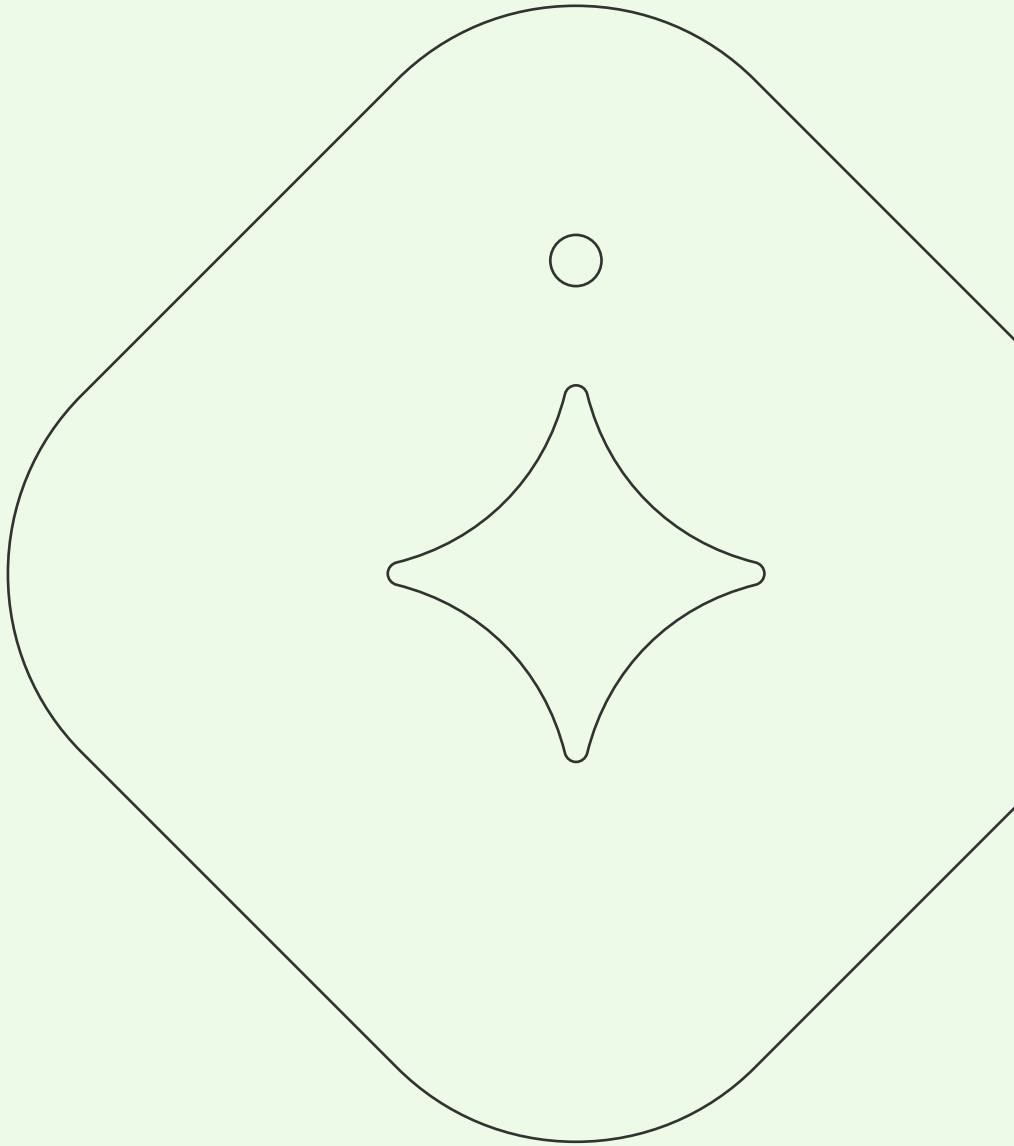
METHODOLOGY

Green Corridors
Feasibility Scoping Phase



Mærsk Mc-Kinney Møller Center
for Zero Carbon Shipping

Expected outcomes of Feasibility Scoping phase

The Pre-Feasibility phase ended with the core consortium selecting the projects that looked most promising on the basis of the interest and commitment intentions from stakeholders. These projects will now move into the Feasibility phase for further maturation.

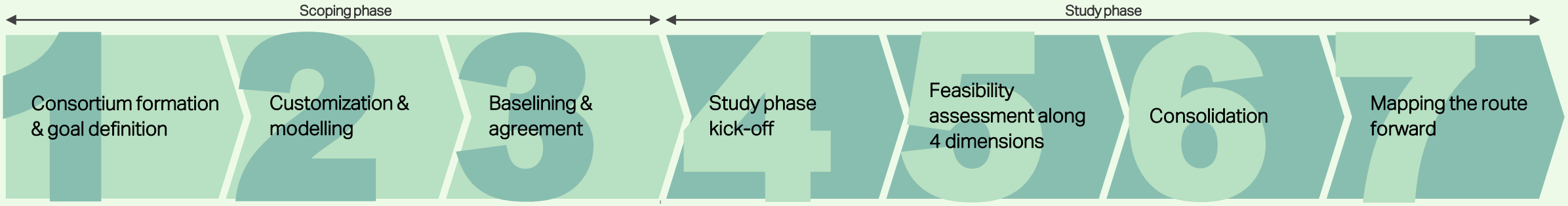
In the Feasibility phase, every green corridor project will undergo a rigorous evaluation to determine its technical, regulatory, and economic feasibility. This assessment is crucial as it provides team members with a comprehensive understanding of the potential for CO_2 abatement and associated costs, thereby enabling them to finalize an implementation roadmap and committing further resources to a green corridor project.

To streamline this process, Feasibility methodologies offer project teams guidance in conducting evaluations and fostering collaboration throughout the alternative fuel supply value chain.

The scoping phase outlined here emphasizes the structure of the project: forming a consortium, defining the scope of work, and establishing formal project descriptions and legal terms in the Project Commitment Letter (PCL).

When these steps are complete, the project will transition from the scoping phase to the study phase. The project team will have a clear direction and framework for the project. This minimizes the risks of undertaking the project and maximizing its potential for success, which, in turn, enhances its attractiveness for further investment and implementation.

The Feasibility Phase

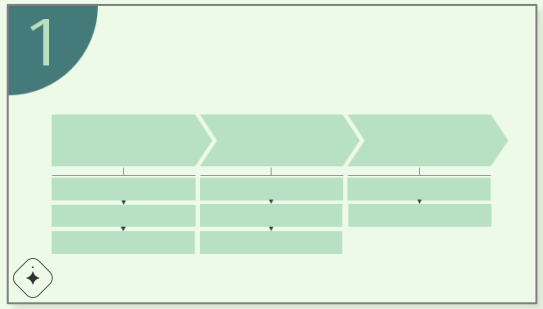


The Feasibility Scoping Phase serves the purpose of **forming a consortium** and **agreeing on roles** for project team members as well as **ways of working** in the upcoming Feasibility Study. It also aims at clearly **defining the focus and goals of the upcoming Feasibility Study** as well as the **work that needs to be done** for the specific corridor to reach these goals

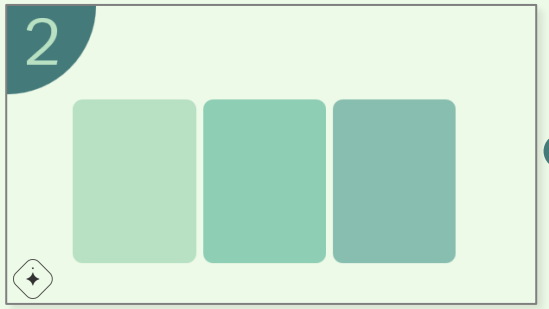
The Feasibility Study aims at **assessing the technical and regulatory feasibility of a specific green corridor** along the fuel, port, vessel, and cargo dimensions as well as **defining the residual cost gap**. It further includes a **risk registry** and **roadmap**, all of which are outlined together with the **consolidated findings** of the Feasibility study

Project Commitment Letter

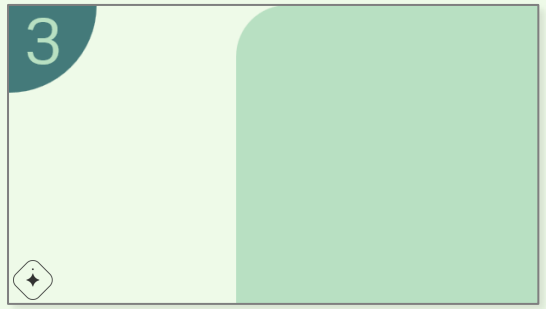
How this document is constructed



Navigation through the document

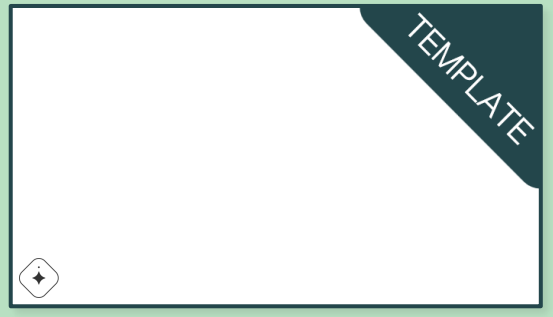


What's the purpose, key questions and importance of the subject



Proposed key tasks & activities

Further detailing of proposed activities



Templates

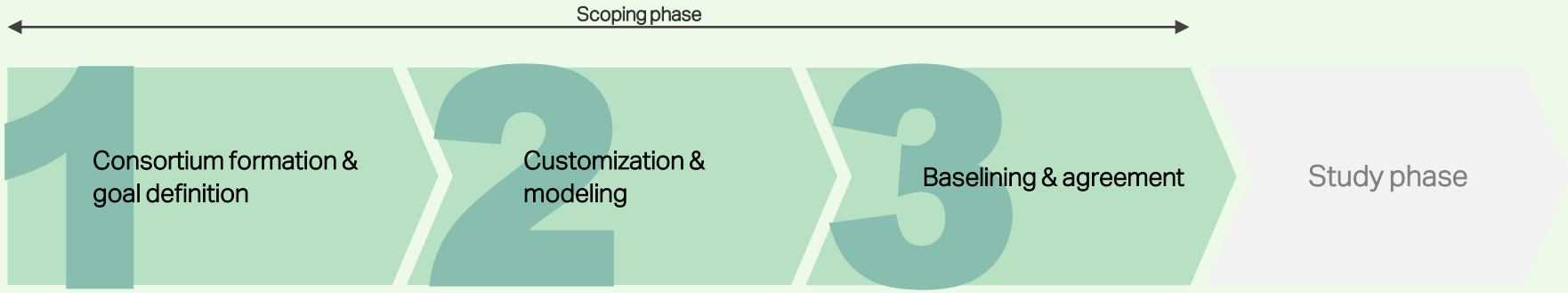
Examples

The Feasibility Scoping phase in detail

This phase consists of three main stages. In this document, all main stages are explained step by step.

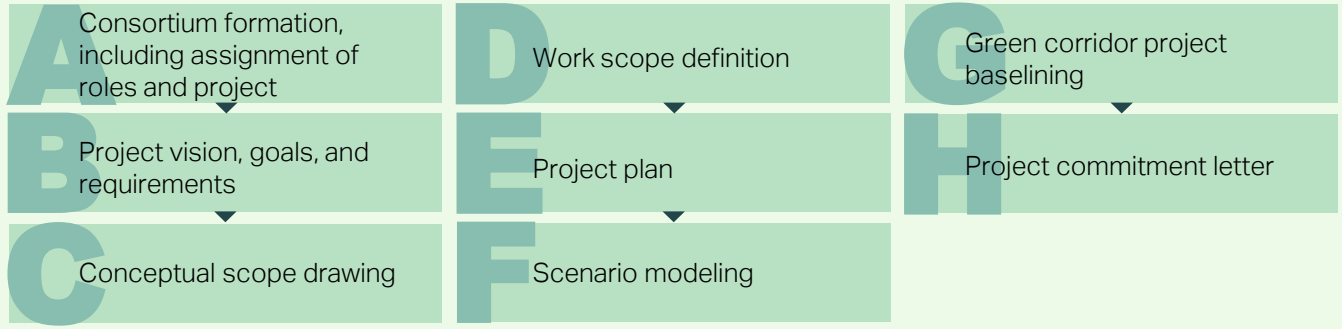
Overview of the different Feasibility scoping stages:

Serves as a point of reference throughout the document and guides the sequencing of activities.



Key activities in each of the stages and their related analyses and guidelines:

Provides an overview of the methodology and select illustrative examples.



The Feasibility Scoping phase in detail

Purpose

- The initial core consortium identifies and engages with new members to fill potential gaps in the consortium.
- The Project team agrees on main elements for the upcoming Feasibility Study:
  - Vision, scope, goals, and narrative
  - Project governance
  - Work scope by customizing blueprint
  - Project Plan
  - Initial corridor modeling
  - Project baseline
- Project members start working at this stage without any legal binding agreement, and only have a standard non-disclosure agreement. They will later prepare a PCL.
- The scoping phase is divided into three steps, each with a clear objective to allow the actual Feasibility Study to be as constructive and add as much value as possible.

Key questions

- The key questions are related to the upcoming Feasibility Study and can largely be divided into classic WH-questions:
  - Why
    - Project Vision and narrative
  - Who
    - Project consortium
    - Project governance
  - What
    - Project scope and goal
    - Work scope definition
    - Corridor modeling
    - Project baseline
  - When
    - Project Plan

Importance

- With the Scoping phase successfully completed, the project consortium can start studying whether or not the project scope is feasible on technical and regulatory levels. The consortium can also assess the economical perspective, including the residual cost gap, and the Just & Equitable characteristics.
- A successful Feasibility Scoping phase clarifies and concretizes the tasks and responsibilities within the project. This ensures that the Study phase goes smoothly.
- Having a clear definition of roles and responsibilities for the upcoming Feasibility Study enables the project consortium to collaborate efficiently.

The Feasibility Scoping phase in detail

Phases		Key questions	Key activities
1. Consortium formation & goal definition	A.	Who are the **relevant stakeholders** who should be **involved** during the Feasibility Study and how will the project team work together?	Identify and engage **potential consortium members**, align on their **roles** and level of **involvement** (manhours in Feasibility Study), as well as defining project **governance.**
	B.	What are the **vision, goals, and requirements** for the upcoming Feasibility Study of the specific corridor?	Describe the project's **vision, goals, and requirements** in detail to identify the **desired target state,** including key considerations for a Just & Equitable Transition, for a specific corridor.
	C.	What does the upcoming Feasibility project look like from a conceptual drawing point of view?	Make **conceptual drawing** of project and highlight numbers and types (fuel, renewables, etc). Define workstream **delineations.**
2. Customization & modeling	D.	Which **activities and analyses** should the Feasibility Study cover? And what is the expected duration?	Develop **Work Scope Definition** by **customizing the Feasibility Study Methodology** based on previously defined vision, goals, and requirements. Estimate **manhours** needed for main activities.
	E.	What does the **timeline** of the Feasibility Study look like	Develop a **project plan** in accordance with the previously defined Work Scope Definition.
	F.	What are the estimated **CO_2 abatement** and **high-level costs** of the green corridor?	Refine the **Green Corridor Scenario Modeling tool** to generate initial view on the **CO_2 abatement potential** and **incremental cost of green.**
3. Baselining & agreement	G.	What are the **key characteristics** of a specific green corridor?	Consolidate knowledge in a **corridor baselining document** to create initial view on relevant **fuels**, **port and bunkering** infrastructure, relevant **vessel** characteristics and **trade flows**, as well as the **CO_2 abatement potential and costs** associated with the specific corridor.
	H.	How will the project team **formalize its collaboration/ cooperation** during the Feasibility Study?	Set up the **Project Commitment Letter**, including a section on legal terms and a description of the project.

1 Consortium formation & goal definition

A Consortium formation, including assignment of roles and project governance

B Project vision, goals, and requirements

C Conceptual scope drawing

2 Customization & modeling

D Work scope definition

E Project plan

F Scenario modeling

3 Baselining & agreement

G Green corridor project baselining

H Project commitment letter

1A. Consortium formation (including assignment of roles and project governance)

Purpose

- Build on **initial stakeholder interest.**
- **Identify additional stakeholders** who can execute projects in the Feasibility Study, after **agreeing on roles** and **level of involvement.**
- **Identify gaps** in the consortium and propose including more stakeholders who can close these gaps.
- **Create a project organization** with responsibilities for each project member as well as define an overarching project **governance.**

Key questions

- Who are **relevant stakeholders** to involve during the Feasibility Study and how will the project team work together?
- Who should be added to consortium to increase probability of success of the Feasibility Study?
- Are all project participants aware of their **expected commitment**?
- Have project participants **reserved the manhours** needed for the Feasibility Study phase?

