



# IDE Master Graduation Project

## Project team, procedural checks and Personal Project Brief

In this document the agreements made between student and supervisory team about the student's IDE Master Graduation Project are set out. This document may also include involvement of an external client, however does not cover any legal matters student and client (might) agree upon. Next to that, this document facilitates the required procedural checks:

- Student defines the team, what the student is going to do/deliver and how that will come about
- Chair of the supervisory team signs, to formally approve the project's setup / Project brief
- SSC E&SA (Shared Service Centre, Education & Student Affairs) report on the student's registration and study progress
- IDE's Board of Examiners confirms the proposed supervisory team on their eligibility, and whether the student is allowed to start the Graduation Project

### STUDENT DATA & MASTER PROGRAMME

Complete all fields and indicate which master(s) you are in

Family name	Bouman	7212	IDE master(s) IPD	<input checked="" type="checkbox"/>	Dfi	<input type="checkbox"/>	SPD	<input type="checkbox"/>
Initials	G. R.		2 <sup>nd</sup> non-IDE master					
Given name	Gigi		Individual programme (date of approval)					
Student number	4644999		Medisign	<input type="checkbox"/>				
			HPM	<input type="checkbox"/>				

### SUPERVISORY TEAM

Fill in the required information of supervisory team members. If applicable, company mentor is added as 2<sup>nd</sup> mentor

Chair	Natalia Romero Herrera	dept./section	HCD - DCC	<p>! Ensure a heterogeneous team. In case you wish to include team members from the same section, explain why.</p> <p>! Chair should request the IDE Board of Examiners for approval when a non-IDE mentor is proposed. Include CV and motivation letter.</p> <p>! 2<sup>nd</sup> mentor only applies when a client is involved.</p>
mentor	Vibhas Mishra	dept./section	MF - Materials Manufacturing	
2 <sup>nd</sup> mentor				
client:				
city:		country:	Netherlands	
optional comments	Osprey Energy (Fuel provider/Energy supplier) will be an involved stakeholder from the start.			

### APPROVAL OF CHAIR on PROJECT PROPOSAL / PROJECT BRIEF -> to be filled in by the Chair of the supervisory team

Sign for approval (Chair)

Name Natalia Romero Herrera

Date 9 Jun 2024

Signature \_\_\_\_\_

tudelft.protect  
Jamf Protect CSR  
Identity

Digitally signed by  
tudelft.protect Jamf Protect  
CSR Identity  
Date: 2024.06.19 10:28:12  
+02'00'

## CHECK ON STUDY PROGRESS

To be filled in by **SSC E&SA** (Shared Service Centre, Education & Student Affairs), after approval of the project brief by the chair. The study progress will be checked for a 2<sup>nd</sup> time just before the green light meeting.

Master electives no. of EC accumulated in total \_\_\_\_\_ EC

Of which, taking conditional requirements into account, can be part of the exam programme \_\_\_\_\_ EC

★	YES	all 1 <sup>st</sup> year master courses passed
	NO	missing 1 <sup>st</sup> year courses

Comments:

Sign for approval (SSC E&SA)



Rik Ledoux  
2024.06.26  
12:32:11 +02'00'

Name Rik Ledoux Date 26 Jun 2024 Signature \_\_\_\_\_

## APPROVAL OF BOARD OF EXAMINERS IDE on SUPERVISORY TEAM -> to be checked and filled in by IDE's Board of Examiners

Does the composition of the Supervisory Team comply with regulations?

YES	★	Supervisory Team approved
NO		Supervisory Team not approved

Comments:

Based on study progress, students is ...

★	ALLOWED to start the graduation project
	NOT allowed to start the graduation project

Comments:

Sign for approval (BoEx)

Monique  
von Morgen

Digitally signed by  
Monique von Morgen  
Date: 2024.07.03  
09:41:30 +02'00'

Name Monique von Morgen Date 3 Jul 2024 Signature \_\_\_\_\_

# Personal Project Brief – IDE Master Graduation Project

Name student Gigi Bouman

Student number 4,644,999

## PROJECT TITLE, INTRODUCTION, PROBLEM DEFINITION and ASSIGNMENT

Complete all fields, keep information clear, specific and concise

**Project title** Design a simulation dashboard to prepare vessels' owners for upcoming maritime emission regulations

*Please state the title of your graduation project (above). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.*

### Introduction

*Describe the context of your project here; What is the domain in which your project takes place? Who are the main stakeholders and what interests are at stake? Describe the opportunities (and limitations) in this domain to better serve the stakeholder interests. (max 250 words)*

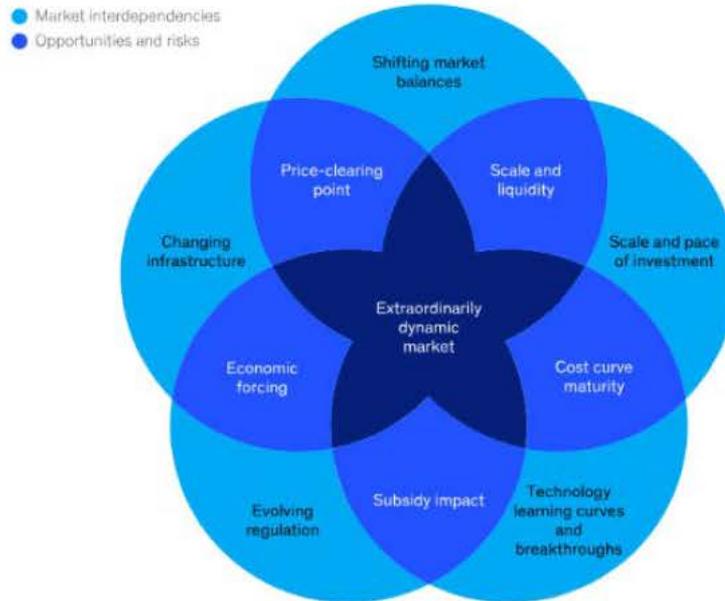
Marine emissions are equal tot the aviation sector, with over 100.000 ship's crossing the world ocean daily. To tackle this, The EU aims for a reduction of 80% of green house gasses in the shipping industry for seagoing ships above 5000 GT (FUEM, see Figure 2). In 2025 the first target is set: a 2% decrease. 60% of the vessels are owned by smaller companies (UNCTAD) who face challenges due to limited (human) resources ([SEATRADE](#)).

