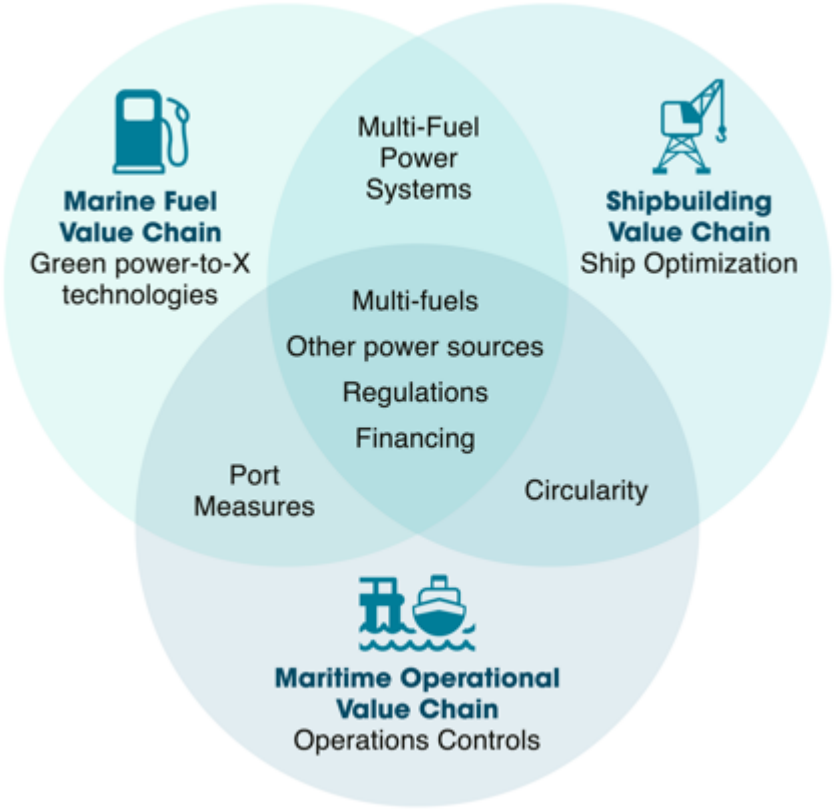


Foundational viewpoint: Interdependent value chains





Decarbonization enablers across interdependent value chains



Port measures
- Fuel storage / Fuelling equipment for sustainable alternative fuels + incentives
- On-shore power supply
- Lower levy for greener ships

Green power-to-X technologies
- Electrolysis solutions for green fuels from renewable electricity
- Technologies to produce green fuels from waste / carbon

Operations controls
- JIT Port Calls
- Advanced weather routing
- Commercial contracts
- Slot Management
- Speed Optimisation
- GHG emissions calculation

Ship optimisation
- Wind Support
- Hydrodynamics
- Ship size optimisation
- Fleet renewal
- Autonomous ships

Multi-fuels
- LNG
- Green LNG / LBG
- Biodiesel
- Green methanol
- Green ammonia
- Green hydrogen

CO2 reduction for green shipping

Circularity
- Recyclable ships of recyclable material
- Carbon capture and storage (CCS) on ship level
- Battery processes and management

Financing
- Incentives for green fuel production
- Incentives for green shipbuilding
- Green innovation / R&D funds

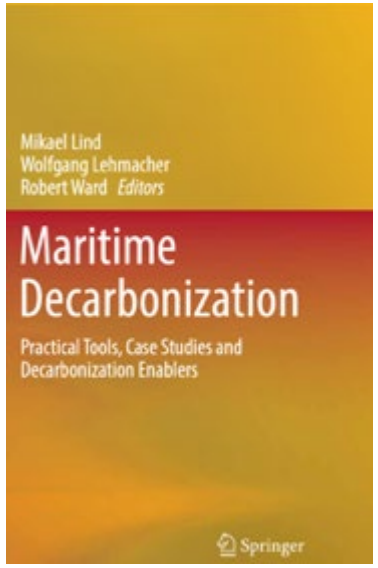
Other power sources
- Green electricity
- Nuclear
- Wind
- Solar

Multi-fuel power systems
- Multi-fuel ICE engines / onboard storages
- Fuel cell technology
- Batteries powered motors
- Upgradability / Retrofitting

Regulations
- Market based measures (MBM) - ETS and levy
- EEDI/EEXI/CII
- On-shore Power Supply Usage
- Gradual reduction of GHG content in fuel
- Raw materials regulations

A book on Maritime Decarbonization

- Editors: Mikael Lind, Wolfgang Lehmacher, and Robert Ward
- 70 contributors from industry and academia
- Preface: Mobilizing for decarbonization
- Part 1: Outlining baseline and perspectives
- Part 2: A step by step concept for decarbonizing shipping
- Part 3: Bringing the four step-concept to life
- Part 4: Some critical success factors for fast and global decarbonization
- Part 5: Case studies: Selected maritime decarbonization initiatives
- Concluding remarks – calling for a holistic and inclusive approach



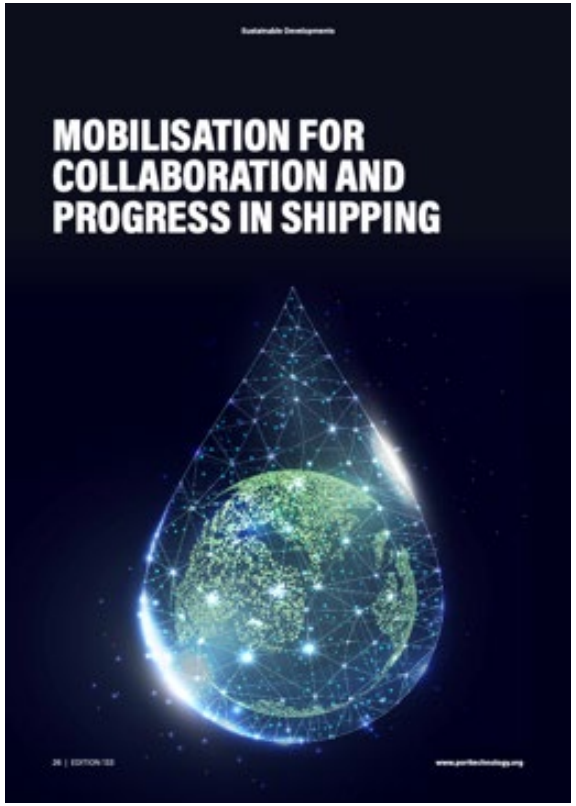
www.maritime-decarbonization.org

The ability to mobilise for collaboration and co-creation is critical in today's economy and society

- Collaboratively co-creating a novel approach to supply chain management
  www.virtualwatchtower.org

- Collaboratively enhancing the knowledge base on Maritime Decarbonisation
  www.maritime-decarbonization.org

- Collaboratively establishing Maritime Informatics as an applied research field
  www.maritimeinformatics.org



You are all invited to co-create our sustainable world of tomorrow