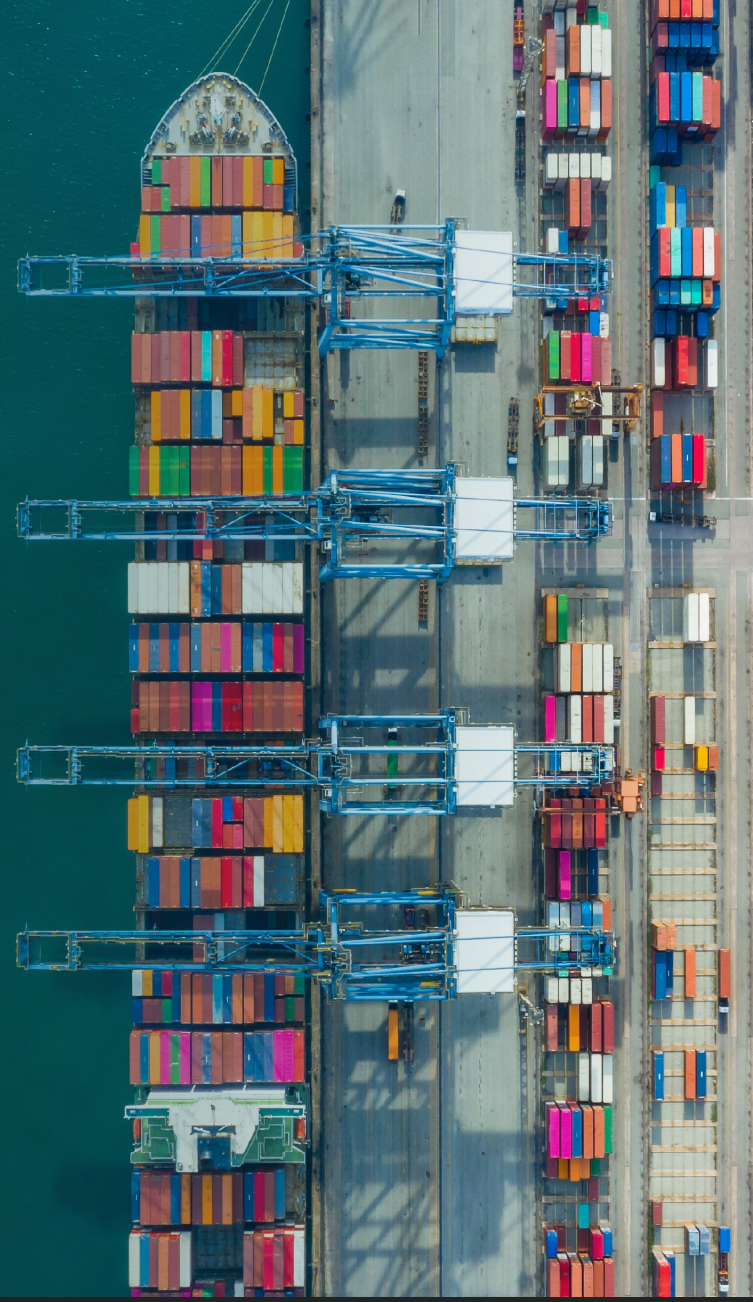
GREEN HYDROGEN CATAPULT

Green Corridors Guide to creating a Pre-Feasibility Phase Blueprint

JANUARY 2023



GREEN HYDROGEN CATAPULT
Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping
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CONTENT

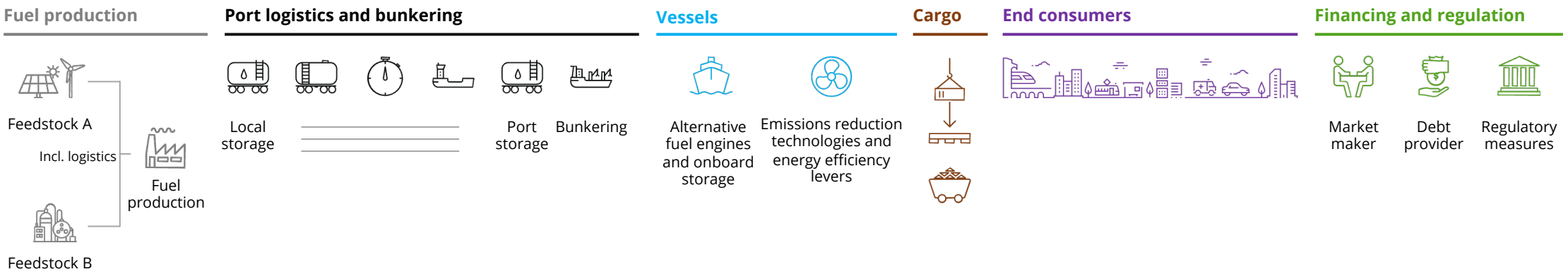
01. Introduction

The Clydebank Declaration was launched at COP26 to facilitate rapid decarbonization of the shipping industry. Its signatories support establishing "green shipping corridors – zero-emission maritime routes between two (or more) ports" with an intent to establish at least six corridors by 2025 and "many more" by 2030.