Leveraging on biofuel blends can help meet these targets while considering price, availability and engine compatibility. Fuel acquisition is currently often an outdated process that does not prioritize sustainability, but price, availability and reliability. Evaluating the impact of different fuel options can be complex and relies on information provided, and traders and purchasers do not (always) actively engage in emission reduction efforts. A purchaser can recognize the long term need to achieve sustainability goals but faces daily operational challenges such as limited options, compatibility options, time, costs, and the need for continues supply. Assessing all available options can become a hassle as purchasing fuel is often a small task within their activities. The assesment of emission impact also requires information, knowledge, time as well as communication efforts, which are all spare within companies. However, fuel providers can grasp market dynamics (see the evolving landscape Picture 1) and have an indirect influence on the emission rate and facilitate for a more straight forward decision-making process through which greater reductions can be achieved. Moreover, this will strengthen their position in the market.

**Stakeholders:** energy suppliers & traders (sellers) V.S. shipowners, operations/logistics teams and shipping companies (purchasers).

**Stakeholders' interests:** gaining (competitive) advantage, preparing for and leveraging regulations and emission goals, strengthening reputation, and retaining customers.

Companies in the dynamic sustainable-fuel market can derive value understanding the interdependencies in five key areas.



McKinsey & Company

image / figure 1 <https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/how-traders-can-capt>

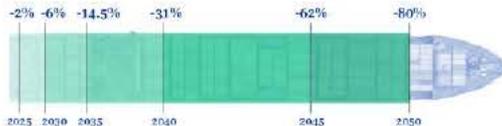


**The FuelEU maritime regulation will oblige vessels above 5,000 gross tonnes calling at European ports** (with exceptions such as fishing ships):



→ to reduce the greenhouse gas intensity of the energy used on board as follows

Annual average carbon intensity reduction compared to the average in 2020



→ to connect to onshore power supply for their electrical power needs while moored at the quayside, unless they use another zero-emission technology



### What the benefits will be



a level playing field for the aviation and maritime sectors



increased production and uptake of sustainable aviation and maritime fuels at competitive costs



greater innovation and investment in sustainable aviation and maritime transport



more eco-responsible transport for EU citizens

image / figure 2 FEULEU - illustration, explanation and benefits from EU legislation maritime transport sector

## Personal Project Brief – IDE Master Graduation Project

### Problem Definition

*What problem do you want to solve in the context described in the introduction, and within the available time frame of 100 working days? (= Master Graduation Project of 30 EC). What opportunities do you see to create added value for the described stakeholders? Substantiate your choice.  
(max 200 words)*

To address the challenges of reducing marine emissions, such as limited resources, complex fuel assesment, outdated acquisition processes, a simulation dashboard will be designed to raise awareness and promote emission reduction. The dashboard will support stakeholder's readiness for (behaviour) change by moving them from the precontemplation stage ([Transtheoretical model](#)) were there is no awareness and understanding, to the contemplation stage where they can consider decarbonization strategies. The dashboard will help stakeholders understand impacts, explore options, and reflect on strategies. Within 100 working days, key features and information will be determined, designed, tested and implemented into a simlation dashboard to prepare for more sustainable decision making. For Vessels owners, the tool wil help them prepare for future regulations and start the process of decarbonization, while fuel providers can strenghten their customer relation, reputation and facilitate for future emission needs of customers.

Foreseen strategical outcomes for stakeholders with the implementation of this tool: Improved Decision-Making, Modernization, Sustainability Leadership and Compliance, Competitive Advantage, Costs Savings, Customer Retention, Enhanced Communication and Information.

### Assignment

*This is the most important part of the project brief because it will give a clear direction of what you are heading for. Formulate an assignment to yourself regarding what you expect to deliver as result at the end of your project. (1 sentence) As you graduate as an industrial design engineer, your assignment will start with a verb (Design/Investigate/Validate/Create), and you may use the green text format:*

Design a simulation dashboard for vessel owners (of SMEs) to raise awareness and foster behaviour change by providing insights, enabling option assesment, impact evaluation and strategic reflection, all to prepare for (future) regulations and initiate decarbonization.

*Then explain your project approach to carrying out your graduation project and what research and design methods you plan to use to generate your design solution (max 150 words)*

The project will consist of 4 (iterative) phases: Discover, Define, Develop and Deliver.

Discover: Describing the pre-contemplation phase of stakeholders and understanding current tools to manage and influence decision making - design methods: (desk) research, context-, competitor- and trend-analysis

Define: Envisioning contemplation phase and defining strategies to move from the pre-contemplation to the contemplation phase, identify essetial data and interaction for the simulation dashboard - design methods: problem-, need and goal definition, WWWWWH, Value proposition.

Develop: Develop dashboard iterations to communicate, inform, and simulate potential scenarios - design methods: brainstorming, (lo-fi) prototyping.

Deliver: Illustrate how the tool can create emission reduction strategies. - design methods: testing & evaluation + final design iteration.

Additionally, the project will explore smart and digital aspects & features such as vessel tracking/connection (with AIS-API or GPS) and emissions predictions.

## Project planning and key moments

To make visible how you plan to spend your time, you must make a planning for the full project. You are advised to use a Gantt chart format to show the different phases of your project, deliverables you have in mind, meetings and in-between deadlines. Keep in mind that all activities should fit within the given run time of 100 working days. Your planning should include a **kick-off meeting, mid-term evaluation meeting, green light meeting and graduation ceremony**. Please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any (for instance because of holidays or parallel course activities).

