SHIPPING SCENARIOS 2030

International Maritime Statistics Forum
Hong Kong, 31st May 2011

WÄRTSILÄ

GLOBAL SCENARIOS OF SHIPPING IN 2030

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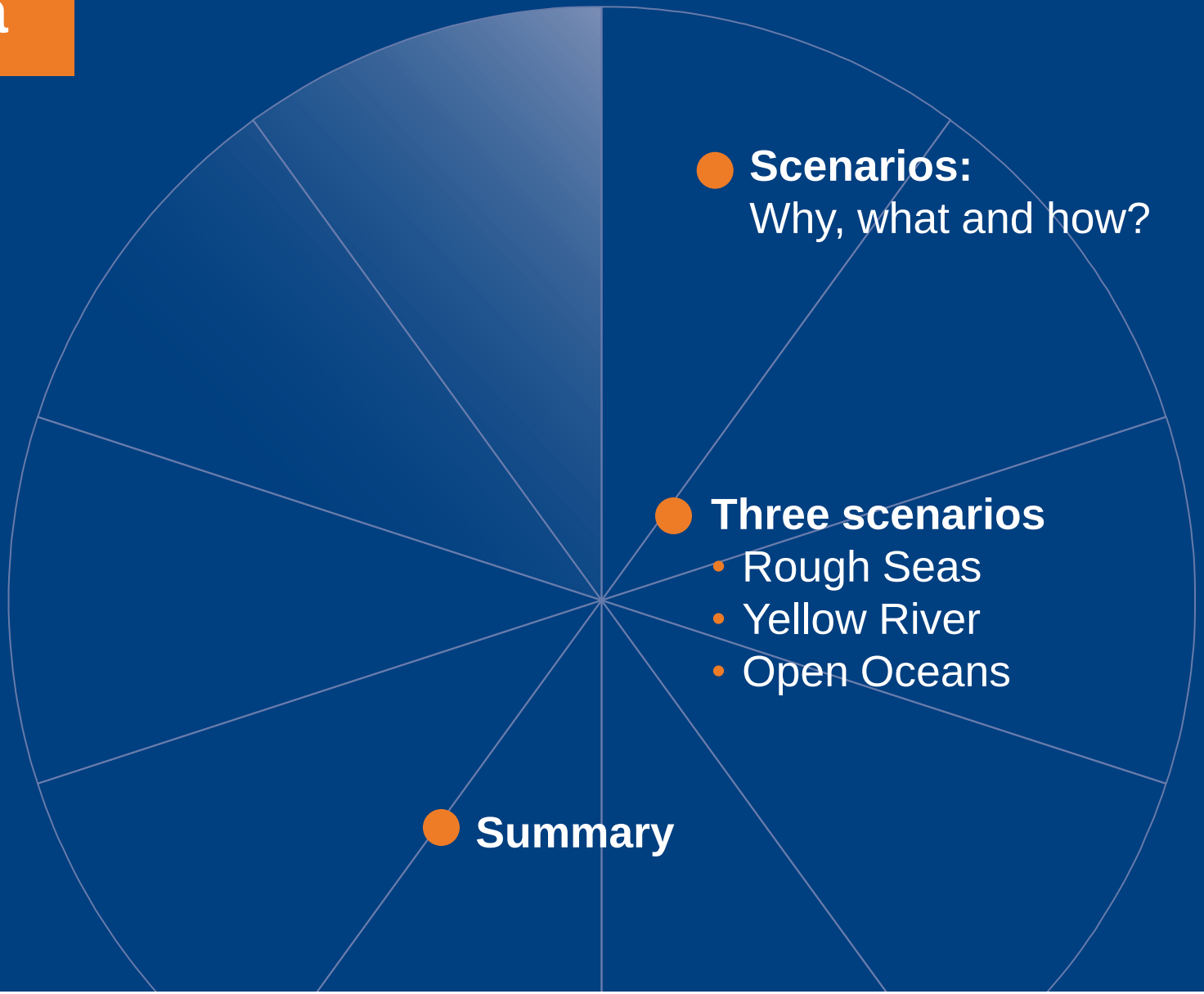
Agenda



- **Scenarios:**
  Why, what and how?
- **Three scenarios**
  - Rough Seas
  - Yellow River
  - Open Oceans
- **Summary**

Scenarios

Scenarios are

- Stories describing alternative, plausible futures and how they might come about
- A method of making sense of a complex and changing environment
- A valuable tool for enhancing strategic decision-making by challenging conventional modes of thinking

Introduction

WHY

To support our strategy work and provide a foundation for finding ways of being prepared for the future, together with the industry.

