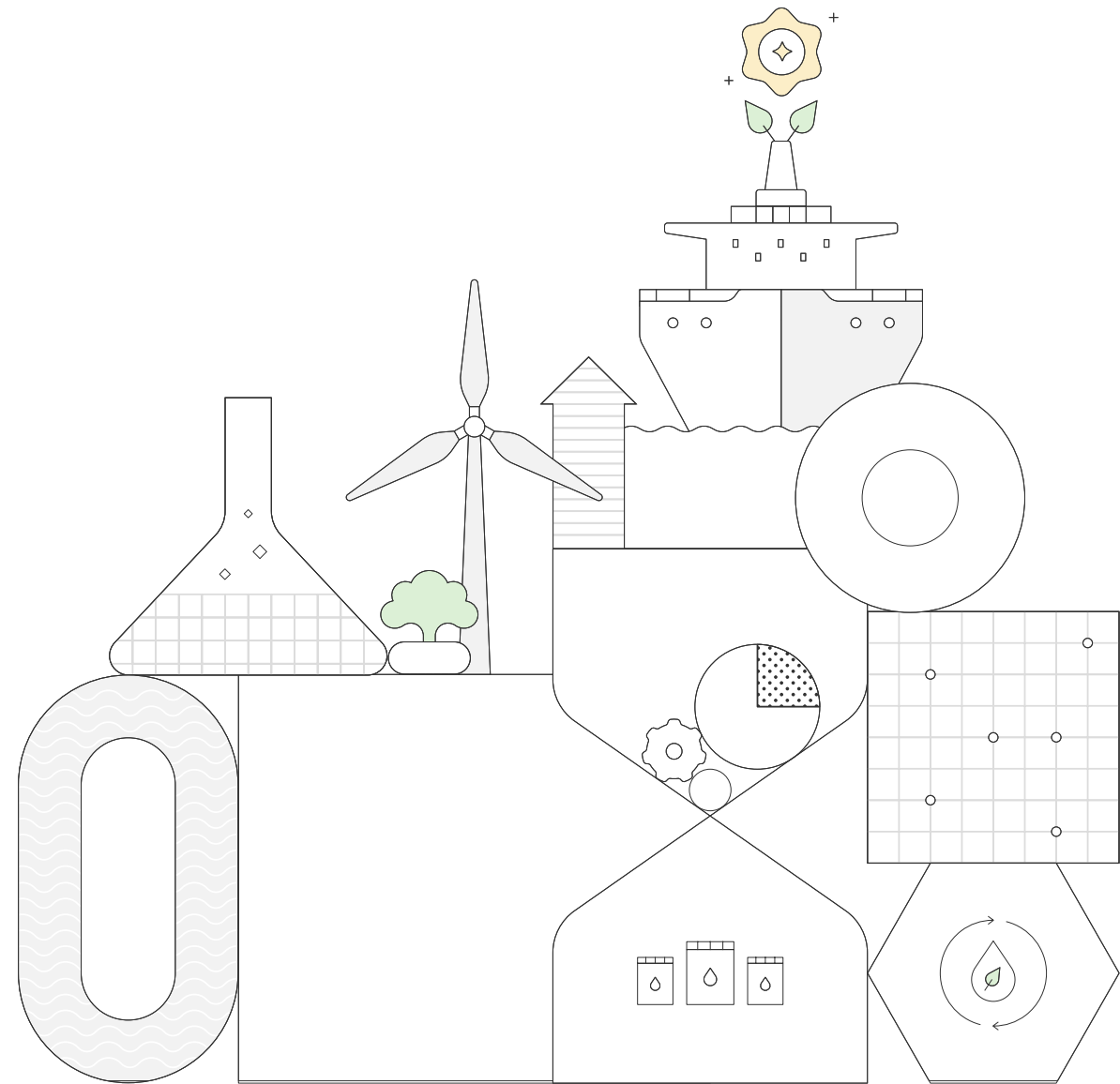


# MMMCZCS Pre-Feasibility Methodology

Green corridors – a gateway  
for reaching climate goals



# Introduction

Green shipping corridors can play an important role in decarbonizing the maritime industry before 2050.

The corridors are shipping routes on which ships using alternative fuels operate commercially. The corridors have the power to accelerate the green transition in a country or region and can also support infrastructure development and green transition in developing economies.

Since the ships operating in these corridors use alternative fuels, they generate low/zero levels of emissions. This enables green corridors to contribute to global emission reduction. If the corridors are domestic, then they can be a part of a nation's efforts to implement strategies in accordance with their climate goals. To support the implementation of the corridors, authorities and policy makers should enable and incentivize players along the entire value chain, as stipulated in the Clydebank Declaration.

