Tides of Change

A Framework for Developing Just and Inclusive Green Shipping Corridors

OCEAN STEWARDSHIP COALITION

Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping

SSI Sustainable Shipping Initiative

Contents

01 Introduction

Transitioning to zero and near-zero emission economies is at the core of addressing the three planetary crises outlined by the UN: climate change, biodiversity loss, and pollution currently underway.[1] However, decarbonization cannot be treated in isolation. As recognized in the 17 UN Sustainable Development Goals, "ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests."

Shipping is deeply integrated in 90% of global trade flows and, therefore, a central part of the necessary systems change towards zero and near-zero emission economies. However, the shipping industry can only truly succeed with decarbonization if the socio-economic and broader environmental impacts of the transition are adequately understood and addressed.

In July 2023, the International Maritime Organization agreed on a 2023 greenhouse gas strategy signaling early industry commitment to phasing out GHG emissions from international shipping as well as promoting a just and equitable transition.

The International Labour Organization defines a just transition as "greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind."[2] In their 'Introduction to just transition - a business brief', the UN Global Compact further explores how the private sector can "help achieve a just transition through own policies and strategies, but also by advocating for a public policy environment which is conducive to a just transition for all".[3]

This ambition is further detailed in an UNCTAD article published in 2022 outlining the elements of what a just and equitable transition entails for maritime. The authors argue that a just and equitable transition for the shipping industry should be socially just, globally equitable, technologically inclusive, and procedurally fair: "a globally equitable transition considers disparities between nations and whether action taken to address climate change would exacerbate or explicitly seek to mitigate them."[4]

As recognized by the increasing number of signatories to the Clydebank Declaration,[5] a key accelerator of early transition is green shipping corridors – large-scale demonstration projects that enable sustainable shipping solutions in and between selected ports. Once operational, green corridors can speed up the development of alternative fuel supply chains and new business models across the maritime ecosystem. Green corridors have the potential to strengthen the confidence in the feasibility of green shipping solutions and catalyze global action towards the energy transition.

In addition to demonstrating technical and regulatory feasibility, green corridors are uniquely positioned to act as demonstration projects for socio-economic and environmental impacts. As we navigate the transition away from fossil fuels, it is crucial to reflect on and address the existing injustices embedded in today's global economy, such as unequal access to energy, food and water, economic disparities between the Global South and Global North, and social inequities.

Applying a just and equitable transition lens to green corridors will help stakeholders shape a transition that not only mitigates environmental impact but also ensures that the benefits of green shipping corridors are shared inclusively across communities and nations. Green corridors can help unlock benefits for countries – such as accelerating the development of sustainable fuel production, enabling knowledge and technology transfers, building local capacity and creating green jobs, supporting a country's wider transition aims, and improving access to clean energy. This is particularly true for many developing countries placed in areas with an abundance of solar or wind.

This report describes what the stakeholders involved in green corridors project consortia must consider in order to contribute to a just transition. It is evident that this requires significant collective action, but also that the benefits of this approach will spread far beyond the shipping industry benefiting individuals, communities, and countries.

OCEAN STEWARDSHIP COALITION

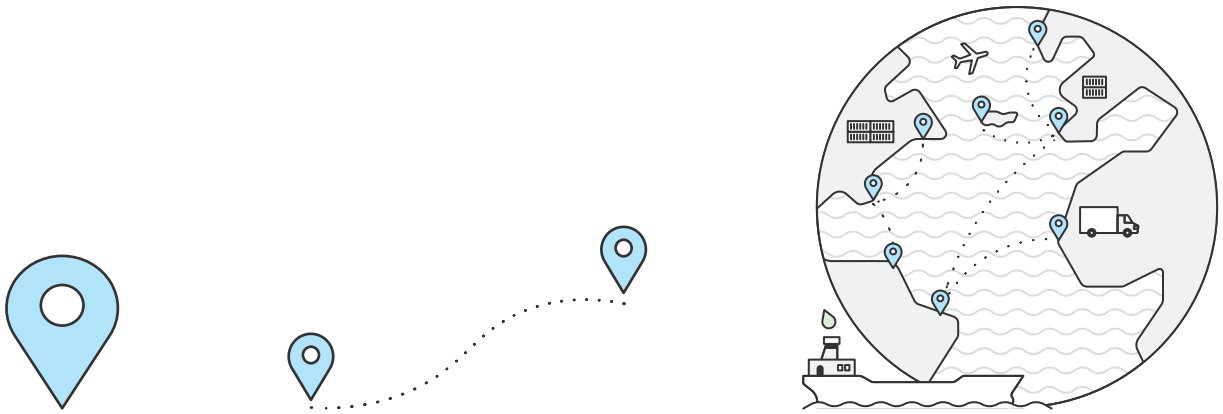
Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping

SSI Sustainable Shipping Initiative

Green corridors in short

Green corridors are large-scale demonstration projects that enable sustainable shipping solutions in selected ports. Once operational, green corridors will accelerate the development of alternative fuel supply chains and new business models across the maritime value chain.

Figure 1: Maritime green corridors accelerate the decarbonization of shipping and hold the power to boost the green transition in a country or region.



Single point

Single-point corridors establish zero-emission shipping routes around a particular location, e.i., a port hub allowing round-trip bunkering

Point to point

Point-to-point corridors are single-route green corridors between 2 ports. Typically,more niche segments or based around a commodity transport route

Network

Network green corridorsestablish routes between 3 or more ports where vessels can sail on alternative fuels

A green corridor can be initiated by any stakeholder, public or private. Each project uniquely demonstrates a specific change scenario for shipping across vessel segments, fuel types, cargo types, etc. However, common to all projects is the dependency of key stakeholders from across the value chain coming together to form a project consortium.

The collaborative and specific nature of these projects can be beneficial in reducing complexity and mitigating some of the uncertainties faced by first movers. Green corridors can also reduce perceived risk for financial stakeholders, such as insurers, lenders, and investors. At their core, green corridors provide knowledge and insights to support shipping's decarbonization, such as the implications of different transition strategies, the required development of effective regulation, and concrete data on what is required to build alternative fuel supply chains. Green corridors may also shed light on broader environmental considerations and socio-economic risks and opportunities.

At the United Nations Climate Change Conference in 2021 (COP26), a number of countries signed the Clydebank Declaration asserting the need to "act together and demonstrate that maritime decarbonisation is possible, while unlocking new business opportunities and socioeconomic benefits for communities across the globe".[5] At the time of writing, 24 countries have signed the declaration.

02 The socio-economic opportunities and risks of green corridors

A just and equitable transition involves maximizing opportunities and minimizing the risks for individuals, communities and countries when moving towards zero and near-zero emission economies. Table 1.0 outlines these risks and opportunities in the context of green shipping corridors.

Table 1: Summary overview of 'socio-economic risks and opportunities of green corridors'.