WHAT

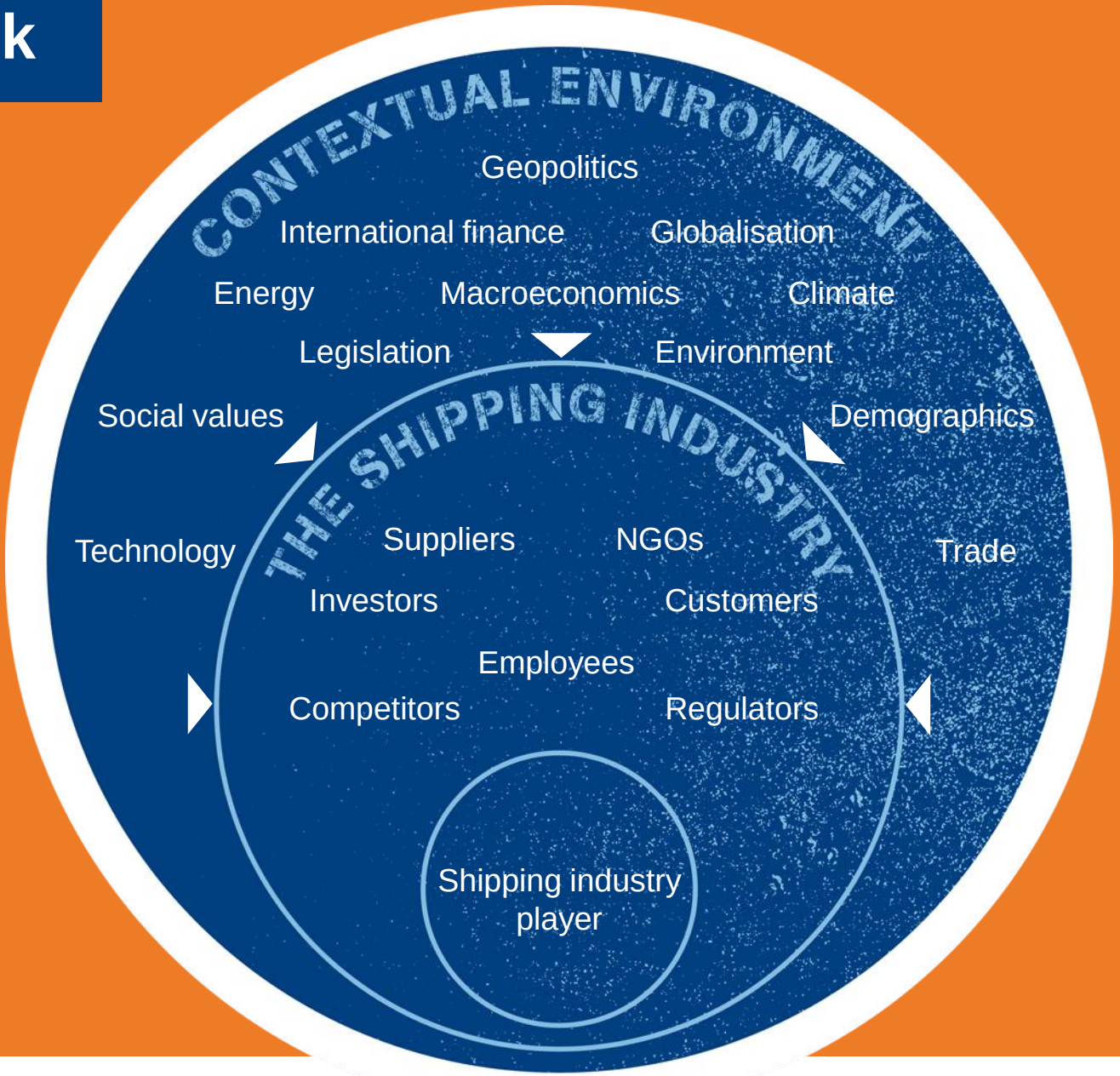
Three challenging and different, yet plausible, scenarios about what shipping could look like in the year 2030.