Importance

- The consortium provides the **specific expertise** and knowledge that can be **leveraged during** the Feasibility assessment.
- Roles and project **governance** need to be clarified and agreed on to ensure a smooth execution of the Feasibility Study and to instill **accountability** for the workstreams conducting the Feasibility Study.
- The consortium formation and governance is best **ensured by using a common and shared Methodology.**

1A. Consortium formation (including assignment of roles and project governance)

	Methodology – steps	Inputs
01	Create an **initial core team** for the project	• Conversations with stakeholders with commercial interest • Consortium Incubation Workshop
02	Outline **project governance** and **agree on roles** for consortium members in an iterative process as the project team is formed	• Conversations with project team members • Initial manhour commitment for study phase
03	Conduct a **consortium gap analysis** to identify workstream gaps in the consortium, **identify additional members and agree on roles**	• Conversations with project team members and relevant stakeholders • Workstream Leads to consider Workstream Support
04	**Finalize** the consortium	• Combination of the above

The consortium formation

Consortium is formed in an iterative process in parallel to other scoping activities

Create an initial core team for the project including assignment of project lead

This typically includes a small subset of participants from the value chain that showed interest (e.g., during the Consortium Incubation Workshop) and/or stakeholders that approached one/more members of the core team.

Agree on roles for consortium members (Workstream Lead, Workstream Support, Sounding Board) for the upcoming Feasibility Study phase based on their commitment level, interest and expertise.

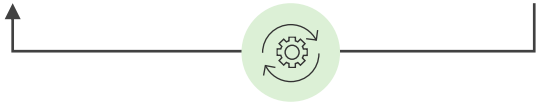
See also the commitment assessment in Pre-Feasibility Phase Methodology.

Identify workstream gaps in the consortium

Select **additional** potential consortium members in a **step-wise** process based on level of commitment, interest and expertise, and align with the core team on the selection. Consider community/ worker representatives and non-governmental organizations.

Finalize consortium committed to moving into Feasibility Study.

Signing of Project Commitment Letter/NDA to ensure safe space for sharing sensitive data within the consortium.



Continuously adjust consortium as more insights are generated and goals evolve (the initial core team can already start with activities in the Scoping Phase before the consortium has been finalized)

TEMPLATE

Consortium members can take on various roles in the Feasibility Study

Workstreams	1 Corridor baseline	2 Alternative fuels supply chain	3 Port and bunkering infrastructure	4 Low/zero emission vessels	5 Cargo demand dynamics	6 Summary of technical and regulatory feasibility and cost assessments	7 Roadmap and commitments
Stakeholders	All stakeholders	Fuel producers	Port and bunkering operators	Shipowners and operators	Cargo owners	All stakeholders	All stakeholders
Project Lead						Partner A[1]	
Workstream Lead	Partner B	Partner C	Partner E	Partner F	Partner G	Partner A	Partner H
SteerCo members		*Partner C*	*Partner E*	*Partner F*		*Partner A*	
Workstream Support[2]	Partner A	Partner C		Partner F		Partner I	
Sounding Board	Partner J		Partner K		Partner L		Partner M

1. The Workstream Lead of Workstream 6 is automatically the Project Lead
2. The need for support is decided upon by the Workstream Lead. The roles and responsibilities are to be clarified early on

Suggested set of responsibilities for each group of stakeholders

Role	Responsibilities	Resources required (hours)
Project Lead (Workstream 6)	• **Lead, plan and coordinate** the project • **Provide guidance** on processes/frameworks/methods/templates to ensure consistency and quality across workstreams and, due to its overseeing role, cannot take the role of Workstream Lead 2-5 • **Lead the consortium formation** • **Gather and synthesize findings from the Feasibility study** (Workstreams 2-5), including technical, regulatory, as well as cost assessments	1,000-2,000
Workstream Lead (Workstream 1)	• **Take responsibility for the corridor baselining**, including a preliminary assessment of the corridor's technical and regulatory feasibility as well as its costs (based on Pre-Feasibility findings)	100-250
Workstream Lead (Workstreams 2-5)	• **Take responsibility** for a workstream, including coordination of workstream resources and activities • **Lead and oversee the workstream analysis** with respective workstream members in accordance with defined scope, processes, and methods • **Gather, share, and analyze valuable information and data** to assess the technical and regulatory feasibility as well as costs and **summarize results in a report** • **Identify project-related risks within the workstream area,** and define and implement **mitigating actions** • **Liaise with Project Lead** to align on deliverables (typically centered around and assessment of the technical and regulatory feasibility as well as costs, and summary of results in a report) and **define the desired outcomes**	400-800 [3] Workstream support hours could be subtracted from this
Workstreams Support[4] (optional)	• **Support the Workstream Lead in gathering and analyzing valuable information and data** in the respective workstream to assess the economic and regulatory feasibility as well as costs, and **summarizing results in a report** • **Align with the Workstream Lead** on required analyses and desired outcomes	50-300 Should be seen as part of the total workstream support hours
Workstream Lead (Workstream 7)	• **Take responsibility** for the workstream, including coordination of workstream resources and activities • **Aggregate findings** from the Feasibility study and **derive a roadmap which describes how the project can be brought forward** that can be publicly shared with relevant stakeholders	300-500
Sounding Board	• **Provide feedback and input** throughout the project. Also covering non-technical matters such as environmental or social NGO, civil society, and workers groups.	10-30

3: The expected manhours needed for the entire workstream. If Workstream Lead is alone, it corresponds to Workstream Lead expectation
4: The need for support is decided solely by the workstream leads

Project Lead / Workstream Lead / Workstream Support dialogue

TEMPLATE

This template facilitates dialogue between the project lead, the workstream lead and the workstream support(s) by formalizing roles and responsibilities for executing or supporting actions across various workstreams.

It clarifies who will be accountable for specific tasks and evaluates their expertise at company, department, or personnel levels, thereby enhancing coordination and efficiency within the project framework.

Workstream Description

Name of the Workstream		Today´s Date
Port & bunkering infrastructure		
Project Name		**Planned Start**
Workstream Lead	**Workstream Support**	**Planned End**
Name / Department / email / Other contacts if any		
Significant Milestones (Dates) and Required Deliverables		
Requested Result / Solution (incl. Completion Criteria)		
Critical Success Factors / Risks		
Detailed Activity Descriptions (Incl. All Involved / Participating Resources / Departments)		
		Competence (Company, department, Personnel levels)

TEMPLATE

Role assignment template

Workstreams	1 Corridor baseline	2 Alternative fuels supply chain	3 Port and bunkering infrastructure	4 Low/zero emission vessels	5 Cargo demand dynamics	6 Summary of technical and regulatory feasibility and cost assessments	7 Roadmap and commitments
Stakeholders	All stakeholders	Fuel producers	Port and bunkering operators	Shipowners and operators	Cargo owners	All stakeholders	All stakeholders

Workstream Lead

[Add logos and names of stakeholders to be involved]

Workstream Support

Examples of potential stakeholders are:

- Fuel producers
- Trading operators
- Logistics companies
- Port and bunkering operators
- Shipowners and companies
- Cargo owners
- Investors
- Consulting services companies

Sounding Board

Note for Sounding Board:

Representative from environmental or social NGO should be included to provide a perspective without a commercial interest Regional representative from the affected civil society or workers groups can be included.

1 Consortium formation & goal definition

A Consortium formation, incl. assignment of roles and project governance

B Project vision, goals, and requirements

C Conceptual scope drawing

2 Customization & modeling

D Work scope definition

E Project plan

F Scenario modeling

3 Baselining & agreement

G Green corridor project baselining

H Project commitment letter

1B. Project vision, goals, and requirements

Purpose

- Provide a **sense of direction** to the project team and create a shared understanding of **what** the project **aims to achieve** in the Feasibility phase.
- Describe the project's vision, goals, and requirements in detail to **identify the desired target.**
- **Offer input and guidance** for the entire Feasibility project.

Key questions

- What are the **vision, goals, and requirements** for the upcoming Feasibility Study of the specific corridors?
- Which are the important **focus areas** for the upcoming phases?
- What are the **desired outcomes**?
- Which **results** are key to proceeding to the next step?
- **How** do green corridors **support** the areas' overall social, ecological or economical goals and ambitions described in the **vision**?

Importance

- Establishment of a **clear** project vision, goals, and requirements for the Feasibility Study that will guide the consortium.
- Development of workstreams with **leads** and **support** (if deemed necessary) based on the requirements of the project.
- Ensures the **alignment of stakeholders** on the project's objectives. This alignment is **vital** for the **success** of green corridor projects.

1B. Project vision, goals, and requirements

	Methodology – steps	Inputs
01	Describe the desired **target state**	• Conversations with key project stakeholders • Output from Pre-Feasibility Study[5], final list of green corridors assessment (1st Wave)
02	Create a **Scoping factsheet** with key data on fuel, port, bunkering, and storage, as well as vessel and cargo. Update as more insight is acquired	• Conversations with key project stakeholders
03	Describe the project's **vision, goals, and requirements** as precisely as possible	• Combination of the above

[5] Learn more at https://cms.zerocarbonshipping.com/media/uploads/documents/02-Pre-Feasibility-Study-Methodology-Final.pdf

Each project requires a project vision, goals, and requirements, and a scoping factsheet

A Project Vision

Purpose Put the project's vision and goals into perspective, provide reasoning behind them, and use it to engage external stakeholders for various purposes

How to

- Outline the vision and context
- Define the goals and value streams related to the vision
- Input thoughts on Just & Equitable aspects

B Scoping factsheet

Purpose Create a baseline that serves as a point of reference – to be continuously refined during the Scoping Phase in preparation for Feasibility as more insight is acquired

How to Identify guardrails for Feasibility across the four dimensions

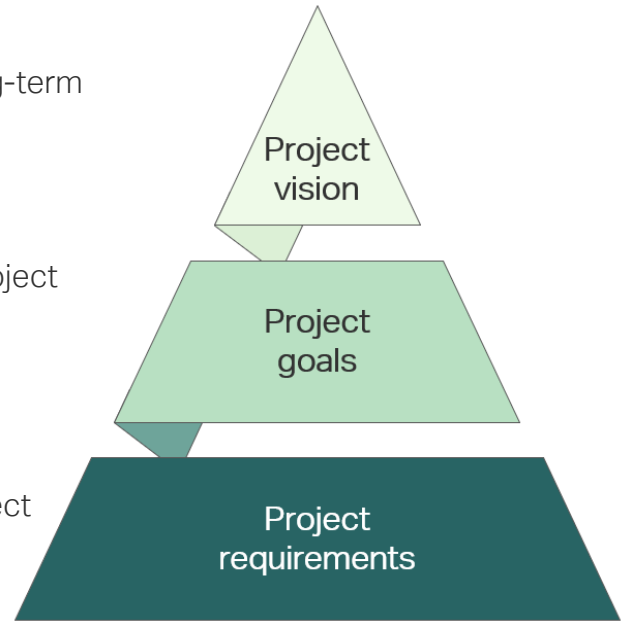
- Fuel
- Vessel
- Ports and bunkering
- Cargo

C Project vision, goals, and requirements

Purpose Provide a common direction to project members and a shared understanding of what the project aims to achieve and under which conditions

How to

1. Define the long-term project vision *(based on A)*
2. Specify the project goals (desired outcomes) *(based on A)*
3. Detail the project requirements *(based on B)*



To be detailed further in an iterative process throughout the Scoping Phase

A. Project Vision

1	Vision and context	What is the overall vision and what recent developments does the project play into?
2	Goals and value streams related to the vision	How does this project contribute to realizing the overall vision?
3	Just & Equitable	How can the outcomes of the project be a positive driver for a Just & Equitable green transition

Include relevant data points, if available, to support the overall vision, to make it more tangible

A. Example of a project vision – Chile

EXAMPLE

1 Vision and context

"Chile is recognized as one of the places in the world where **hydrogen will be produced at the lowest cost** (LCOH). As a consequence, the hydrogen derivate maritime fuels **ammonia and e-methanol are also expected to be produced at low cost in Chile**. Chile has therefore embarked on a Green Hydrogen Journey and wants to be a **key source of cheap renewable energy for the future**."

2 Goals and value streams related to the vision

"Given its geographic configuration with more than 4,000 km coastline, the vast majority of the international import and export **takes place via maritime transport**. As the majority of the fuel to be produced in Chile will be ammonia (lack of sustainable CO2), **it is crucial for Chile to demonstrate that ammonia is a useful and safe fuel**.

Chile is the **largest copper exporter in the world**, and copper is one of the five critical elements for the Green Transition, and hence growth in the copper export is expected. At the same time, there is a growing interest for cradle-to-cradle emission for all products (especially amongst Western consumers). Chile is therefore keen to **explore the options for zero-emission copper production**."

3 Just & Equitable

This part has not been assessed during the Chilean Feasibility scoping phase as the specific J&E methodology has been developed by the Center post project start (2023)

EXAMPLE

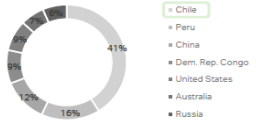
A. Example of supporting material for project vision – Chile

1 Why a copper corridor - copper facts and focus areas

Uses

Equipment manufacturing	32%
Building construction	28%
Infrastructure	16%
Transportation	12%
Industrial	12%

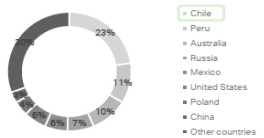
International copper production by country in %



World mine production per year

20 Mio. tonnes

World reserves of copper by country in %



Chile – copper smelter capacity per region

Chuquicamata (north)	1.400 kt / y
Caletones (central)	1.370 kt / y
Altonorte (north)	1.160 kt / y
Potrerillos (north)	680 kt / y

Copper facts (mcan.cn.cn)
Environmental, economic and technological factors affecting Chilean copper smelters – A critical review - ScienceDirect

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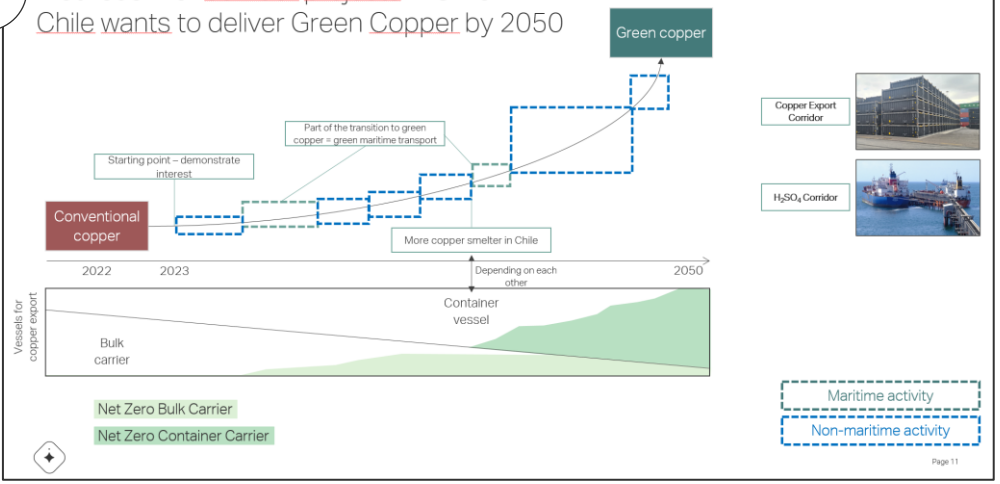
2 Motivation for corridor projects in Chile Chile wants to deliver Green Copper by 2050



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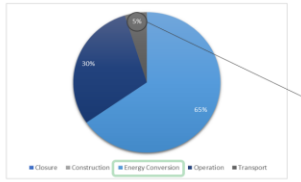
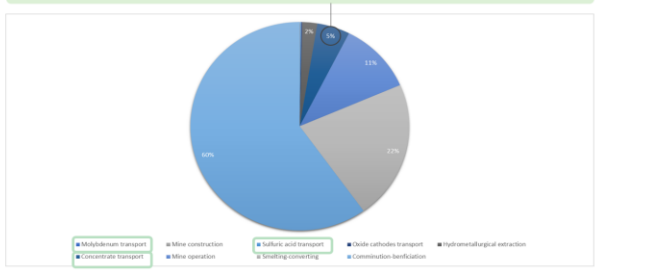
3 Emissions of 1 tonne of copper cathodes – combined information for Chile



- 4.1 t CO_2eq per t of copper cathodes
- 2.2 Mio. t of copper cathodes export per year
- 9.0 Mio. t CO_2eq per year
- Total transport emissions[1] per year ~ 400.000 t CO_2eq

Emissions possibly effected by first wave activities



1 Transport emissions not limited to maritime transport and calculated for the entire Chilean export of copper cathodes
Spiral: Sustainability analysis of copper extraction and processing using LCA methods (imperial.ac.uk)

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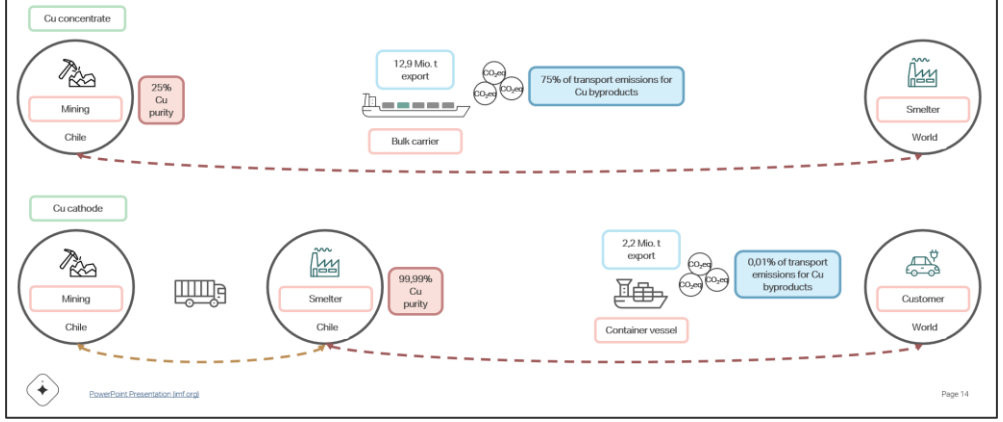
4 Transport of copper and emissions in relation to product



