

SSI roadmap

As leaders in our industry, SSI members want to show the way towards a better future – for our own success and for wider society, with sustainable shipping serving a genuinely sustainable economy.

The Roadmap has been developed by the SSI members, and reviewed by panels of industry stakeholders, to show the complex pathways, through to a sustainable industry in 2040. The story begins with the analysis of the key mega-trends affecting the industry outlined in our Case for Action document. These were then projected forwards in our Vision2040 to six key defined areas which were each comprised of the evolution of one or more of the mega-trends. These six vision areas form the basis of the Roadmap which aims to help us on the journey.

It is important to note that the Roadmap is not static. Content has already changed and evolved during the development and it will need to be reviewed and updated often to maintain relevance. It is also impossible to include absolutely everything that could or should happen, but there has been some consensus on the content. It is a working document for the SSI and its members and it is hoped that the industry will also find it useful. If there are suggestions for inclusion, update or deletion of items, please contact us.



[Click to find out more about the Case For Action & Vision 2040](#)

- 1. Proactively contributing to the responsible governance of the oceans**

- 2. Earning the reputation of being a trusted and responsible partner in the communities where we live, work and operate**

- 3. Provide healthy, safe and secure work environments so that people want to work in shipping, where they can enjoy rewarding careers and achieve their full potential**

- 4. Transparency and accountability drive performance improvements and enable better, sustainable decision making**

- 5. Develop financial solutions that reward sustainable performance and enable large scale uptake of innovation, technology, design and operational efficiencies**

- 6. Change to a diverse range of energy sources, using resources more efficiently and responsibly, and dramatically reducing greenhouse gas intensity**

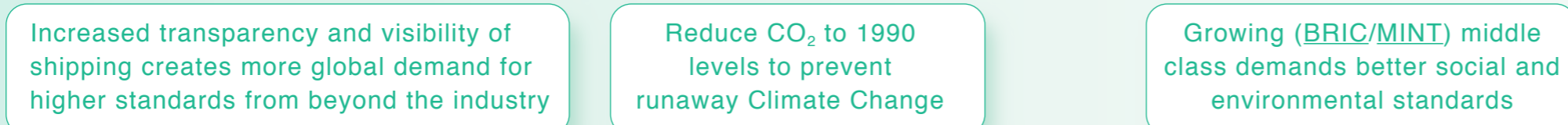
1 Proactively contributing to the responsible governance of the oceans

THE CASE FOR ACTION

FREEDOM VS LEVEL PLAYING FIELD - GLOBAL GOVERNANCE



DEMANDING HIGHER STANDARDS : SUSTAINABILITY REGULATION



VISION 2040

WORK WITH KEY POLICY & REGULATORY FORUMS, AND WITH RELEVANT STAKEHOLDERS TO BALANCE RIGHTS AND RESPONSIBILITIES FOR USE AND ACCESS, AND IMPROVE OCEAN GOVERNANCE

(NOTE: WE HAVE USED MARINE SPATIAL PLANNING (MSP) AS A PROXY)



IMPLEMENTATION

Pilot projects (Irish sea + Great Barrier Reef Pilots, Polar Code) have demonstrated good practice, and benefits of spatially driven legislation that brings together multiple sectors to balance rights and responsibilities of key ocean users.



IMPLEMENTATION

Progressive increase in performance standards required in MPAs.



PIRACY

Piracy is eliminated/solved.



GOVERNANCE

IMO has strengthened links with national and International governments (EU, African Union, ROCRAM, etc.), giving teeth to enforce standards and regulations.



GOVERNANCE

Oil and gas, wind, and all other key maritime industries are represented by an international governance body, enabling formal participation in global ocean governance processes.



GOVERNANCE

Formalisation of inter-agency ocean governance body via UNCLOS, with buy-in from all key groups- IMO, International Seabed Authority, FAO, regional fisheries management, oil and gas (etc).

INFLUENCING FACTOR

Communication between all stakeholders.

A formal system of global ocean governance is in place, recognising the rights and responsibilities of key ocean users.

All 'heavy use areas' are managed through a system of well enforced Marine Spatial Plans

Ideally, we would measure success by the specific schedule of regulations considered by the SSI to be 'desirable by 2040'. In the absence of such a schedule, the following outcomes are proposed;

SUPPORT DEVELOPMENT OF COORDINATED AND PROGRESSIVE LEGISLATION AIMED AT SIGNIFICANTLY IMPROVING SOCIAL, ENVIRONMENTAL AND ECONOMIC SUSTAINABILITY ACROSS THE SHIPPING INDUSTRY.



