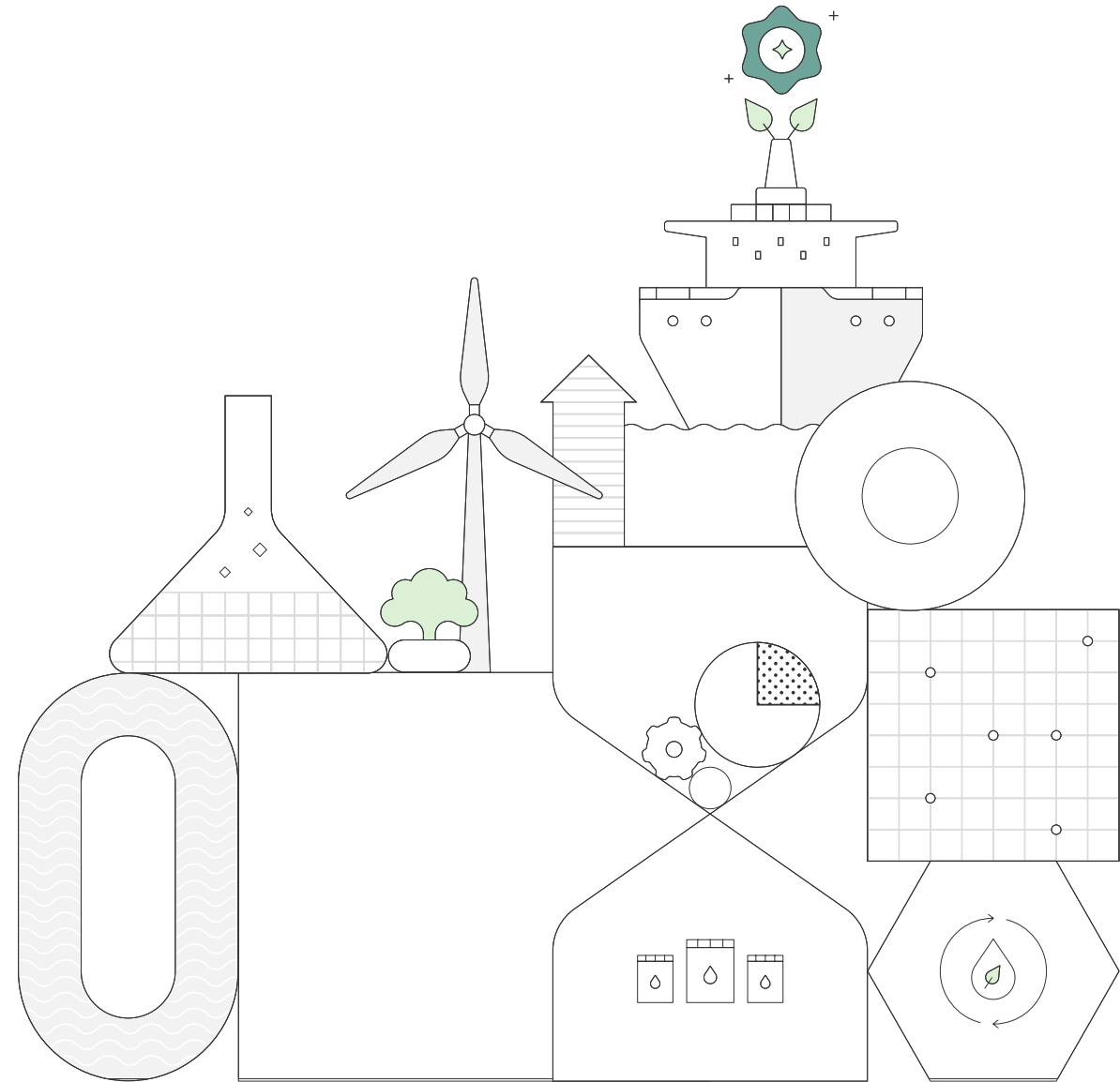


# Feasibility Methodology

Green corridors – navigating new  
business opportunities



# Introduction

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

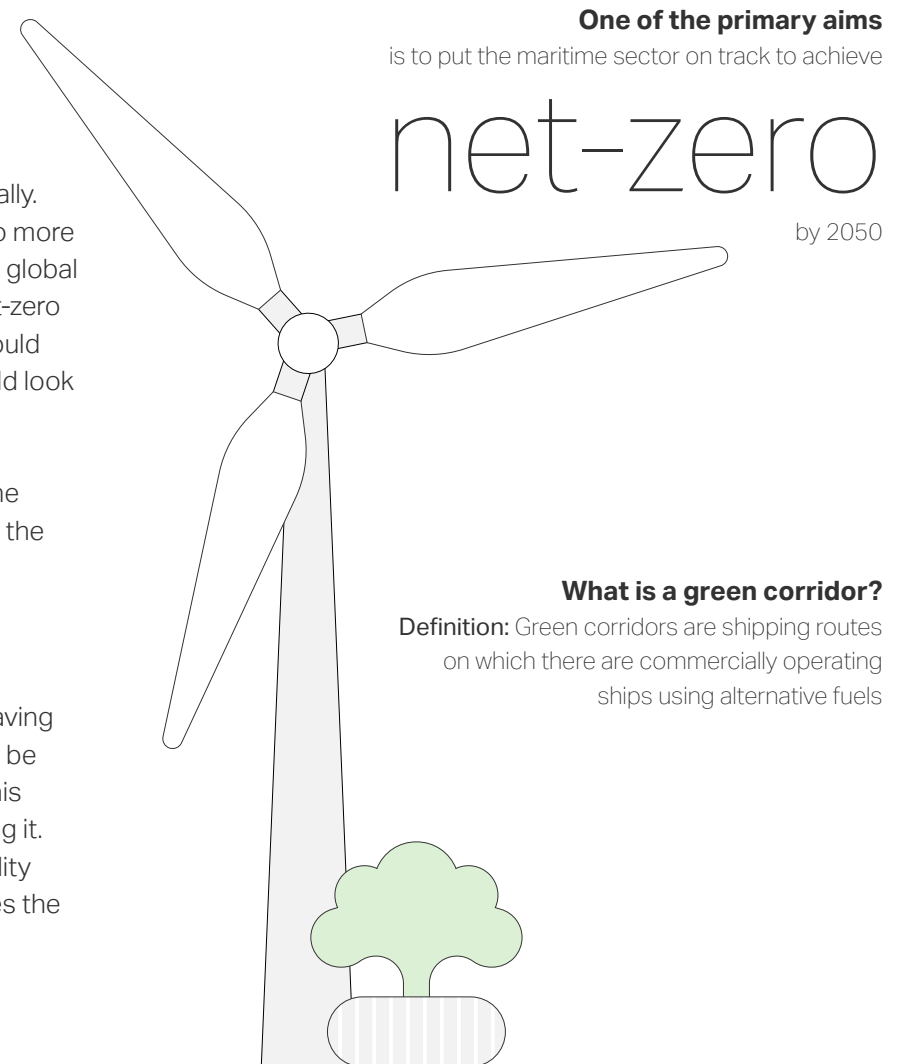
The corridors are shipping routes on which ships using alternative fuels operate commercially. Since the fuels being used are alternative fuels, they emit low/zero levels of CO<sub>2</sub>, but are also more costly than their fossil equivalents. Thereby green corridors play a crucial role in helping the global shipping industry reach the goal set by the International Maritime Organization to reach net-zero by 2050. To support the implementation of the corridors, authorities and policy makers should incentivize players along the entire value chain, and businesses along the value chain should look at rewards from a non-economic lens.

The concept of green corridors gained prominence at COP26 when 22 countries signed the Clydebank Declaration. 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>1</sup> and [...] “explore actions to address barriers to the formation [...] for example, regulative frameworks, incentives.”<sup>1</sup>

Progress on achieving this target has been slower than expected, with no green corridor having reached the implementation stage yet. This has led to concerns that green corridors could be perceived as greenwashing attempts where projects are announced but never matured. This is why it is crucial to have a stringent methodology for corridor maturation when announcing it. Green corridors can be an effective way to decarbonize the shipping industry, and a feasibility assessment is an early and necessary step on the road to building the corridor, as it outlines the incentive needs as outlined in the Clydebank Declaration.



<sup>1</sup>) COP26: Clydebank Declaration for green shipping corridors - GOV.UK



What does it mean to evaluate whether a project is feasible or not?