Once operational, green corridors will:

- Contribute to the development of alternative fuel supply chains and lead to reduced cost.
- Address current cost-gaps and propose / develop measures to overcome these gaps
- Unite individual first-mover actions across the value chain and accelerate decarbonization processes in a specific geographical area

Green corridors bring together first movers from the entire maritime supply chain to share risk



The collaborative nature of green corridors creates a space for pre-competitive testing and commercial trials of technologies and market solutions. The experience of planning, implementing, and operating green corridors is also valuable for informing and accelerating the development of effective regulation and, in general, to remove some of the uncertainties and risks faced by first movers. Furthermore, they can use a 'ring-fenced' partnership approach (e.g., consortium) between public and private players that promotes collaboration across the supply chain so that risks, costs, and benefits are shared.

To reap the benefits and meet the high ambitions of the Clydebank Declaration, it is paramount that green corridor maturation is done with the participation od as many companies / organizations as possible.

To accelerate the generation of green corridors, the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping (MMM Center) has developed blueprints for both the pre-feasibility and the feasibility phase. Developed with partners of the Center, these blueprints serve as a ready-to-use guide for any stakeholder involved or wanting to get involved in green shipping corridors. They outline methodology, analysis, and illustrative templates for each step of the process and for all players in the decarbonization value chain.

Focus of this blueprint:

Key definitions and activities for the early phases of Green Corridor Maturation

Pre-feasibility

Definitions

- A **preliminary assessment** of the main components of possible green corridors in a region to outline the most promising and viable corridors
- The assessment is based on **data insight** from the full value chain and **interview** confirmation
- The outcome of the assessment is to determine whether **further investigation and maturation of the outlined green corridor projects is justified** (i.e. moving to the feasibility phase)

Key activities

- Project **baselining** (across value chain and enablers)
- **Value chain** mapping
- Establish **screening criteria for green corridor** (selection framework and justification)
- High-level **screening and selection** of potential corridors
- **Initial engagement with stakeholders for potential green corridors**
- **No optimization** or detailed consideration

Feasibility

- A deeper assessment and evaluation of the selected green corridor scenario(s) to determine their viability and actions to mitigate potential gaps and risks
- The assessment is based on an evaluation of the technical, economic, and regulatory feasibility of a corridor and an evaluation of main gaps and risks
- The outcome of the assessment is an evaluation of whether or not the green corridor 'project' should advance. I.e., a go/ no go decision point involving increasing commitment and resources

- Technical, economic and regulatory feasibility assessment and evaluation for each decarbonization pathway along the value chain,
- Outline main gaps, risks and mitigation plan
- Outline decisions and commitments required by stakeholders
- Build a road map and milestones for the next project phases until operation

Project Phases

02. How to Use: Pre-Feasibility Blueprint

The Green Corridor Pre-Feasibility Blueprint is produced by the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping and RMI, under the auspices of the Green Hydrogen Catapult, and provides guidance to stakeholders who are interested in understanding the green corridor options in a pre-defined area: port, region, country or sub-continental. The methodology is derived from the Center's experience in similar projects and aims at supporting first movers with hands-on guidelines for the initial, required desktop analysis.

The blueprint is divided into three sections covering a total of seven steps in the pre-feasibility process:

1. Introduction
2. Data, interviews, and results
3. Interpretation and discussion

The blueprint provides a data-driven approach where an area is screened based on specific selection criteria. The result is a suite of green corridor options to be further assess in the feasibility phase.

The seven sequential steps cover a holistic value-chain assessment of opportunities for green corridors and deliver tangible outputs.

Step 1: Introduction, vision and project setup

Identification of project vision and possible green corridors in the selected region including region specific drivers and constraints.

Step 2: Alternative fuels: Timing, capacity, emissions, and cost

Mapping of fuel supply possibilities within the region including considerations around cost, current and future production capacity and expected competition. Fuel LCA - estimation of the well-to-wake reduction potential for each alternative fuel considered.

Step 3: Port, storage, and bunkering infrastructure

Identification of ports in the defined area and description of crucial, port-specific restrictions. Mapping of port readiness level assessment (bunkering and call) for relevant ports.

Step 4: Trade routes, vessels, cargo, and services

Mapping of emissions and fuel consumption in the region by vessel segments. Analysis of import and export by cargo type, services, volume, value, (vessel / operator specific) trade routes and vessel segments for defined region. Mapping and quantification of the additional cost of green services and transport

Step 5: Policy, regulation, and funding

Assessment of the regulatory landscape in the region to identify possible discriminating factors.

When the first round of data gathering is completed, it is crucial to verify it with interviews conducted with stakeholders in the various steps of the value chain and regulators in the areas of interest (chapters 1-5). Following the interview round, the data tables are updated and finalized.

Step 6: Selecting potential green corridors

Mapping and ranking Green Corridor selection criteria (might be related to vision and objectives) and list possible green corridors.

While CO_2 emission abatement is the ultimate goal, the fastest way to achieve it is not necessarily to address the largest emitters. In some areas, the availability of specific fuel might make a certain vessel segment the most relevant, while in others it can be secondary attributes, like availability of local workforce, infrastructural development opportunities, or the opportunity to increase technical insights.

Certain regulation or funding options might also influence the decision, allowing certain corridors or segments of fuels to be given a head-start. The blueprint is structured to gather a lot of data, allowing multiple criteria to inform the decision the number and types of green corridors to pursue.

When the process has been repeated to the extent needed, and the number of corridors is decided, the CO_2 emission of each corridor needs to be calculated. This is done by simply assessing the fuel need per nautical mile as well as the fuel need during port stay and navigation (in energy units). These numbers are multiplied by operational profile, ratio of 'days at sea vs. days in port' for the specific corridor. Finally, the length of the corridor and the number of vessels are multiplied. In this way, the total energy consumption can be estimated, and the CO_2e emission for fueling the corridor with MFO / LSFO vs. an alternative fuel can be assessed.