Make sure to attach the full plan to this project brief.  
The four key moment dates must be filled in below

Kick off meeting 18 Jun 2024

Mid-term evaluation 13 Sep 2024

Green light meeting 20 Dec 2024

Graduation ceremony 7 Feb 2025

In exceptional cases (part of) the Graduation Project may need to be scheduled part-time. Indicate here if such applies to your project

Part of project scheduled part-time	<input checked="" type="checkbox"/>
For how many project weeks	33
Number of project days per week	3,0

Comments:

I will part-time work for an energy supply company, that works with and is a stakeholder(s) for the project.

## Motivation and personal ambitions

Explain why you wish to start this project, what competencies you want to prove or develop (e.g. competencies acquired in your MSc programme, electives, extra-curricular activities or other).

Optionally, describe whether you have some personal learning ambitions which you explicitly want to address in this project, on top of the learning objectives of the Graduation Project itself. You might think of e.g. acquiring in depth knowledge on a specific subject, broadening your competencies or experimenting with a specific tool or methodology. Personal learning ambitions are limited to a maximum number of five.

(200 words max)

I am looking forward to starting this project as I am currently working for a (maritime) fuel supplier and have a huge interest in the maritime and energy industry. My role already provided me with insights into the industry's challenges and the critical need for innovative and sustainable solutions. As close competitors are currently working on the development of a similar platform, it shows the need for an effective tool in order to maximize the (sustainability) outcomes. Therefore, I feel motivated to dive into this project.

During the project, my learning ambitions are to expand my knowledge in digital tooling, effective information and communication design, sustainable maritime practices and get more experience with integrating technology such as AI or IOT-data.

This project offers me a chance to broaden my experience beyond the typical product or product-service design taught in IPD while incorporating elements of it.

On top of that, I aspire to contribute to a project that promotes environmental responsibility, drives positive impact or change and creates operational efficiency in the maritime sector.

# Appendix A

## Suppliers



**Alternative Fuels What We Do | KPI OceanConnect**  
 Transforming to low-carbon marine fuels is crucial to combat climate change. Our alternative fuels division supports development of new fuel & supply options

fuel "supplier" - calculate and make tailored program for client



**FincoEnergies**  
 Meet FincoEnergies: a leader in sustainable energy solutions. Reduce emissions with low-carbon fuels and innovative carbon insetting for a better world.



**GoodFuels | Developer and supplier of biofuels for transport**  
 Goodfuels is a global leader in developing and supplying biofuels. Our goal is to create a better world by accelerating the transition to fossil-free transport.

Competitor - biofuel producer part of finco, calculate impact - fuelcan



**GoodShipping | A better world with carbon insetting**  
 GoodShipping is the world's first carbon insetting service. Read more about our solution and mission for a better world with decarbonised shipments.

Also part of finco - measure, scope & switch fuel Co2 reduction certificates + decarb desk



**Marine fueling | New Fuels | Glander International Bunkering**  
 We support companies on the transition to new energy sources and responsible shipping. New fuels solutions, NOx emission reduction, and decarbonization compliance.

help in navigating offering a plan



**WHERE IS YOUR FLEET ON THE ROAD TO A LOW CARBON FUTURE?**  
 Sustainability for your fleet with Shell Fleet Solutions

book & claim also happens in aviation

has fuelink



**Energy for Tomorrow**  
 2,000+ Ports covered globally 33 years combined experience. The latest global market intelligence is brought to you by our experts. Insights from our session on Biofuel Readiness, Technical Insights, and Carbon Market Dynamics Download File



**Vitol Bunkers - Vitol Bunkers**  
 Building on Vitol's long-standing presence across global bunkering markets, we supply bunker fuels to ship and fleet owners around the world. The scale of our operations, underpinned by the technical and logistical knowledge of our people has established...

have own fleet, but have bio fuel network



**Sustainability | Neste**  
 Setting high standards for sustainability enables our growth and purpose: creating a healthier planet for our children.

for aviation industry



**Industry leading carbon trading and insetting programmes**  
 you're considering a carbon offsetting approach for regulatory compliance, we can support you. Our organization offers comprehensive carbon allowance and offsetting solutions through the carbon trading systems go...

Sustainable fuel producer

## Platforms/tools

shipping focused



**Fleetenergies**  
 Unlock the Power of Sustainable Transportation Operations. AI-powered by 135 billion fuel consumption data. Utilize our emission and consumption management solutions backed by 18 years of primary data collected from road transportation vehicles, to effect...

measure scope 3 visible impact in platform



**GreenRouter - Carbon accounting and reduction strategies**  
 GreenRouter supports you in measuring your climate impact and developing CO2e reduction strategies by means of advanced tools.

Co2 consulting emission calculator



**Fuelink**  
 The digital platform to simplify your vessel fueling decisions, supporting your chartering, operations, technical and finance departments. REQUEST DEMO Unlock the future of maritime fuel management. Create your fueling strategy Upload seamlessly your va...

Route and fuel strategy, emission planning etc. + reports Part of biofueler?



**123Carbon - Your platform for Carbon insetting within transportation**  
 We use immutable blockchain-backed certificates to ensure full transparency, chain of custody and integrity to both issuers and buyers.

Carbon insetting program



**Carbon Insetting with CarbonLeap**  
 Learn how CarbonLeap can help your business with Scope 3 emissions reduction through Carbon Insetting to leap towards net-zero supply chains!