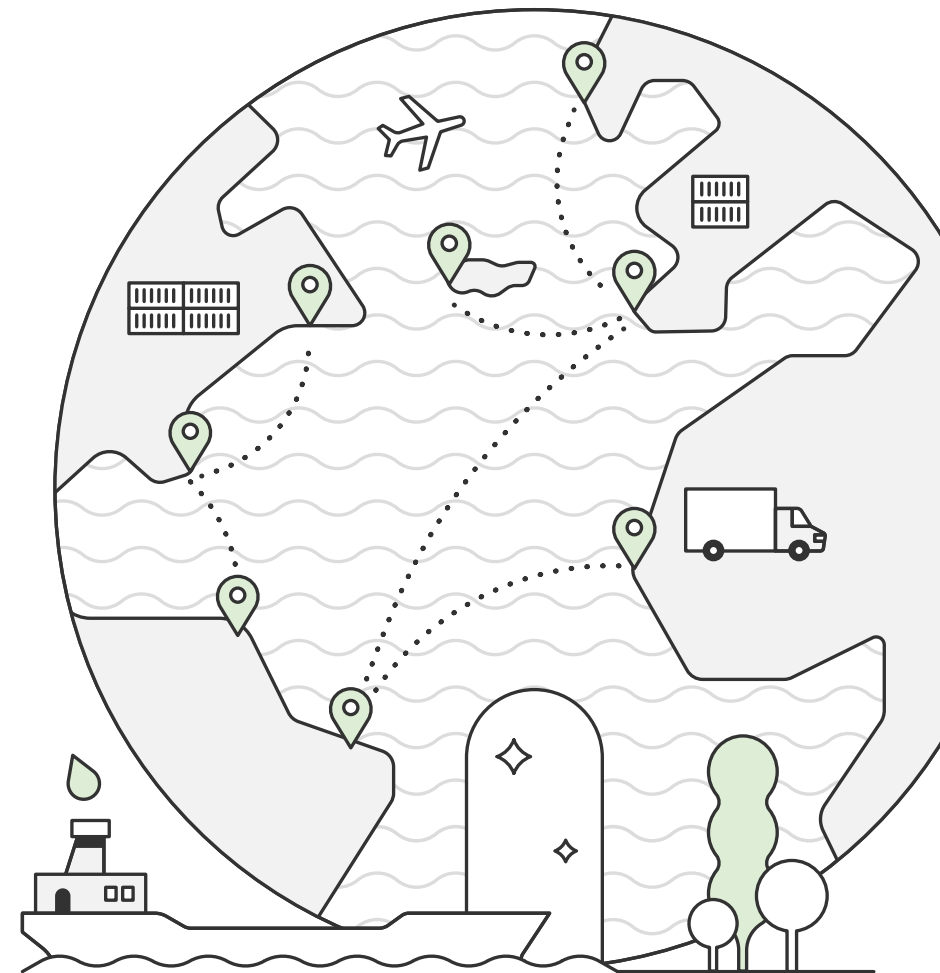
In general, the term 'feasibility' refers to whether a project can be completed according to three parameters:

**Technical feasibility:** is an assessment of the practicality of the practicality of a project, to uncover the strengths and weaknesses, including listing the opportunities of a project.

A feasibility study aims to uncover the strengths and weaknesses of a project including listing opportunities and threats, and ultimately the prospects for success with the technical sphere.

**Regulatory feasibility:** is an assessment of the required permits, rights or licenses that impacts the project and provides an understanding of the legal framework and its boundaries in relation to the project

**Economic feasibility:** In the context of green corridors, this is an assessment of the incremental cost of green compared to a similar fossil fuel project, followed by screening and/or identification of financial options to close the cost gap. Beyond the willingness to pay across the value chain, these options could include additional incentives.