HOW

By combining expert input, quality research, hard work, dedication and a bit of imagination.

The framework

- Time horizon
- What could shape the future: uncertainties and certainties
- Two certainties:
  - Shipping will continue to be part of the transportation matrix
  - Fresh water will become more valuable
- And a large number of uncertainties



Key uncertainties lay the groundwork for scenarios

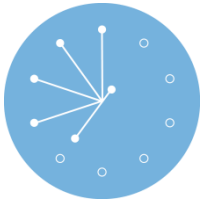
The key uncertainties refined into five dimensions:

1. Trade and economic growth
2. Response to climate change and sustainability issues
3. Geopolitical issues and global leadership
4. Solutions to deal with scarcity issues
5. Control of power

Three scenarios

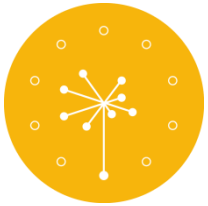
Rough Seas

- Scarcity of resources is predominant
- Climate change adds further stress
- Cartels and bilateral agreements have overtaken free markets
- Wealth is divided unequally among nations, resulting in tension



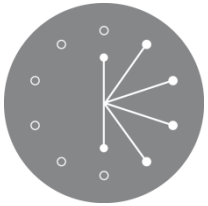
Yellow River

- China dominates the global arena
- Resource-intensive manufacturing has moved to Africa and other Asian countries
- Economic growth is significantly slower in the West
- Climate change is tackled only on a regional level – no global agreements exist



Open Oceans

- Global mega-corporations and megacities have gained power over the nation states
- Governments cooperate on the governance of climate issues and free trade protocols
- Climate change is perceived as an opportunity and innovating green solutions is a lifestyle