The data gathered as part of the pre-feasibility process is meant to guide the following actual assessment of the feasibility of a green corridor. The data set doesn't necessarily need to be complete to provide foundation for the decision to proceed to feasibility assessment. If suggested data tables are not generated it simply means that certain criteria cannot be activated. And opposite - if more data can be gathered, it will generate additional selection criteria.

Step 7: Next steps

The process ends with the planning of Consortia Incubation Workshop, alignment on project governance, funding, and resourcing requirements to complete the feasibility phase and develop a communications and engagement plan.

Each chapter carefully guides the reader through the process with easy-to-use tables that ensure that the user gathers all necessary data. The purpose of each data table is explained and leads to the final suite of corridors. In addition, the tables are accompanied by an Excel toolbox with pre-filled examples from already completed Green Corridor Pre-Feasibility Assessments including the specific source for the data. This will allow the user to get inspiration for both data formatting as well as guiding to relevant sources for the required type of data.

The Pre-Feasibility Blueprint strives to bring the concept of green corridors from a political ambition level to a more practical working level, in recognition of the importance of the Green Corridors as a key igniter of the decarbonization of shipping.

Flow and overview of the proposed methodology

Conceptual drawing of the Pre-feasibility Maturation Process

Key questions	**Why** do we want the knowledge	**How** do we get the knowledge	**What** knowledge do we want
Overall sections	**Introduction**	**Data, interviews and results**	**Interpretation and discussion**
Chapter insights	Introduction to Area / Region & Constraints Decarbonization Vision for Area / Region Objectives and Project Governance	Relevant insight into: Fuel Port & Bunkering Cargo, Services, Trade Routes & Vessel Regulatory Landscape	Selection criteria and a ranking of these List of recommenced corridors based on selection criteria Final report incl. necessary Appendix Proposed way of moving forward into the Feasibility Phase
Step	1	2 3 4 5	6 7
Output	**Scene is set**		**Data is gathered and selection criteria defined**

03. The Framework

Framework Steps

Step 1	Introduction, vision and project setup
Step 2	Alternative fuels: Timing, capacity, emissions and cost
Step 3	Port, storage, and bunkering infrastructure
Step 4	Trade routes, vessel, cargo and services
Step 5	Policy, regulation and funding
Step 6	Potential green corridor selection frameworks
Step 7	Next steps

Step 1: Introduction, vision, and project setup

Key questions

What are the **possible green corridors** in a defined region? What are the **key results** and what are the corridors to focus on in the upcoming phases?

I. What is the **region-specific baseline** and are there any **particularities?**

II. **Why** do we want to have green corridors in the defined region?

III. **How** do possible green corridors support the **regions overall social, ecological or economical goals** and **ambitions** described in in the **vision**?

IV. How is the **pre-feasibility project governed**? **When** and **how** do we take **which** action? **Who** is involved?

Chapter analyses

Executive Summary

A **Region-specific overview** and **constraints**

B **Vision** of possible green corridors in the defined area (basis for selection criteria)

Specified **objectives** of possible green corridors in the defined area (basis for selection criteria)

C Project specific information – **timeline, governance (project plan), stakeholders, agreements, methodology**

Proposed Work

- Write introduction to area of interest and highlight essential characteristics, as well as possible constraints for the region. Make sure to define the borders of your defined area of interest and set the scene as specifically as possible to ease data collection in following chapters.
- State the overall decarbonization vision for the area and highlight how green corridors can contribute to realizing this vision.
- Link the implementation of green corridors to specific and overall social, ecological or economical objectives of the region, e.g. UN Global Compact, sustainability goals, climate action commitments.
- Focus on identifying relevant discriminating factors which favour one green corridor in comparison to another.
- A short description of the proposed execution of the project, including governance, agreements, timeline, project partners, etc.
- Always confirm database insights in interviews with relevant stakeholders and update data sheets accordingly → Chapter 2-5.

Framework Steps

Step 1 Introduction, vision and project setup

Step 2 Alternative fuels: Timing, capacity, emissions and cost

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Step 2: Alternative fuels: Timing, capacity, emissions, and cost

Key questions

I. What is the **range of expected production of alternative fuels relevant** to the corridor, based on announced projects, feedstock availability, regulation, timeline, etc.?

III. What are the main **drivers impacting the cost of alternative fuels** and price for shipowners, and how will they evolve over time?

II. What are the **fuel emissions** depending on the alternative fuel type and its origin?

IV. What is the **range of expected import of alternative fuels relevant** to the corridor, based on announced projects, feedstock availability, regulation, timeline, etc.?

III. What are the main **drivers impacting the cost of alternative fuels** and price for shipowners, and how will they evolve over time?

Chapter analyses

A **Intra-regional**

Fuel choice and supply – supply possibilities within the region in a given **timeframe**. Current and future
Production capacity with expected competition for fuels considered
Fuel cost – show the expected costs and explain the main drivers behind

Fuel emissions – estimate the well-to-wake reduction potential for each alternative fuel considered

B **Extra-regional**

Fuel choice and supply – supply possibilities imported to the region in a given **timeframe**. Current and future
Production capacity with expected competition for fuels considered
Fuel cost – show the expected costs and explain the main drivers behind

Fuel emission – estimate the well-to-wake reduction potential for each alternative fuel considered

Proposed work

Fuel choice: List of relevant alternative fuels to be assessed in the defined area (Tab. 2.1)

Fuel supply: Access database to find relevant fuel projects announced, and generate overview of the availability of fuels over time, intra- (Tab. 2.2 / Tab. 2.3) and extra-regional (Tab. 2.6 / Tab. 2.7). Estimate the expected amount of fuel available for shipping.