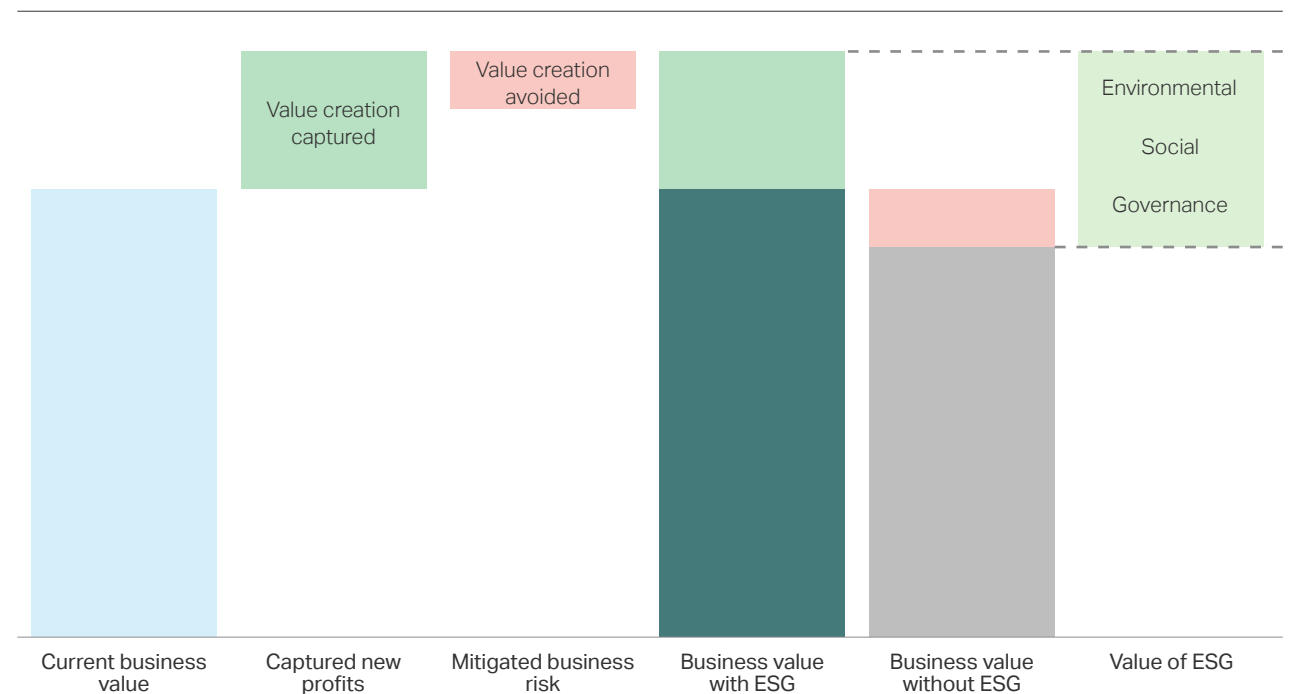


# Investing in green corridors is urgent and important

The advantages of being a first mover and investing in the early green corridor projects will not be immediately visible in terms of revenue. However, it is important to look beyond the purely economic return on investment. There are several other non-economic advantages:

- It enhances a business's ability to meet its Environmental, Social, and Governance (ESG) goals (Figure 1),
- It helps businesses to report progress in reducing their Scope 1, Scope 2, and Scope 3 emissions,
- It offers a reputational advantage and a strong position to advocate as the investment is in a climate-friendly project,
- It gives the business an opportunity to contribute to the IMO's net-zero goal.

Figure 1: Schematic illustration of the business value of working on Environmental, Social, and Governance (ESG)

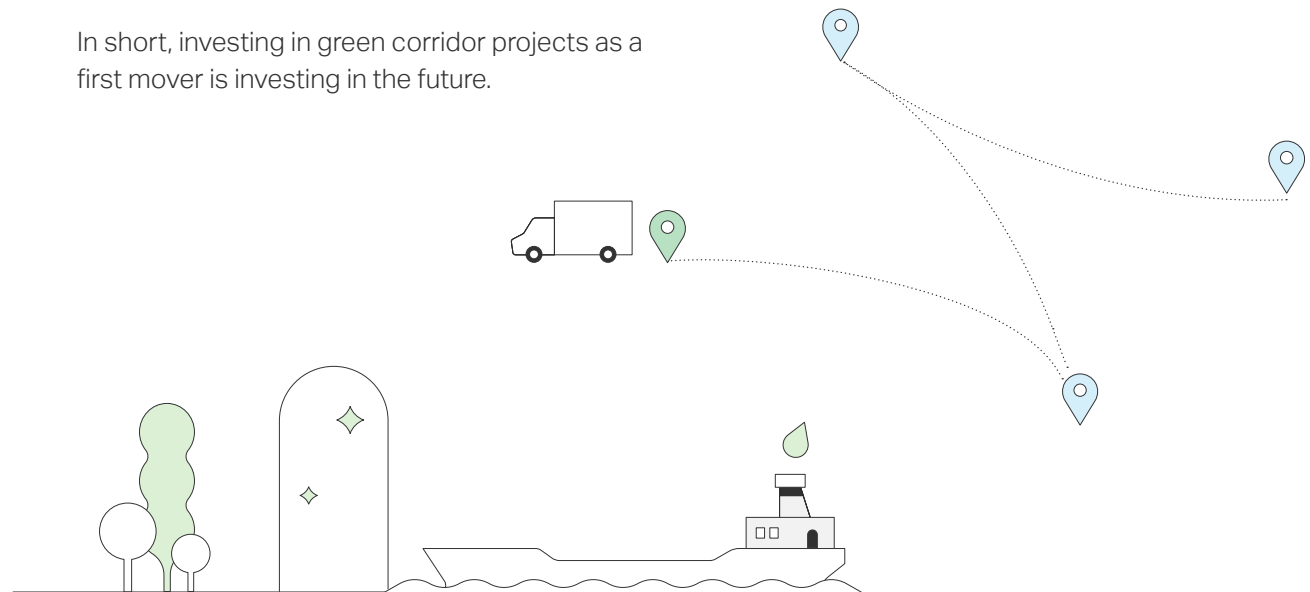


Being a first mover in investing in green corridors means that a business has the opportunity to learn about building synergies with other players in the corridors, about possible upcoming regulations (taxation systems, subsidies, etc), and about creating new business models which are more suited to a new economy built around alternative fuels rather than fossil fuels.