ENFORCEMENT

Marine Spatial Planning in national waters includes all users.



REGULATION

Rate of ratification of regulation at IMO is increased significantly.



BIG DATA

Better ship tracking
Better port management.
Better route management.



PRACTICAL MEASURES

Unmanned vessels.

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BRIC Brazil, Russia, India, China **MINT** Mexico, Indonesia, Nigeria, Turkey **MSP** Marine Spatial planning **woc** World Ocean Council **UNCLOS** United Nations Convention on the Law of the Sea
FAO Food and Agriculture Organisation **EU** European Union **MPA** Marine Protected Area **CBD** Convention on Biological Diversity **EBSA** Ecologically or Biologically Significant Area
IMO International Maritime Organisation **ROCRAM** Red Operativa de Cooperación Regional de Autoridades Marítimas de las Americas /Operative Network for Regional Co-operation among Maritime Authorities of South America, Cuba, Mexico and Panama **PSSA** Particularly Sensitive Sea Area **ECA** Emission Control Areas

POLAR CODE IMO has adopted the International Code for Ships Operating in Polar Waters (Polar Code) and related amendments to protect the two polar regions—Arctic (north pole region) and Antarctic (south pole region)—from maritime risks and to make it mandatory under both the International Convention for the Safety of Life at Sea (SOLAS) and the International Convention for the Prevention of Pollution from Ships (MARPOL).

NEXT ROADMAP

2

Earning the reputation of being a trusted and responsible partner in the communities where we live, work and operate

THE CASE FOR ACTION

LATE 2010's

2020's

2030's

OUTCOME 2040's

Increased transparency and visibility of shipping creates more global demand for higher standards from beyond the industry

Growing (BRIC/MINT) middle class demands better social and environmental standards

THE GLOBAL ECONOMY – EMERGING GIANTS

DEMANDING HIGHER STANDARDS

VISION 2040

LATE 2010's

2020's

2030's

OUTCOME 2040's



ERADICATING WORST PRACTICES

UNEP develops a coalition of developing country ports focused on minimising health impacts of black carbon and other particulates. Improvements expected by 2029.



DEFINING BEST PRACTICE

Measures are developed of Social Value Contribution from shipping to port communities.



GOVERNANCE

An international governance body formed to represent port- and other coastal communities, involving port tates/ cities/ authorities and maritime users across the land-sea interface



DEFINING BEST PRACTICE

Voluntary standards for port and port communities agreed by leading port cities/authorities.



GOVERNANCE

International governance body representing coastal/port facilities has significant role in determining standards of development and community engagement in the development of new port facilities.

CRITICAL
Politicians recognise shipping as a responsible industry.

INFLUENCING FACTOR

Significant port and hinterland development is anticipated in Africa and Asia to support rise in short-sea shipping.



DEFINING BEST PRACTICE

Major ports report environmental and social performance using a common standard.



EQUAL TREATMENT FOR SEAFARERS / DECRIMINALISATION

Seafarers are given equal treatment to on-shore staff. Criminalisation of seafarers reversed communities.



ERADICATING WORST PRACTICES

Corruption at ports is managed at global level by the IAPH and IMO port facilities.



PRACTICAL MEASURES

Deregulation of Cabotage frees up land based congestion. Improve port infrastructure. Improve port efficiency.



PRACTICAL MEASURES

Improved infrastructure removes bottlenecks, improves access for smaller producers, eg small parcel, part container loads etc. increasing productivity and employment. Shore leave for seafarers.

Coastal communities are effectively represented in maritime and land-based governance bodies, at a local, national and international level, with well-defined and enforced standards.

- Port communities have clean and healthy environments
- Shipping industry is seen as an enabler to trade and development
- Corruption is eradicated
- IAPH drives improvements through globally recognised standards and reporting requirements
- There is harmony between ships, ports and port communities in terms of jobs, conditions and technology

(Note: specifics relating to ship breaking communities are identified separately.)