PowerPoint Presentation (imf.org)

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TEMPLATE

B. Scoping factsheet for Feasibility – Template

Source(s) of renewable energy :	[Size, capacity (MWh), Type (solar, windfarm …)]
Alternative fuels type:	[Name of fuel to be used in corridor]
Alternative fuels consumption per vessel per journey:	[Amount of fuel expected to be used in t/journey]
Alternative fuels consumption per vessel per year (X journeys/year):	[Amount of fuel expected to be used in t/year]
Alternative fuels transportation and infrastructure:	[How will fuel be transported from production site to port]
Ports:	[All ports to be involved in the corridor]
Storage:	[Location of storage]
Bunkering:	[Type and location of bunkering]
Vessels:	[Type of vessels]
Cargo:	[Type of cargo]
Cargo per vessel per year:	[Amount of cargo in t/year]
First vessel in water	
All vessels decarbonized	

To be detailed further in Feasibility Study

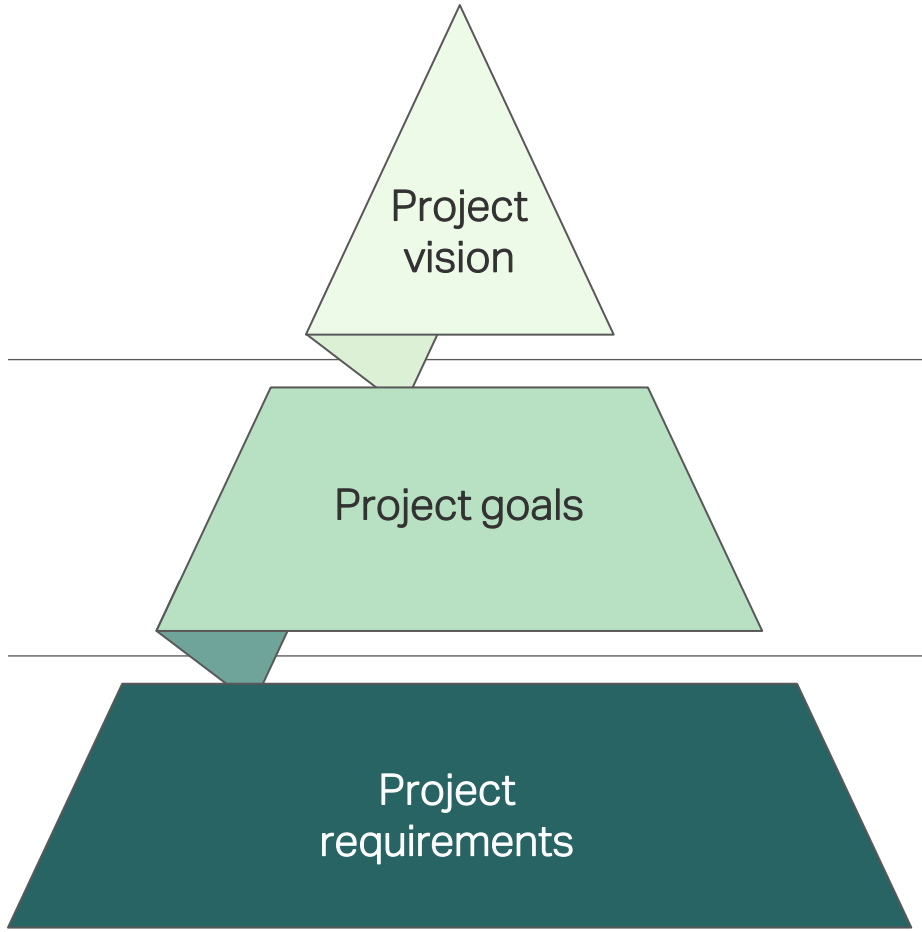
EXAMPLE

B. Example of scoping factsheet for feasibility – Copper export corridor with ten bulk carriers for the transport of copper ore / concentrate

Source(s) of renewable energy :	630 Ha, 420 MWac output, PV solar type
Alternative fuels type:	Ammonia
Alternative fuels consumption per vessel per journey	4.298 t
Alternative fuels consumption per vessel per year (X journeys/year):	13.772 t
Ports:	Puerto Angamos to Japan
Storage:	Interacid / Puerto Angamos
Bunkering:	Jetty or barge (Interacid / Puerto Angamos)
Vessels:	10 * 55.000 t Bulk Carrier (Supramax) with five parcels á 11.000 t (150 “green” parcels)
Cargo:	Copper Concentrate
Cargo per vessel per year:	180.000 t Copper Concentrate
First vessel in water	2028/2030
All vessels decarbonized	2034

C. Project vision, goals, and requirements - Template

TEMPLATE

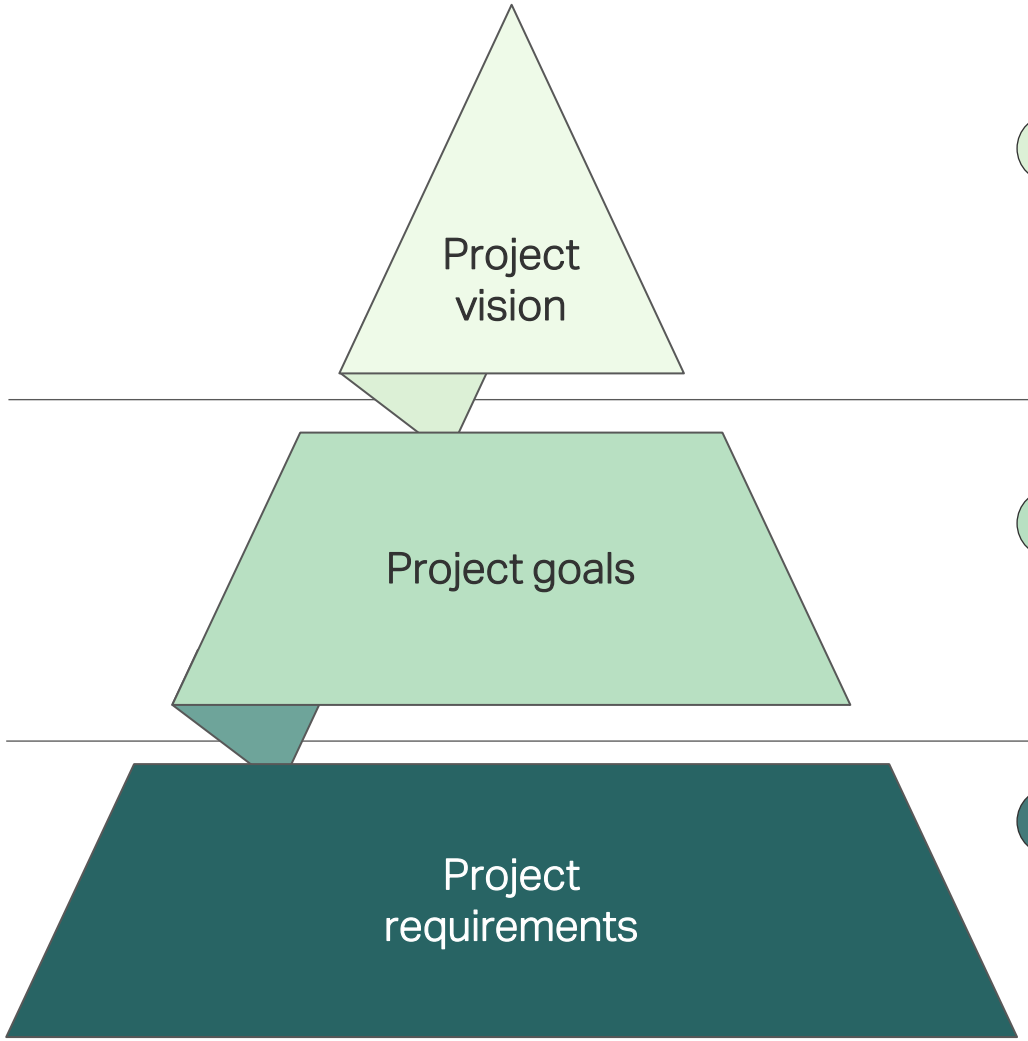


Questions to define the project vision, goals, and requirements:

1. What is the overarching vision that the project is contributing to?
2. What are the project's desired outcomes?
3. What requirements and procedures need to be followed?

EXAMPLE

C. Example of project vision, goals, and requirements – Chile



1 What is the overarching vision that the project is contributing to?

- Contribute to the decarbonization of the Chilean Copper Industry
- Support the work of Chile's Strategy for a Just Transition

2 What are the project's desired outcomes?

- Enable 150 zero-emission Trans-Pacific copper Concentrate parcels from Northern Chile by 2028

3 What requirements and procedures need to be followed?

- 10 Supramax dry-bulk carriers
- Fueled by ammonia
- Loading and bunkering on Northern Chilean Ports – preferably Mejillones
- Receiving ports preferably in Japan and South Korea
- First vessel in the water in 2028
- All vessels by 2030

1 Consortium formation & goal definition

- A Consortium formation, incl. assignment of roles and project governance
- B Project vision, goals, and requirements
- C Conceptual scope drawing

2 Customization & modeling

- D Work scope definition
- E Project plan
- F Scenario modeling

3 Baselining & agreement

- G Green corridor project baselining
- H Project commitment letter

1C. Conceptual scope drawing

Purpose

- Provide a **visual alignment of direction** to the project team and create a shared understanding of **what** the project **aims to achieve** in the Feasibility phase.
- Serve as **one-figure-to-explain-it-all** slide of the project.
- Describe the agreed **types/numbers/amounts** within each workstream, and clearly outline the **delineation** between the workstreams – use **scoping factsheet** as basis.
- Can be used to agree on **options/variations/scenarios** to be considered and assessed in the Feasibility Study phase.

Key questions

- What is the **scope** of the upcoming feasibility study of the specific corridors?
- Which **types/numbers/amounts** are relevant for the individual workstreams:
  - Fuel Group
  - Renewable Area
  - Renewable Type
  - Electrolysis type
  - Fuel Type & Feedstock
  - Storage type
  - Bunkering option
  - Vessel Segment, Size, Engine
  - Cargo Group and Type
- What is the **responsibility/delineation** of each workstream?
- What are the agreed **options/variations/scenarios** to be assessed?

Importance

- Establishment of a **clear visual description** for the Feasibility Study, which will guide the discussions in the project team.
- Ensures the **alignment of stakeholders** on the project's objectives. This alignment is **vital** for the **success** of green corridor projects.
- Ensures that work done in the individual workstreams, if **changed** from the initial scope, can be **discussed and aligned** with the relevant other workstreams.

1C. Conceptual scope drawing

	Methodology – steps	Inputs
01	Fill out **Scoping Drawing Questionnaire**, to ensure that all elements are identified.	• Scoping Factsheet
02	Create the **Scoping Drawing** by utilizing standard pictograms of essential building blocks for green corridor elements. Highlight **connectors** between each element and workstream. Outline delineation between individual workstreams.	• Scoping Drawing template and associated pictograms • Alignment with Workstream Leads
03	Specify types, size, amounts for the different elements across the value chain.	• Scoping Factsheet
04	Ensure **alignment** through Workstream Leads.	• Meeting/review with Workstream Leads
05	<u>Optional step:</u> The Scoping Drawing can also be used to outline **options/variations** to the Base Case Scenario	• Meeting/review with Workstream Leads

1.3 Scoping Drawing Questionnaire

TEMPLATE

Time

The Scoping Drawing Questionnaire is to be filled out for the end state, but can also be filled out for phases in the development of the project

Port B / Fuel B

This is only relevant if roundtrip cannot be made on single fuel tank hold i.e. 'fuel at both ends needed'

Time:

Fuel A					Port A - Call & Bunkering		Vessel				Cargo			Port B - Call	Port B - Call & Bunkering		Fuel B				
Fuel amount A							Number of vessels								Fuel amount B						
Fuel Group	Renewable Area	Renewable Type	Electrolysis type	Fuel Type & Feedstock	Storage type	Bunkering	Vessel Segment	Vessel size (Gross Tonnage)	Vessel size (Cargo Tonnage)	Vessel Engine	Cargo Group	Cargo Type	Cargo	Calling / Bunkering	Bunkering	Storage type	Fuel Type & Feedstock	Electrolysis type	Renewable Type	Renewable Area	Fuel Group
e-fuel	Offshore	wind	Acidic (PEM: Polymer Electrolyte Membrane)	e-methane (point source)	Refrigerated	Jetty	Bulk Carrier	0-9999			Bulk	Ore			Jetty	Refrigerated	e-methane (point source)	Acidic (PEM: Polymer Electrolyte Membrane)	wind	Offshore	e-fuel
bio-fuel	Onshore	solar	Alkaline (AEL)	e-methane (direct air capture)	Pressurized	Barge	Tanker	10000-34999				Liquid			Barge	Pressurized	e-methane (direct air capture)	Alkaline (AEL)	solar	Onshore	bio-fuel
blue fuel		hydro	Solid oxide electrolyser cells (SOEC)	e-methanol (point source)	Ambient		Container	35000-59999			Container					Ambient	e-methanol (point source)	Solid oxide electrolyser cells (SOEC)	hydro		blue fuel
		Other		e-methanol (direct air capture)			Gas Carrier	60000-99999									e-methanol (direct air capture)		Other		
				e-diesel (point source)			Tanker	100000-199999									e-diesel (point source)				
				e-diesel (direct air capture)			Ferry	200000+									e-diesel (direct air capture)				
				e-ammonia			Cruise										e-ammonia				
				Blue ammonia			RoRo/ Car carrier										Blue ammonia				
				FAME (very low availability)			Tug										FAME (very low availability)				
				Bio-methane			Offshore										Bio-methane				
				Bio-methanol			Other										Bio-methanol				
				Bio-oil (HtL) (Low TRL, not existing in 2024)													Bio-oil (HtL) (Low TRL, not existing in 2024)				
				Bio-oil (pyrolis) (Low TRL, not existing in 2024)													Bio-oil (pyrolis) (Low TRL, not existing in 2024)				

1.3 Scoping Drawing Questionnaire

EXAMPLE

Time

The Scoping Drawing Questionnaire is to be filled out for the end state, but can also be filled out for phases in the development of the project

Port B / Fuel B

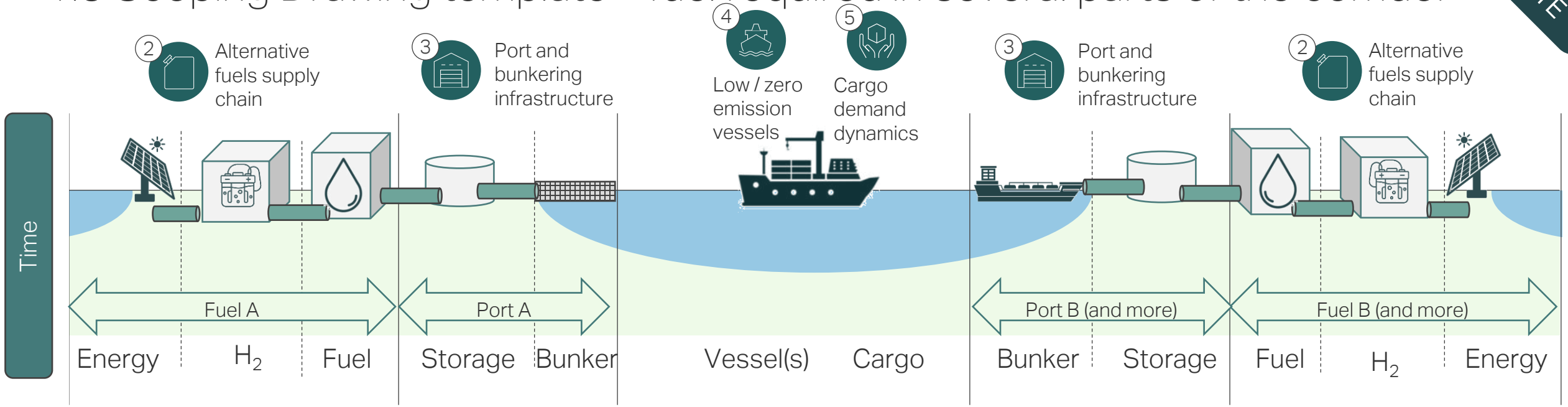
This is only relevant if roundtrip cannot be made on single fuel tank hold i.e. 'fuel at both ends needed'