Fuel cost: Get view on fuel cost – either through publicly available data or through interview insights with stakeholders throughout the value chain, intra- (Tab. 2.4) and extra-regional (Tab. 2.8), e.g. electricity price, fuel production cost (CAPEX, OPEX)

Fuel emissions: Understand well-to-wake emissions for different fuels assessed, depending on their production location (Tab. 2.5 / Tab 2.9)

Why to collect this data

Fuel choice (Tab. 2.1): Essential to align on which fuel you want to focus on at the beginning of the assessment – subsequent data collection depends on this choice.

Fuel supply (Tab. 2.2 / Tab. 2.3 and Tab. 2.6 / Tab. 2.7): Availability of alternative fuels over time will discriminate green corridors in your later selection. If alt. fuel is not available within the region it might be possible to import it.

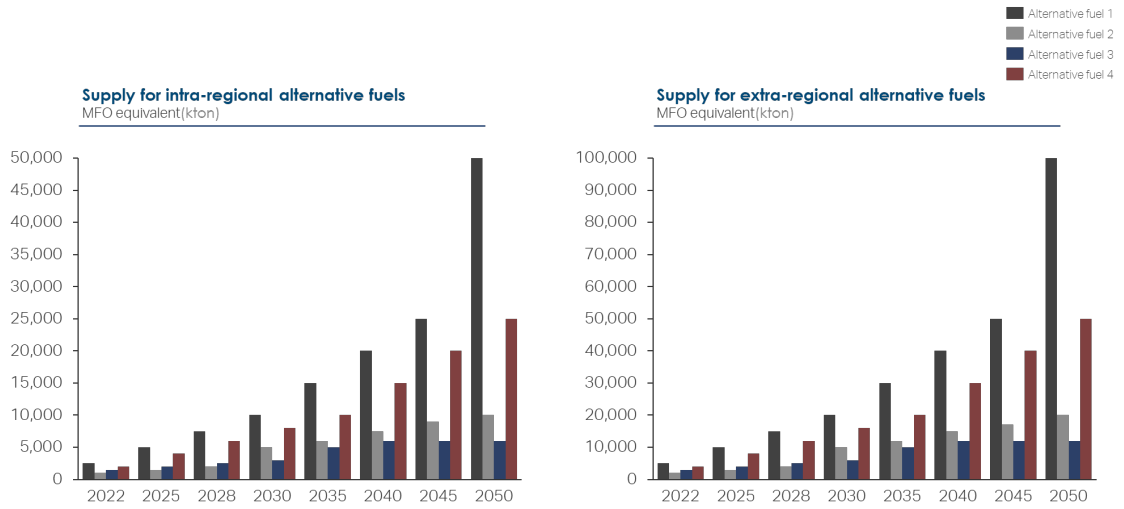
Fuel cost (Tab. 2.4 / Tab. 2.8): Fuel cost to make a statement regarding economical / investment decisions throughout the value chain for both, fuel from within the region or imported fuel.

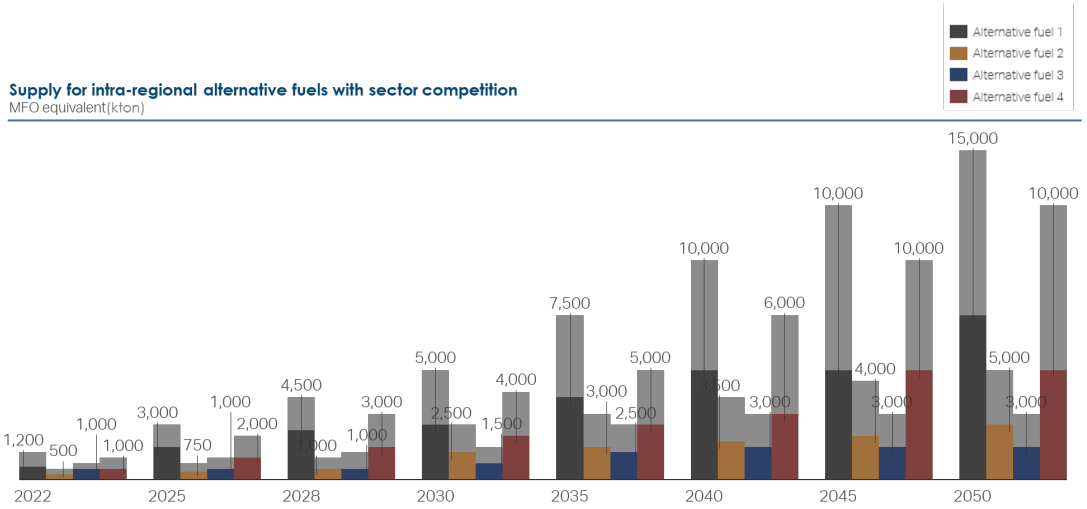
Fuel emissions (Tab. 2.5 / Tab. 2.9): Fuel emissions data is necessary to identify possible green corridors with highest potential on emissions reduction.

Additional Recommendations

I. Communicate with stakeholders, including ports and shipping companies, to **identify alternative fuel demand**.
II. Consider providing **fuel discounts as incentives** for using green fuels to first movers.
III. Clearly **communicate production outlook** and delivery of alternative fuels.