	Workers	Communities	Countries
Socio-economic opportunities to be maximized in a green corridor	– Decent, green jobs which ensure a safe, healthy, and secure work environment. – Upskilling for safe handling of green shipping technologies, e.g., alternative fuels. – A more diverse workforce with equal opportunity for all regardless of their gender, age, and minority, or marginalized status. – Strengthened social dialogue, transparency, knowledge sharing and communication to help overcome fears in the workforce and surrounding communities.	– New local direct, indirect, and induced jobs, creating new capacity and training opportunities. – Increased resource availability, e.g., surplus renewable energy, which can improve local energy security and access. – Health benefits as a result of phasing out fossil fuels, e.g., improved air quality in port communities. – Health benefits from moving cargo from road to sea with improved road safety and NOx and CO2 emissions in local communities. – New partnerships and co-ownership and/or benefit-sharing structures between industry and local stakeholders. – Enhanced community resilience to climate change through embedding climate adaptation and mitigation into infrastructure, asset and project planning. – Improved stakeholder dialogue and consultation at the port, leading to better governance and accountability.	– Opportunities for infrastructure development, technology transfer and capacity building, helping to foster R&D ecosystems. – Financial and technical support provided by a green corridor consortium to support wider sustainable development aims. – Upskilling for green industries can elevate entire economies and drive productivity gains. – Opportunities to boost competitive supply chains associated with electricity and alternative fuel production, enabling economic diversification.
Socio-economic risks to be minimized in a green corridor	– Insufficient technical capacities for the local/domestic workforce that can be addressed/mitigated by upskilling and capacity building. – Job misalignments – jobs lost will not necessarily be replaced through new green shipping jobs in the same geographies. – Safety risks associated with new fuel production, bunkering and use onboard.	– Increased ecosystem degradation, biodiversity loss, and introduction of invasive species affecting livelihoods, e.g., fishing or tourism. – Further marginalization, e.g., of port communities, and displacement of traditional resource users, e.g., small-scale fishers, through infrastructure development at ports or on land. – Adverse environmental impacts caused by increased feedstock demand, freshwater usage, waste streams associated with production of new fuels and indirect land-use change. – Increased transport due to the need for higher fuel volumes (as a result of lower density, zero and near-zero emission fuels).	– Exclusion of countries, such as LDCs[i] and SIDS,[ii] that cannot prioritize the upfront investment required to be part of a green corridor. – Potential issues of land-use change for fuel production, transport, and bunkering, particularly relating to sustainable sourcing of biogenic feedstock. – Some countries, e.g., SIDS and LDCs, are more likely to be negatively impacted by the decarbonization of shipping and associated increase in fuel costs, which may result in an increase in the cost of imported goods.

i Least Developed Countries (LDC).
ii Small Island Developing States (SIDS).

03 Impact on workforce

The just transition concept has roots in the labor movement and recognizes that the transition to zero emission may disproportionately affect some groups negatively. As a driver of sustainable growth with the potential to create quality green jobs, a just transition mitigates negative impact by ensuring that workers have access to reskilling programs, social protection, and safety nets throughout the transition from one reality to another, e.g., replacing fossil fuels with green alternatives. In order to accomplish this, a just transition relies on effective social dialogueiii and stakeholder engagement among impacted groups.

3.1. Creating decent green jobs

Studies assessing likely employment impacts of the energy transition point to a global net gain of jobs.[6] In the energy sector alone, estimates predict a rise of up to 139 million jobs.[7] Jobs created will include direct jobs, such as manufacturing, construction and operations, indirect jobs, such as service jobs or supply chain jobs, and induced jobs, such as hospitality and healthcare.

Jobs directly created by the transition to zero and near-zero emission shipping will depend on various factors ranging from domestic workforce capacity to unique local economic and labor market structures, as well as the size, scope, and fuel options of the corridor.[8] Attempting to quantify these would be premature, but there are examples of existing alternative fuel projects that provide inspiration with regard to job creation. An example is a new green ammonia plant project in South Africa predicted to generate 20,000 jobs in the Nelson Mandela Bay region, which suffers from almost 50 per cent unemployment.[9] In Spain, a large-scale green fuel production partnership between a private actor and the Spanish government is expected to generate up to around 85,000 jobs, including construction and temporary positions.[10] Additional studies from Chile,[11] the European Union,[12] Canada,[13] and Africa[14,15] show similar expectations for job creation associated with national strategies for hydrogen production - a key element in sustainable fuels for shipping.

The same trend is expected for ports. In the United States, the Maritime Port Clean Energy Infrastructure Jobs Study estimates that infrastructure spending on projects to reduce air pollution and greenhouse gas emissions from port operations in the US would support an average of nearly 32,000 jobs per year, many of them in the construction industry.[16]

However, it is important to emphasize that a conscious effort is required to ensure that jobs created during the energy transition qualify as decent, sustainable green jobs. This effort can include applying internationally accepted International Labour Organization's frameworks, sectoral bargaining, and wider relevant legislation on employment rights and occupational health and safety.[17]

An additional barrier to unlocking domestic, high-quality green jobs across sectors is misalignment between where labor is needed versus where it is geographically located. Green corridors may not necessarily be developed within the communities where fossil fuel-related jobs have been lost. To mitigate this, an initial labor assessment should take place alongside the green corridor scoping phase, and social criteria, i.e., ability to retrain and upskill workers, could be included into the decision-making process to determine where a green corridor will ultimately be located. To use green corridors as test beds for understanding potential job creation as well as job type and structure, these topics must be early considerations for green corridor projects.

iii Social dialogue is defined by the ILO to "include all types of negotiation, consultation or simply exchange of information between, or among, representatives of governments, employers and workers, on issues of common interest relating to economic and social policy."

3.2. Upskilling to safeguard local jobs

If competency gaps are not mapped and addressed locally, it will prevent the development of human capacity through training and increase production costs. For example, green hydrogen projects in Latin America currently depend heavily on foreign scientists and engineers, adding another layer of cost to production, as well as being without local workforce capacity development.[18] To mitigate this, governments and private stakeholders engaging in green corridor projects and shipping's wider decarbonization will need to undertake appropriate and timely forecasting of skills both on a project and a country level,[iv] invest in education and capacity development, and work with local industry and unions through mechanisms such as skills councils to help bolster the participation of local workforces in the green shipping economy.

Similar to the onshore need for new competencies, up to 800,000 out 1.8 million seafarers will require additional training to handle alternative fuels and other technologies by the mid 2030s.[19] Although no current training framework exists for alternative fuels, this is a high priority for the sector and is being explored by several organizations including class societies and the Maritime Just Transition Task Force under the UN Global Compact, the International Chamber of Shipping (ICS), the International Transport Workers' Federation (ITF), the International Labour Organization (ILO) and the International Maritime Organization (IMO).