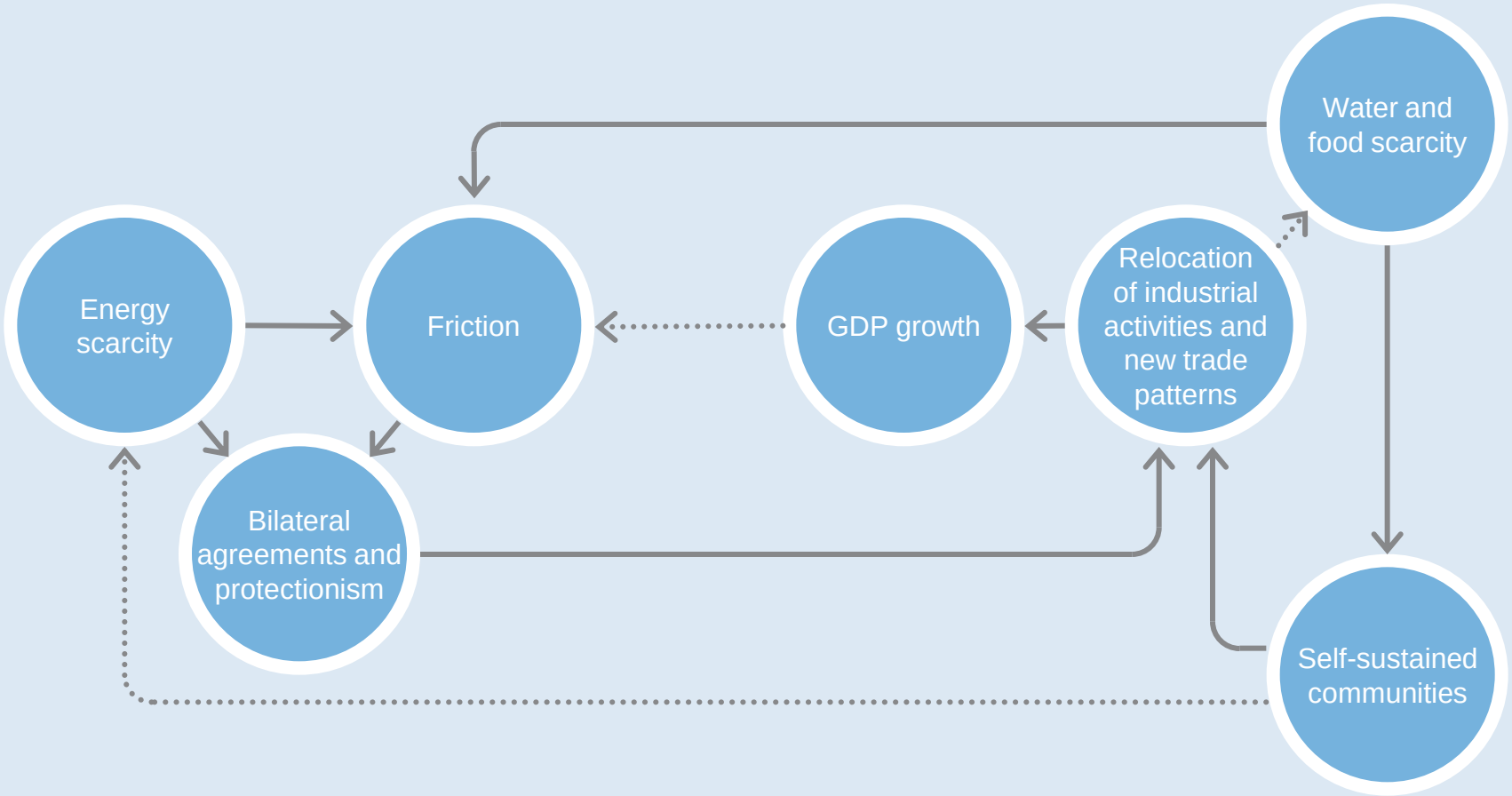
SEPTEMBER 14, 2027

Rough Seas

The first convoy of ships carrying water sails from Russia to India, protected by Navy escorts.

Causes and effects

Rough Seas



Rough Seas

In the world of Rough Seas, scarcity of energy, water and food is predominant. Climate change adds further stress.