Carbon insetting program

**Net zero strategies**

Fast Forward Strategies for the Race for Carbon Neutral Shipping

What to Look Out for when Buying Biofuel: Sustainability, Certification & Standardisation

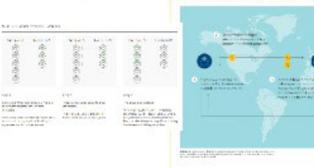
Blockchain strategies for the shipping industry

**STRIVE**

We assist you along your decarbonization process

1. Assessment 2. Strategy 3. Implementation 4. Monitoring

Reduce your Carbon Footprint



### Reduce your Scope 3 emissions in 3 simple steps

- Measure & Scope**
- Finalize Fuel Switch**
- Secure Certification**

### GoodShipping launches Decarb Desk to improve carbon insighting transparency and efficiency

Download the Decarb Desk

### Carbon Markets

KPI OceanConnect has a holistic approach to supporting your carbon objectives. Our highly experienced global team will bring innovative solutions for your marine fuels requirement, calculate emissions and help you choose the right biofuel/offset programme according to your work, budget and strategy.

It is a cost and time efficient solution as KPI OceanConnect can be your one point of contact. We have got expertise in both the voluntary and mandatory regulatory markets such as EU ETS.

### Emissions Calculator

CO2E	CO2E	CO2E	CO2E
1000	1000	1000	1000
1000	1000	1000	1000
1000	1000	1000	1000

### Unlock the future of maritime fuel management

everyday work simplified

Before Fuelink: Manual, error-prone, time-consuming

With Fuelink: Automated, efficient, transparent

### Certified from production to consumption

What to look out for when buying biofuels

Explore generators and certification

Explore regulations

Watch video

From-bio to bio: production, Pre-treatment, Feedback storage, Bioenergy Conversion, Consumption

interesting findings: strategies communication and programs

Summary of findings and program details.

### Carbon Compensation Programme options for Fleets

Shell Card

Shell Fuel Carbon Compensation

Shell Forest Carbon Compensation

Shell Nature Carbon Credits

### How Shell's Carbon Compensation Programme works

Achieve sustainable growth with the Shell Carbon Compensation Programme

1. Measure your emissions

2. Offset your emissions

3. Monitor your progress

# Appendix B

## use case 1 Decarb desk

### What our new Customer Portal has to offer

- User-friendly interface**  
With a simple click on the Portal button on our website, you can access your personalised environment. Here, you can view all your data, and conveniently download certificates and invoices.
- Impact Dashboard**  
Get a clear overview of your carbon management achievements, including removal credits, reduction credits, and avoidance credits that have been bought.
- Automated scope 3 emissions calculation**  
Use our integrated emissions calculator to calculate your scope 3 emissions from transportation and distribution. For more complex calculations, say your company's entire GHG emissions, our experts are ready to assist you.
- Products & services**  
Discover the full range of the impactful carbon reducing, offsetting and projects and services we provide. Explore their prices, have a look at how they align with the United Nations Sustainability Development Goals (SDGs), and access project videos.
- Quotation and project overview**  
Easily track all your quotations and purchased credits. Subsequently, you can find your audited client certificates in the Portal.
- Communication**  
Share your decarbonisation achievements with the world by accessing marketing kits and tools directly from the Customer Portal.



A graphic for GoodShipping's 'Starter Guide to Carbon Insetting' with a cloud icon containing a molecular structure.

A graphic titled 'A Roadmap to a Net-Zero Strategy: 5 Steps for your decarbonisation journey' showing a road winding through a forest.

CO2 emissions are the main driver of climate change. Reducing them is essential to limit global warming to 1.5°C. This requires a fundamental change in our energy systems and production processes. The transition to a net-zero economy is a complex task that requires a combination of measures, including energy efficiency, renewable energy, and carbon capture and storage (CCS). The transition to a net-zero economy is a complex task that requires a combination of measures, including energy efficiency, renewable energy, and carbon capture and storage (CCS). The transition to a net-zero economy is a complex task that requires a combination of measures, including energy efficiency, renewable energy, and carbon capture and storage (CCS).

Model	Description	Source	Treatment & Storage	Production	Transport	Customer end-use (CO2e)
Industry	Manufacturing and industrial processes	Coal, natural gas, oil	None	High	High	High
Transportation	Aviation, shipping, road transport	Jet fuel, diesel, gasoline	None	Medium	High	High
Power Generation	Electricity production	Coal, gas, wind, solar	None	High	Low	Medium
Buildings	Residential and commercial energy use	Gas, electricity	None	Low	Low	Medium
Land Use Change	Deforestation and land use changes	Land clearing	None	Low	Low	Low

- What are the core functionalities of Decarb Desk?**
- Decarb Desk is designed to streamline and improve the management of your decarbonisation efforts. Some of the core functionalities that our Decarb Desk offer include:
- Calculating and managing emission footprint:** Calculate, track, and manage your company's decarbonisation footprint with reporting tools and analytics, enabling you to identify key areas for improvement and measure progress over time.
  - Transparent and verified in-set reductions:** Ensure the credibility and traceability of your decarbonisation initiatives with unique, tangible in-set reductions, which are verified through a book-and-claim methodology.
  - Providing full accessibility of in-set certificates:** Access your in-set certificates through the Decarb Desk Book & Claim registry.
  - Access to all FincoEnergies carbon credit projects:** Leverage FincoEnergies' extensive network of verified and high-impact carbon credit projects to offset your unavoidable emissions and meet sustainability goals efficiently.

## 2. persefoni

The screenshot shows the Persefoni 'Welcome to Persefoni' dashboard. Annotations include: 'First step: target an industry', 'measuring', 'reduction opportunities', 'calculating + showing data', 'reporting', 'add fleet', 'reduction targets', and 'reporting'. A central chart shows 'Let's activate your services'.