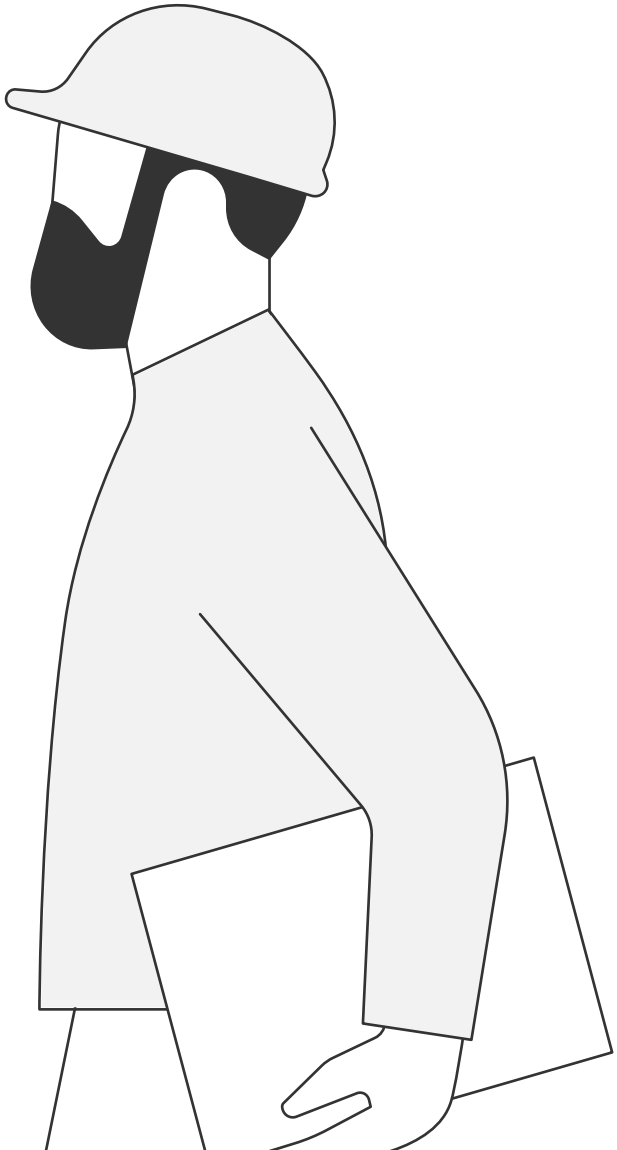
The global community of seafarers comprises around 1.8 million[20] active seafarers mainly from countries like The Philippines, India, Indonesia, Russia, Ukraine, and China. The necessary training or reskilling for the workforce onboard vessels sailing in green corridors outside of those regions will require deliberate knowledge transfers and exchanges of best practices between green corridor pilot projects and major global/regional maritime education and training stakeholders. Seafarer crew hubs can ensure crucial access to the latest best practices and training on green fuels and technologies.

iv On a project level, this might be done within the green corridor consortium. On a national level, this should be done in conjunction with a wider Just Transition plan and strategy.

3.3 Gender and marginalized groups

The transition is also an opportunity to advance gender equality, youth participation, and support marginalized groups. This will require undertaking targeted measures and programs as part of just transition planning, including in the context of green corridors.

Policies for development of new skills should emphasize equal access to workforce training and related policy measures. This could include investment, targeted programs, and special measures in Science, Technology, Engineering and Mathematics (STEM), which will become increasingly important for green shipping jobs. Several governments are already incorporating a gender lens into their transition planning. Spain's Just Transition strategy (2020) includes a specific provision "to ensure the incorporation of women into green economy employment opportunities through gender mainstreaming."



04 Impact on communities

Community involvement, transparency, and trust are crucial for successful green corridor projects. Local context, economic landscape, and community needs must be considered and concerns addressed in order to build buy-in for a project through social acceptance.[21] The U.S. Environmental Protection Agency's Community-Port Collaboration Toolkit helps both communities and port actors collaborate and create common understanding around opportunities and challenges.

4.1 Economic opportunities as a result of green corridors

In addition to potential job creation, community benefits may also consist of surplus resources – more specifically, improved access to clean energy, including stable electricity, lower costs, and potentially even the creation of a new income source through the exploration of new ownership models. As an example, in India, a community-owned wind plant in Tamil Nadu set up in 2006 generates all the electricity for the village and sells excess electricity to the grid.[22]

The development of new infrastructure and fuel supply chains also provides opportunities to explore new and more just business models such as shared ownership, which has been explored more deeply in the context of energy projects.[22] These models may include joint decision-making and profit sharing. For example, the Apuiat Wind Farm project in Canada is a 50-50 partnership between the Innu First Nation and renewable energy company Boralex. The project adopts Innu values and traditional practices, all decisions are made jointly, and profits are split equally.[23]

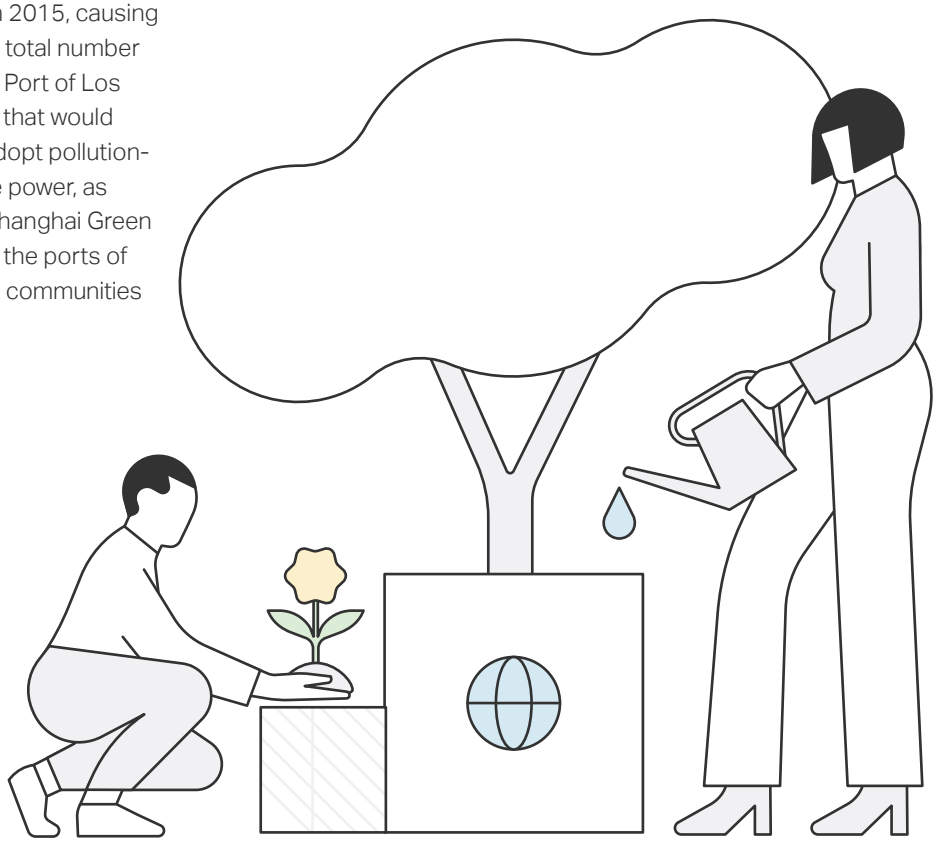
4.2 Derived environmental and health benefits

Some communities suffer from the negative impacts of fossil fuel production. These negative impacts include health risks such as respiratory conditions and some types of cancer, or environmental risks such as ecosystem degradation and biodiversity loss.[24] In these communities, the phasing out of fossil fuels will have a positive impact on the surroundings, including improved air quality and cleaner water. This could, in turn, lead to increased opportunities for industries such as fishing and tourism. Addressing these negative externalities and working to reverse the damage should be considered a form of climate justice.