It is a matter of scale. Investments in green corridors are needed to bring cost down as more projects come up over time. This is also supported by the customers' willingness to pay for the green transportation, which may increase over time, thanks to a greater awareness of environmental impact. Ultimately, the customers will have to carry the majority of the incremental cost of green

As a first mover, a business will be well-positioned to anticipate and prepare themselves for these changes. The business will be in a better position to receive funding from governments to support the project through subsidies and incentives that will help the project/consortium close the residual cost gap between fossil fuel and alternative fuels. Finally, green corridors provide hard facts of doability to regulators, thereby providing the arguments for implementing a pricing on CO<sub>2</sub> emissions

In short, investing in green corridor projects as a first mover is investing in the future.



# Defining a project

Considering the three parameters above, it becomes clear that as in any project, a certain level of definition is needed for a green corridor before a meaningful feasibility assessment can be conducted. To make this process as simple as possible, the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping (MMMCZCS) has developed a comprehensive Feasibility Methodology.

Methodology makes it easy for businesses to get started

The MMMCZCS Feasibility Methodology enables businesses to take systematic steps to evaluate the feasibility of a proposed green corridor project. This methodology will support gathering of the necessary data and at the end create a roadmap that will help businesses decide how

they want to move forward. This methodology outlines the roles of the various stakeholders (Figure 2), thereby making it easier for the consortium to delegate tasks and responsibilities and for each player to dedicate the necessary resources.

Figure 2: Illustration of the split of roles & responsibilities in the project.

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



Methodology includes a handy set of tools that explains which stakeholder is responsible for collecting which data, how to process the data and in which format it should be reported

These tools include:



Explanations of each step of the project



Easy-to-use templates and tables to gather necessary data



Examples from previous feasibility assessments on other green corridor projects

The projects for which feasibility studies are to be conducted can be initiated in one of two ways: they can be the result of the processes of a pre-feasibility project (such as the 1st Wave Corridor from MMMCZCS' Pre-Feasibility Methodology) or they can be the result of a decision taken by a group of commercial companies to embark on a green corridor project. Irrespective of how these projects came about the MMMCZCS Feasibility Methodology is applicable and will lead to a meaningful result at the end.