## 3. Sinai

A collage of Sinai platform features and reports. Key elements include:
 

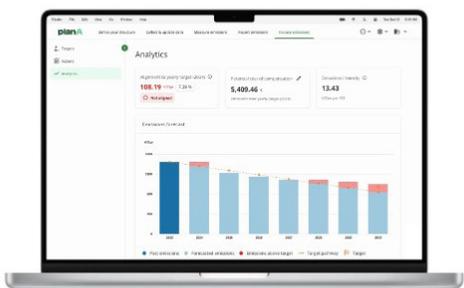
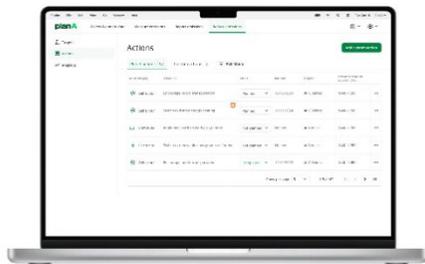
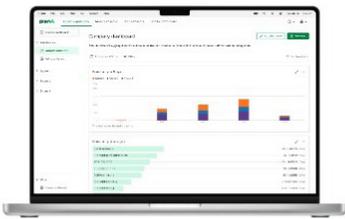
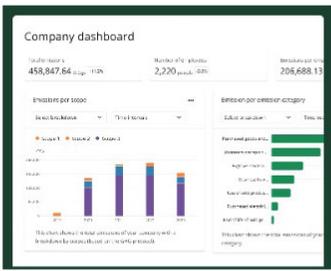
- 'Build the foundation for your decarbonization pathway' with a line chart showing 'Residual Consumption by Fuel Type'.
- 'Actionable Insights' with bullet points: 'Aggregate and sort GHG emissions data', 'Customize and filter views on emissions consumption', 'Identify needs, patterns, and emissions hotspots early'.
- 'Methodological guidance and transparent calculations' with bullet points: 'Emissions factor breakdown including LCA, IPCC, GHG Protocol, DEFRA, and many more', 'Custom and tailored emissions factors', 'Transparent and auditable calculations'.
- 'The decarbonization journey' with a flowchart.
- 'Baseline Metrics' with a bar chart.
- 'Findings in the next cycle provide insights to reduce emissions'.
- 'Build financial models into climate scenarios'.
- 'Calculate time zones for Scope 3 emissions'.

Logo for TUV Rheinland, 'Approved Carbon Footprint Calculation Method'.

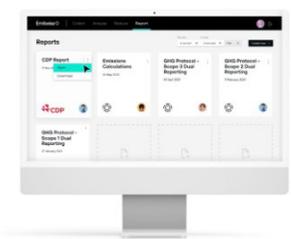
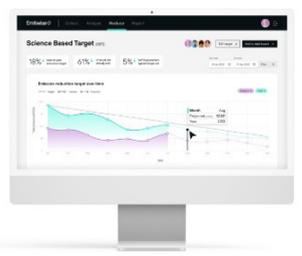
Sinai has its Platform Certified by TÜV Rheinland. Sinai is proud to announce the certification from TÜV Rheinland for its Corporate Carbon Footprint GCI with AI-based technology.



9.  
plan a



10.  
emitwise



11.  
sweep



12.  
pledge

Deliver added value for your clients by enabling them to meet their sustainability goals

Emissions measurement and reporting powered by coordinated technology

www.pledge.io

**Sustainability solutions built for freight forwarders**

Measure, report and offset shippers' carbon emissions. Quick and easy carbon footprint reporting for freight forwarders.

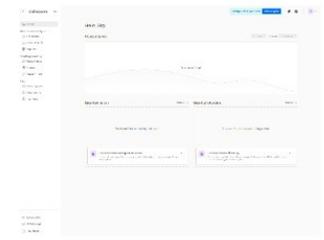
5.3 tonnes

380,882 kg of CO<sub>2</sub>e from 210,142 tkm of activity with an intensity rate of 0.622 kg CO<sub>2</sub>e/tkm

GLEC Report - 2023

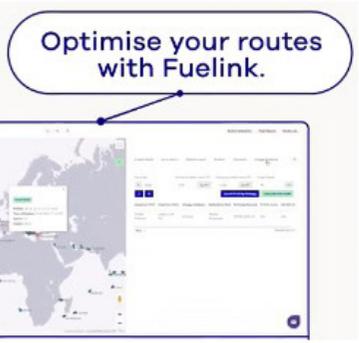
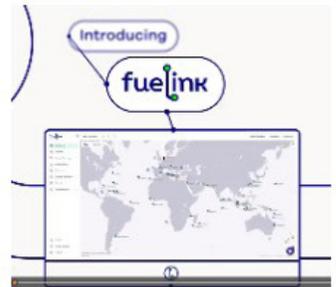
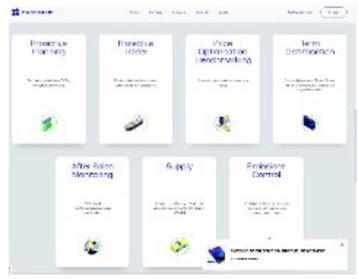
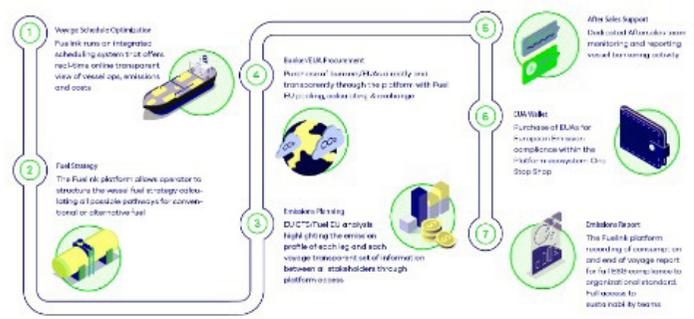
GLEC Report - 2023