Air quality has been a long-standing health and environmental issue in port communities, due to emissions from vessels at port, trucks and rail, among others. A 2019 study found that air pollution from shipping was the third-highest cause of transport-related death from pollution worldwide in 2015, causing 60,000 premature deaths, or 15% of the total number of polution related deaths.[25] In 2001, the Port of Los Angeles was sued over expansion plans that would increase pollution and was required to adopt pollution-prevention measures, such as shoreside power, as part of the settlement.[26] Today, the LA-Shanghai Green Shipping Corridor mentions air quality in the ports of Shanghai and Los Angeles and adjacent communities as part of its decarbonization goals.[27]

New fuel production and port infrastructure also carry risks to the local environment such as ecosystem degradation, biodiversity loss, and the introduction of invasive species, among others. Protecting – and, in some cases, restoring – ecosystems carries obvious benefits to the local community. For example, mangroves can act as flood protection and support local livelihoods dependent on fishing. In Ecuador, DP World Posoria is currently engaged in a reforestation project planting 65 hectares of mangroves, which will enable both carbon capture for the port and support the local fishing community.[28]

Green corridors also have the potential to act as catalysts for resilience through embedding climate adaptation into asset and infrastructure development and leveraging ecosystem services, such as storm and flood protection.[v]



v ARUP's Port Resilience Framework for Action points to protecting ecosystems as a way to reduce port exposure to shocks and build social capital with communities.

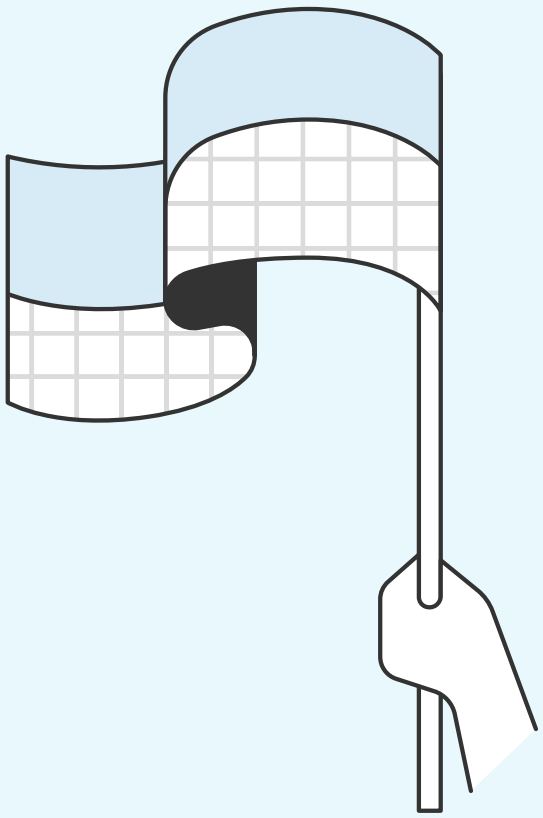
05 Impact on countries

The attention towards the international dimension of the energy transition is increasing, and it is often associated with the need to transition to zero and near-zero emission economies in a just and equitable way. A just and equitable transition recognizes the inequity built into the fossil fuel-based system, and acknowledges that climate impacts do not affect all states equally.[29]

Global South countries, including a number of developing countries, are disproportionately impacted by climate change, despite carrying little historic responsibility for it.[30] This includes having to redirect resources to deal with climate impacts and future-proof their infrastructure.

A 2023 UNEP report mentions that the costs of adaptation in developing countries are estimated at US$215 billion per year this decade.[31] Small Island Developing States rely on their ports for trade, food and energy security, and tourism, among others. However, these critical assets are also projected to be at high and growing risk of coastal flooding from as early as the 2030s, unless effective adaptation action is taken.[32]

Given the differences between countries, including current impacts of climate change, the transition to zero and near-zero emission economies needs to be not only fair to local workers and communities but also equitable at a global level. The UN climate organization UNFCCC has developed a set of principles that describe common but differentiated responsibilities.[vi] Against this background, UNCTAD[vii] calls for bold global action to decarbonize shipping in its recent Review of Maritime Transport,[33] to ensure a "just and equitable transition," advocating for system-wide collaboration, swift regulatory intervention, and stronger investments in green technologies and fleets.



vi The United Nations Framework Convention on Climate Change (UNFCCC) is the United Nations entity tasked with supporting the global response to the threat of climate change About the secretariat | UNFCCC
vii The United Nations Conference on Trade and Development (UNCTAD) is an intergovernmental organization within the United Nations Secretariat that promotes the interests of developing countries in world trade: About UNCTAD | UNCTAD

5.1 National benefits from green corridors

Green corridors can unlock significant benefits for countries such as accelerating the development of alternative fuel production, enabling knowledge and technology transfers, building local capacity, creating sustainable green jobs, and supporting a country's wider transition aims. Furthermore, green corridors present an opportunity for countries to "achieve their environmental objectives while fuelling economic prosperity, realizing social co-benefits, and protecting themselves from the impact of divestment from fossil fuel industries".[34]

Many developing countries have untapped, but abundant, renewable energy resources.[35] Green corridors could accelerate the development of these renewable energy resources through financing, technology transfers, capacity building, driving wider national economic diversification, and supporting energy access.

However, in order to gain these benefits, countries must be able to participate in green corridors in the first place. The current portfolio of green corridor projects has been criticized for high upfront costs, which can limit participation for countries with smaller economies. As of now, only two planned green corridors involve African countries (South Africa[36] and Namibia[37]), whereas an increasing number of green corridors have been announced in the Global North.

Green corridors should be equal partnerships where all benefits are fairly distributed with considerations for global equity, and governed by a consortium that is representative of the stakeholders involved. This is particularly relevant where one country is engaged in a green corridor project for its fuel production potential. In these cases, measures can be taken to mitigate risks by ensuring that new developments do not infringe on the rights of local and/or marginalized communities, exploring co-ownership models with local actors for new infrastructure, and making new resources (e.g., electricity production) available for domestic use.

5.2 Opportunities for mitigating climate risk

Over 80% of the investments needed to decarbonize shipping will be land-based – including renewable electricity generation, hydrogen electrolyzers, and fuel synthesis plants.[38] Land-side investment to decarbonize shipping can boost competitive domestic supply chains associated with electricity and alternative fuel production, in turn leading to a boost to national gross domestic product (GDP). In addition, investments in port resilience can also boost trade and economic growth, and create green, decent jobs.

Ports are critical junctions for global trade, and investments in climate-resilient port infrastructure are crucial.[39] As highlighted by UNCTAD, climate-related port infrastructure damage, operational disruptions and delays across global supply chains may lead to extensive economic losses – especially in regions impacted by tropical cyclones and storm surges, with important implications for global trade and the sustainable development prospects of the most vulnerable countries.[40]

The Oxford Environmental Change Institute estimates that 81 billion USD in international trade and at least 122 billion USD in economic activity annually is already at risk from the impact of extreme climate events on port operations.[41] However, these estimates do not yet take into account projections of future climate change.[viii] Climate hazards such as sea-level rise and associated extreme sea levels pose a particular threat to seaports across the globe[42] and are projected to grow significantly,[43] making the need for effective adaptation action increasingly urgent.