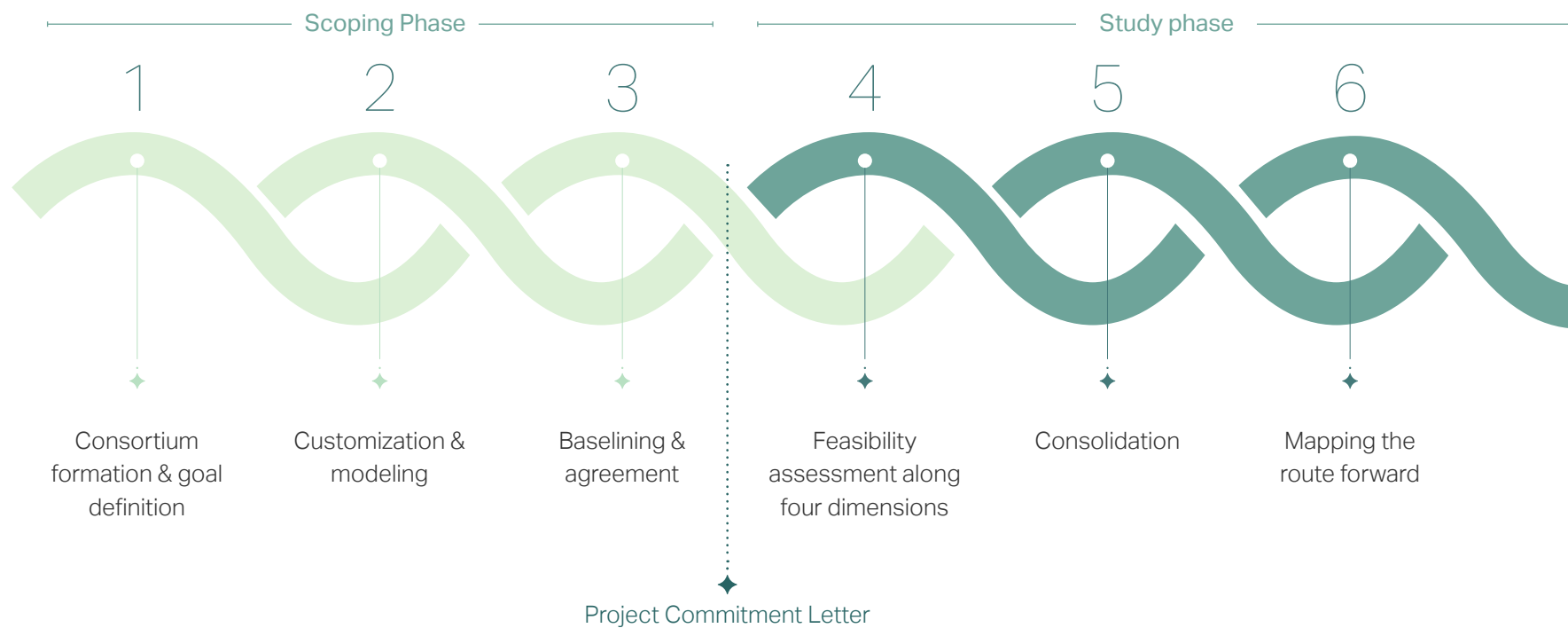
The MMMCZCS Feasibility Methodology is based on learnings from the extensive work that the Center has carried out while leading, co-leading, and advising on multiple green corridor projects for the past two years. Depending on the type and complexity of the project, it will take 12 to 16 months to conduct a Feasibility study.



# A methodology with six steps

The MMMCZCS Feasibility Methodology is divided into six steps across two phases: **the Scoping Phase (three steps)** and the **Study Phase (three steps)**. Each phase has a set of well-defined activities that will comprehensively scope the project, and evaluate its overall feasibility.

Figure 3: Overall division of Feasibility Methodology into Scoping Phase and Study Phase







## Feasibility Scoping Phase (Steps 1-3)

The aim of this phase is to increase the specificity of the project, and to identify the consortium members and their commitment to the project. The Scoping Phase is divided into three steps, each with a clear objective that allows the actual feasibility assessment to be a constructive, value adding assessment.

### Step 1:

The aim of this step is to form a consortium which includes members from the entire value chain. Each main area of the assessment requires a workstream lead. At this stage, project members also acknowledge the amount of work they are expected to complete during the Feasibility assessment. The total number of hours estimated for a Feasibility assessment is 4,000 to 10,000 hours (Figure 4). The time requirement is strongly dependent on the complexity and novelty of the project

Hence, each of the project members will have to make sure that they can devote 200 to 1,000 manhours (depending on their responsibilities) during the 12-16 months it takes to conduct the Feasibility Study.

Another element of this step is to ensure that the project specificity and scope are well-described. This is an important element because it allows the right allocation of resources and ensures that the outcomes will fit with the vision.

Figure 4: Indicative view of hours needed to carry out the work needed in different phases and steps in the early parts of green corridor maturation.

Indicative number of hours for the different maturation phases for green corridors		Maturation Phases*		
		Signal of Intent	Pre-Feasibility	Feasibility
Progress*	Announcement of Initial Partnership	20 hours	200 hours	1,000 hours
	Study/phase ongoing	200 hours	1,000 - 2,000 hours	4,000 - 8,000 hours
	Develop Roadmap	20 hours	200 hours	1,000 hours

\*) Phases and Progress to overall follow the Mission Innovation Green Corridor Global Route Tracker <https://mission-innovation.net/missions/shipping/green-shipping-corridors/route-tracker/>