Illustrative examples





Framework Steps

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Step 3: Port, storage, and bunkering infrastructure

Key questions

I. What are the **expected ports** for the green corridor, what kind of cargo are they handling, and are there any **port specific restrictions**?

II. What is the **current storage** and **bunkering infrastructure** in the region?

III. What is the current **port readiness level** and the **expected level in the future**?

Chapter analyses

A **Identify ports** in the defined area, analyze the **trade** and describe crucial, **port-specific restrictions** - some examples might be:

- Ownership and operation
- Location
- Water depth
- Degree of congestion
- Current and predicted handling (limited number of ships per day, limited storage capacity etc.)
- Port infrastructure (limited number of cranes, limited handling of cargo, transport type from port to destination etc.),
- Environmental or social regulations (limited port growth etc.)

B Identify **current** potential import, storage and bunkering of relevant chemicals at ports in defined region

C Do a **Port Readiness Level Assessment** for relevant ports, to compare different ports in the area; bunkering and port calls of traditional and alternative fuels

Proposed work

Identify ports: Make list of all relevant ports

Port-specific restrictions: Populate data sheet with relevant, objective data: water depth, degree of congestion, etc. (Tab. 3.1). The list of examples is for orientation only; add any characteristic that is port-relevant for your defined area

Port-specific trade: Map cargo segments and trade patterns of your selected ports separated by import and export (Tab. 3.2 / Tab. 3.3)

Current infrastructure: Map the current ability to handle ammonia, methanol and other relevant chemicals in your area of interest (Tab. 3.4). Assess the infrastructure in place and estimate the technical development stage to make ports comparable.

Future infrastructure: For each port to be considered, make Port Readiness Level Assessment for both bunkering and port call to assess the current and future ability to handle alternative fuels (Tab. 3.5 / Tab. 3.6)

Why to collect this data

Identify ports: Get a baseline overview, and de-select minor or not relevant ports upfront.

Port-specific restrictions (Tab. 3.1): Identify discriminating factors that will influence your choice of ports and the actual feasibility of green corridors, e.g. water depth limits the number of vessel segments entering the port.

Port-specific trade (Tab. 3.2 / Tab. 3.3): Get an understanding of trade and cargo type, e.g. if you want to select your green corridor based on the top ports regarding volume / value trade.

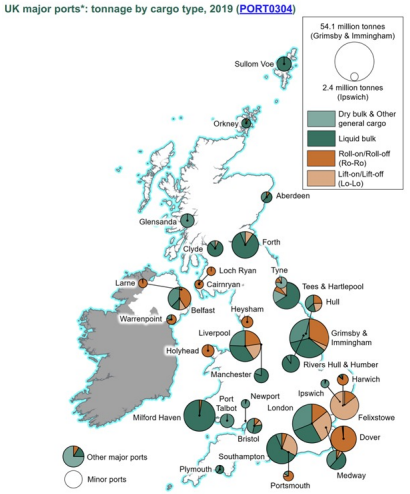
Current infrastructure (Tab. 3.4): Handling relevant chemicals today can give an indication of whether a green corridor with specific alternative fuel is already possible or favors one port against another.

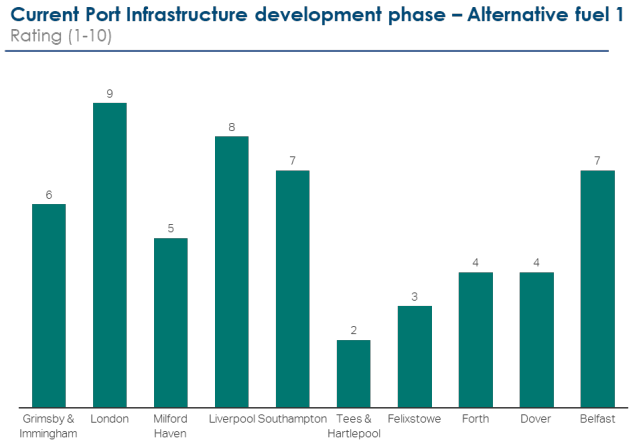
Future infrastructure (Tab. 3.5 / Tab. 3.6): The Port Readiness Level Assessment for both bunkering and port call indicates a time frame on when a green corridor with specific alternative fuel might be possible.