- Logistics chain optimised regionally
- Fleets partly nationalised
- Changed goods flow, reduced container traffic
- New trade routes
- Increased need for armed escorts

Water carrier for the Rough Seas

Rough Seas

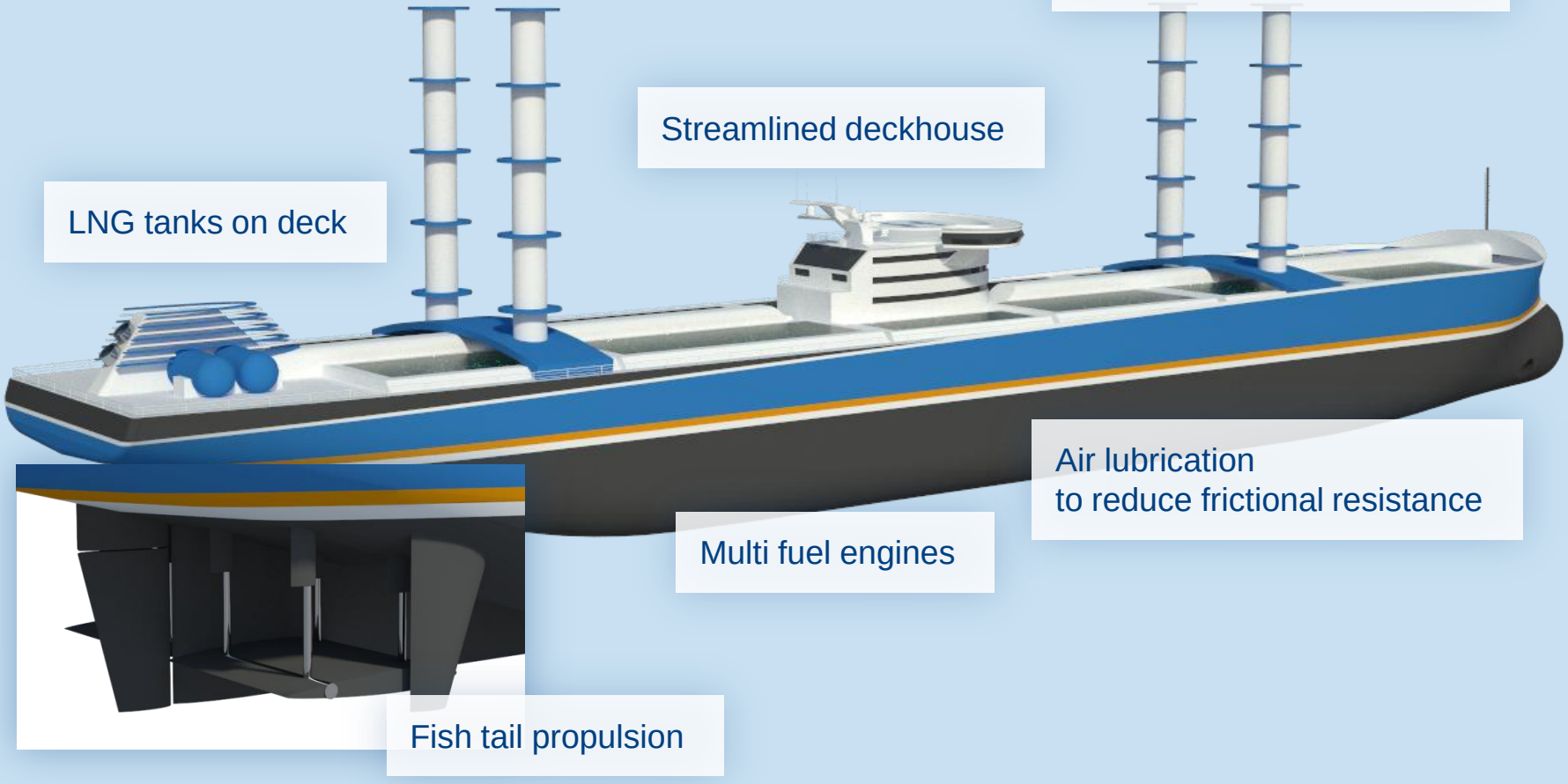
Water is valuable and is in short supply → water is transported