While green corridors are not a silver bullet for these critical adaptation needs, they can act as a catalyst for wider action. Drawing on synergies between energy efficiency, decarbonization and renewables can also provide important co-benefits for both mitigation and adaptation, reduce related energy needs and costs and increase energy security.[22] At minimum, the infrastructure development associated with the green corridor should embed principles of resilience to ensure its longevity. In addition, the green corridor consortium may be able to exert leverage on the participating port or ports, and, in some cases, even support with financing for a wider resilience plan.

viii For some estimates of the cost of increased annual storm damage and port disruptions under climate change, as well as related implications for shipping and ports, see EDF's Act Now or Pay Later: The Costs of Climate Inaction for Ports and Shipping.

06 Key actions and recommendations

While recognizing that every green corridor project is unique, the following sections summarize key actions and recommendations for stakeholders involved in their development to ensure that the corridor is developed in a way that is genuinely just and equitable.

Some actions can be pursued by each actor individually, while others require the aligned actions of multiple stakeholders in the project consortium.

Stakeholder groups not mentioned below, such as civil societies and NGOs, can play vital roles in calling for green corridor consortia to adopt these recommendations, providing knowledge and experience with specific just transition topics, engaging communities, and more.

Guidance on building sustainable green corridors

A number of guidelines on how to create green corridors have been issued with the objective of catalyzing ecosystem action and scaling the number of green corridor initiatives as fast as possible. These valuable, supporting frameworks should be used to build on the learnings and experience already gathered around the complex task of building a green corridor:

– Mission Innovation's Zero Emission Shipping Mission facilitates knowledge sharing on the topic of green corridors through its website: https://mission-innovation.net/missions/shipping/green-shipping-corridors/reports/

– Mærsk McKinney Møller Center for Zero Carbon Shipping has developed green corridor pre-feasibility and feasibility study blueprints that include step-by-step guides to both phases, as well as the initial analysis required for green corridor development (to be updated Q1 2024): https://www.zerocarbonshipping.com/publications/green-corridors-pre-feasibility-phase-blueprint/

– Lloyd's Register Maritime Decarbonisation Hub has issued a framework to help converting ambition into action: https://www.thesilkalliance.com/wp-content/uploads/LR_First_movers_in_shipping_s_decarbonisation_A_framework_for_getting_-1.pdf

– The government of Canada has developed a national green shipping corridors framework to guide the people and organizations who are developing the green shipping corridors: https://tc.canada.ca/en/marine-transportation/marine-pollution-environmental-response/canadian-green-shipping-corridors-framework

– Environmental Defense Fund, Lloyd's Register Maritime Decarbonisation Hub and Arup have explored "The potential of ports in developing Sustainable First Movers Initiatives"

– Global Maritime Forum has issued a brief that explores the rationale for different subsidies and compares the potential advantages of different policy combinations: https://www.globalmaritimeforum.org/publications/national-and-regional-policy-for-green-shipping-corridors

– Environmental Defense Fund (EDF) and Lloyd's Register (LR) Maritime Decarbonisation Hub, in collaboration with Arup, have issued a Sustainable First Movers Initiative Identification Tool, a system to help shipping stakeholders align investment decisions that support the maritime energy transition away from fossil fuels: The Potential of Ports in Developing Sustainable First Movers Initiatives

The UN Global Compact has developed guidance and an e-learning course to introduce just transition and help companies get started in planning for it. The UN Global Compact has also developed four briefs to deepen the understanding of just transition in the context of adaptation, finance, renewable energy and supply chains. Further inspiration on the development of more sustainable ports can be found in the UN Global Compact Sustainable Ocean Principles: Practical Guidance - Ports.

6.1 Recommended individual action

There are several actions that all stakeholders (private and public) can pursue individually to ensure just green corridors. However, collaboration and sharing of best practices relating to these recommended actions can significantly accelerate the overall transition and boost learning across the value chain.

6.1.1 Just transition planning

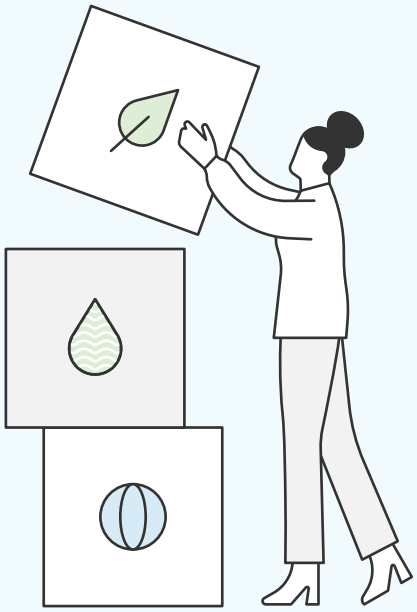
Incorporating just transition planning means directly including considerations about affected workers and communities as part of the overall planning discussions. According to UN Global Compact: "Businesses can support a just transition through their own policies and strategies [...] Businesses' full potential is realized through transition planning that is based on social dialogue and stakeholder engagement and optimizes social, economic and employment impacts on the journey to net-zero emissions and environmental sustainability."[3]

Recommendations:

– Assess how the green corridor can leverage wider transition aims regionally/locally, including improved access to clean energy, the development of decent, sustainable jobs, a diverse and inclusive workforce and capacity building, but also improved air quality and the preservation of biodiversity and ecosystems regionally.

– Consider how the green corridor in question can support a global transition and the extent to which the consortium is inclusive of stakeholders that are not large multinationals, e.g., local enterprises.

– Include a just and equitable transition as a focus area in ESG and sustainability strategies, and for governments and national development plans.



6.1.2 Workforce and skills development

Green corridor projects should commit to upskilling and reskilling the workforce and prioritize decent green job creation across the areas of fuel production, port activities, zero and near-zero emission vessel production and operations. This requires early identification of skill gaps, investments in competency building and facilities to provide (re-)training, and developing and executing upskilling or reskilling training programs.

For all these activities, collaboration with industry peers, academia and other training and educational institutions, as well as other relevant stakeholders, is key. Since a community where fossil fuel-related jobs have been lost may not be the place where a green corridor is developed, an initial labor assessment should take place alongside the green corridor scoping phase. Social criteria, i.e., ability to retrain and reskill workers, could be included in the decision-making process of where a green corridor is ultimately located.

Recommendations:

– Prioritize use of domestic labor (which may or may not already be employed in existing industries) and support local-level capacity building and economic development.

– Identify skill gaps. Partner with unions, skill councils, local governments and communities to support this process. Training needs could include reskilling workers in the fossil fuel industry to meet the workforce demand for alternative fuel production, and/or training port workers and seafarers on how to handle new alternative fuels.

– Invest in capacity building and facilities to meet future training needs on- and offshore. These training programs should be offered at no cost to the affected workers.

– Develop and execute training programs with, for example, seafarer institutions and existing training centers.