Time: 2028

Fuel A: e-ammonia					Port A: Mejillones Call & Bunkering		Vessel				Cargo			Port B: Naoshima a.o.	Port B: Naoshima a.o. Call & Bunkering		Fuel B: e-ammonia				
Fuel amount A: 70.000 mt							Number of vessels: 10								Fuel Amount B: 70.000 mt						
Fuel Group	Renewable Area	Renewable Type	Electrolysis type	Fuel Type & Feedstock	Storage type	Bunkering	Vessel Segment	Vessel size (Gross Tonnage)	Vessel size (Cargo Tonnage)	Vessel Engine	Cargo Group	Cargo Type	Cargo	Calling / Bunkering	Bunkering	Storage type	Fuel Type & Feedstock	Electrolysis type	Renewable Type	Renewable Area	Fuel Group
e-fuel	Onshore	solar	tbd	e-ammonia	Pressurized	Jetty	Bulk Carrier	35.000 gt	55.000 dwt	ICE dual fuel e.g. MAN B&W 6S50ME	Bulk	Ore	Copper Concentrate	Bunkering	?	?	e-ammonia	tbd	?	?	e-fuel
e-fuel	Onshore	solar	tbd	e-ammonia	Pressurized	Barge	Bulk Carrier	35.000 gt	55.000 dwt	ICE dual fuel e.g. MAN B&W 6S50ME	Bulk	Ore	Copper Concentrate	Bunkering	?	?	e-ammonia	tbd	?	?	e-fuel

1.3 Scoping Drawing template – fuel required in several parts of the corridor

TEMPLATE

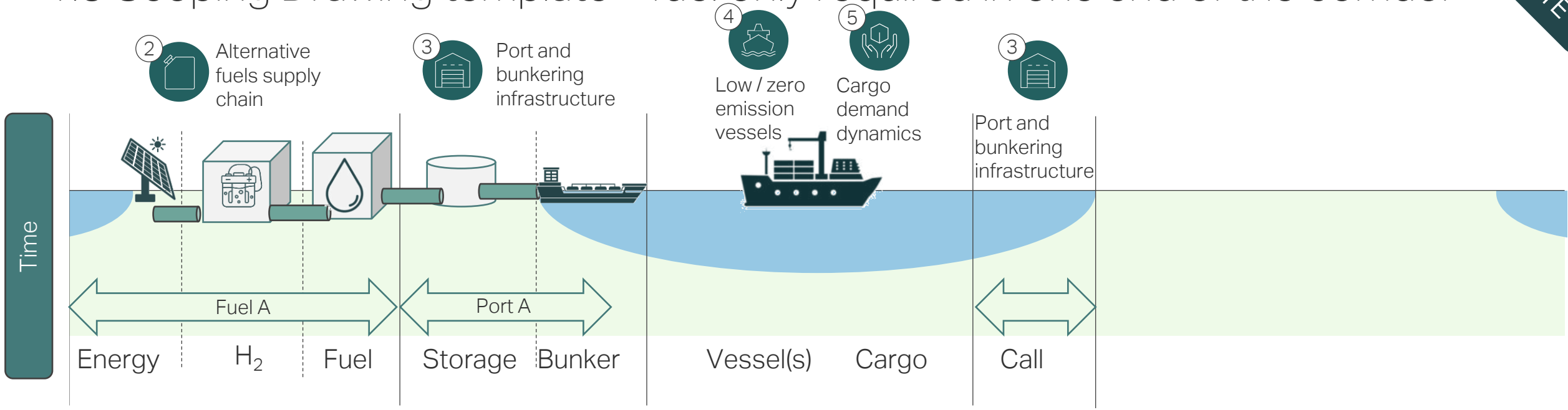


Area	Energy	Electrolysis	Fuel	Storage	Bunker	Vessel	Cargo	Bunker	Storage	Fuel	Electrolysis	Energy
Type/ Area												
I: Size/ amount												
II: Size/ amount												

III: Connectors	WS 2		WS 2		WS 2 / 3		WS 3		WS 3 / 4		WS 3 / 4		WS 3		WS 2 / 3		WS 2		WS 2	

1.3 Scoping Drawing template – fuel only required in one end of the corridor

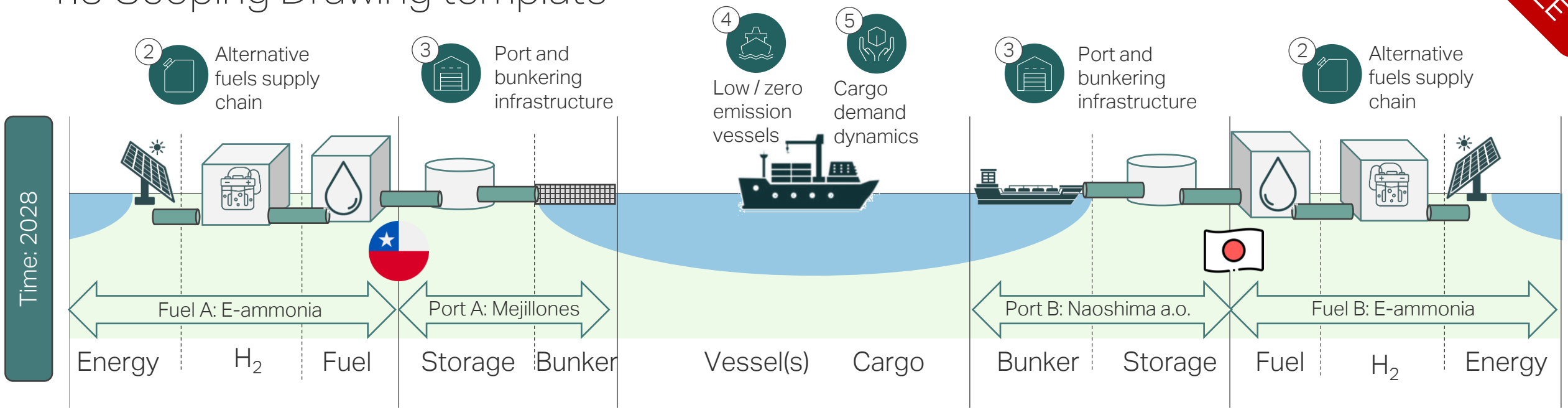
TEMPLATE



Area	Energy	Electrolysis	Fuel	Storage	Bunker	Vessel	Cargo	Call	Storage	Fuel	Electrolysis	Energy
Type/ Area								-				
I: Size/ amount												
II: Size/ amount												
III: Connectors	WS 2		WS 2		WS 2 / 3		WS 3		WS 3 / 4		WS 3 / 4									

1.3 Scoping Drawing template

EXAMPLE

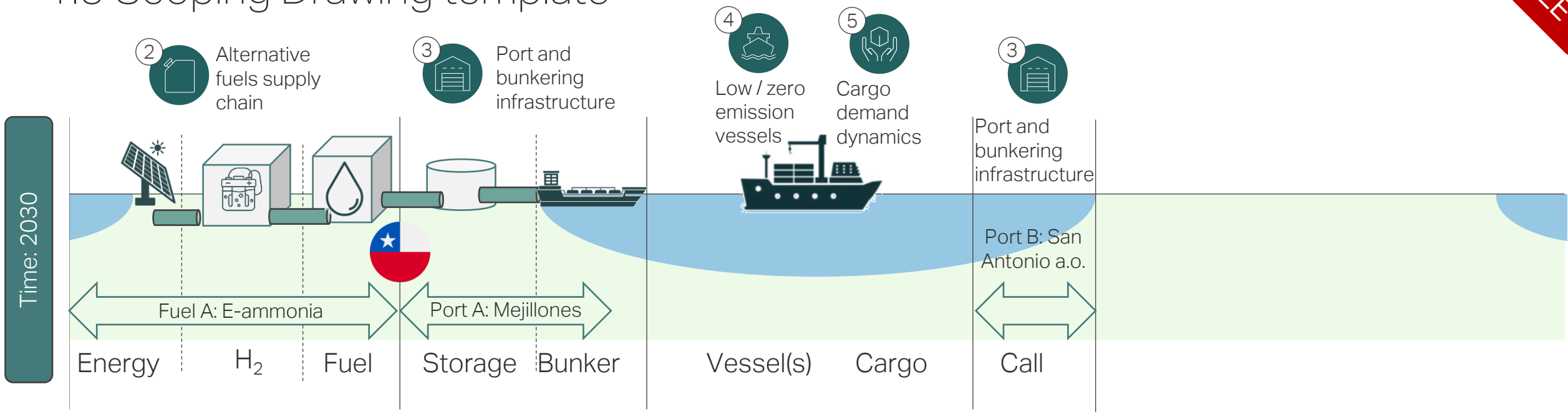


Area	Energy	Electrolysis	Fuel	Storage	Bunker	Vessel	Cargo	Bunker	Storage	Fuel	Electrolysis	Energy
Type/ Area	Onshore Solar	TBD	E-ammonia	Pressurized	Jetty	Bulk carrier 55.000 dwt	Copper concentrate	?	?	e-ammonia	?	?
I: Size/ amount	630 ha / 420 MWac	28.000 mt	70.000 mt			10		70.000 mt			28.000 mt	
II: Size/ amount												

III: Connectors	WS 2		WS 2		WS 2 / 3		WS 3		WS 3 / 4		WS 3 / 4		WS 3		WS 2 / 3		WS 2		WS 2	

1.3 Scoping Drawing template

EXAMPLE



Area	Energy	Electrolysis	Fuel	Storage	Bunker	Vessel	Cargo	Call	Storage	Fuel	Electrolysis	Energy
Type/ Area	Onshore Solar	TBD	E-ammonia	Pressurized	Barge	Chemical tanker 25.000 dwt	Sulfuric Acid	-	?	e-ammonia	?	?
I: Size/ amount	47 ha / 32 Mwac	2.100 mt	10.000 mt			2	1.000.000 mt	70.000 mt			28.000 mt	
II: Size/ amount												

III: Connectors	WS 2		WS 2		WS 2 / 3		WS 3		WS 3 / 4		WS 3 / 4									

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2D. Work scope definition

Purpose

- Point of reference and guide during **Feasibility Study.**
- Develop Work Scope Definition by **customizing** the Feasibility Study Methodology based on previously defined vision, goals, and requirements.
- Create transparency and alignment around **expectations in the Feasibility Study** using the Feasibility Matrix (see page 42).

Key questions

- Which activities and analyses are **relevant** for the Feasibility Study?
- What does the **resource requirement/timeline** of the Feasibility Study look like?

Importance

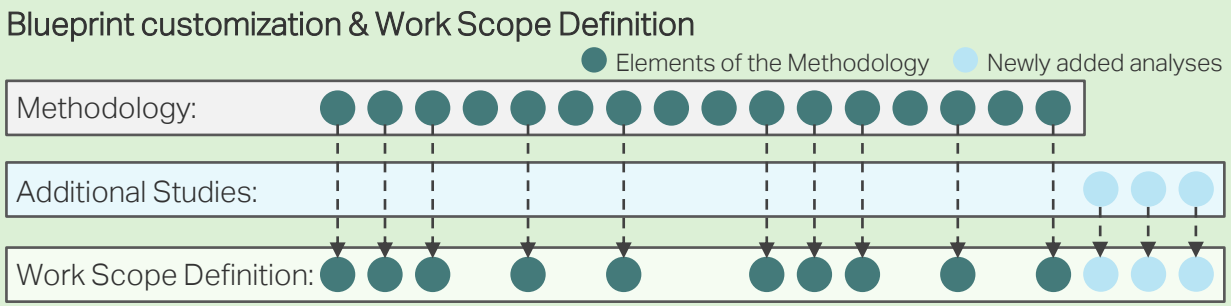
- The Standard Methodology is intended to be used by the project team as a guide and can be **adjusted when and where necessary**.
- The project team can complement the Methodology with new project-specific activities/ analyses if needed.
- **Not every activity** listed in the Methodology may be applicable or necessary for every project. But all **main activities should be covered.**
- The Work Scope Definition **outlines all activities and analyses required** in the Feasibility Study to achieve the desired goals and outcomes. Thus, the definition, together with the project plan, serves as a guide for the workstreams during the Feasibility Study.

2D. Work scope definition

	Methodology – steps	Inputs
01	Provide an overview of the **project's desired outcomes and key data** as a common point of reference in the **Feasibility matrix.** Use **Conceptual Scope Drawing** as guidance	• Project vision, goals, and requirements • Workstream Lead assessment of project requirements
02	**Generate Work Scope Definition** by customizing Methodology *(Work Scope Definition replaces Standard Methodology as reference/ guide for the project after this step)*	• Project vision, goals, and requirements • Input from Workstream Leads
03	**Create work packages** in accordance with Work Scope Definition	• Work Scope Definition [Methodology 2D] • Feasibility Study project plan guideline [Methodology 2E]

Illustrative visualization:

Project vision, goals, and requirements serve as input →



The Work Scope Definition is generated based on the customized Methodology

A. Use the Feasibility Methodology as reference and customize it where and if necessary

Based on the standard Feasibility Study Methodology and the previously defined project vision and goals, Workstream Leads identify **which elements are required** for their workstream in the Workstream Overview sheets *(Excel template available)*

Workstream Leads also have the option to **add additional analyses** if and where necessary

Workstream Leads and Project Lead align on the Work Scope Definition – **Project Lead to point out potential gaps** between desired outcomes and the customized Methodology

Workstream Leads to estimate the **manhour requirements** to handle the identified tasks

B. Generate Work Scope Definition

Project Lead to consolidate inputs across workstreams into a final Work Scope Definition. From this point on, the **Work Scope Definition replaces the Methodology** as reference/ guideline for the project

Workstream Lead to **create work packages** for the workstream based on the Work Scope Definition

A. Each Workstream Lead to provide key information and customize the Methodology for their respective workstreams (1/2)

	A	B	C	D	E	F	G
1	**Workstream Description**						
2	**Name of the Workstream**					**Today´s Date**	
3							
4	Energy & fuel						
5	**Project Name**					**Planned Start**	
6							
7							
8	**Workstream Lead**	**Workstream Support**				**Planned End**	
9							
10							
11							
12							
13	**Significant Milestones (Dates) and Required Deliverables**						
14							
15							
16	**Requested Result / Solution (incl. Completion Criteria)**						
17							
18							
19	**Critical Success Factors / Risks**						
20							
21							
22	**Detailed Activity Descriptions (Incl. All Involved / Participating Resources / Departments)**						
23	**Blueprint**			**Importance**			**Resources Required**
24	**Elements**	**Methodology Steps**	**Comment**	**High**	**Medium**	**Low (Not included in**	**Hours / weeks**
25	2.1 Estimate fuel demand for the specific green corridor	2.1A Estimate energy demand for the specific corridor based on expected evolution of trade					
	2.1 Estimate fuel demand for the specific green corridor	2.1B Calculate alternative fuel demand for the					

2 3 4

1 **Overview:**
Fill in high-level workstream description, incl. milestones and key deliverables, desired results and success factors / risks

2 **Comment:**
Document with comments on how the standard task from the Methodology applies to the specific corridor

3 **Importance:**
Indicate the relative importance of the tasks

4 **Resources:**
Indicate the expected manhour requirement to perform the task . Ensure time for QC / review

A. Each Workstream Lead to provide key information and customize the Methodology for their respective workstreams (2/2)

41	2.5 Additional activities (optional)	2.5A ...					
42		2.5B ...					
43		2.5C ...					
44	**Interfaces and Relations to other Work Packages**						
45							
46							
47	**Data Input Required**						
48	**Energy**						
49	Energy project production						
50	Energy project size (Ha)						
51	Energy project location						
52	Energy project type (e.g., PV solar, ...)						
53	Energy project operational						
54	**Fuel**						
55	Fuel type						
56	Fuel consumption (t/vessel						
57	Fuel amount per year						
58	Fuel project operational year						
59	Fuel project location						
60	Fuel project supporting facts						
61	**Attachment (Further Information)**						
62							
63							
64	**Other**						
65							
66							
67	**Signature Workstream Lead**						
68							
69							
70	**Signature Project Lead**						
71							
72							

5 **Methodology customization (2/2):**
Add additional rows in the spreadsheet, if you would like to add additional analyses to the Methodology / Feasibility assessment, and identify interdependencies between other work packages / workstreams

6 **Key data points:**
Add key data points for the respective workstream and include attachments if relevant.
The currently displayed data points are exemplary and can be customized as per your needs (Consider which data points would be relevant to know for your project partners when choosing data points to display)

7 **Comments and signatures:**
Add comments if necessary and, after review and alignment with the Project Lead, sign the document

A. The Feasibility matrix provides an overview of the project's key data and desired outcomes

Action required in Scoping

Legend: Color coding for final Feasibility assessment (2)

Yes	Study has been conducted and claimed feasible
Maybe	More studies are required
Maybe	More physical testing or pilots are needed
No	Nothing is available yet

(FID = Final investment decision)

Project scope / vision

(1) **Project scope / vision:** Project Lead to add scope / vision defined during Scoping Phase

High-level evaluation of feasibility					
(2) Workstream 2: Energy Scope / vision					
	Energy project production size (GWh)	0			
	Energy project size (Ha)	0			
	Energy project location	0			
	Energy project type (e.g., PV farm)	0			
	Energy project operational year	0			
Energy	Technical [mark with one X]				
	Regulatory [mark with one X]				
	Cost to reach project scope [$m]				
	Cost to reach FID (Pilots etc) [$m]				
(2) Workstream 2: Fuel Scope / vision					
	Fuel type	0			
	Fuel consumption (t/vessel per year / per journey / per xxx)	0			
	Fuel amount per year	0			
	Fuel project operational year	0			
	Fuel project location	0			
	Fuel project supporting facts	0			
Fuel	Technical [mark with one X]				
	Regulatory [mark with one X]				
	Cost to reach project scope [$m]				
	Cost to reach FID (Pilots etc) [$m]				

(3) **Key data:** Key data points are populated automatically based on Workstream Leads' inputs in Workstream Overview sheet in Scoping

(4) **Technical and regulatory assessment:** To be filled at the end of the Feasibility study

(5) **Cost assessment:** To be filled at the end of the Feasibility study

B. The input from the Workstream Leads is consolidated into the Work Scope Definition

	A	B	C	D	E	F	G	H
1	**Work Scope Definition**							
2	**Project Name**						**Today´s Date**	
3								
4								
5	**Workstream Lead**		**Workstream Support**				**Planned Start**	
6								
7							**Planned End**	
8								
9	**Work Scope Definition**							
10	**Workstream 2 activities: Energy & fuel**					**Importance**		**Resources Required**
11	**Key questions**		**Workstream analyses**	**Comment**		**High**	**Medium**	**Hours /**
12								
13								
14								
15								
16								
17								
18								
19	**Workstream 3 activities: Port and bunkering infrastructure**					**Importance**		**Resources Required**
20	**Key questions**		**Workstream analyses**	**Comment**		**High**	**Medium**	**Hours /**
21								
22								
23								
24								
25								
26								
27								
28	**Workstream 4 activities: Vessel decarbonization pathway**					**Importance**		**Resources Required**
29	**Key questions**		**Workstream analyses**	**Comment**		**High**	**Medium**	**Hours /**
30								
31								

1 **Overview:**
Project Lead enters general introductory information

2 **Work scope definition:**
Project Lead compiles Work Scope Definition based on input from Workstream Leads
(The Excel sheet automatically draws activities directly from the Workstream Description sheets)

1 Consortium formation & goal definition

- **A** Consortium formation, incl. assignment of roles and project governance
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2 Customization & modeling

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2E. Project plan

Purpose

- Provide a clear and transparent **overview of workstream activities**, meeting cadence, key deliverables and deadlines in the Feasibility Study.
- **Allocate resources** effectively to complete the project.
- **Reference point** for project team to hold each other a-ccountable against the agreed timeline during the Feasibility Study.