The concept of green corridors gained prominence at COP26 when 22 countries signed the Clydebank Declaration. These countries have committed to supporting the implementation of green corridors "with the primary aim [...] to put the maritime sector on track to achieve net-zero by 2050".<sup>1</sup>

The target was the "establishment of at least six green corridors by the middle of the decade [...] and many more in operation by 2030".<sup>2</sup>

1) The Clydebank Declaration: Green corridors kickstarting the adoption of long-term solutions

2) COP26: Clydebank Declaration for green shipping corridors - GOV.UK



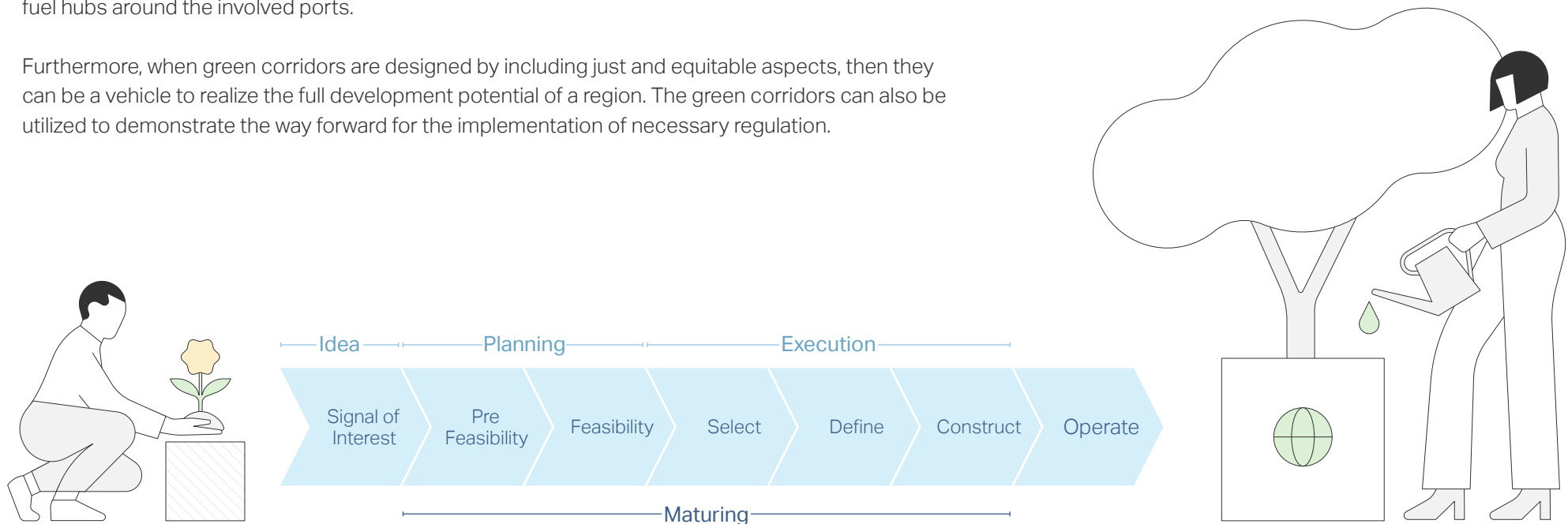
## Support decarbonization by nurturing low or zero carbon fuel hubs

The development of these corridors has been slower than expected when the declaration was signed in 2021, with no green corridor having reached the implementation stage yet. There have also been voices pointing out that green corridors could be perceived as green washing when a signal of intent does not move into project maturation.

However, it is important to distinguish between what is purely an announcement, which is not followed up by action, and what is an actual project identifying and maturing real decarbonization opportunities. Each step in a project life cycle can be divided into Announcement, Study, and Implementation/Roadmap.

The implementation of green corridors will support decarbonization by nurturing low or zero carbon fuel hubs around the involved ports.

Furthermore, when green corridors are designed by including just and equitable aspects, then they can be a vehicle to realize the full development potential of a region. The green corridors can also be utilized to demonstrate the way forward for the implementation of necessary regulation.