Address unavoidable emissions with verified offsets



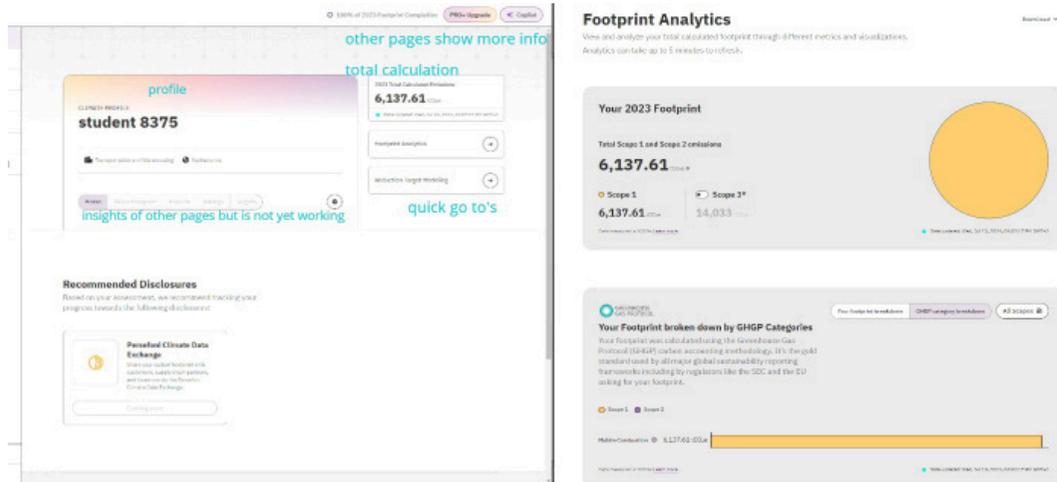
13. Fuellink

Bunkering Procurement Management Optimisation



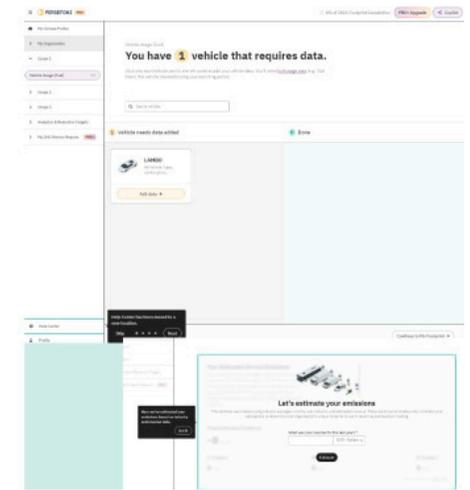
# Appendix C

PMI of persefoni



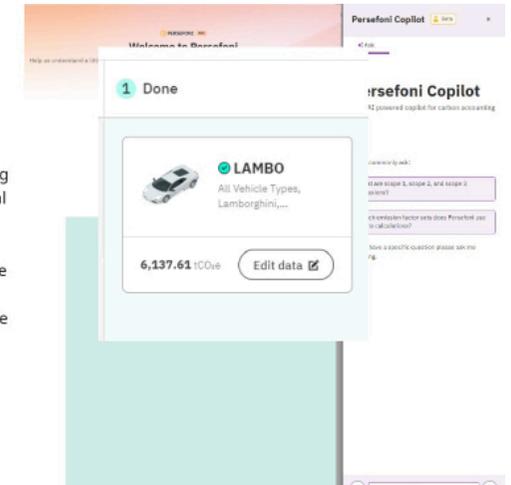
## Minus

- Targeted for road transport, not sea
- No back button sometimes
- requires some input and effort
- Not specific enough for stakeholders of this project therefore cannot support decision making
- Looks at the complete emission scope, might feel too much.



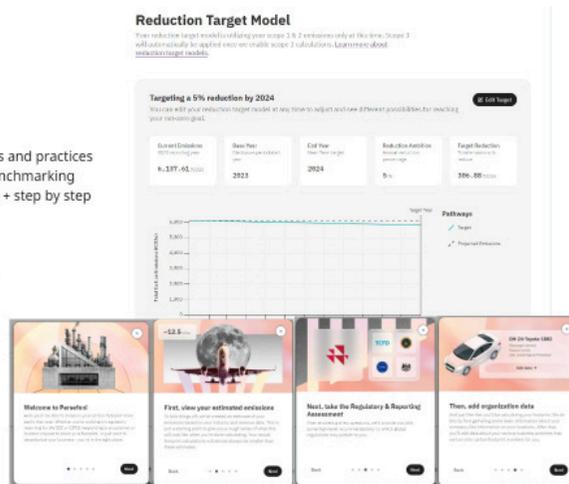
## Interesting

- AI/copilot on demand support
- has a little bit of gamification feeling due to adding "cars" and the visual style and process
- provides benchmarking or speculative incentives to stimulate going through the process
- step by step process, feeling simple and intuitive
- providing smart personalized visuals



## Plusses

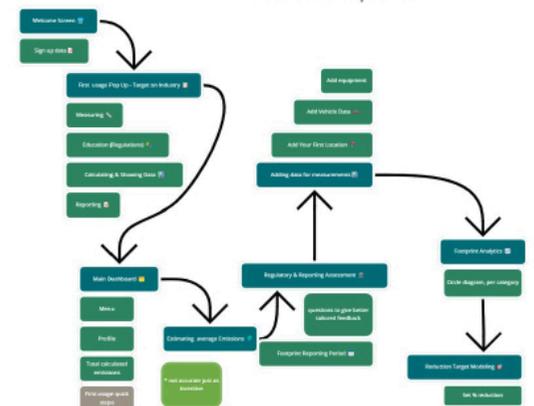
- Targeted Industry Insights pop ups and practices
- accurate emission calculation + benchmarking
- Guided and informing onboarding + step by step
- downloadable reports
- interactive, clean and easy to use
- Adding a personal fleet and data
- able to set targets and see impact
- provides incentives to engage