LATE 2010's

2020's

2030's

OUTCOME 2040's

3

Provide healthy, safe and secure work environments so that people want to work in shipping, where they can enjoy rewarding careers and achieve their full potential

THE CASE FOR ACTION

NO SECRETS – DEMAND FOR TRANSPARENCY

Increased transparency and visibility of shipping creates more demand for higher standards from beyond the industry

Low cost personal satellite / internet technology empowers seafarers to expose poor conditions

Technology enabling real-time monitoring of activity on ships is required by key customers to monitor standards

DEMANDING HIGHER STANDARDS – SUSTAINABILITY REGULATION

Ongoing difficulty in recruiting Officer level seafarers puts pressure on the industry

Branded shipping customers seek to eradicate ‘sweatshop ships’ - the final frontier of supply chain management

Growing BRIC middle class demands better social standards

VISION 2040

ADOPT LABOUR STANDARDS ACROSS THE SHIPPING INDUSTRY TO IMPROVE SAFETY, SECURITY, LIVING CONDITIONS, WAGES AND REWARD FOR WORKERS



SHIP RECYCLING
Industry and regulators apply strong financial, legal and regulatory pressure to ship recyclers to significantly improve ‘worst case’ performance.



SAFETY
Structures in place for systematic reporting and sharing of accident & near miss data across the industry, to enable better identification of patterns, and design of safe processes and vessels, with >50% participation.



LEGAL STANDARDS
Existing standards are robustly enforced by PSC – eliminating non-compliance / ‘sweat shop’ ships.



TRAINING
Agreed global minimum standards of training for mariners, ratified by 95% of IMO member states.

Zero Accidents.
(Accident rates in shipping achieve parity with those of land-based industries).
The shipping sector’s fatality rates are reduced by 90% (over x baseline).

EMPLOY BEST PRACTICE IN LEADERSHIP AND EMPLOYEE DEVELOPMENT TO ATTRACT PEOPLE TO SHIPPING CAREERS



TRAINING
High quality training facilities in all areas associated with poor standards of mariner training. 80% of mariners have access to “high quality” training.



LABOUR CONDITIONS
Bullying, harassment and discrimination are eliminated / managed through actively enforced company policies, with minimum standards set and enforced by the IMO.



TRAINING
Globally recognised competence standards, qualifications and career development paths are adopted by IMO, with minimum standards required across the industry.



LABOUR CONDITIONS
Shipping careers rank equally or higher with shore based industries in terms of

- Satisfaction
- Technology*
- Impact on relationships

Shipping is a recognised career sector and features in rankings of sought-after careers.

Labour conditions are assessed on a level playing field across all segments of the industry (short sea, coastal, deep sea etc.) – no ‘hidden horrors’.

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BRIC Brazil, Russia, India, China IMO International Maritime Organisation

[PREVIOUS ROADMAP](#)

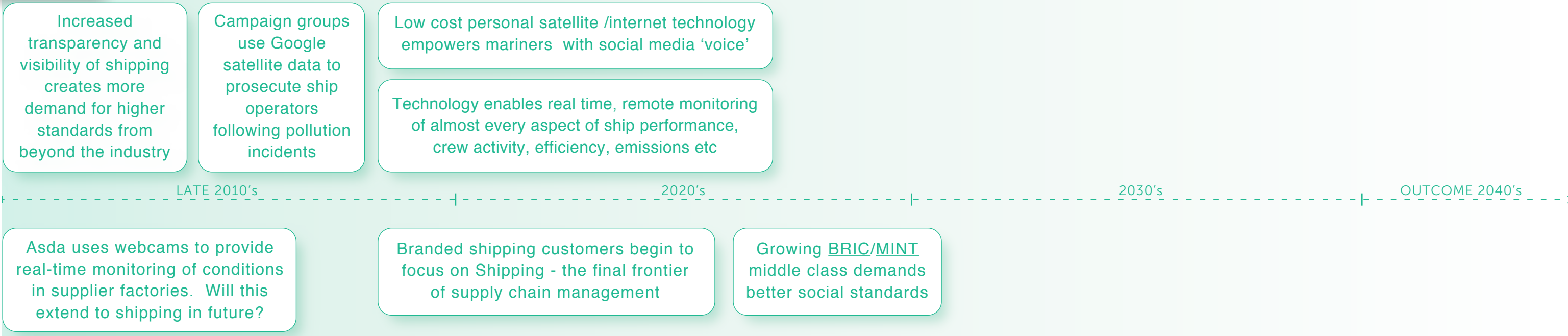
[NEXT ROADMAP](#)