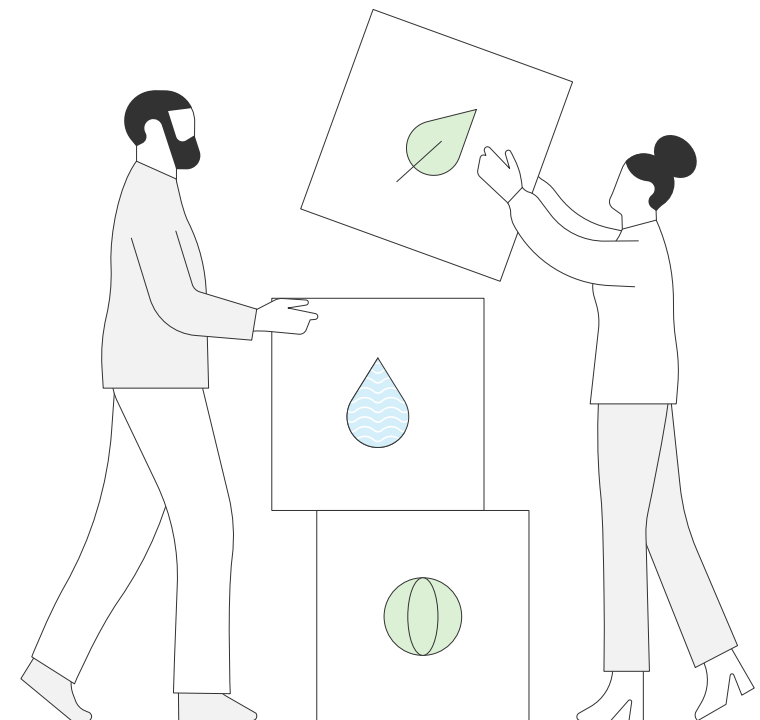
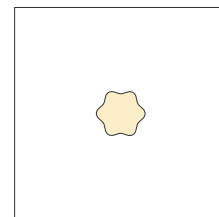


# Methodology makes it easy to build green corridors

Building a green corridor cannot be done in isolation by a single player. It is a complex project involving the entire value chain from fuel production, logistics, ports and vessels to cargo owners, end users as well as regulatory bodies and governmental bodies.

The Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping (the Center) has developed a methodology that makes it easier for policymakers and other decision makers to take the first steps in identifying the corridors that are most likely to be implemented in their region.

This methodology, called the MMMCZCS Pre-Feasibility Methodology, empowers policymakers to embark on a step-by-step process, during which they can gather the necessary data and at the end, shortlist possible green corridor projects. This methodology has delineated the roles of the various stakeholders, thereby dividing a process that can otherwise seem overwhelming into steps that are easy to follow.



The methodology includes a handy set of tools that explains which stakeholder is responsible for collecting which data from where and when, and in which format it should be reported.

These tools include:



Easy-to-use tables to gather necessary data

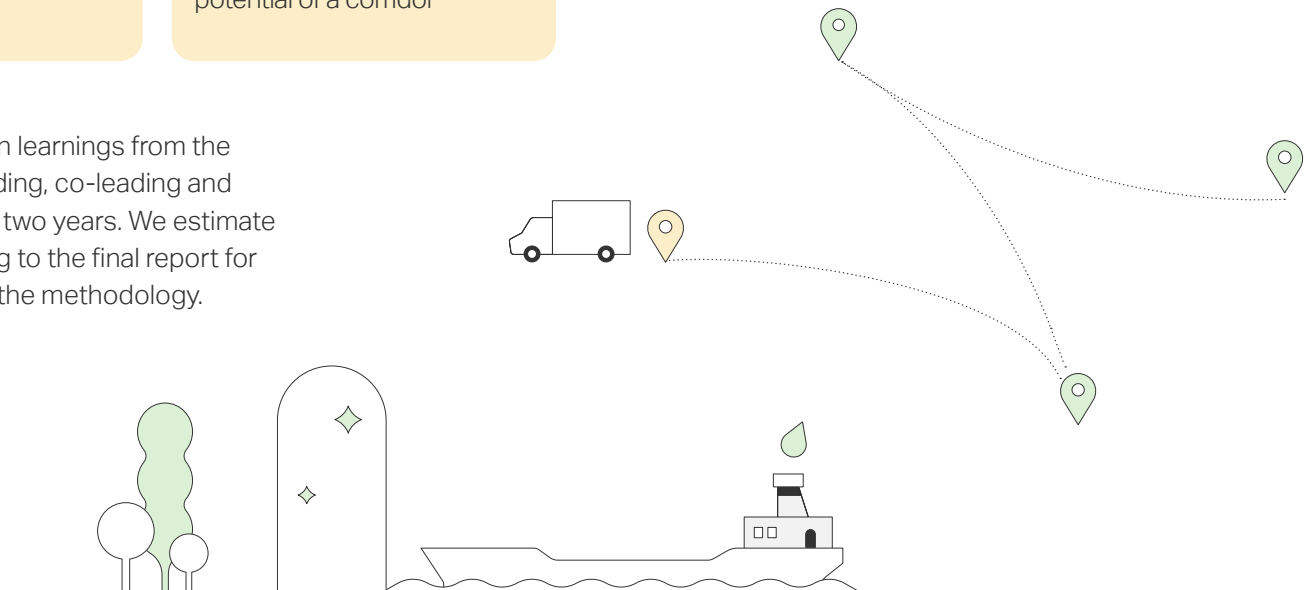


Examples from previous pre-feasibility assessments on other green corridor projects, as conducted by the Center