Energy scarcity

- Consumption of natural resources should be minimized
- Ships will contain technology to reduce energy consumption

Dwt	**150 000**	dwt
Length	**285**	m
Breadth	**46**	m
Draft	**16**	m

Water carrier for the Rough Seas



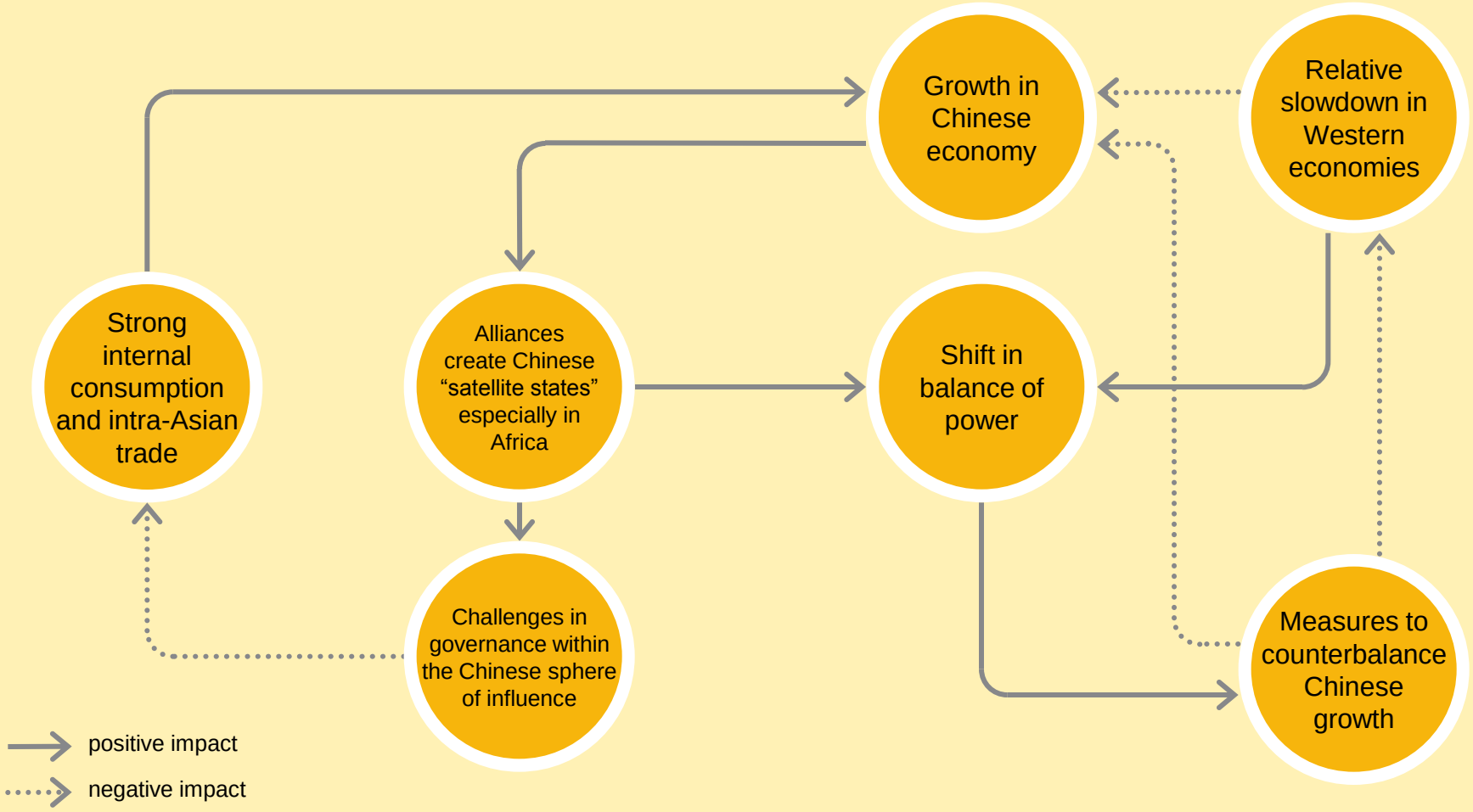
MAY 21, 2028

A Chinese containership – one of many – is crossing the Indian Ocean on its way from Dar es Salaam to Shanghai, loaded with manufactured goods.

Yellow River

Causes and effects

Yellow River



Yellow River

Yellow River

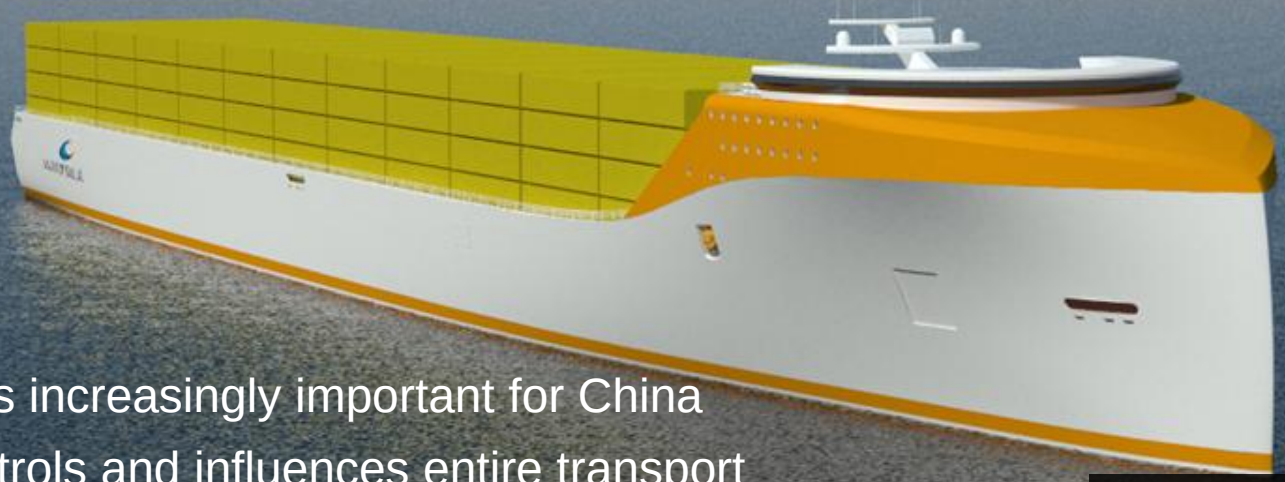
In Yellow River, China dominates the global arena, economically, geopolitically and in shipping.