Key questions

- How much **time** will it take to carry out the key activities under each workstream?
- When are **resources** from the individual project teams **available** for carrying out the activities?
- Where/how do the activities **require input** from other workstreams?
- When will key **conference/meetings** related to the project take place?

Importance

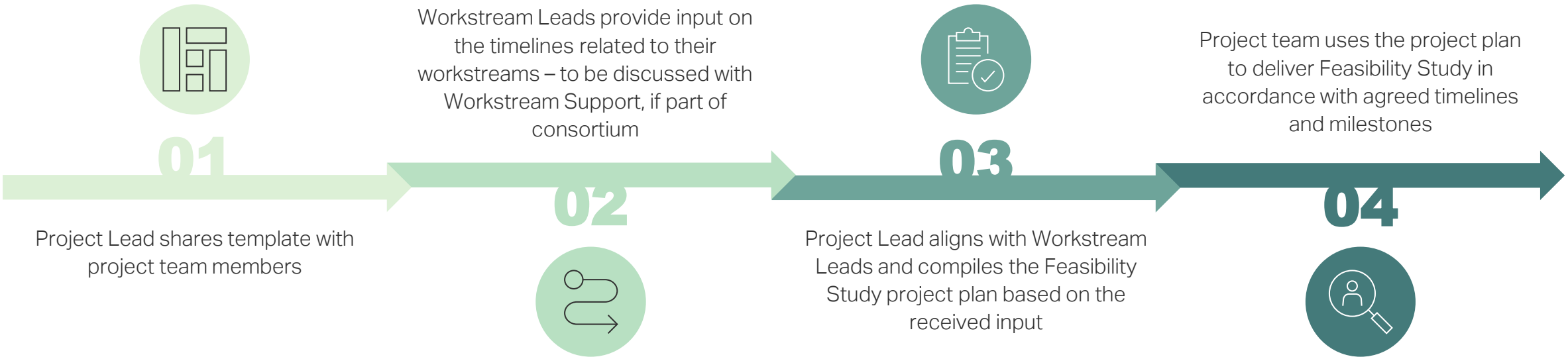
- A **shared and clear** project plan is paramount for the efficient execution of any project.
- The green corridor projects involve **several stakeholders** who are often not familiar with working with each other and are often in different time zones. It is important that **everyone works according to the same plan**.
- The project plan gives a clear **outline of interdependencies** between the workstreams.

2E. Project plan

	Methodology – steps	Inputs
01	Share **project plan template** with project team members	• Feasibility Study Project Plan guide
02	Incorporate **input on timelines** related to workstreams	• Work Scope Definition [Methodology 2D] • Input from Workstream Leads
03	Compile **final project plan** based on the received input	• Outcome of the above

Project plan

The project plan serves as a common point of reference throughout the entire project



Template: Develop a Feasibility Study project plan using the template

TEMPLATE

Feasibility Study		Year																							
		June				July				August				September				Ocotber				November			
ID	Workstream	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Corridor baseline (optional)																								
2	Alternative fuels supply chain																								
3	Port and bunkering infrastructure																								
4	Low/zero emission vessels																								
5	Cargo demand dynamics																								
6	Summary of technical and regulatc																								
7	Roadmap and commitments																								
Milestones		Month				Month				Month				Month				Month				Month			
ID	Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
A	Steering group meeting																								
B	Workshop																								
C	Status Meeting																								

2	Alternative fuels supply chain	Year																							
		Month				Month				Month				Month				Month				Month			
ID	Task	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
2																									
2.1																									

1. Enter the duration of the workstreams here and indicate with lines (use the "Draw Border" tool) if they depend on each other

2. Insert key milestones here

3. Detailed tasks
Workstream Leads list tasks, their duration, and key milestones – Can serve as input to overarching project plan at the top of the sheet

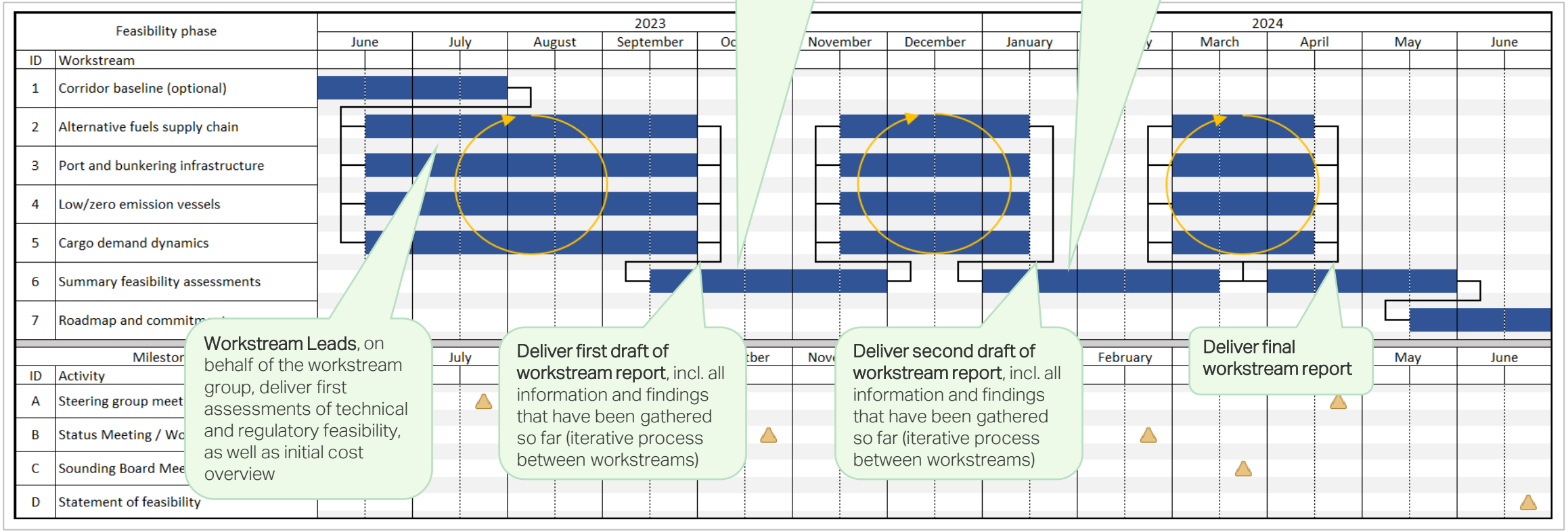
High-level project plan for a Feasibility Study over one year

ILLUSTRATIVE

EXAMPLE

Project Lead consolidates input from ongoing Feasibility assessments (Workstreams 2-5) and **identifies gaps** to be addressed by Workstream Leads

Project Lead consolidates input from ongoing Feasibility assessments (Workstreams 2-5) and **identifies gaps** to be addressed by Workstream Leads



Workstream Leads, on behalf of the workstream group, deliver first assessments of technical and regulatory feasibility, as well as initial cost overview

Deliver first draft of workstream report, incl. all information and findings that have been gathered so far (iterative process between workstreams)

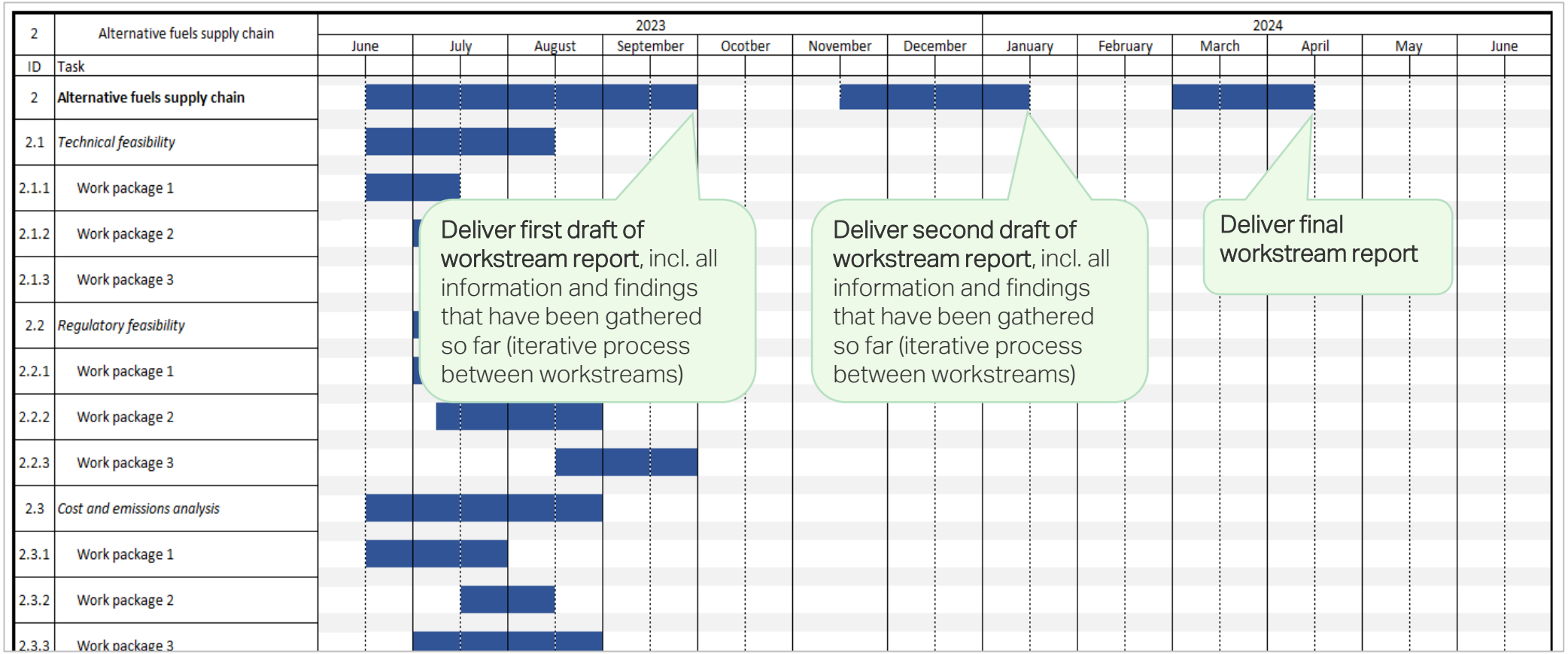
Deliver second draft of workstream report, incl. all information and findings that have been gathered so far (iterative process between workstreams)

Deliver final workstream report

Tasks in each workstream should be clustered into actionable, but high-level work packages

ILLUSTRATIVE

EXAMPLE



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- D Work scope definition
- E Project plan
- F Scenario modeling

3 Baselining & agreement

- G Green corridor project baselining
- H Project commitment letter

2F. Scenario modeling

Purpose

- Evaluate the high-level **CO_2 abatement potential** for the specific corridor.
- Provide an **initial estimate of the incremental cost of green** and incremental cost per cargo unit for the selected corridor.
- Serve as a **first point of discussion with consortium members** on the residual cost gap.

Key questions

- How much **CO_2 emission** can be abated by the specific corridors as vessels move from fossil-based fuel to the alternative fuel of choice?
- What is the total **CAPEX and OPEX** for establishing the corridor:
  - Renewable energy
  - Fuel production
  - Port Infrastructure
  - Vessels

Importance

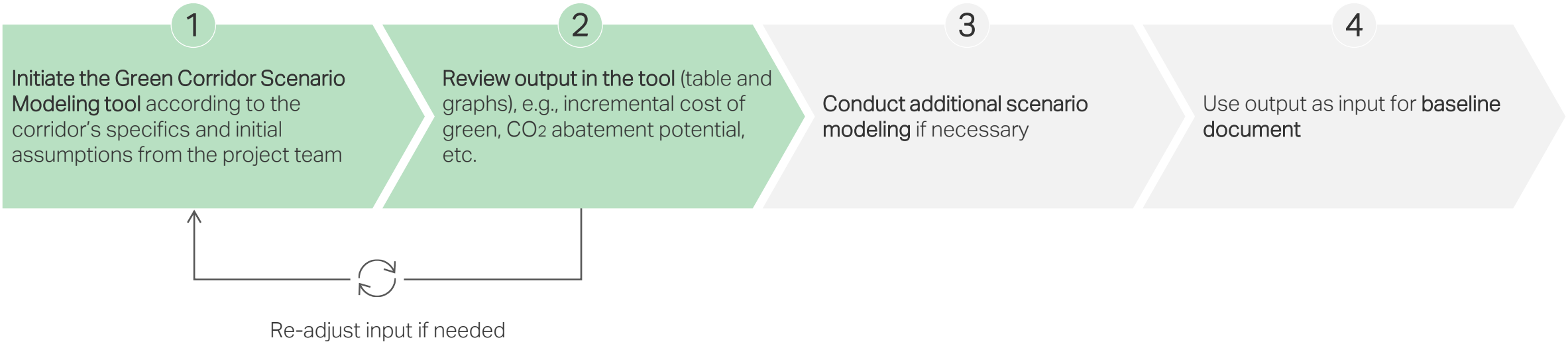
- A **good understanding** of the incremental cost, amount of abated CO_2, cost impact on cargo, and cost of abated CO_2 is important for the **communication regarding the project**.
- These initial estimates give an important indication and **allow stakeholders to understand** if the corridor is likely to be impactful in terms of CO_2 abatement, cost effectiveness, technological enabling, etc.
- Ultimately, the estimates allow the very first assessment as to whether **it makes sense to do** a Feasibility Study.

2F. Scenario modeling

	Methodology – steps	Inputs
01	**Use Green Corridor Scenario Modeling Tool** according to the **corridor's specifics** and initial assumptions, if and where needed	• Green Corridor Cost Model • Initial assumptions and input from Workstream • Output from the Pre-Feasibility Study 1st Wave Assessment
02	**Review output in the tool**, e.g., CO_2 abatement potential, incremental cost of green, etc.	• n/a
03	Conduct **additional scenario modeling** if required	• Input from Workstream Leads

The cost and scenario assessment provides preliminary insights on the incremental cost of green and CO_2 abatement potential of the green corridor

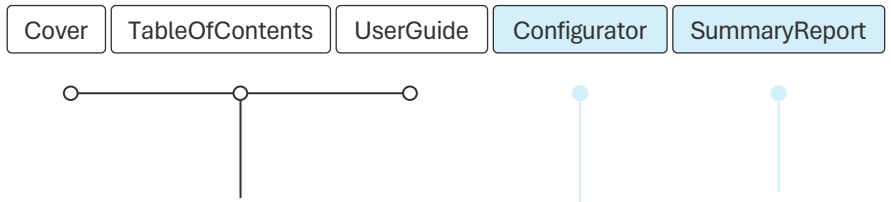
Focus on the following pages



The Green Corridor Scenario Modeling Tool[6] is a configurable, automated Excel tool that provides insights on costs and CO_2 abatement potential of a corridor

How to use the tool

The tool has 5 main sheets ...