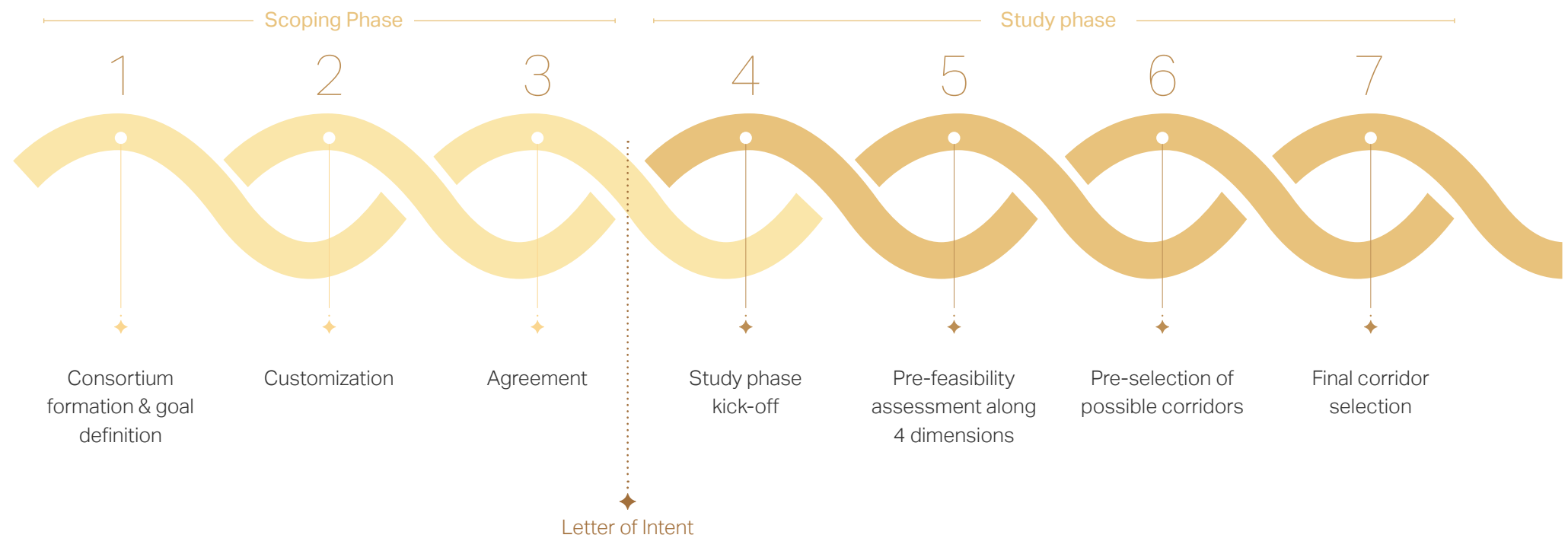
A scenario modeling tool that is configurable and automated to provide insights on costs and the CO<sub>2</sub> abatement potential of a corridor

The MMMCZCS Pre-Feasibility Methodology is based on learnings from the extensive work that the Center has carried out while leading, co-leading and advising on multiple green corridor projects for the past two years. We estimate that it will take eight to 12 months from the initial scoping to the final report for the Pre-Feasibility phase to be completed according to the methodology.



# A Methodology with seven steps

The MMMCZCS Pre-Feasibility Methodology is divided into seven steps across two phases: **the Scoping Phase** and the **Study Phase**. Each phase has a set of well-defined activities that will comprehensively evaluate the entire value chain, identify opportunities for green corridors, and ultimately return a shortlist of potential green corridors.





## Pre-Feasibility Scoping Phase (Steps 1-3)

This phase involves establishing a consortium of policy makers, port authorities and NGOs among others; defining clear project goals; and outlining the scope of work. At the end of the phase, the members of the consortium have the option to formalize their consortium with a Letter of Intent (LOI).

### Step 1:

This involves forming the core consortium, defining the project goals, assigning the roles, and setting up a project governance. By doing this, the members of the consortium can ensure that everyone has a shared understanding of what the project aims to achieve and who will undertake which responsibility. Since many of the members of the core consortium may not have worked together previously, this step minimizes the risk of different members being unable to coordinate their functions. This step is crucial as it forms the basis of the entire green corridor project.