- Most big shipping companies Chinese-owned
- New ports in Africa, Eastern Russia and India
- Chinese ports sophisticated logistics centres
- Manufacturing to Africa and other Asian countries
- Chinese energy demand counterbalanced with efficiency and cleantech
- Western societies adapt sustainable living

Box carrier for Yellow River

Yellow River

Large trade volumes of produced goods from Africa to China

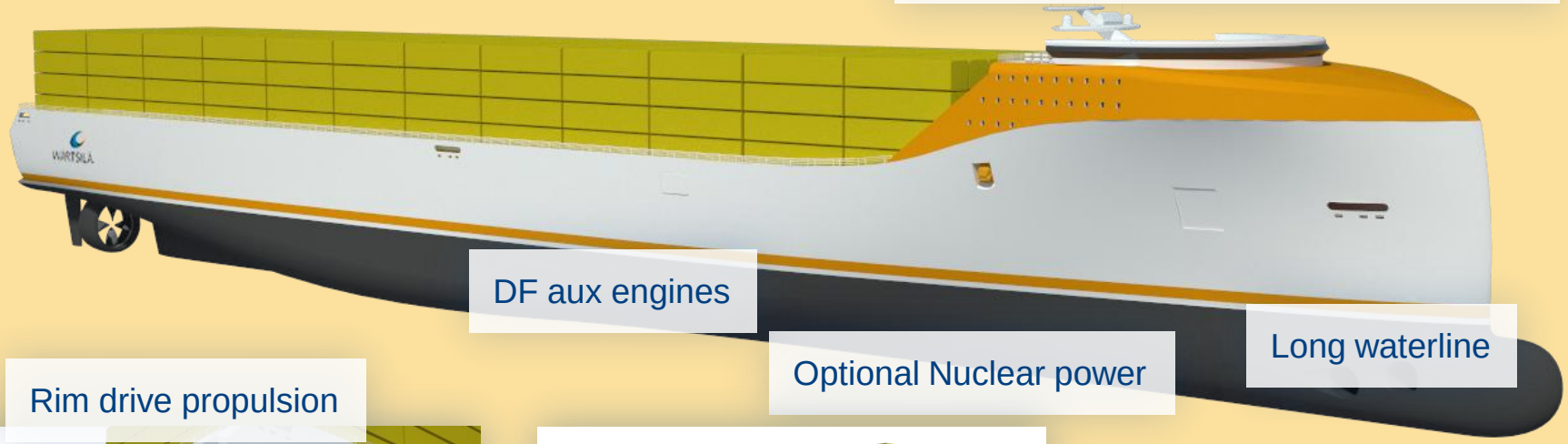


- Shipping is increasingly important for China
- China controls and influences entire transport chains → possibility to generate new transport standards
  - Larger cargo units for higher transport efficiency

Capacity	**1 000**	MBEU
Length	**400**	m
Breadth	**58**	m
Draft	**14.5**	m

Box carrier for Yellow River

Larger cargo units: Mega Box
1 000 MBEU = 8 000 FEU = 16 000 TEU



DF aux engines

Optional Nuclear power

Long waterline

Rim drive propulsion

Cargo ramp
Cargo hold can be loaded simultaneously with the cargo deck. Flexibility and speed.