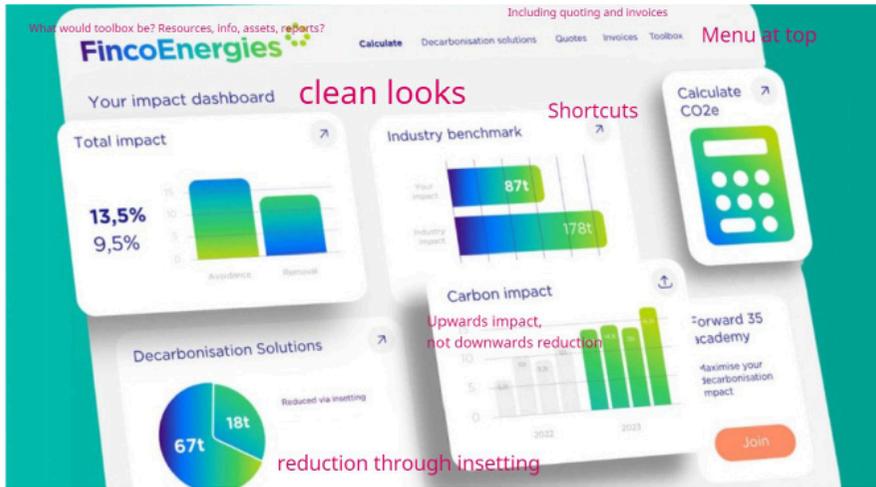
## Functionalities

- Emission Tracking
- Educational Resources
- Interactive Dashboard
- Guided Process
- AI support
- reduction target modeling
- footprint analytics
- benchmark tools
- Adding data; vehicles, location equipment

first time use process

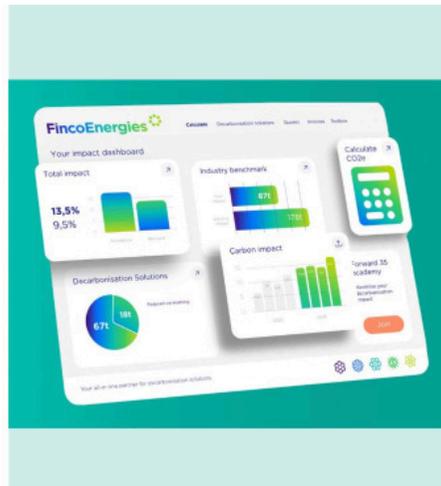


# PMI of Decarb Desk



## Plusses

- User friendly and minimal interface
- shows 4 different graphical metrics
- calculation tool
- shortcuts
- branding



## Minus

- No user personalisation
- very basic visualizations, not in depth, maybe more in depth if you expand
- little stimulation by conclusions or kpi's etc.
- not mobile friendly
- no side bar menu



## Interesting

- Industry benchmarking
- Promoting insetting
- Academy - educational / social
- Quoting and invoices in 1 place
- toolbox? Assets?

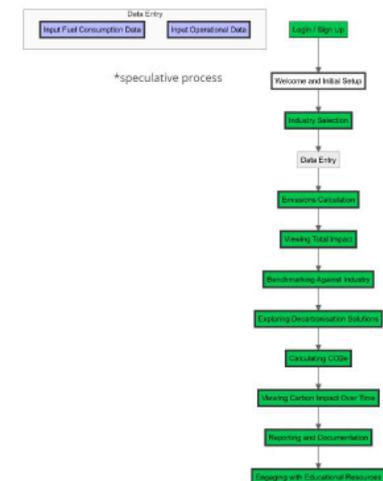


## Functionalities

- Total impact avoided and removed
- Calculated emissions
- Industry benchmark impact
- Insetting decarbonization strategies/solutions
- educational program
- toolbox

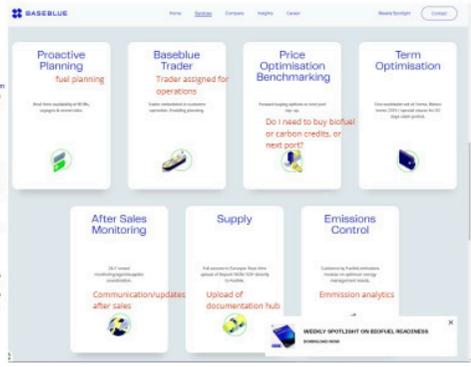
## Metrics

- Co2e calculated, reduced, impacted
- or x t Co2e



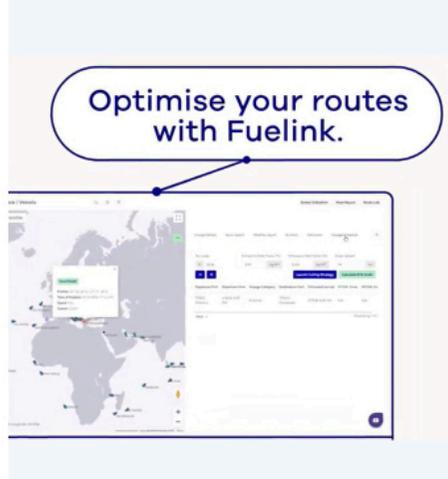
# PMI of Fuellink

## Bunkering Procurement Management Optimisation



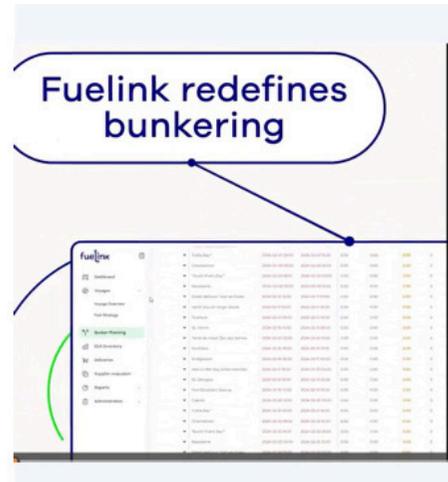
## Plusses

- Optimizing of shipping routes to reduce costs and emissions
- EU ETS compliant and management + credits shop
- Fuel strategy calculations
- emission analysis and profiles
- documentation hub
- simplifies compliance