### Step 2:

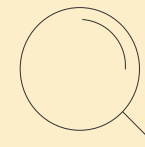
The core consortium can customize the Pre-Feasibility Methodology and templates according to the outcome they are looking for and the characteristics of the area (region/country) where potential green corridors are being considered. The custom project plan needs to offer a transparent overview of workstream activities, meeting schedules, key deliverables, and deadlines. This step plays a vital role in laying the foundation for the operation of the Pre-Feasibility Study phase.

### Step 3:

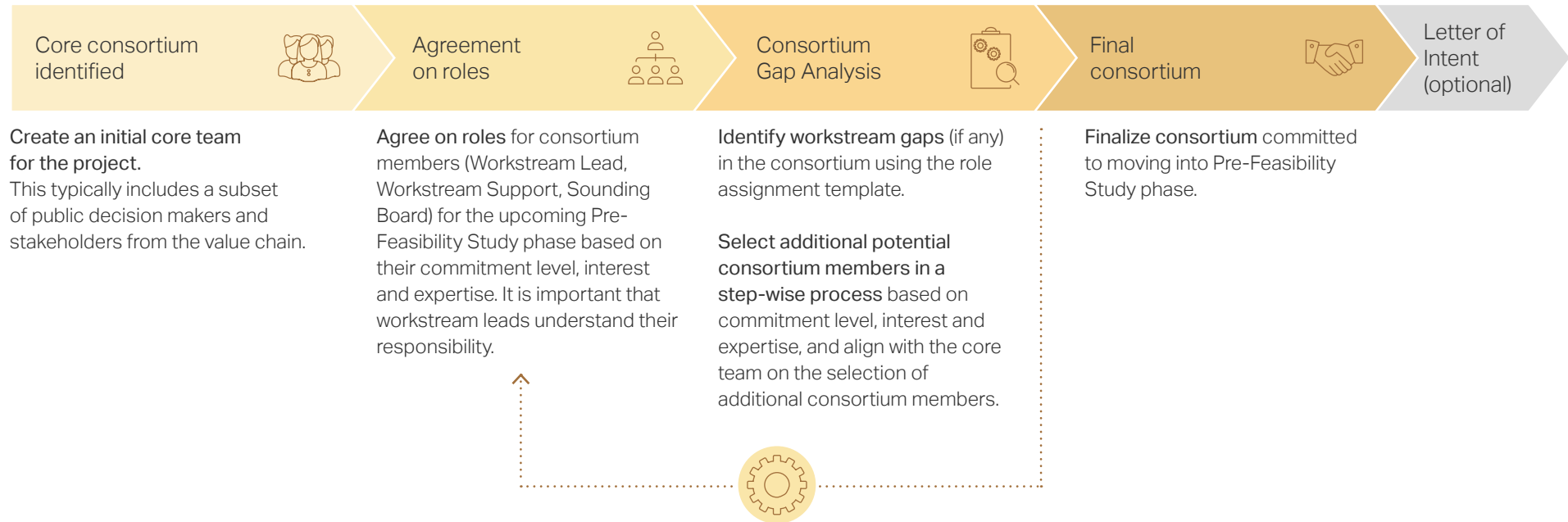
The last step in this phase is to draft a Letter of Intent (LOI). This is not a legally binding document, but it does provide a detailed project description along with an outline of the terms, conditions, and responsibilities of each member of the core consortium. This step is optional, but it is recommended to go for it as it formalizes the core consortium and provides a reference to the agreed project scope. This document makes it easier for everyone to understand the commitment required from them if they choose to continue to participate in the Pre-Feasibility Study phase.

### Step 2

Dive into this step with an illustration on page 8



## Step 2: The consortium formation







## Pre-Feasibility Study Phase (Steps 4-7)

This phase assesses publicly available data collected by the respective Workstream Lead along the dimensions of port, fuel, cargo and vessel, regulation, and just and equitable transition. Each step naturally progresses into the next and culminates in the creation of a shortlist of potential green corridors, called '1<sup>st</sup> Suite of Corridors'.

### Step 4:

The core consortium evaluates the area (region/country) according to the decarbonization vision for the area and potential constraints. This evaluation, performed as workstream 1 (WS1), is expected to result in a rationale that will support the pursuit of green corridors in the area.

### Step 5:

This step comprises four workstreams (WS) that run in parallel as workstream leads map the data related to the value chain and assess the viability of potential green corridors by assessing the four dimensions: fuel, port, cargo and vessel, and regulation including just and equitable transition.