## Feasibility Study Phase (Steps 1-3), continued

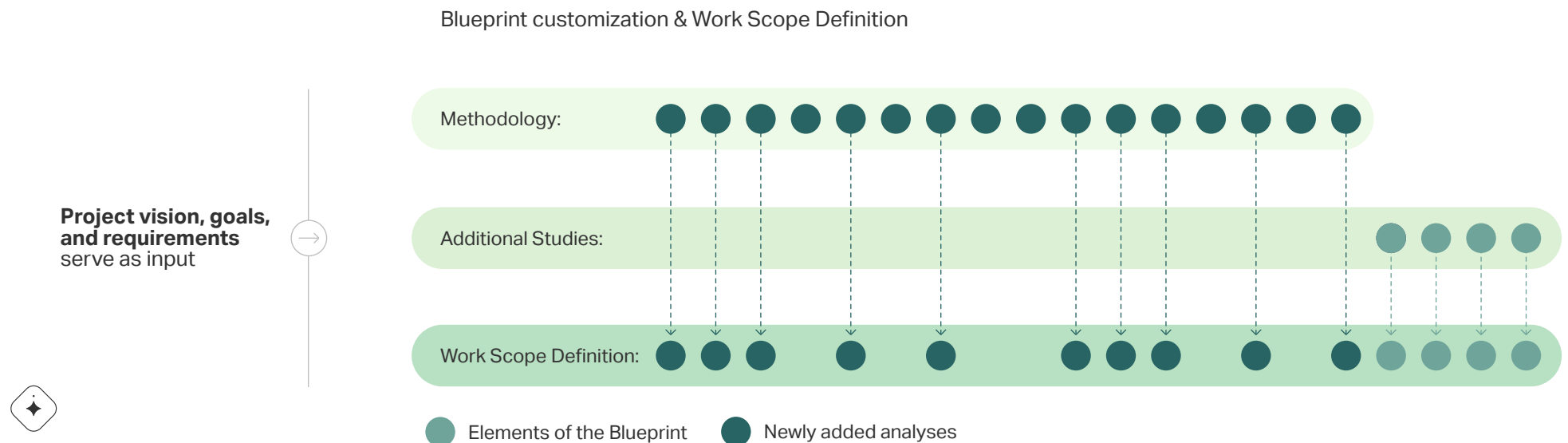
### Step 2:

The MMMCZCS Feasibility Methodology is constructed to accommodate virtually all project setups. However, all the tasks in these steps are not needed for all projects: in cases where the feasibility is already proven for certain parts of the project such as vessel design (e.g. methanol-fuelled feeder vessel) or bunkering

of new fuel (e.g. bunkering in Ulsan), the work needed might be significantly reduced. In some project configurations, the consortium may have to create models of fuel consumption, vessel numbers, incremental cost of cargo, etc, before they can decide on a clear Work Scope Definition (Figure 5).

This step is crucial as this is where the project members can customize the methodology to meet the specific requirements of the project. The project members can deselect some steps and, when needed, add new parameters that are unique to the project. This makes the approach a bespoke and efficient one.

Figure 5: Illustration of the development of the Work Scope Definition for the actual project.





## Feasibility Study Phase (Steps 1-3), continued

### Step 3:

By the time the assessment reaches this step, the project consortium will be in place, and they would be aligned on the definition and scope of work. In this step, there are two important elements: a Baseline Document, and a Project Commitment Letter (PCL).

The project members create a Baseline Document which includes all the findings and results from the Feasibility Scoping Phase. This document will form the base for the project work that will take place in the Feasibility Study phase. This document is not publicly available and does not require a thorough review; however, it is an important document as it will be the common reference point for the entire consortium as they work towards building a green corridor.

The Project Commitment Letter is, as the name suggests, a formal declaration of commitment by the workstream leads of the consortium in the green corridor project. In this letter, the workstream leads jointly commit to carry out the work or oversee the execution of the work at the level of quality outlined in the work scope definition and to put in the necessary manhours.

It is at this stage that the consortium also signs a non-disclosure agreement (NDA). Until now, in the Scoping Phase, the project members worked without an NDA and hence could not share sensitive commercial data. At the end of the Scoping Phase, they sign an NDA to allow for data sharing as long as the data does not involve business critical elements or does not compromise competition.





## Feasibility Study Phase (Steps 4-6)

Having defined the scope of the project in the Feasibility Scoping Phase, the project team can now start evaluating whether a proposed project is feasible along technical, regulatory, and economic parameters. The study phase comprises three steps<sup>2</sup> (Figure 3) and culminates in the creation of a roadmap that shows the way forward for the execution of the project.

### Step 4:

This step is undoubtedly the most time-consuming step in the entire Feasibility Phase. This is where the technical and regulatory feasibility is being assessed and costs (CapEx and OpEx) for each value chain element in the project are calculated. Workstream Leads will also estimate the amount of fuel needed, the need for infrastructure for storage and bunkering of fuel at ports, the CO<sub>2</sub> abatement potential, and the willingness of cargo owners to pay for decarbonized transport. The Workstream Leads will also evaluate the impact of the green corridor from a just and equitable perspective. Step 4 is needed because it gives the team the insight they need to consolidate the final picture in Step 5.