– Help build a relevant training catalog by sharing knowledge from zero emission pilot projects that can be implemented into training programs for seafarers and integrate learnings into existing standards such as the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).

– Involve workers and unions in the process of identifying skill gaps and developing training programs.

– Share best practices with industry peers and other relevant stakeholders to improve training quality and accelerate the development and execution of training programs.

6.1.3 Social dialogue and meaningful stakeholder engagement

Planning for a just transition is only effective when informed by negotiation through social dialogue, stakeholder engagement, and social impact mitigation. Social dialogue is the foundation of a just transition, according to the International Labour Organization's just transition guidelines.

Recommendations include:

– Engage early and often in dialogue with relevant local stakeholders (i.e., local governments, private companies, universities and scientific institutes, local NGOs, ports, local communities, and individuals) before and throughout the development of a green corridor. This dialogue is important in order to understand and address local perspectives and concerns about the green corridor project and its impacts, as well as community needs. It can take place in forums and/or face-to-face sessions with local groups to ensure transparency of development plans. This engagement, as well as accommodation of input and continuous transparency, is the basis for obtaining and maintaining a "social license to operate".

– Engage workers in decarbonization strategies, plans around restructuring, and any other net zero-related strategy with large employment impacts. For example, hold interactive sessions on chosen zero emission fuel options and the implications for workers in ports or seafarers, etc..

6.1.4 Advocate for public policy and enabling frameworks

Publicly advocating strengthened institutional and regulatory frameworks that promote inclusion and protection of the most affected stakeholders (e.g., programs and government support for reskilling, and social protection for affected individuals outside of companies' direct operations). This may take place at a local, national, or international level, depending on the context.

6.2 Recommended collective action

In addition to the above actions, a green corridor consortium can consider additional collective actions, using the green corridors as a demonstrator for a just and equitable transition by amplifying potential synergies and minimizing trade-offs.

Recommendations include:

6.2.1 Create transparent project governance systems

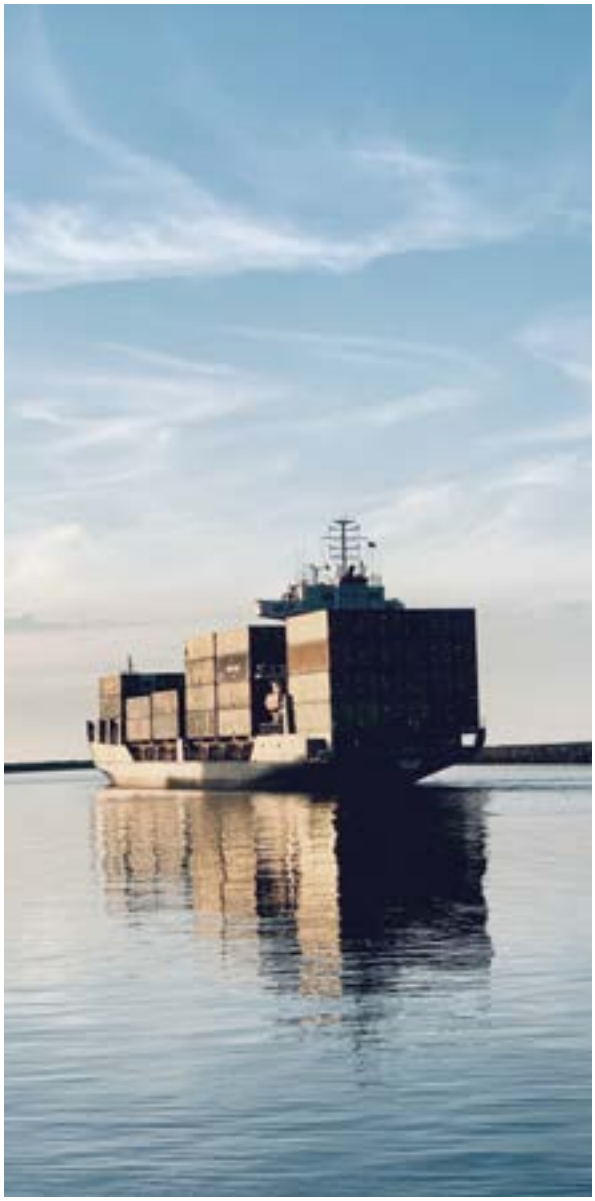
This will ensure that accurate information about the development of the green corridor project is disclosed in a timely and transparent manner. This information should include all material matters regarding activities, structure, financial situation, performance, ownership, and governance of the project. Transparency on progress and decision-making can also support knowledge dissemination to countries and stakeholders that are not involved in a green corridor. GH2's Green Hydrogen Standard includes provisions addressing transparency and accountability. https://greenhydrogenstandard.org/

6.2.2 Build a consortium that reflects the geographical location of the corridor

A consortium should engage in thorough stakeholder mapping and ensure that all relevant groups are adequately engaged. The opportunities that may be derived from an inclusive green corridor partnership, including technology and knowledge transfer and skills transfer for workforces, should be a key consideration.

6.2.3 Establish joint training programs

While adequate training is the responsibility of individual stakeholders, a joint initiative may be beneficial in the initial phases of green corridors to support local workforces' participation. Local workforce should be involved in establishing a joint training center as part of the green corridor consortium. This could include establishing skills funds which assist in the provision of learning, training, education and employment initiatives that help build capacity, tackle isolation and increase employment opportunities. Involvement of relevant government departments (e.g., Higher Education) may foster collaboration and contribute to the success and longevity of any training.



6.2.4 Leverage socio-economic synergies

By exploring new innovative ownership structures such as community ownership through co-operatives, local collective benefits, and equity ownership it is possible to leverage socio-economic synergies. This could be applicable to both port infrastructure and zero and near-zero emission fuel production points. Shipping can look towards the renewable energy sector and more than 4000+ ongoing community ownership projects for inspiration.[22]

07 Conclusion

Shipping is deeply integrated in 90% of global trade flows and, therefore, a central part of the necessary systems change towards zero and near-zero emission economies. However, the shipping industry can only truly succeed with decarbonization if the socio-economic and broader environmental impacts are adequately understood and addressed.