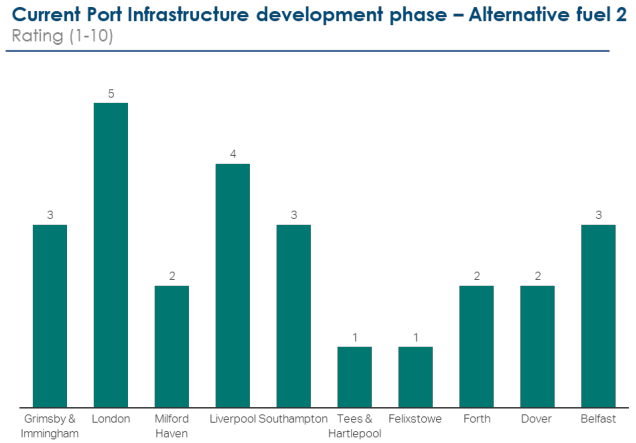
Additional Recommendations

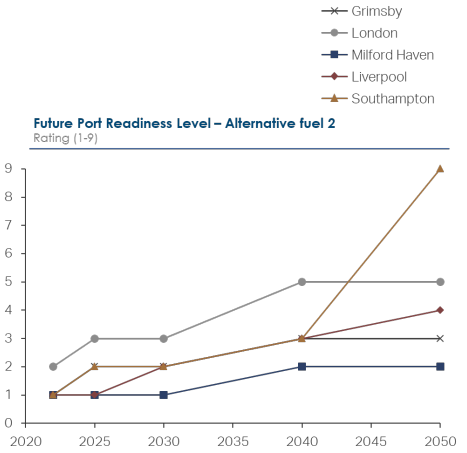
I. Use **port readiness level assessment** to enable green projects and corridors.
II. Act as a catalyst between fuel producers, shipping companies, and cargo owners to realize green corridors.
III. Share knowledge with other ports to solve challenges, identify opportunities, and develop common safety procedures.
IV. Consider providing **discounts as incentives** for using green fuels to first movers.
V. Recognize that **readiness for new fuels** early can be turned into a **competitive advantage** that could provide **growth opportunities**.

Illustrative Examples









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Step 4: Trade routes, vessel, cargo, and services

Key questions

I. Which **vessel segment** is responsible for which **emissions** and **fuel consumption** within the region? Which vessels **appear on a regular basis** in the region?

II. What are the **main cargos** and **services** in the region (volume and value)? What are the **main trade routes** in the region (where from / where to)? Which vessels are **used predominantly** in the region?

III. What are the **additional costs for green transport** and which products should be preferred to be handled in a green corridor?

Chapter analyses

A Analyze **emissions** and **fuel consumption** in the region by segment in a reasonable timeframe **– results including emissions factor[1] of ships**

B Analyze **import** and **export** by **cargo type**, **services**, **volume**, **value**, (vessel / operator specific) **trade routes** and **vessel segments** for defined region

C Quantify the **additional cost of green services and transport** – results including **incremental cost of green** (in %) and **willingness to pay** by customer

Proposed work

Vessel analysis: Create overview of vessel-segments operating in region of interest, including number of vessels, voyages, fuel consumption and CO_2 emissions in a reasonable time frame (Tab. 4.1)

Vessel-specific trade: List products (export and import) as per volume and value, as well as to which vessel segments the cargo is being handled on (Tab. 4.2 / Tab. 4.3)

Vessel-specific service: Make overview of international and domestic service handling (ferries, cruises, RoPAX, tugboats etc.), as well as to which vessel segments the service is being handled on (Tab. 4.4 / Tab. 4.5)

Green premium: Estimate incremental cost for green transport per unit of cargo / service, based on publicly available data (Tab. 4.6 / Tab. 4.7)

Why to collect this data

Vessel analysis (Tab. 4.1): Understand which vessels appear in your region, with which frequency and with which emissions impact, to select green corridors with biggest potential for emissions reductions or identify the vessel segment with best investment vs. emissions potential.

Vessel-specific trade (Tab. 4.2 / Tab. 4.3): Get a product-specific commercial overview in the defined area, to select green corridors with specific products or cargo types.

Vessel-specific service (Tab. 4.4 / Tab. 4.5): Get a service-specific commercial overview in the defined area, to select green corridors with specific service types or to be aware of relevant regulatory and safety aspects.

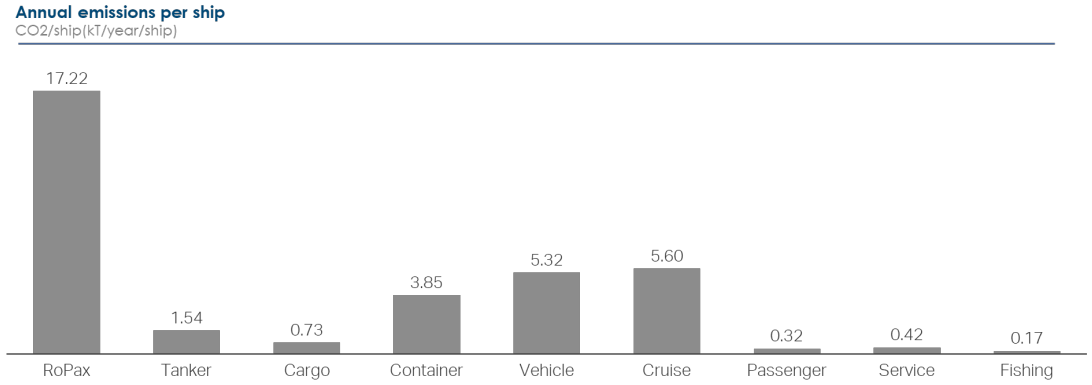
Green premium (Tab. 4.6 / Tab. 4.7): To make your green corridor work, it is essential to understand if it is financially feasible as well as if there are customers willing to pay extra for “green” credentials.

Additional Recommendations

I. Aim to find **key customers** who have pledged to decarbonize their transport and may be willing to pay for green transport.
II. Investigate **options with other stakeholders**, including ports and fuel producers.
II. If relying on **electricity to decarbonize**, consider where you will get the **green energy** from.

Illustrative examples

	Trade route (Region to region)	Proxy corridor (port to port)	Product	Volume (M TUE)	Value of goods (€M)
Bulk - dry: Iron ore trade routes	Australia – China	Hedland – Tianjin	Iron ore	TBD	TBD
	Australia - Japan	Hedland - Tokyo	Iron ore	TBD	TBD
Bulk – dry: Grain trade routes	Australia - China	Hedland – Shanghai	Cereals	TBD	TBD
	Australia – Netherlands	Adelaide- Rotterdam	Oil seeds	TBD	TBD
Cargo: Container trade routes	Australia – Singapore	Brisbane - Singapore	Container	TBD	TBD
	Australia – China	Brisbane - Shanghai	Container	TBD	TBD



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Step 5: Policy, regulation, and funding

Key questions

I. What are the policies and regulations that affect a possible green corridor?

II. What are the funding options for the different phases on the path to implementing a green corridor (regional, national, international)?