4

Transparency and accountability drive performance improvements and enable better, sustainable decision making

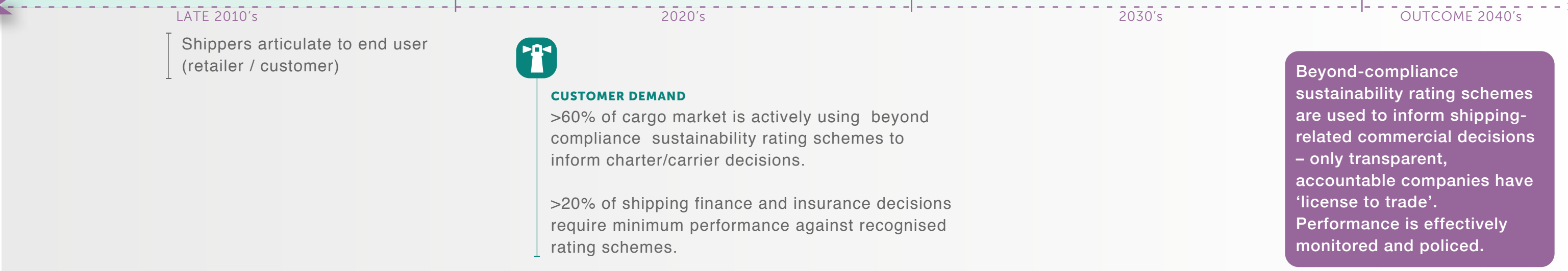
THE CASE FOR ACTION

INCREASED SCRUTINY, HIGHER EXPECTATIONS

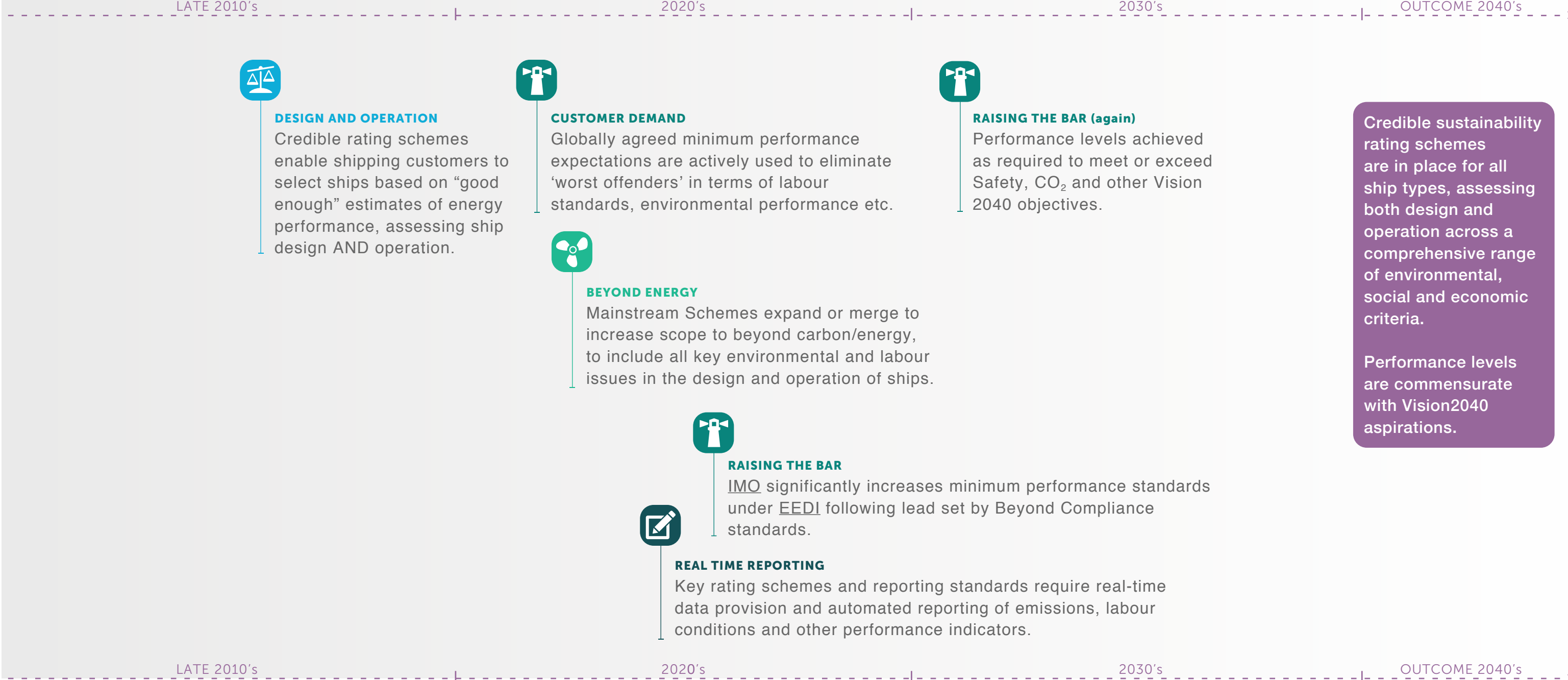


VISION 2040

ENCOURAGE SHIPPING CUSTOMERS TO MAKE SD PERFORMANCE KEY IN SERVICE SELECTION AND AGREED SET OF PERFORMANCE STANDARDS



PIONEER METHODS FOR SHIPPING'S STAKEHOLDERS TO COMPARE SUSTAINABILITY PERFORMANCE & DRIVE IMPROVEMENT



5

Develop financial solutions that reward sustainable performance and enable large scale uptake of innovation, technology, design and operational efficiencies

THE CASE FOR ACTION

FREEDOM VS LEVEL PLAYING FIELD – OCEAN GOVERNANCE

Investments in double hull required as 'license to operate' for tankers

ECA Compliance requires investment in NOx and SOx reduction

ADVANCING TECHNOLOGY – MAKING IT PAY

New ownership models emerge

- ownership of the vessel and all technical installations
- owner buys and supplies to yard (owner supply)
- ESCO models (energy service company) with suppliers retaining ownership of equipment and guaranteeing lifecycle cost OR performance on spot-test

VISION 2040

EXPLORE WAYS TO PUT A FINANCIAL VALUE ON ECOSYSTEM GOODS AND SERVICES AND ENSURE RESPONSIBLE USE AND REDUCE ECOSYSTEM IMPACT



PRACTICAL APPLICATION
Pilot studies identify how the notional "Value" of ecosystems can be incorporated into marine governance systems and real decision making – eg calculation of license fees that reflect the impact a given economic activity has on the marine environment.



GOVERNANCE
Establishment of a credible, global coalition of institutions and organisations to advance natural capital accounting & adoption by IMO.



GOVERNANCE