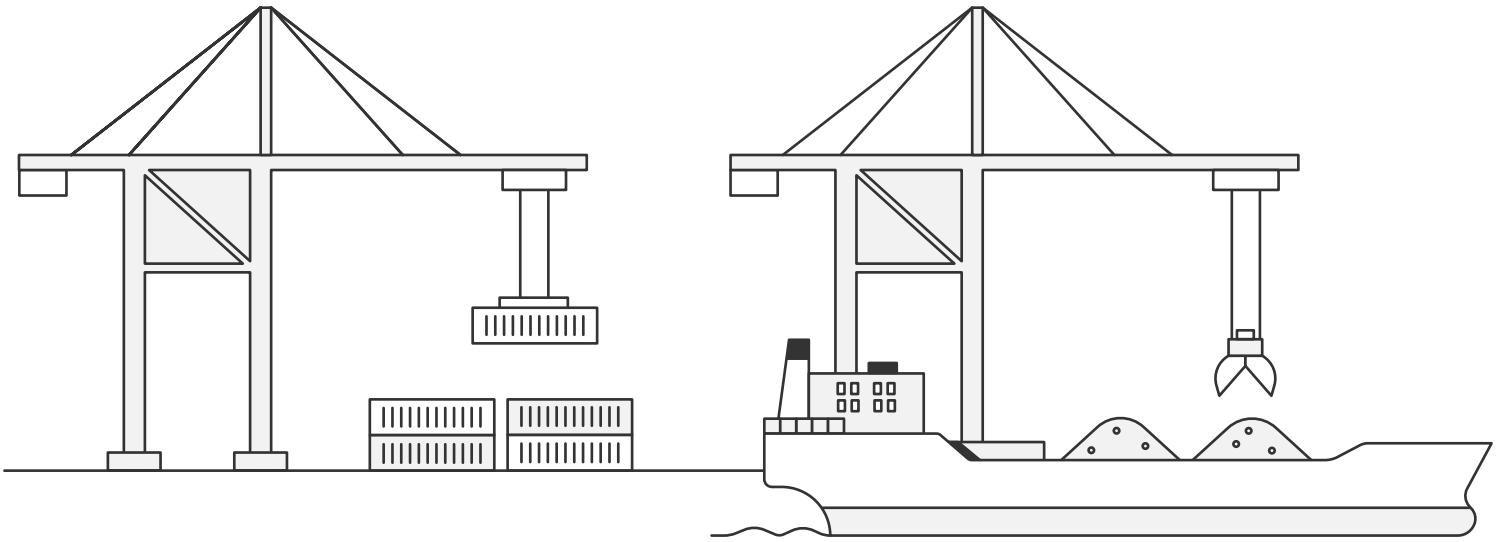
Green corridors demonstrate the technical and regulatory feasibility of zero emission shipping with the involvement of stakeholders across the value chain. However, as we navigate the transition away from fossil fuels, it is crucial to reflect on and address the existing injustices embedded in today's global economy, such as unequal access to energy, food and water, economic disparities between the Global South and Global North, and social inequities.

To that end green corridors provide an opportunity to understand and demonstrate the potential socio-economic benefits associated with the transition away from fossil fuels, as well as understand and mitigate potential risks and trade-offs.

A conscious effort is needed to ensure an equitable distribution of green corridors across Global South and Global North as well as those emerging being inclusive of a diverse portfolio of stakeholders. As Asela Peneueta, Assistant Secretary of the Government of Tuvalu, said in May 2023, "We need careful thought to ensure that green corridors contribute meaningfully to an equitable transition; benefiting everyone and not just the dominant trading and shipping nations. Otherwise, they will increase the inequality that already exists, leaving some of us even further behind."[44]

For countries, and governments in particular, green corridors present an opportunity to leverage several agendas in support of a country's wider transition aims including improved access to clean energy as well as the development of decent, sustainable jobs and capacity building, but also improved air quality and the preservation of biodiversity and ecosystems.

Green corridors can be powerful vehicles to kick-start the green transition in the shipping sector. As a multitude of stakeholders implement them, our focus should be on ensuring that the wider socio-economic and environmental benefits of transitioning to low- and zero-carbon shipping are understood, leveraged and shared inclusively.



08 Project team

This report was prepared by the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping (MMMCZCS).

Lead authors: Elizabeth Petit (SSI), Kjersti Aass and Martha Selwyn (UNGC) and Anne Katrine Bjerregaard (MMMCZCS)

Contributing authors: Mariana Bastos (SSI) Lena Depner (MMMCZCS).

Reviewers: Arjun Bhargava (UNGC), Andreea Miu and Andrew Stephens (SSI), Molly Finlayson, Jan-Christoph Napierski, Didde Pilgaard, Tanja Dalgaard and Pernille Dahlgaard (MMMCZCS).

Design: Julia Garbowska & Karoline Andersen (MMMCZCS).

References

1 SDGs will address 'three planetary crises' harming life on earth. (2021). UN News. https://news.un.org/en/story/2021/04/1090762

2 International Labour Organization. (2015). Guidelines for a just transition towards environmentally sustainable economies and societies for all. https://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_ent/documents/publication/wcms_432859.pdf

3 United Nations Global Compact Think Lab. (2022). Introduction to Just Transition: A Business Brief. https://www.globalcompact.de/fileadmin/user_upload/20221209_Just_Transition_LK.pdf

4 Shaw, A. & De Beukelaer, C. (2022). Why should we talk about a 'just and equitable' transition for shipping? UNCTAD Transport and Trade Facilitation Newsletter N°96 - Third Quarter 2022, 93. https://unctad.org/news/why-should-we-talk-about-just-and-equitable-transition-shipping

5 COP 26: Clydebank Declaration for green shipping corridors. (2022). Gov.UK. https://www.gov.uk/government/publications/cop-26-clydebank-declaration-for-green-shipping-corridors/cop-26-clydebank-declaration-for-green-shipping-corridors

6 International Labour Organization. (2018). World Employment and Social Outlook 2018: Greening with Jobs. https://www.ilo.org/global/publications/books/WCMS_628654/lang--en/index.htm

7 International Renewable Energy Agency & International Labour Organization. (2022). Renewable energy and jobs: Annual review 2022. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Sep/IRENA_Renewable_energy_and_jobs_2022.pdf

8 UMAS. (2022). Maritime Review: A review of existing evidence on maritime emissions reduction pathways, in support of the UK government contributions to the revision of the IMO's Initial Strategy for GHG Reduction.

9 Prisco, J. (2023). $4.6 billion plant in South Africa will make 'the fuel of the future'. CNN. https://edition.cnn.com/2022/10/18/africa/green-ammonia-hive-energy-scn-climate-spc-intl/index.html

10 Maersk. (2022). Maersk and the Spanish government to explore large-scale green fuels production. [Press release]. https://www.maersk.com/news/articles/2022/11/03/maersk-and-the-spanish-government-to-explore-large-scale-green-fuels-production

11 Ministry of Energy, Government of Chile. (2020). National green hydrogen strategy. https://energia.gob.cl/sites/default/files/national_green_hydrogen_strategy_-_chile.pdf

12 Fuel Cells and Hydrogen 2 Joint Undertaking. (2016). Hydrogen roadmap Europe – A sustainable pathway for the European energy transition. Publications Office. https://data.europa.eu/doi/10.2843/341510

13 Government of Canada. (2020). Hydrogen strategy for Canada. https://natural-resources.canada.ca/sites/nrcan/files/environment/hydrogen/NRCan_Hydrogen-Strategy-Canada-na-en-v3.pdf

14 Ministry of Mines and Energy, Government of Namibia. (2022). Namibia:
Green Hydrogen and Derivatives Strategy. https://gh2namibia.com/gh2_file_uploads/2022/11/Namibia-GH2-Strategy-Rev2.pdf

15 Climate Champions. (2022). Green hydrogen could sustainably industrialise Africa and boost GDP by 6 to 12% in six key countries – new report [Press release]. https://climatechampions.unfccc.int/unlocking-africas-green-hydrogen-potential/