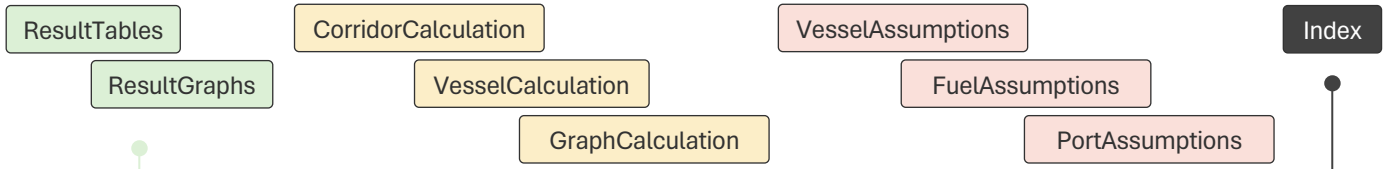


Review the license agreement, table of contents and **how to use the tool**

Configure the input according to your corridor's specifics

View summary of output

... and 9 hidden sheets with detailed results, calculations and assumptions



If required, **review more detailed results** from the configuration

If required, **review the corridor and vessel calculations**

If required, **review the assumptions** of the tool

An index sheet for **underlying mapping**

For now, the tool has a range of limitations:

- In the output, electricity and fossil fuel costs are considered OPEX only.
- Lost cargo space from larger fuel tanks. Currently, the model assumes same size fuel tanks independent of the configuration.
- Electrical and heat energy demand assumed constant no matter the operational profile to simplify vessel calculation
- Port costs are input with very simple assumptions. Please change these when configuring a corridor if you have a better view on these values.

(6) Can be downloaded: https://cms.zerocarbonshipping.com/media/uploads/documents/green_corridor_model_v0.9.xlsx

Configurator: This sheet allows users to configure the model to fit the selected green corridor's specifics

(x) Deep dive follows (x) 2 main output graphs

A

Input values

Only red cells should be adjusted by the user – some of the cells have a drop-down menu that opens when clicking on the cell or pressing the 'alt' and '↓' keys simultaneously.

Override function (optional)

The red cells in this column can be used to override the values to their left, if needed.

B

Goal seeking (optional)

The green buttons help the user understand the impact of adding a carbon price or adjusting the willingness to pay on the incremental cost of green (i.e., the cost gap).

C

Output

The graphs provide the following output:

1. Incremental cost of green by alternative fuel type, split into transport and cargo
2. Total cost by alternative fuel type, split into vessel, port, fuel, emissions
3. Emissions compared to fossil-fuel baseline by alternative fuel type

Fuel configuration	Unit	Option 1	Option 2	Option 3	Option 4	Baseline
Main fuel	-	e-methanol (PS)	e-methane liquefied (PS)	e-ammonia	Blue ammonia (CCS)	LSFO
Main fuel type	-	Methanol	Methane	Ammonia	Ammonia	Diesel
Vessel types for fuel	-	DF Methanol	DF Methane	DF Ammonia	DF Ammonia	MF Diesel
Pilot fuel	-	LSFO	LSFO	LSFO	LSFO	LSFO

Corridor configuration	Unit	Value	Override
Bunker region	-	Europe	
Year	-	2025	
Vessel segment	-	Container	
Vessel size	-	8000 TEU	
Number of vessels	-	1	
Lifetime of corridor	Years	25	
Average vessel speed	Knots	18	
Cargo per vessel	TEU	8,000	
Cargo value	USD/TEU	50,000	
Distance for one roundtrip	Nautical miles	8,000	
Days at sea	Days	240	
Number of roundtrips per year	-	13.0	
Cargo utilization	%	65%	

Regulatory configuration	Unit	Value
Corridor carbon price	USD/tCO2eq	-
Willingness to pay from cargo owners/customers	% of cargo value	-

Close cost-gap to Option 1 by adding a **carbon price**

Close cost-gap to Option 2 by adding a **carbon price**

Close cost-gap to Option 3 by adding a **carbon price**

Close cost-gap to Option 4 by adding a **carbon price**

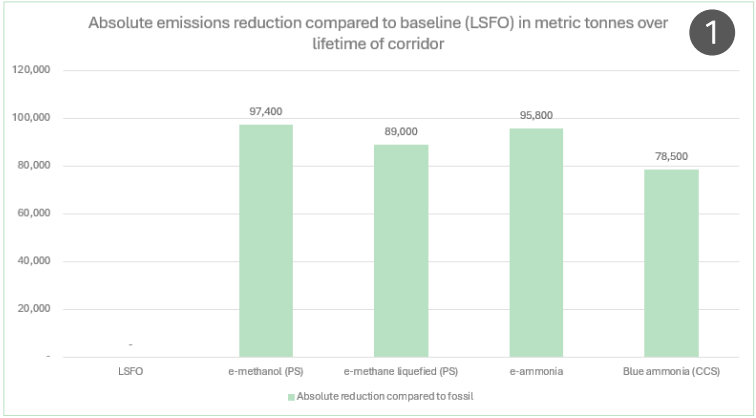
Close cost-gap to Option 1 by adding a **willingness-to-pay**

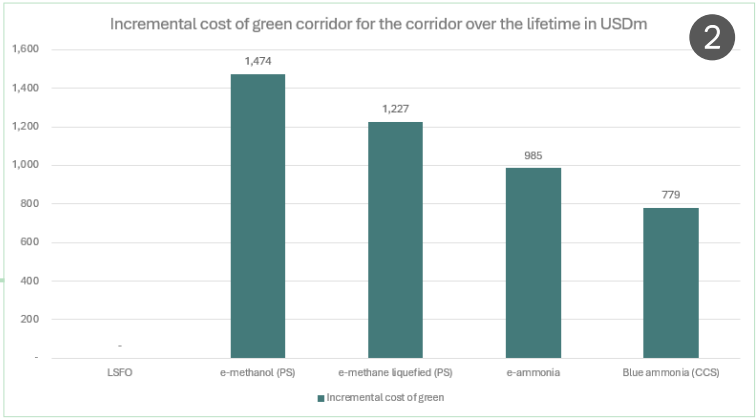
Close cost-gap to Option 2 by adding a **willingness-to-pay**

Close cost-gap to Option 3 by adding a **willingness-to-pay**

Close cost-gap to Option 4 by adding a **willingness-to-pay**

Reset regulatory configuration





A. Input values: Fuel configuration – The user can select different fuel types to be compared to the fossil-fuel baseline

Fuel configuration

Fuel configuration	Unit	Option 1	Option 2	Option 3	Option 4	Baseline
Main fuel	-	e-methanol (PS)	e-methane liquefied (PS)	e-ammonia	Blue ammonia (CCS)	LSFO
Main fuel type	-	Methanol	Methane	Ammonia	Ammonia	Diesel
Vessel types for fuel	-	DF Methanol	DF Methane	DF Ammonia	DF Ammonia	MF Diesel
Pilot fuel	-	LSFO	LSFO	LSFO	LSFO	LSFO

Corridor configuration	Unit	Value	Override
Bunker region	-	Europe	
Year	-	2025	
Vessel segment	-	Container	
Vessel size	-	8000 TEU	
Number of vessels	-	1	
Lifetime of corridor	Years	25	
Average vessel speed	Knots	18	
Cargo per vessel	TEU	8,000	
Cargo value	USD/TEU	50,000	
Distance for one roundtrip	Nautical miles	8,000	
Days at sea	Days	240	
Number of roundtrips per year	-	13.0	
Cargo utilization	%	65%	

Regulatory configuration	Unit	Value
Corridor carbon price	USD/tCO2eq	-
Willingness to pay from cargo owners/customers	% of cargo value	-

Options 1-4 can be customized by the user by **adjusting the red cells**. The white cells are automatically filled based on input in the main fuel row.

The **Baseline** in column H includes the **standard fossil fuel** as a comparison.

See the **"FuelAssumptions" sheet for fuel data.**

A. Input values: Fuel configuration – The model is backed up by a granular and robust data set including multiple bunker fuels

Granularity of data – selected elements (exemplary)

Bunker fuels

- e-hydrogen (liquefied)
- e-hydrogen (compressed)
- e-ammonia
- e-methanol (DAC)
- e-methanol (PS)
- e-methane liquefied (DAC)
- e-methane liquefied (PS)
- e-diesel (DAC)
- e-diesel (PS)
- Blue ammonia (CCS)
- Bio-methanol
- Bio-methane (liquefied)
- Bio-oil (HTL)
- Bio-oil (Pyrolysis)
- LNG
- LSFO

Yearly data points for e-hydrogen (liquefied) for the following parameters:

- CapEx (Global)
- OpEx (Africa)
- OpEx (Americas)
- OpEx (Asia)
- OpEx (Europe)
- OpEx (Middle East)
- Total emissions – WTT – GWP100 (Global)
- Total emissions – TTW – GWP100 (Global)
- Total emissions – WTW – GWP100 (Global)

A. Input values: Corridor configuration – Users can adjust multiple parameters to ensure the data model matches the specific corridor's characteristics

Corridor configuration

Fuel configuration	Unit	Option 1	Option 2	Option 3	Option 4	Baseline
Main fuel	-	e-methanol (PS)	e-methane liquefied (PS)	e-ammonia	Blue ammonia (CCS)	LSFO
Main fuel type	-	Methanol	Methane	Ammonia	Ammonia	Diesel
Vessel types for fuel	-	DF Methanol	DF Methane	DF Ammonia	DF Ammonia	MF Diesel
Pilot fuel	-	LSFO	LSFO	LSFO	LSFO	LSFO

Corridor configuration	Unit	Value	Override
Bunker region	-	Europe	
Year	-	2025	
Vessel segment	-	Container	
Vessel size	-	8000 TEU	
Number of vessels	-	1	
Lifetime of corridor	Years	25	
Average vessel speed	Knots	18	
Cargo per vessel	TEU	8,000	
Cargo value	USD/TEU	50,000	
Distance for one roundtrip	Nautical miles	8,000	
Days at sea	Days	240	
Number of roundtrips per year	-	13.0	
Cargo utilization	%	65%	

Regulatory configuration	Unit	Value
Corridor carbon price	USD/tCO2eq	-
Willingness to pay from cargo owners/customers	% of cargo value	-

Customize the corridor configuration **by adjusting the red cells**.

The white cells are automatically filled based on input on the vessel segment and size. They are based on assumptions from the underlying data model but **can be adjusted using the override function.**

You can also test the impact of adding a **carbon price on the corridor** or adding a **willingness-to-pay** from the cargo owners/customers.

A. Input values: Corridor configuration – The model is backed up by a granular and robust data set including multiple vessel types

Granularity of data – selected elements (exemplary)

Vessels

- Container (3500 TEU)
- Container (8000 TEU)
- Container (15000 TEU)
- Bulk carrier (Handy)
- Bulk carrier (Panamax)
- Bulk carrier (Capesize)
- Tanker (35k dwt)
- Tanker (100k dwt)
- Tanker (300k dwt)
- RoRo (4000 CEU)
- RoRo (7000 CEU)
- Gas Carrier
- Cruise (25k GT)
- Cruise (100k GT)
- Cruise (175k GT)
- Fast Ferry
- Ferry
- General Cargo
- Offshore
- Tug

Yearly data points for Container vessels (3500 TEU) for the following parameters:

- Nominal capacity
- Days at sea
- Average speed
- Main engine thermal efficiency - MF Diesel
- Main engine thermal efficiency - DF Methane
- Main engine thermal efficiency - DF Methanol
- Main engine thermal efficiency - DF Ammonia
- Main engine pilot fuel share - MF Diesel
- Main engine pilot fuel share - DF Methane
- Main engine pilot fuel share - DF Methanol
- Main engine pilot fuel share - DF Ammonia

B. Output: The summary report provides a summarized output from the corridor calculations including two main sections on emissions and cost

Summary report

Emissions section

The four selected options will result in reducing emissions of between:

78500 - 97400

Metric tonnes over the lifetime of the corridor

The resulting emission reduction is due to the four selected options having emissions factors of:

9% - 26%

compared to using LSFO, meaning that the emissions reduction potential of the corridor is:

74% - 91%

Cost section

The incremental cost of green for the full corridor over its lifetime is between

779 USDm - 1474 USDm

when considering the full corridor and

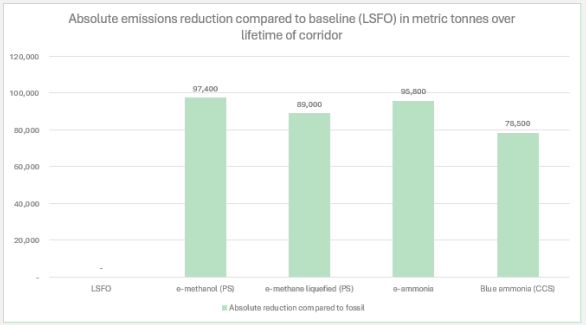
450 USD/TEU - 880 USD/TEU

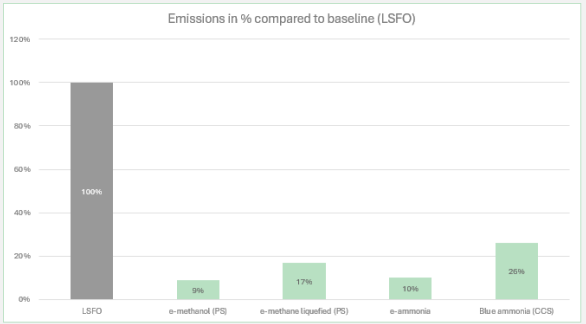
when considering the cost per transport unit.

In order to close the cost gap using a carbon price, the range required is:

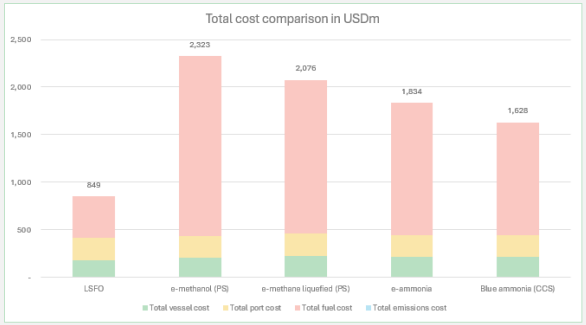
390 USD/tCO2eq - 610 USD/tCO2eq

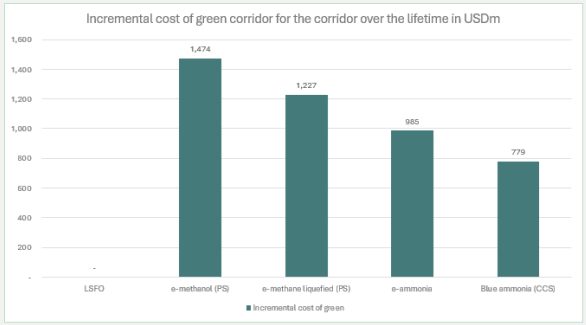
Emissions graphs (key)

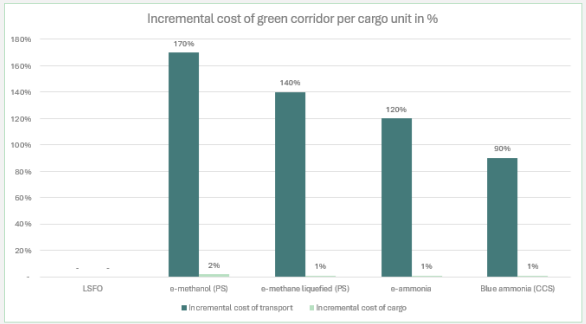


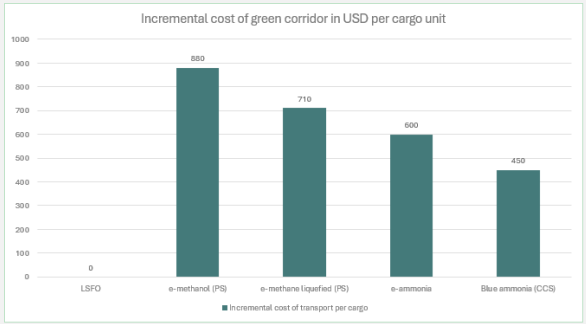


Cost graphs (key)









C. Goal seeking: Examine simple ways to close the cost gap through a carbon price or willingness-to-pay

Goal seeking

Corridor configuration	Unit	Value	Override
Bunker region	-	Europe	
Year	-	2025	
Vessel segment	-	Container	
Vessel size	-	8000 TEU	
Number of vessels	-	1	
Lifetime of corridor	Years	25	
Average vessel speed	Knots	18	
Cargo per vessel	TEU	8,000	
Cargo value	USD/TEU	50,000	
Distance for one roundtrip	Nautical miles	8,000	
Days at sea	Days	240	
Number of roundtrips per year	-	13.0	
Cargo utilization	%	65%	

Regulatory configuration	Unit	Value
Corridor carbon price	USD/tCO2eq	-
Willingness to pay from cargo owners/customers	% of cargo value	-

Close cost-gap to Option 1 by adding a **carbon price**

Close cost-gap to Option 2 by adding a **carbon price**

Close cost-gap to Option 3 by adding a **carbon price**

Close cost-gap to Option 4 by adding a **carbon price**

Close cost-gap to Option 1 by adding a **willingness-to-pay**

Close cost-gap to Option 2 by adding a **willingness-to-pay**

Close cost-gap to Option 3 by adding a **willingness-to-pay**

Close cost-gap to Option 4 by adding a **willingness-to-pay**

Reset regulatory configuration

Understand how the cost gap between Alternative fuel options 1-4 and the Baseline can be closed by using the green buttons to (1) add a **carbon price** or (2) add a **willingness-to-pay** for each of the 4 options selected in the fuel configuration.

The value cells in the two red cells in the regulatory configuration as well as the graphical output will be adjusted automatically based on the selected green buttons.