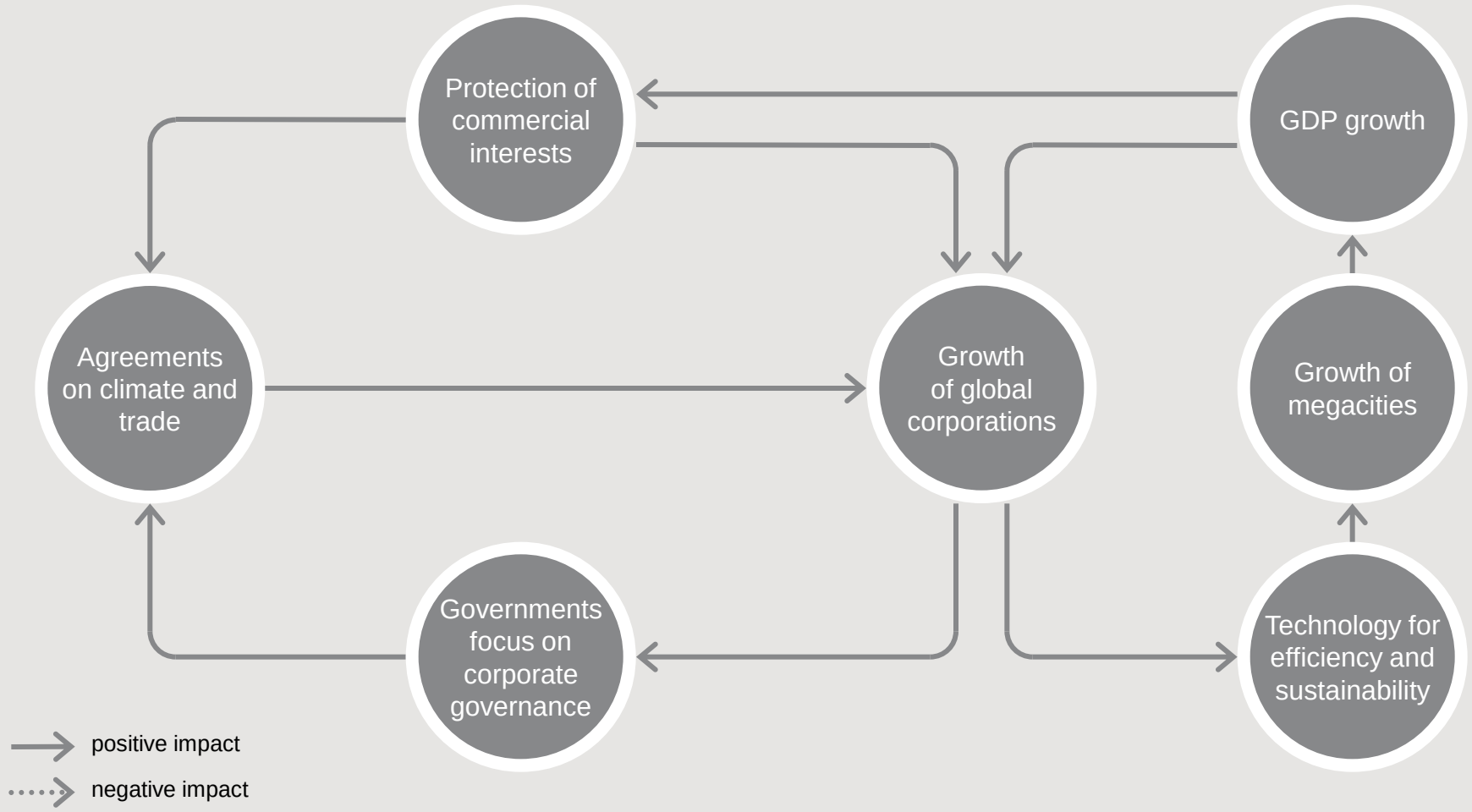
JULY 2, 2027

The world’s first floating desalination unit, powered entirely with renewable energy, is launched to serve the city of Mumbai.

Open Oceans

Causes and effects

Open Oceans



Open Oceans

Open Oceans

The world of Open Oceans is a strongly globalized one.
Global mega-corporations boost GDP growth and megacities have gained power over the nation state.

- Shipping a component within optimised and integrated logistic systems
- Ships simply tools in the process
- Goods transported between megacities and areas rich in resources
- New types of vessels developed based on environmental challenges
- Climate change an opportunity, lifestyle green
- Governments cooperate on climate issues and free trade protocols
- Sustainable cruise vacations a growing trend

Algae harvesting vessel for Open Oceans

Open Oceans

Climate change is perceived as an opportunity and innovating green solutions is a lifestyle → new green technology is introduced

- Algae is used to produce bio fuels
  → new ships are needed
- Environmentally friendly operation is required

Length	**100**	m
Breadth	**20**	m
Draft	**6**	m

Algae harvesting vessel for Open Oceans

Open Oceans

Large booms are used to enlarge the surface area processed

Algae is collect into barges

Barges are collected with tugs and replaced with new ones

Algae is filtered from the sea water

The Algae harvester skims trough the water surface to collect algae that is growing in large basins in the ocean

Algae harvesting vessel for Open Oceans

Open Oceans

Fuel cells
running on bio gas

No crew

Solar power

DF engines
running on bio gas

Low loss electric drives

Thrusters with electric drive

Summary

Rough Seas

Yellow River

Open Oceans

Share your views, challenge us and give us feedback about the Shipping Scenarios here and now or at **www.wartsila.com/shippingscenarios**

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Contacts

Andrea Hernandez

Director, Business Intelligence

+358 10 709 5552

andrea.hernandez@wartsila.com