III. Are there any major discrimination factors that need to be considered when assessing green corridors?

Chapter analyses

A Landscape relevant:

- **regulations**,
- **policies** and
- **funding options**

depending on the defined area of interest (social, ecological, commercial, technical, e.g. map electric poles in the area, incentive programs, protected natural areas)

Identify discrimination factors within the above-mentioned landscape for defined area of interest

Proposed work

Identify policy, regulatory and funding discriminating factors, which will allow selecting green corridors in one area in favor of another

Assessment insights (Tab. 5.1, 5.2, 5.3, 5.4): Discriminating factors are mapped in tables as well as displayed in maps depending on your level of assessment. Assess area-specific information regarding social or environmental incentives, funding or supporting development in infrastructure, climate targets and ambitions.

Why to collect this data

Assessment insights (Tab. 5.1, 5.2, 5.3, 5.4): Identify policy, regulatory and funding discriminating factors that may appear in your defined area. That will allow selecting one green corridor in comparison to another one.

Level of Regulatory Involvement

	Continent	Sub-Continent	Country	Region
Port	Reg. Inv. level 1	Reg. Inv. level 1	Reg. Inv. level 1	**Reg. Inv. level 1**
Region	Reg. Inv. level 2	Reg. Inv. level 2	**Reg. Inv. level 2**	
Country	Reg. Inv. level 3	**Reg. Inv. level 3**		
Sub-Continent	**Reg. Inv. level 4**			

Mandatory

Optional

Indication of detail level

The figure on the left helps to decide on which level of regulatory involvement you may start your regulatory assessment.

E.g. the defined region for possible green corridors is Chile → start your assessment on Region level.

Additional Recommendations

I. Regulator: provide **clear regulation for using alternative fuels**, so implementation isn't overcomplicated.

II. Regulator: develop regulation that provides **financial incentive** to decarbonize and rewards first movers.

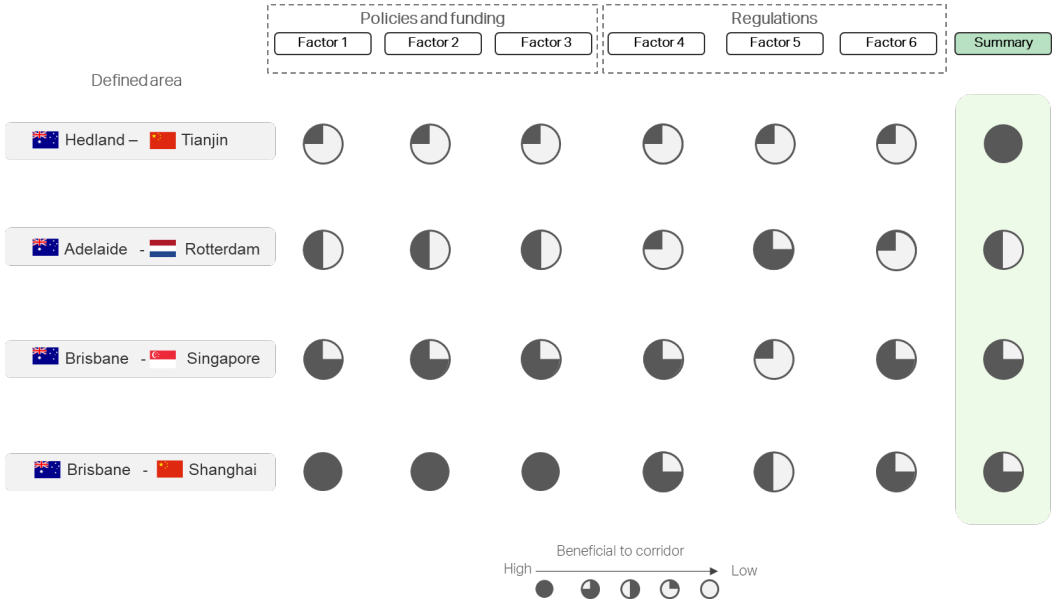
III. Policymakers: develop **support schemes** and provide **funding** for first movers.

IV. Policymakers: **support green corridor projects** to prove they are possible, then **push for regulation** to encourage alternative fuel adoption.

V. Defined areas: build your awareness of different kinds of fuels and how to handle them, to prepare **social readiness and acceptance**.

VI. Defined areas: recognize that **readiness for new fuels** early can be turned into a **competitive advantage** that could provide **growth opportunities in the local region**.

Illustrative Example



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Step 6: Potential green corridor selection frameworks

Key questions

I. Which parameter can be used as **selection criteria** and how are they **ranked and weighted** by the stakeholders internally?