### WS2

The fuel dimension assessment helps estimate total regional (and extra-regional if necessary) availability of fuel for shipping, to understand the maturity of fuel projects in the region and to assess sectorial competition by fuel type.

### WS3

The port readiness level assessment will identify the ports most suited to handle the needs of a green corridor.

### WS4

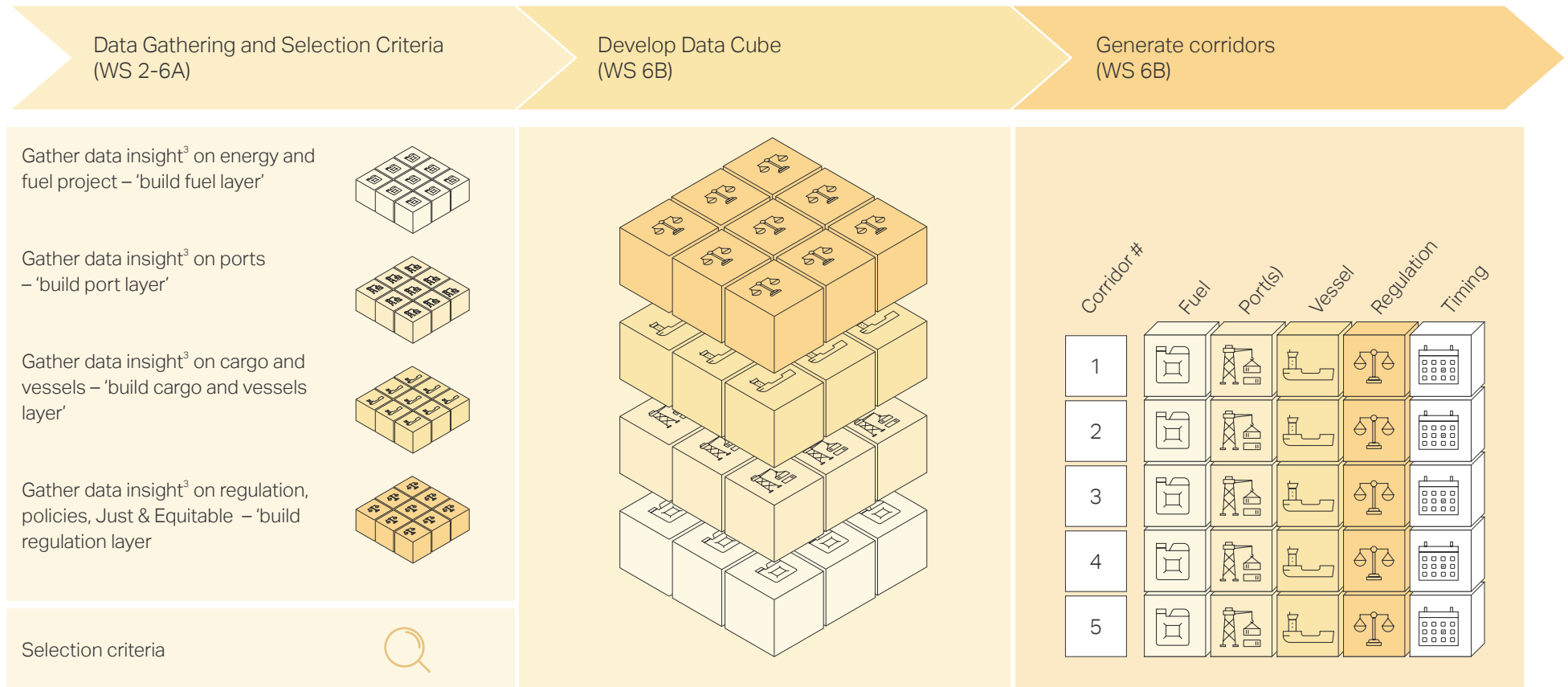
The assessments of cargo and vessels identify main cargo types and services (both in terms of volume and value) and the specific vessels which would work best for a green corridor. This assessment, combined with knowledge about trade routes, offers a comprehensive understanding of the trade dynamics in the region.

### WS5

The regulatory and just and equitable transition assessments are initiated with the collection of data and insights. These assessments make it possible for the core consortium members to evaluate the impact of these factors on the value chain. They can then identify discriminating factors that act as either drivers or barriers for a green corridor.

## A holistic approach

The advantage of completing these assessments in Step 5, is that it ensures that fuel demand for corridors does not exceed the fuel production in the area, and that the timing of a corridor matches a port's readiness to handle the fuel. This holistic approach ensures that every step in the full value chain of the proposed green corridors is supported, thereby setting up the corridors — which have been selected for further maturation — for a successful implementation.