1 Consortium formation & goal definition

- A Consortium formation, incl. assignment of roles and project governance
- B Project vision, goals, and requirements
- C Conceptual scope drawing

2 Customization & modeling

- D Work scope definition
- E Project plan
- F Scenario modeling

3 Baselining & agreement

- G Green corridor project baselining
- H Project commitment letter

3G. Green corridor project baselining

Purpose

- Outline the **goals and objectives** for the Feasibility Study.
- The **technical session** provides context and background information in relation to fuel, ports, vessel, cargo dynamics, etc.
- The **scenarios modeling** provides an insight into, and discussion hereof, of the CO_2 abatement potential and incremental cost
- The document is an internal project document, which ensures an **aligned partnership in advance of starting** the Feasibility and signing the Project Commitment Letter.
- The document serves, in an updated version, also as **Chapter 1** in the Feasibility Study

Key questions

- What are the agreed **project technical terms: project members, goal, objective, governance, etc?**
- What are the **initial positions** on choice of fuel(s), port(s), vessel segment, for the Feasibility Study?

Importance

- A common **baseline document** for all project members ensures an **efficient and swift process for signing** the Project Commitment Letter, as the baseline document outlines **all relevant parts of the project.**
- The document will **not be publicly available** and does not require a thorough review. It only serves as a common reference point for starting the project.

3G. Green corridor project baselining

	Methodology – steps	Inputs
01	Describe the project's **vision, goals, and requirements** in detail to identify the **desired target state.**	Feasibility Scoping [Methodology 1A]
02	Identify **sources of alternative fuel** best suited to meet future demand, considering import options, announced projects, etc	What are the **potential alternative fuels and sources** best suited for the corridor?
03	Assess the **current and expected storage and bunkering infrastructure** for the corridor (based on geography, fuels, segment, volume, etc.)	Which are the key **ports** and what are their respective **bunkering & storage infrastructure**?
04	Understand the administrative scheme in place within the green corridor	Which tax and tax exemptions are applicable? What are the laws and who are the relevant authorities for handling/bunkering?
05	Specify the **technical characteristics of vessels** in the corridor (incl. types, sizes, ages, fuel consumption, voyage characteristics)	What are the key **technical characteristics of the vessels** expected in the green corridor?
06	Describe the high-level trade flows, incl. **type** (cargo types), **nature** (e.g., origin-destination), **ownership**, etc.	What is the nature of the **trade flows** and the **end-customer** characteristics related to the corridor?
07	Estimate the **CO_2 abatement potential** and **cost gap to be closed**. Define the target state and compare with a **fossil-based 'current state'**	Feasibility Scoping [Methodology 2F]
08	Summarize **key insights** into a **corridor project baseline** that can serve as the starting point for the Feasibility assessment (max 10 pages)	

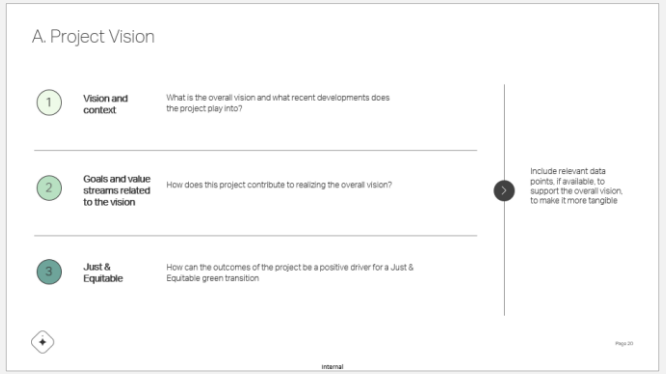
A. Describe the vision, goals, and requirements of the Feasibility Study

Methodology – steps	Inputs
i Describe the desired **target state** in a **foundational narrative**	– Conversations with key project stakeholders – Output from Pre-Feasibility Study
ii Create a **Scoping factsheet** with key data on fuel, port, bunkering, and storage, as well as regulatory factors, and update it as more insight is acquired	– Conversations with key project stakeholders
iii Describe the project's **vision, goals, and requirements** as precisely as possible	– Combination of the above

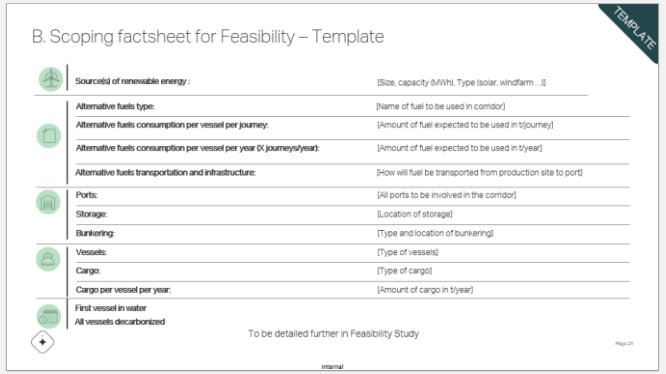
Refer to project vision, goals, requirements, and narrative guideline

Illustrative examples

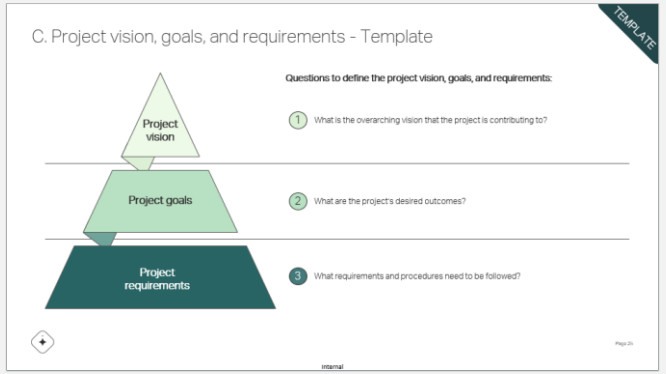
A.i



A.ii



A.iii

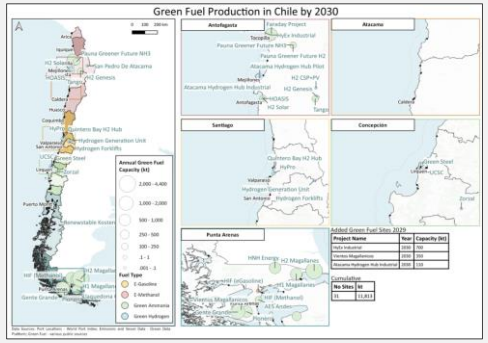


B. Identify sources of alternative fuel best suited to meet future demand

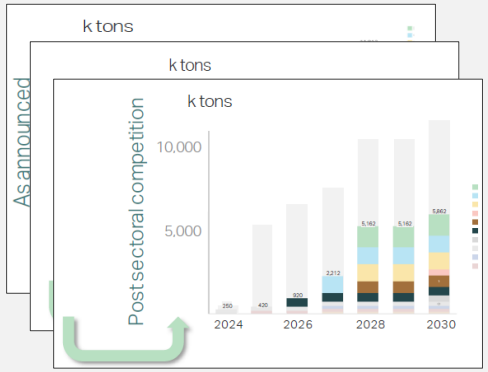
Methodology – steps	Inputs
i **Fuel demand of decided alternative fuel(s):** Create high-level estimate for future **demand for alternative fuel(s)** over time for the specific corridor	– Expected fuel consumption for vessels operating on specific corridor – Distance of corridor – Days at sea / days at port
ii Create overview of **existing and planned alternative fuel production sites for relevant fuel (near corridor/import to corridor = intra-regional)** (overview by volume, type, capacity, operator, and location) Align with workstream lead if already defined	– Current and expected projects by company, production levels and maturity level for agreed fuel type(s) – Location of expected production sites and import routes to corridor
iii If intra-regional fuel is not an option or uncertain, provide insight into timing, and assess capacity and cost of **extra-regional** fuel	– Literature / announcement screening – Transportation cost
iv **Estimate the cost of the alternative fuel** to be used for the specific corridor on a high level Use Fuel Cost Calculator if no known cost is available	– Estimates from literature – Input from early consortium partners
v Select **potential sourcing and type of alternative fuel** to be used in the green corridor Align with workstream lead if already defined	– Combination of above

Illustrative examples

B.ii



B.iii



B.Iv [7]

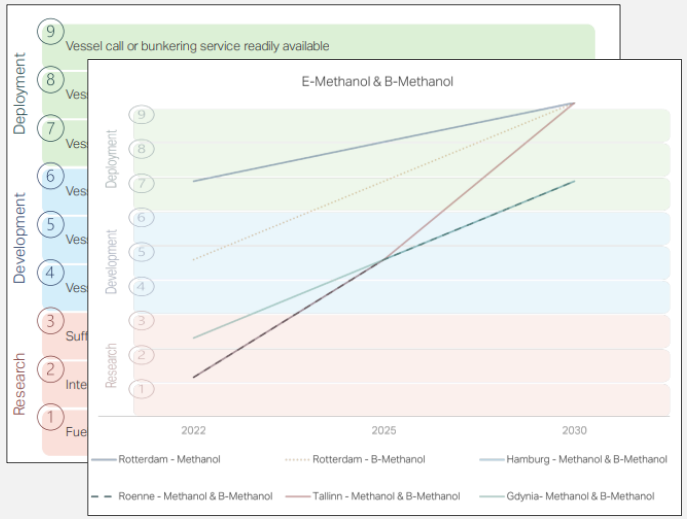
7: Inspired from: GMF_WA-East-Asia-Iron-Ore-Green-Corridor-Feasibility-Study.pdf (globalmaritimeforum.org)

C. Assess the current and expected storage and bunkering infrastructure along the corridor

Methodology – steps	Inputs
i Describe port **ownership and operatorship structures** relevant for the specific green corridor. Describe geographical conditions for relevant ports (weather, depth, etc.) as well as limitations (to expansion or fuel handling)	– Ownership structure (e.g., state-owned, private) – Port operators – Existing agreements between operator/owner – Geography of ports – Description of possible limitations to expansion (e.g., protected land)
ii Identify **current storage, loading/unloading & bunkering** options for ports along the specific corridor	– Bunkering operators – Assessment of fuels and chemical handled in the port – Description of onshore and marine bunkering/storage infrastructure by fuel type (fuel oil, bio-oil, LNG) – Chemical types handled (especially NH_3, CH_3OH, CO_2, H_2) – Description of current and expected capacity
iii Create overview of quantitative / qualitative **port readiness level** assessment along with planned future investments in facilities and other future plans for relevant ports along the specific corridor	– Quantitative port readiness level assessment based on WPCAP guideline and/or qualitative port assessment to determine port readiness – Description of strategies and any planned additions to infrastructure
iv Estimate high-level **CapEx and OpEx for the selected ports** to establish and operate the infrastructure (storage & bunkering) for the alternative fuel	– Input from literature and/or announcement – Possibly Input/QC'ed by Scoping Project members

Illustrative examples

C.iii



D. Understand the administrative scheme in place within the green corridor

The administrative scheme within the green corridor encompasses several key aspects, including taxation/exemptions and handling/bunkering permissions.

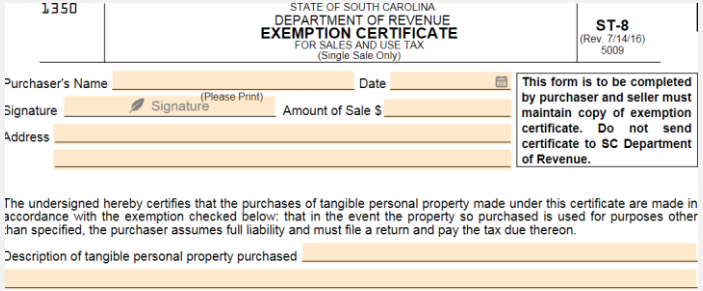
Methodology – steps

Determine the taxation status of alternative fuels versus fossil fuels, and whether taxation applies to fuel consumption during **domestic navigation** versus international navigation (tax exempted).

Understand **handling and bunkering permissions.** This will involve inquiries into **applicable laws** and jurisdictions, identification of **authorities** responsible for overseeing the use of new fuels (such as but not limited to: port authorities, operators, coast guards, or ministries).

Find out whether land-based facilities fall under the purview of the same agencies.

These considerations are vital for navigating the **regulatory landscape** and **ensuring compliance** within the green corridor.



1350

STATE OF SOUTH CAROLINA
DEPARTMENT OF REVENUE
EXEMPTION CERTIFICATE
FOR SALES AND USE TAX
(Single Sale Only)

ST-8
(Rev. 7/14/16)
5009

Purchaser's Name _____ Date _____

Signature _____ (Please Print) Amount of Sale $ _____

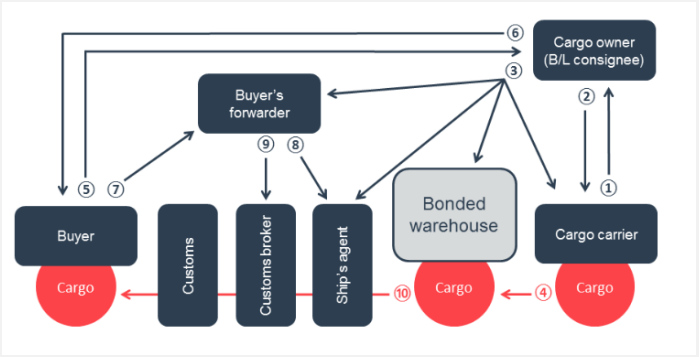
Address _____

This form is to be completed by purchaser and seller must maintain copy of exemption certificate. Do not send certificate to SC Department of Revenue.

The undersigned hereby certifies that the purchases of tangible personal property made under this certificate are made in accordance with the exemption checked below: that in the event the property so purchased is used for purposes other than specified, the purchaser assumes full liability and must file a return and pay the tax due thereon.

Description of tangible personal property purchased _____

Illustrative example of exemption certificate

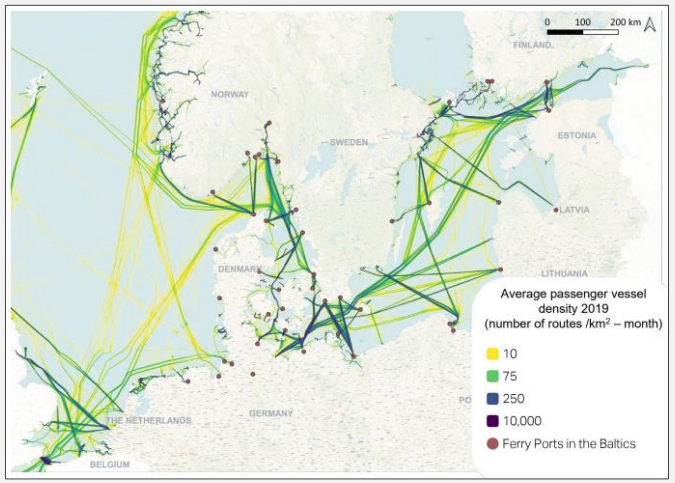


Illustrative example of trade and forfaiting flow

E. Specify the technical characteristics of vessels in the corridor

Methodology – steps		Inputs
i	Describe current **vessel routing** behavior on the corridor. Estimate future changes (if any)	– Schedules, number of trips, etc.
ii	Create **overview of owner(s) and operator(s) of vessels** active on the specific corridor	– Literature/Internet search
iii	Develop **overview of number and type of vessels** operating on the specific corridor. Estimate **development scenario** of specific corridor to fully decarbonize	– Number of vessels by size (e.g., handysize, capesize) – Number of vessels by age (e.g., newbuild, 10+ years) – Expected vessel newbuilds (order book)
iv	Identify **technical profile of vessels** 1) **currently** active on specific corridor and 2) **to be active on alternative fuel**	– Propulsion technologies, engine systems for current and future vessels
v	Estimate **annual fuel consumption** on green corridor based on high-level assessment of **annual fuel consumption for vessels on specific corridor**	– Number of ships along corridor by size – Preferred fuel type – Average fuel consumption by size
vi	Calculate **corridor emissions per vessel/cargo unit** for vessels 1) **currently** active on specific corridor and 2) **to be active on alternative fuel**	– Vessel annual fuel consumption – Emissions factor to convert fuel to resulting emissions
vii	Estimate **high-level CapEx and OpEx** for the specific number of vessels in both a fossil and alternative version	– Input from literature and/or announcement – Possibly Input/QC'ed by Scoping Project members