Global governance body established for overseeing ecosystem goods and service valuation. Also see Milestone 2020's in Key Area for Action 1 (governance of the oceans).



VALUATION TECHNIQUES
Agreed global methodology for ecosystem valuation adopted by global governance body.



PRACTICAL APPLICATION
Ecosystem valuations are factored into major MSP negotiations and IMO decisions.

Ecosystem valuations are routinely used by key global institutions in decisions affecting maritime regulation and ocean planning (MSP). There is clear evidence that ecosystem valuations have a material impact on decisions.



PRACTICAL APPLICATION
IMO trials the use of Ecosystem valuations in development of regulations.

DEVELOP PREFERENTIAL ACCESS TO CAPITAL AND INSURANCE THAT REWARDS HIGH SUSTAINABILITY PERFORMANCE



RATING SCHEMES - TRIALS
Pioneering banks are factoring Sustainability Rating Scheme performance (eg under EEDI, Rightship, Green Award, etc) is factored into financing decisions, as it is recognised that this will impact on asset value (see 'Transparency and Accountability Drive Performance' Key Area for Action).

Adoption of a voluntary pricing scheme – eg: Gold Standard.

Change to a diverse range of energy sources, using resources more efficiently and responsibly, and dramatically reducing greenhouse gas intensity

THE CASE FOR ACTION

ADAPTING TO CLIMATE CHANGE

Reduce CO₂ to 1990 levels to prevent runaway Climate Change

Arctic sea passages 'open for business'

IPCC predict significant increase in extreme weather

IPCC predict significant impact on coastal infrastructure due to CC.

2050 Arctic completely ice free during the summer

LATE 2010's

2020's

2030's

OUTCOME 2040's

MOVING ON FROM OIL - THE FUTURE OF ENERGY

Oil price spike + downturn hits shipping.