16 Wooley, D., Jones, B., Cheung, A. & Brito J. (2021). Maritime Port Clean Energy Infrastructure Jobs Study. https://oceanconservancy.org/wp-content/uploads/2021/11/Maritime-Port-Clean-Energy-Infrastructure-Jobs-Study-Final-Draft-11.1.21.pdf

17 International Labour Office. (2020). Overview of the ILO's Framework for Measuring Decent Work. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/documents/presentation/wcms_166196.pdf

18 Center for Strategic and International Studies. (2022). Hydrogen development in Latin America. https://www.csis.org/analysis/hydrogen-development-latin-america

19 Maritime Just Transition Task Force. (2022). Mapping a maritime just transition for seafarers. https://www.ics-shipping.org/wp-content/uploads/2022/11/Position-Paper-Mapping-a-Maritime-Just-Transition-for-Seafarers-%E2%80%93-Maritime-Just-Transition-Task-Force-2022-OFFICIAL.pdf

20 International Chamber of Shipping. Shipping and World Trade: Global Supply and Demand for Seafarers https://www.ics-shipping.org/shipping-fact/shipping-and-world-trade-global-supply-and-demand-for-seafarers/

21 IRENA Coalition for Action. (2020). Stimulating investment in community energy: Broadening the ownership of renewables. International Renewable Energy Agency. https://www.irena.org/publications/2020/Dec/Stimulating-investment-in-community-energy-Broadening-the-ownership-of-renewables

22 International Renewable Energy Agency. (2020). Innovation landscape brief: Community-ownership models. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jul/IRENA_Community_ownership_2020

23 Institute for Human Rights and Business. (2023). Community Ownership of Renewable Energy: How it Works in Nine Countries. https://www.ihrb.org/focus-areas/just-transitions/community-ownership-of-renewable-energy-how-it-works-in-nine-countries

24 The Global Climate and Health Alliance. (2022). Cradle to grave: The health harms of fossil fuel dependence and the case for a just phase-out. https://climateandhealthalliance.org/wp-content/uploads/2022/07/Cradle-To-Grave-Fossil-Fuels-Brief.pdf

25 Anenberg, S., Miller, J., Henze, D. & Minjares, R. (2019). A global snapshot of the air pollution-related health impacts of transportation sector emissions in 2010 and 2015. The International Council on Clean Transportation. https://theicct.org/publication/a-global-snapshot-of-the-air-pollution-related-health-impacts-of-transportation-sector-emissions-in-2010-and-2015/

26 Schoch, D. (2003). Port project suit settled. Los Angeles Times. https://www.latimes.com/archives/la-xpm-2003-mar-06-me-port6-story.html

27 C40 Cities. (2022). Port of Los Angeles, Port of Shanghai, and C40 Cities announce partnership to create world's first transpacific green shipping corridor between ports in the United States and China [Press Release]. https://www.c40.org/news/la-shanghai-green-shipping-corridor/

28 World Ports Sustainability Program. (2021). DP World Posorja – Mangrove Reforestation Project. Sustainable World Ports. https://sustainableworldports.org/project/dp-world-posorja-mangrove-reforestation-project/

29 United Nations Framework Convention on Climate Change. (2022). Sharm-el Sheikh Implementation Plan. https://unfccc.int/sites/default/files/resource/cma2022_L21_revised_adv.pdf

30 United Nations. Finance & Justice. https://www.un.org/en/climatechange/raising-ambition/climate-finance

31 UNEP. (2023). Adaptation Gap Report 2023. https://www.unep.org/resources/adaptation-gap-report-2023

32 Monioudi, I. N., et al. (2018). Climate change impacts on critical international transportation assets of Caribbean Small Island Developing States (SIDS): the case of Jamaica and Saint Lucia. Regional Environmental Change 18, 2211–2225. https://doi.org/10.1007/s10113-018-1360-4

33 The United Nations Conference on Trade and Development. (2023). Review of maritime transport: Towards a just and green transition. https://unctad.org/isar/publication/review-maritime-transport-2023

34 Oceans North Conservation Society. (2023). Canadian Green Shipping Corridors Preliminary Assessment: Final Report. https://www.arup.com/perspectives/publications/research/section/canadian-green-shipping-corridors-preliminary-assessment

35 The United Nations Conference on Trade and Development. (2017). The least developed countries report 2017. https://unctad.org/publication/least-developed-countries-report-2017

36 Global Maritime Forum. (2023). Maritime, mining, steel, and energy industry leaders join forces to develop first-ever concept for a green corridor between South Africa and Europe [Press Release]. https://www.globalmaritimeforum.org/press/maritime-mining-steel-and-energy-industry-leaders-join-forces-to-develop-first-ever-concept-for-a-green-corridor-between-south-africa-and-europe

37 United Nations Web TV. (2023). Namibia - President Addresses General Debate, 78th Session [Video]. https://media.un.org/en/asset/k1j/k1jy6hqr4t

38 Smith, T., Shaw, A. & Fahnestock, J. (2021). Transition perspective: The role of the energy sector in shipping's fuel transition. https://www.globalmaritimeforum.org/news/transition-perspective-the-role-of-the-energy-sector-in-shippings-fuel-transition

39 The United Nations Conference on Trade and Development. (2022). Climate-resilience of seaports: Adequate finance is critical for developing countries but remains a major challenge. Policy Brief 103. https://unctad.org/publication/climate-resilience-seaports-adequate-finance-critical-developing-countries-remains.

40 Asariotis, R. (2021). Climate change impacts on seaports: A growing threat to sustainable trade and development. UNCTAD Transport and Trade Facilitation Newsletter N°90 - Second Quarter 2021. https://unctad.org/news/climate-change-impacts-seaports-growing-threat-sustainable-trade-and-development

41 Verschuur, J., Koks, E.E. & Hall, J.W. (2023). Systemic risks from climate-related disruptions at ports. Nature Climate Change. 13, 804–806. https://doi.org/10.1038/s41558-023-01754-w

42 Izaguirre, C., et al. (2021). Climate change risk to global port operations. Nature Climate Change. 11, 14–20. https://doi.org/10.1038/s41558-020-00937-z

43 Allan, R. P. et al. (2021). Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf

44 Peneueta, A. (2023). Green shipping corridors must not strand island states. Climate Champions. https://climatechampions.unfccc.int/green-shipping-corridors-must-not-strand-island-states/

Visit our website for more zerocarbonshipping.com

As a special initiative of the United Nations Secretary-General, the UN Global Compact is a call to companies worldwide to align their operations and strategies with Ten Principles in the areas of human rights, labour, environment and anti-corruption. Our ambition is to accelerate and scale the global collective impact of business by upholding the Ten Principles and delivering the Sustainable Development Goals through accountable companies and ecosystems that enable change. With more than 18,000 companies and 3,800 non-business signatories based in more than 160 countries, and 62 Local Networks, the UN Global Compact is the world's largest corporate sustainability initiative — one Global Compact uniting business for a better world.
The Ocean Stewardship Coalition is a convening point at the UN Global Compact for ocean related industries, academic institutions, financial actors, governments and UN institutions. For more information, visit our website at unglobalcompact.org.

Mærsk Mc-Kinney Møller Center
for Zero Carbon Shipping