3) In accordance with principles outlined in the methodology



## Pre-Feasibility Study Phase (Steps 4-7), continued

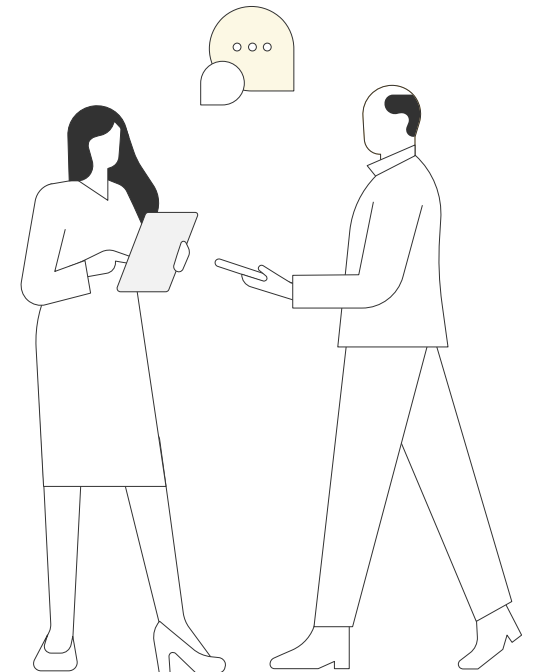
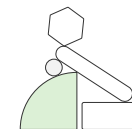
### Step 6:

This is a crucial step as this is the stage in the process when the core consortium defines the selection criteria to decide which potential green corridors will be included in the longlist, referred to as the 1<sup>st</sup> Suite of corridors. There are two ways in which the core consortium can generate selection criteria: one way is driven by a strategic stakeholder's interest, while the other is based on more generic terms (timing, emission, fuel, etc.). By defining the selection criteria, the core consortium makes the process of generating the 1<sup>st</sup> Suite of corridors into a transparent, unbiased one, thereby ensuring that all the potential green corridors are evaluated along the same parameters.

### Step 7:

This is when the core consortium invites public and private stakeholders from the entire value chain to discuss the 1<sup>st</sup> Suite of corridors at the Consortium Incubation Workshop (CIW). In this transparent and democratic process, all stakeholders provide input on the corridors they think have the potential to be viable projects in this decarbonization journey and can be moved to the next phase for further maturation. The 1<sup>st</sup> Suite of corridors is shortened into a final list called 1<sup>st</sup> Wave corridors.

The advantage of this evaluation and this workshop is that it identifies the specific corridors that have necessary interest from stakeholders. Assessing at this early stage whether a corridor has commitment from stakeholders or not improves the chances of these green corridors coming to fruition. It also gives an opportunity for the policy makers in the core consortium to discuss with public and private stakeholders the ways in which they can be a part of the larger consortium that drives the Feasibility assessment of the 1<sup>st</sup> Wave corridors. Ultimately, this process supports the optimization of resource allocation by directing attention towards those green corridors where genuine stakeholder support and commitment exists.

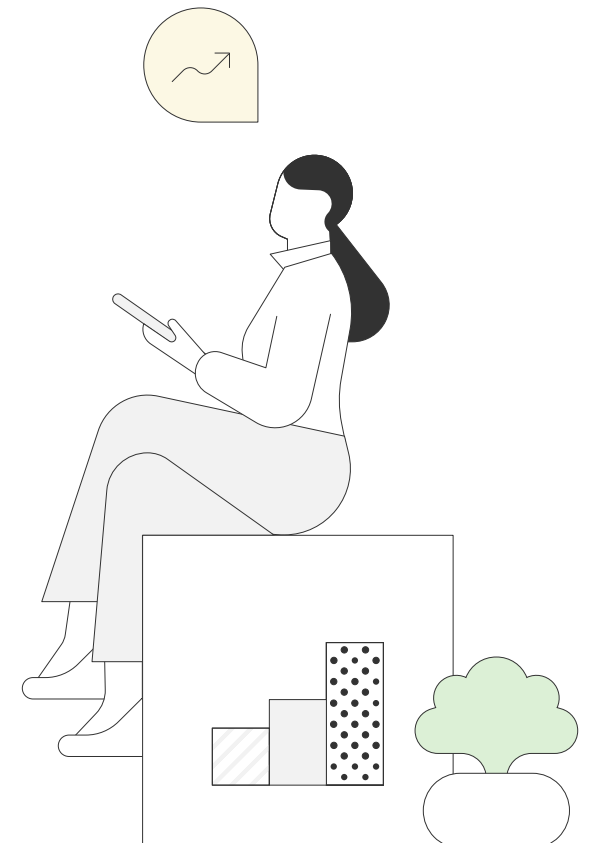


# Climate action plans and cost gaps

Thus, the Pre-Feasibility Methodology allows decision makers to follow an easy, transparent, and democratic process to choose the most qualified corridors for further maturation. They are guided by physical and/or monetary measures, and compliance with national strategies and climate action plans. The number of green corridors that move into the Feasibility Phase depends on the number of corridors in the 1<sup>st</sup> Wave and the commitment level.