Illustrative examples



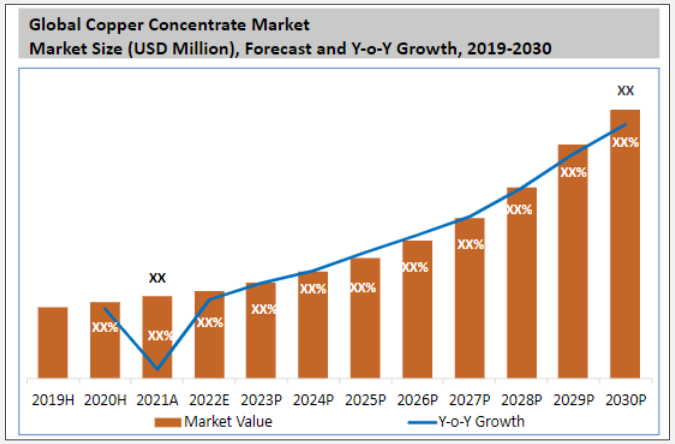
D.iii

F. Describe the high-level trade flows, including type, nature and ownership

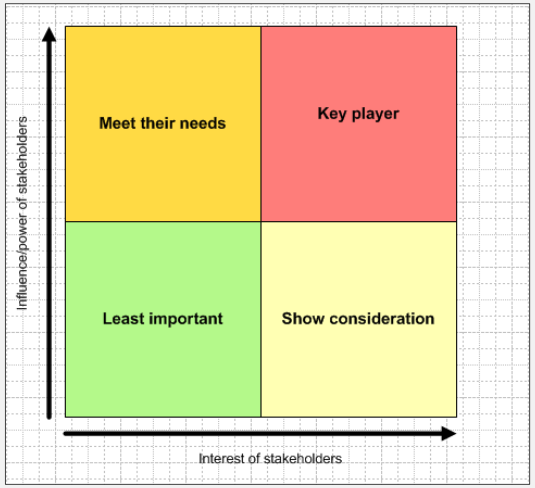
Methodology – steps	Inputs
i Describe the **nature of the cargo** to be transported on the specific corridor (origin-destination)	– Trade type and volumes (import/export) – Origin-destination vs. trans-shipment
ii Map the current and projected **cargo trade flows and growth** (volume/value) for the cargo type of the specific corridor	– Types of goods for each vessel segment (e.g., commodities, passengers, consumer) – Current and projected trade volume (DWT/TEU[8]) of commodities/products – Current and projected trade value of commodities/ products
iii Map key **stakeholders** related to the cargo	– Beneficial cargo owners and intermediaries (freights forwarders, third parties, etc.)
iv Estimate the high-level **value of the cargo type** for the corridor, based on a number of years, to estimate value increase/decrease and/or interruptions. Assess based on studies, literature, and questionnaires what the possible **willingness-to-pay is for the cargo type**	– Market reports, commodity index – Studies, literature

Illustrative examples

E.i



E.iii



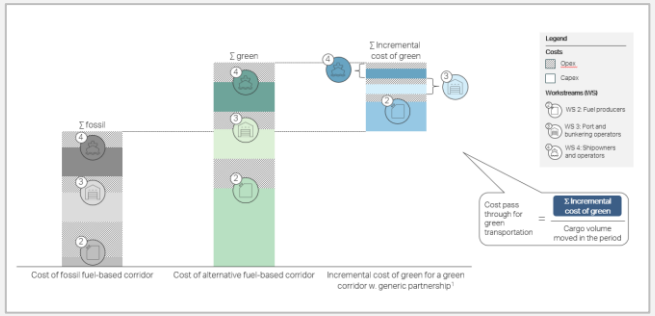
8: Deadweight tonnage and 20-foot equivalent unit

G. Estimate the green corridor's CO_2 abatement potential and cost gap to be closed

Methodology – steps	Inputs
i Assess the **total cost** (CapEx + OpEx) of the specific corridor on **traditional fossil fuel** and on the **proposed alternative fuel** based on insights from each value chain element	– 1.2.D, E output – 1.4.G output – Green Corridor Scenario Modeling tool
ii Estimate the **incremental cost of green for each of the value chain elements as well as the total incremental cost of green**	– 1.2.D, E output – 1.4.G output – Green Corridor Scenario Modeling tool
iii Identify the **CO_2 abatement potential** and **incremental cost of green per cargo unit** and compare to total cargo value	– The above and 1.4 output – Green Corridor Scenario Modeling tool
iv Make **'inverse calculation'** to estimate 1) the needed **pricing on CO_2** to break even 2) the **incremental cost** per cargo unit	– Combination of above – **Green Corridor Scenario Modeling tool**

Illustrative examples

F.i-iii



H. Summarize key insights into a corridor baseline document

1. Description of the **target state** — including **vision, goals, and requirements** for the green corridor — conceptual drawing of scope and workstream delineation
2. Recommendation of the **alternative fuel** to be used in the green corridor, including its required volume, if possible, its **source / feedstock** and its **production location**
3. Description of **current port, storage and bunkering infrastructure** along the green corridor, including current capacity, as well as the future **target port, storage and bunkering infrastructure**, including necessary capacity
4. Overview of the administrative scheme in place within the green corridor
5. Overview of current and expected **low/zero carbon emission vessels** in the corridor, including their specific **characteristics** and **emissions**
6. Understanding of **trade flows, cargo type, volume and value, cargo owners** and **consumers**
7. Potential CO_2 abatement, initial total **cost estimate** (CapEx and OpEx over 25 years) as well as an initial view on the **incremental cost of green**

Suggested structure of the chapter in the final report

1. Introduction and project framework, incl. project vision, goals, and requirements, an initial view on key findings and the incremental cost gap
2. Alternative fuels supply chain
   - A. General overview
   - B. Specific to the project
   - C. Preliminary cost assessment
3. Port and bunkering infrastructure
   - A. General overview
   - B. Specific to the project
   - C. Preliminary cost assessment
4. Overview of administrative scheme
5. Low/zero emission vessels
   - A. General overview
   - B. Specific to the project
   - C. Preliminary cost assessment
6. Cargo demand dynamics
7. Summary
   - A. CO_2 abatement potential
   - B. Incremental cost
   - C. Next steps

1 Consortium formation & goal definition

- **A** Consortium formation, incl. assignment of roles and project governance
- **B** Project vision, goals, and requirements
- **C** Conceptual scope drawing

2 Customization & modeling

- **D** Work scope definition
- **E** Project plan
- **F** Scenario modeling

3 Baselining & agreement

- **G** Green corridor project baselining
- **H** Project commitment letter

3H. Project commitment letter (PCL)

Purpose

- The PCL **outlines mutual intentions** for collaborative efforts in the Feasibility Study.
- The parties commit to carry out the Feasibility Study phase. **No financial commitment**, beyond possible minor analysis and surveys, if deemed necessary, to document feasibility.
- It does **not** create **legally binding obligations, except** for the **confidentiality** provisions.
- Establishes a **framework** for ongoing discussion and cooperation.
- Articulates **general principles and objectives** guiding the parties.

Key questions

- Is it **necessary** to include a PCL in the Feasibility Scoping Phase?
- What are the **general principles and objectives** articulated in the PCL?
- How does the PCL handle legally binding obligations, particularly regarding **confidentiality provisions**?
- What is the **prerequisite** for project team members to sign the PCL regarding the completion of other activities in the Feasibility Scoping Phase?

Importance

- The PCL is an **optional element**; it determines the **end** of the **scoping** phase.
- Could be required when **public announcements are expected**, or **mutual intention** of formalization is desired.
- Serves as a **point of reference** for guiding principles, conditions, and responsibilities.
- All **other activities** in the Feasibility Scoping Phase must be **completed** for project team members to sign the PCL.

3H. Project commitment letter (PCL)

	Methodology – steps	Inputs
01	**Create initial version** of the PCL based on the template	• Feasibility Scoping Methodology/ PCL guideline
02	**Review and adjust the wording** with lawyers / legal teams of all project members	• Input from lawyers/ legal teams of project members
03	**Review and adjust the project description** with project members	• Input from project team members
04	Finalize and **sign the PCL**	• Outcome of the above

The Project Commitment Letter is set up by the Project Lead and reviewed by all project members

Create the initial PCL

Share, review, and adjust the PCL

Finalize the PCL

Project Lead to create initial version of the PCL based on template

Project Lead to share initial version of the PCL with Workstream Leads

Legal teams of the Workstream Leads **review** the provisions of the PCL, while project team members of the Workstream Leads **review the project description**

The **feedback is then iterated** between the Project Lead and the Workstream Leads

Eventually, the Project Lead **finalizes the PCL** and **sends it** to project team members for their **signature**

The Project Commitment Letter includes two parts: (1) The terms and (2) the project description

1 Legal terms

- A list of signing parties (company details)
- A short description of each signing party

1. Background
2. Validity and Legal Effect
3. Documents
4. The study
5. Contemplated Agreement
6. Confidentiality
7. Publication
8. Non-exclusion
9. Term and Termination
10. Choice of Law and Dispute Resolution
11. Signatures

To be reviewed by legal teams of project members

2 Schedule (PD) Project Description

1. Introduction
2. The Project
   - A. Project overview
   - B. Project vision
   - C. Project goals
   - D. Project requirements
   - E. Scoping factsheet
   - F. Project timeline
   - G. Project organization
   - H. Roles and responsibilities
   - I. Project supervision
   - J. Project conduct
3. Commitment and contribution
4. Finance and budget
5. Reporting

1.1. Describe the vision, goals, and requirements of the Feasibility Study

2.2 Develop a project plan in accordance with the previously defined Work Scope Definition

1.2. Identify and engage potential project members and align on their roles and level of involvement

To be reviewed by participating project team members

1. Legal terms – Overview of key messages (1/2)

Section in the PCL	Key content/ messages
1 Background	By signing this PCL, the **Parties confirm their strong intentions** of initiating the collaboration in order to carry out the Feasibility Study
2 Validity and Legal Effect	This PCL is **solely an expression of the Parties' intentions** and shall **not constitute any legally binding obligations** for the Parties, **except for the confidentiality obligations**
3 Documents	The **Schedule [PD] (Project Description) is an integral part of this PCL** and all references made to this PCL include a reference to the Schedule [PD] Project Description
4 The Project	The "Project" shall mean the **project governed by this PCL as described in Schedule [PD] Project Description**
5 Contemplated Agreement	Should the Parties, during the term of this PCL, decide to legally formalize their collaboration in the Project, **the following agreement is expected to be entered into between the Parties ('Contemplated Agreement'):** (i) Project Agreement governing the Parties' collaboration in the Project
6 Confidentiality	The Parties are obliged to **keep confidential any information that is exchanged between the Parties in connection with the Project and that is explicitly and clearly marked as confidential** upon disclosure Where **disclosure is required by law,** prior to such disclosure the receiving Party shall consult with the disclosing Party in good faith about the terms of the receiving Party's disclosure of the disclosing Party's confidential information The confidentiality obligations set out in Section 6 will survive termination of this PCL **for a period of 2 (two) years from termination of this PCL**

1. Legal terms – Overview of key messages (2/2)

Section in the PCL	Key content/ messages
7 Publication	For the purpose of this PCL, **"Publication"** means (i) the publication of an **abstract, article, study, paper or similar** in a journal or in other public domains, (ii) **presentations** at a conference, seminar or other public domains, and (iii) **any other disclosure** that is meant to inform or present a certain topic to a wider group of recipients or unidentified audience, and **"Publish" and "Publishing"** are to be construed as meaning the same **Joint publication:** The Parties shall in good faith discuss a joint initial Publication of the Project results and the general principles for references to the Parties' involvement in this Project **Required Publication:** Subject to the confidentiality obligations contained herein, the requirement for publicity shall be honored in good faith by all project participants.
8 Non-exclusive	This PCL is **non-exclusive** and nothing in this PCL shall prevent or restrict a Party from entering into identical or similar arrangements, letters of intent and/or agreements with any other persons or entities

9 Term and Termination	**Start date:** When all parties have signed the PCL, counting from the date of the Party signing last in time **('Effective Date')**
	End date:
	• If the Parties enter into the **contemplated Agreement** or a similar agreement governing the Project:
	  • PCL automatically terminates when the **Project is completed**
	  • PCL automatically terminates on a fixed **'Expiration Date'**
	• If the contemplated Agreement is not entered into or the Project is not completed 30 calendar days prior to the Expiration Date, and upon notice from a Party to the other Parties, the Parties agree to enter into good faith discussions for an **extension of the term of this PCL**

10 Choice of Law and Dispute Resolution	*TBD by the Parties, including to what extent this section should be made legally binding*

2. Schedule (PD) Project Description – Overview of key messages

Section in the PCL	Key content/ messages
1 Introduction	This **Schedule [PD] sets out the main parts of the Project details**. Including the **Project Title**
2 The Project	A. Project overview B. Project vision C. Project goals D. Project requirements E. Scoping factsheet F. Project timeline G. Project organization H. Roles and responsibilities I. Project supervision J. Project conduct
3 **Commitment and contribution**	The Parties have **committed to contribute to the Project by providing the human, financial and/or material contributions** on those terms set out in this PCL (e.g., workstream internal meetings organized by Workstream Lead, status meetings with the whole project team, workshops with the whole project team)
4 **Finance and budget**	**Each Party shall be responsible for, and pay all costs** associated with, the performance of its obligations under this PCL (e.g., for surveys or demonstrators)
5 **Reporting**	The Parties will on a monthly basis, or as otherwise agreed, meet to **report on agreed content**

1.1. Describe the vision, goals, and requirements of the Feasibility Study

2.2 Develop a project plan in accordance with the previously defined Work Scope Definition

1.2. Identify and engage potential project members and align on their roles and level of involvement

An overview of signees and participating companies is required to set up the Project Commitment Letter – Template to be sent out to project members

Please share the information below by [insert date]:

Signees / Project Supervision / Key Personnel

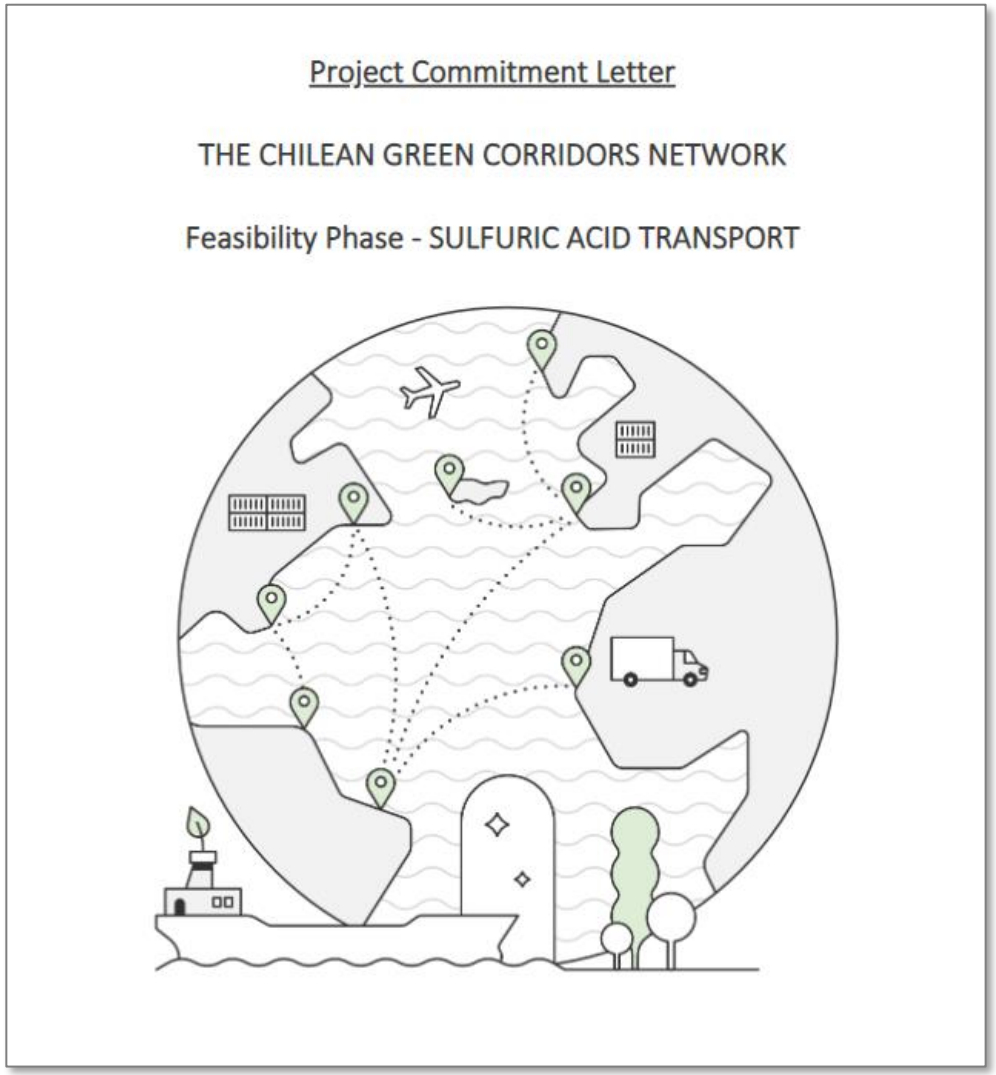
- Name
- Job Title
- Company
- E-mail address / Mobile number

Companies

- Full Registration Name
- Company reg. no.
- Address
- Postal Code
- Country

Project Commitment Letter (PCL)

EXAMPLE



Congratulations on successfully completing the Feasibility Scoping Phase of your green corridor project!

This milestone signifies the establishment of a dedicated team with clear governance and assigned roles. A comprehensive project vision is articulated and substantiated with conceptual drawings, providing a visual representation for the green corridor project members. Additionally, the project team has shared key metrics regarding CO_2 abatement and the incremental cost of adopting green fuels. An agreement is formalized among project members, outlining project description and legal terms.

What comes next?

With this foundation in place, the stage is set for the Study phase to begin. During this phase, a thorough assessment of fuels, ports, vessels, and cargoes will be conducted, culminating in the final consolidation and edition of the project roadmap.

Simply click here to access the ready-to-use methodology for the next step in your green corridor journey.

Disclaimer

This Methodology is provided "as is" without any warranty of any kind, express or implied, including but not limited to merchantability, accuracy, completeness, or fitness for a particular purpose. Any reliance you place on this Methodology is strictly at your own risk.

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This report is based on analysis which McKinsey & Company contributed to.

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