### Step 5:

In this step, the project lead consolidates all the findings, including the calculation of the final residual cost gap (Figure 6, next page). This step is important because it helps determine if the project is likely to receive sufficient funding to move towards execution. It creates the base for consortium members to identify options to close the residual cost gap through public and private sources of funding.

### Step 6:

Based on the technical and regulatory assessments in Step 4 and the consolidation in Step 5, the project team develops an integrated roadmap for the way forward. The roadmap communicates what is required to close the cost gap with possible funding/financing options. It is important to have a roadmap as it precisely describes the way forward for the future implementation of the corridor with all practical key information, including costs and project milestones. It serves as a strategic communication document that investors will need to decide whether they should go for the Final Investment Decision (FID) or not. Thus, the Feasibility Methodology evaluates the proposed project so that companies that are part of the project team can decide whether going ahead with the project is a viable option for them or not for technical, regulatory and economic reasons —the latter primarily if an adequate funding mechanism is established.

#### Go to next page to view Figure 6:

A fundamental part of the Feasibility Assessment is estimating the Residual Cost Gap



<sup>2</sup>) \*The number of steps in the Study Phase may increase to four, depending on whether the baselining process was completed during the Scoping Phase. If it was not completed earlier, then it can be completed here, at the beginning of the Feasibility Study. However, as discussed in Step 3, this is a crucial step, and it should definitely be carried out.



Figure 6: A fundamental part of the Feasibility Assessment is estimating the residual cost gap (red box below).



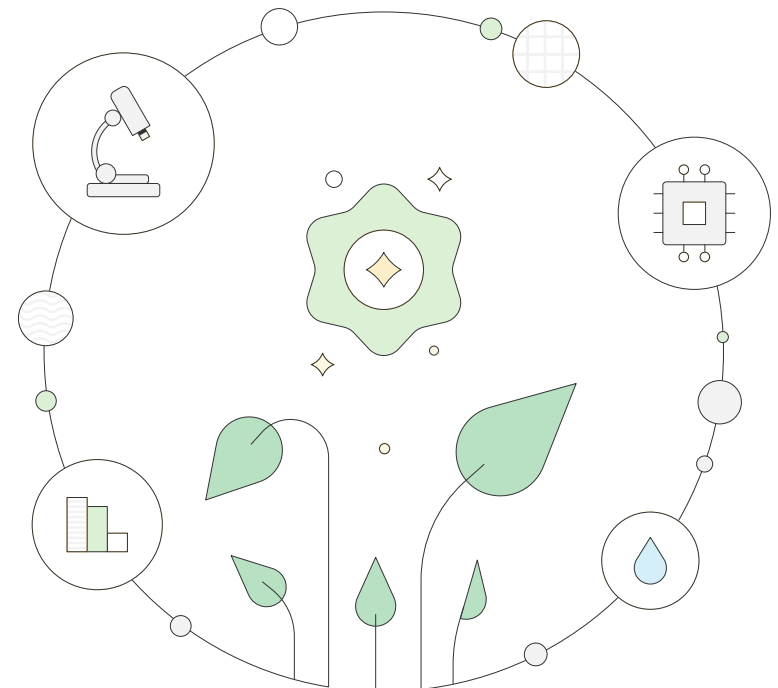
# Next steps

The MMMCZCS recognizes that building a green corridor is a long and, sometimes, complex process. However, the MMMCZCS Feasibility Methodology breaks down the process into steps that are simple and easy to follow, regardless of the size or type of the organization. With all essential elements assembled at the end of the Feasibility assessment, stakeholders have all the knowledge necessary to define the needed funding and to move forward with the construction of the green corridor in a just and equitable manner, if the funding is established.

The MMMCZCS Feasibility Methodology is best suited for companies who see the decarbonization of the international maritime ecosystem as an opportunity for their respective business but who find it challenging to grasp the full complexity of the value chain without a framework for the project maturation in this new area.

Each stakeholder along the value chain is equally important for a green corridor to be able to successfully meet its decarbonization goals. All of them being likeminded first movers, come together as part of a project team to participate in the assessment. In the process, each of them gains insight into areas that are not a part of their standard operation. By participating in the Feasibility assessment, companies can evaluate their significance in the project and the project's role in the company being able to meet its business goals.

By acting now and leveraging the potential of green corridors, companies can not only see growth but also help the industry achieve the ambitious Clydebank targets as well as the IMO's goal of net-zero emissions by 2050. The opportunity to lead and innovate is here.



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### Feasibility Scoping Phase



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