II. What are the **possible green corridors** and how are they **ranked** depending on the selection criteria?

III. What are the **CO_2e emissions** and how much **fuel** is needed in the relevant corridors?

Chapter analyses

A Green corridor **selection criteria** (might be related to vision and objectives) and **ranking** (stakeholder-specific) of criteria

B **List of possible green corridors** depending on selection criteria

C **Estimate CO_2e emissions** and **fuel consumption** for relevant corridors

Potential green corridors are identified, and preferred ones can be moved to Feasibility phase

Proposed work

Corridor selection criteria: Identify relevant Corridor Selection Criteria (CSC) based on vision, objectives (as outlined in Chapter 1) and literature insight in the defined area of interest

Rank CSC: A ranking of the CSC are based on insight and subjective (stakeholder-specific) criteria (Tab. 6.1)

List green corridors: For each CSC configuration, a series of prioritized green corridors is identified (Tab. 6.2)

CO_2e emission and fuel consumption: It is recommended to calculate the emissions and fuel consumption for your preferred corridors (Tab. 6.3)

Why to collect this data

Corridor selection criteria: Define the Corridor Selection Criteria (CSC), which is your relevant driver on what data is going to be used for your final green corridor ranking / prioritization.

Rank CSC (Tab. 6.1): Rank and weigh your CSC regarding your preferences → this will prioritize your possible green corridors.

List green corridors (Tab. 6.2): This is the final result of your decisions in the before mentioned steps.

CO_2e emission and fuel consumption (Tab. 6.3): After picking the most promising corridors, these calculations will bring even more detail and a better basis for further decision making.

Chapter Analyses

A Green Corridor **selection criteria** (might be related to vision and objectives) and **ranking** (stakeholder-specific) of criteria

B

Criteria	Name	Look at table
1	Transport of cargo / service	Tab. 3.2, 3.3 and 4.2 to 4.5
2	Domestic trade route	Tab. 4.2 to 4.4
3	International trade route	Tab. 3.2, 3.3, 4.2, 4.3 and 4.5
4	Transport of top 10 cargo	Tab. 3.2 and 3.3
5	Primary trade routes	Tab. 4.2 to 4.4
6	Expected future growth, CAGR 2021-2025	Tab. 3.2, 3.3 and 4.2 to 4.5
7	Any corridor from largest port	Tab. 3.2 and 3.3
8	CO_2 emissions	Tab. 2.5, 2.10 and 4.1
9	Any corridor until 2030	Tab. 2.2, 2.3, 3.5 and 3.6
10	Use of alternative fuel 1	Tab. 2.2, 2.3, 3.5 and 3.6
11	Regulatory feasible	Tab. 5.1.x

Selection criteria might not always be one-dimensional, meaning that you will have to combine data from different tables and include qualitative knowledge. In this case an objective result is always difficult, and the list of corridors will be influenced by the ones executing the pre-feasibility assessment.

Please keep in mind that the **qualitative data**, which will be gathered during the **interviews** with the relevant **stakeholders** are equally important and can give an indication on what to focus on.

Illustrative Example

		Green Corridor Name 1	Green Corridor Name 2	Green Corridor Name 3	Green Corridor Name 4
Chapter 2: Alternative fuels: Timing, capacity, emission and cost					
Supply for alternative fuels - 2030	ktons	4,500	1,000	1,000	3,000
Fuel cost - 2030	$/ton	2,000	1,200	500	800
Chapter 3: Port, storage, and bunkering infrastructure					
Port share of total tonnage	%	12%	50%	10%	28%
Port share of total value	%	48%	19%	20%	13%
Port Readiness Level - 2030	1 = low, 9 = high	3	4	1	7
Chapter 4: Trade routes, vessel, cargo and services					
Volume	ktons	10,000	5,000	2,800	722
Value	$	441,000,000	1,995,000,000	1,419,000,000	468,000,000
Incremental cost of green per product	%	10%	27%	1%	5%
Chapter 5: Policy, regualtory and funding		2	3	5	1
Benefical regulation environment	1 = low, 5 = high				
Chapter 6: Potential green corridor selection frameworks					
Annual emissions per corridor	tCO2e	3,700,000	2,337,000	1,379,000	2,941,000

Framework Steps

Step 1 Introduction, vision and project setup

Step 2 Alternative fuels: Timing, capacity, emissions and cost

Step 3 Port, storage, and bunkering infrastructure

Step 4 Trade routes, vessel, cargo and services

Step 5 Policy, regulation and funding

Step 6 Potential green corridor selection frameworks

Step 7 Next steps

Step 7: Next steps

Key questions

I. Who are the **relevant stakeholders** throughout the value chain to enable the preferred green corridors?

II. What are the **steps needed for the Feasibility phase?**

III. What is the **overall roadmap toward operationalizing the green corridor** and what **actions does each stakeholder** need to take?

IV. What is the required **project governance** to deliver the roadmap for the next phase (Feasibility)?

V. What are the **resources and capabilities required to complete the next phase** (Feasibility) of the project?

VI. What is the **internal and external stakeholder communications plan?**

Chapter analyses

A Initiate **Consortia Incubation Workshop** with relevant stakeholders throughout the value chain in defined region

B Prepare for further steps in the **Feasibility phase** to run detailed assessments on chosen green corridors

Define the **project governance, funding and resourcing requirements** to complete the Feasibility phase

C Develop a **communications and engagement plan** for internal and external stakeholders in the Feasibility phase

Socialize and sign off the integrated roadmap

Proposed Work

- Identify relevant participants for the Consortia Incubation Workshop (CIW) and prepare material (report, workshop agenda etc.).
- Conduct CIW and present results as well as bring relevant stakeholder for the upcoming feasibility phase together.
- Make initial scoping for the feasibility phase, including governance, timeline, funding etc.
- Produce and agree on roadmap for feasibility phase.
- Communicate the results of the pre-feasibility study in accordance with planned communication strategy.