Increasing reliance on 'hard to reach' oil reserves and shale gas.

Likely date of 3rd generation biofuel wide availability to shipping.

Predicted date of depletion of US shale gas reserves.

80% reduction in CO₂ emissions required (by 2050) to prevent runaway climate change.

VISION 2040

LATE 2010's

2020's

2030's

OUTCOME 2040's

PIONEER / IMPLEMENT AGGRESSIVE IMPROVEMENTS IN ENERGY EFFICIENCY IN NEW SHIP DESIGNS, RETROFITS AND OPERATIONS.



REGULATORY MILESTONE
IMO implements CO₂ reduction plan towards UNFCCC warming target.



OPERATIONAL MILESTONE
Slow steaming, weather routing and other key operational practices are used on majority of voyages.



INDUSTRY MILESTONE
Sustained 20% reduction in CO₂ per tonne/mile from 2012 levels.



OPERATIONAL MILESTONE
Cold Ironing and virtual arrival used in all major ports.

INFLUENCING FACTOR
New technologies currently take around 10-15yrs to achieve market penetration. Average rate of improvement in energy efficiency of new ships is <10% per decade.

INFLUENCING FACTOR
IMO requires 10% improvement in EEDI – this is insufficient.

INFLUENCING FACTOR
Global fleet doubles to 200,000 ships.

Unified regulation, ONE voice (EU/IMO/ Global).

Global shipping fleet achieves 80-90% CO₂ per tonne/mile from 2012 levels. (UCL)

AVERAGE 25-30% REDUCTION IN CO₂ EMISSIONS PER TONNE/KM REQUIRED, EVERY DECADE TO 2040

ACTIVELY SEEK RENEWABLE AND OTHER ENERGY SOURCES TO ENCOURAGE A STEP-CHANGE IN ENERGY PORTFOLIO TO ACHIEVE SIGNIFICANTLY REDUCED CO₂ INTENSITY.



INDUSTRY MILESTONE
MARPOL low sulphur regulation and SECAs promote fuel switch (rather than scrubbers).



BATTERIES/ELECTRIC
Electric hybrid propulsion for large ships enabled by 50% drop in battery cost (per kWh) by 2025. Enables on-shore charging, and energy harvesting and recovery, estimated 8-15% efficiency gain.



ALT FUEL TRIALS
Many experimental projects for ship propulsion have materialized by 2030, using wind /solar / wave energy.



BIOFUEL TRANSITION
Transition plan in place to enable transition from methanol/ethanol from coal/natural gas, to bio-methanol and bio-ethanol.



BIOFUEL
Sustainable biofuel used for marine engines + fuel cells on gas/methanol begin to be used for auxiliary engines.

LNG
LNG use in deep sea ships well established.

(WORK IN PARTNERSHIP TO SHARE RISKS AND BENEFITS OF SUSTAINABLE INNOVATION AND TECHNOLOGY).

LATE 2010's

2020's

2030's

OUTCOME 2040's

ENGAGE OUR PARTNERS TO ACHIEVE MAJOR SUPPLY CHAIN EFFICIENCY GAINS



TRANSPARENCY
Carbon pricing is used to inform procurement processes and logistics design.



INDUSTRY MILESTONE
The practice of ships / containers returning empty from a voyage is phased out (WBCSD).



INDUSTRY MILESTONE
Elimination of "in ballast" phase. More efficient positioning of cargo / ship (DHL model).

WHOLE SYSTEM APPROACH TO LOGISTICS
Modal shift from air to sea transport as cargo owners seek dramatic CO₂ reduction.

WHOLE SYSTEM APPROACH TO LOGISTICS
Finished goods are consumed primarily by domestic market – facilitate by 3rd party licenses for manufacture reducing import/export cross over.



TRANSPARENCY
Mainstream use of sustainability Rating schemes in procurement processes.



TRANSPARENCY AND COLLABORATION
Optimisation of supply chain and 3rd party supplier licensing.



PERVERSE TRADING
Business/trading models to avoid 'perverse trading' are developed and trialled.

Large, super-efficient, fully integrated supply chains are operating throughout the industry, supported by widespread sharing of resources and information.

LATE 2010's

2020's

2030's

OUTCOME 2040's

**sustainable
shipping
initiative**