The benefit of knowing this at this early stage cannot be understated: it significantly reduces the risk of projects falling through after they are announced, thereby leading to accusations of greenwashing and damage to reputations.

The outcome of the study creates conditions for closer dialogue and collaboration between public and private stakeholders involved in the overall regional ecosystem. The current expectation is that virtually all green corridor projects at this stage will be sub-economic and will require financial support, either state or philanthropic funding, to be realized. Closing the cost gap is key to successfully building a green corridor and the Pre-Feasibility cost assessment for the 1<sup>st</sup> Wave corridors will provide a preliminary estimate of the cost gaps. This will give an indication of the size of the gap, which is important for starting funding discussions with public and philanthropic organizations as the project moves into Feasibility.



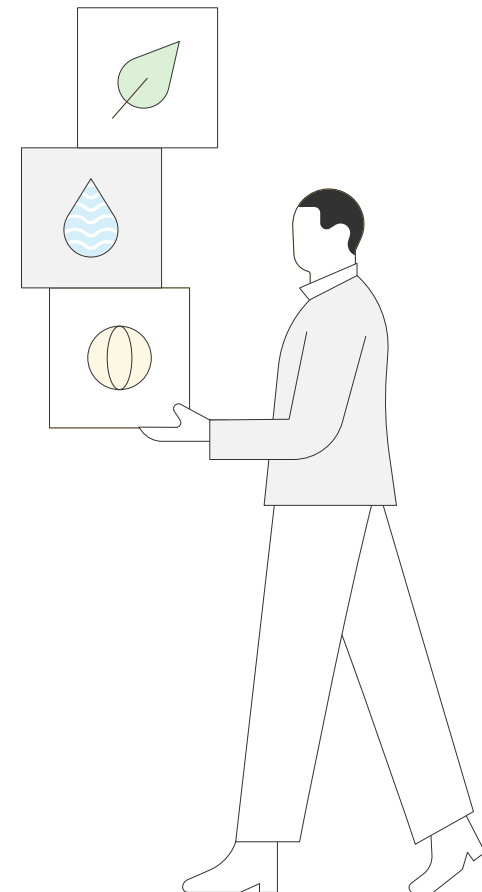
# How to get started

Our experience has shown us that taking the concept of a green corridor from the idea stage to the implementation stage is a complex process, but by following the methodology, the complexity is reduced to smaller, manageable steps.

Establishing a green corridor can take anywhere from two to 10 years as it can involve the construction of an alternative fuel plant, or building infrastructure in a port, but also due to the sheer number of stakeholders involved in the value chain along a corridor. Those countries who signed the Clydebank Declaration will have an obligation to determine how they will effectuate their decision to support and incentivize green corridors.

Policymakers play a crucial role in setting in motion the process to bring together public and private stakeholders, incentivizing the participation of industry financially, and ensuring a just and equitable transition for the people of the country or region.

Green corridors can leverage wider transition aims such as improved access to clean energy, improved air quality, diversification of the economy, transfer of knowledge and/or technology, development of sustainable jobs and a diverse and inclusive workforce, and preservation of biodiversity and ecosystems. To achieve this, the project parties need to be committed to maturing the project and public entities should ensure that the relevant funding is available.



# Next steps

The Pre-Feasibility phase is the first step in maturing green corridors. From the Pre-Feasibility Study, a couple of projects will be identified for moving into Feasibility Phase. These will be specific projects with defined fuel, ports, and cargo and vessels.

Obviously, you can also start at the Feasibility Phase if you already have a well-defined green corridor project. In that case, there is no need to go through a full Pre-Feasibility exercise, and instead we refer you to our Feasibility Methodologies. The risk of moving directly into the Feasibility Phase is that the consolidation may not be optimal and the selection of the specific green corridor might be difficult to justify. This can challenge the support from public funding and financing.

Regardless of whether you want to carry out Pre-Feasibility or Feasibility studies for green corridors, change needs to happen soon if we want green corridors to contribute towards achieving IMO's goal of net zero emissions by 2050 and the nation's climate goals.

The time to start is now.



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### Pre-Feasibility Scoping Phase



Scan the code or click here  
to read the Pre-Feasibility  
Scoping Phase methodology

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