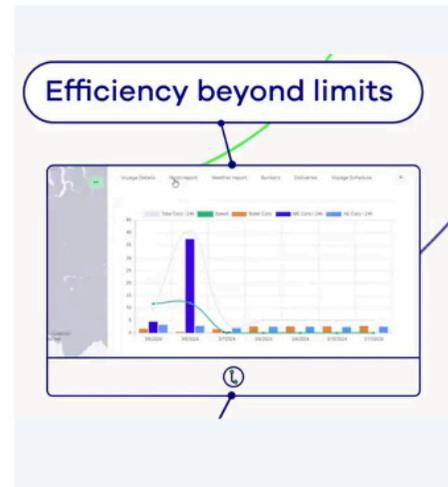
## Minus

- Extensive in use therefore might demand time and has a learning & adaptability curve
- replaces a trader for a lot of things, might make it less personal while that is a strength of the business
- not mobile responsive



## Interesting

- API connection for accurate measures
- emission trading & pooling
- scenario planning and assisting decision making
- emission wallet
- reports & statistics
- aftersales & administration also included



## Functionalities

- Voyage Schedule Optimization (API)
- Fuel Strategy Planning
- Emissions Planning
- After Sales Support
- EUA Wallet
- Emissions Reporting
- Route Optimization
- Bunkering Management
- Emissions Cost Calculation
- Analytics and Metrics
- Administration Hub

## Dashboard pages

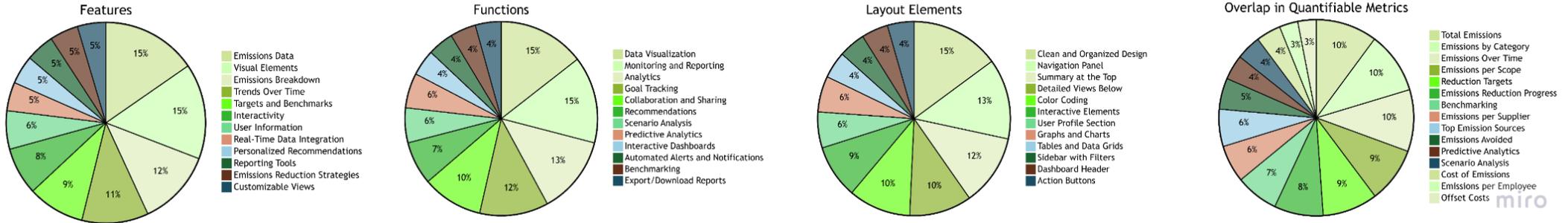
- Home - dashboard
- voyages - voyage overview,
- fuel strategy
- Bunker planning
- EUA Inventory
- Supplier evaluation
- reports
- administration

## Metrics

- Co2e calculated, reduced, impacted
- Price (costs per MT / CBM) + price differences

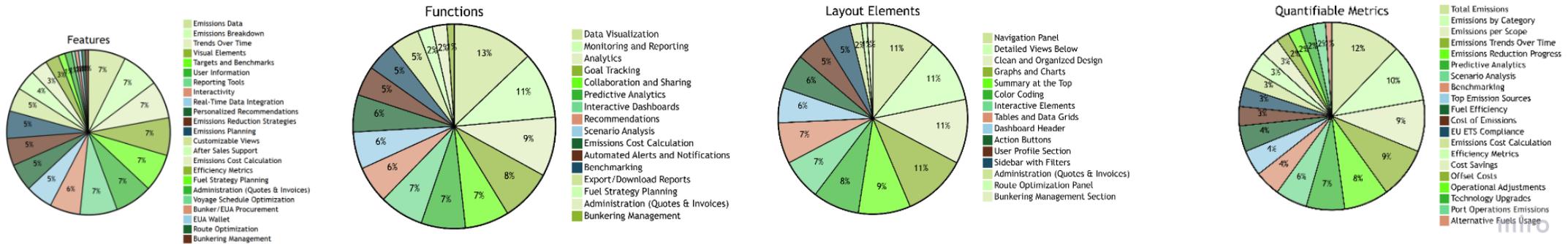
# Appendix D

## Findings from the dashboards (10/13 analysed)



## Findings from the dashboards (11/13 analysed)

- when including fuellink (as this is quite different to the other examples)
- Above is without



# Appendix E

## GREEN NUDGES AT A GLANCE

Here's a simple summary of the EAST subcategories and sample nudges in each one.

### MAKE SUSTAINABILITY EASY

- **Use defaults.**  
Example: Give guests at catered events the most sustainable food option unless they request otherwise.
- **Remove or add frictions.**  
Example: Offer smaller plates and no trays in campus canteens.
- **Change the choice environment.**  
Example: Provide fewer car-parking spaces and more bike-parking spaces.

### MAKE SUSTAINABILITY ATTRACTIVE

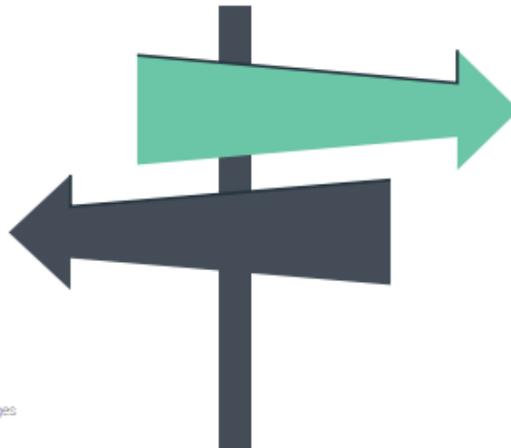
- **Draw attention.**  
Example: Design recycling bins to be eye-catching.
- **Frame messages positively and highlight co-benefits.**  
Example: Promote sustainable food as tasty and indulgent.
- **Use smart incentives.**  
Example: Introduce lottery-based deposit return schemes for recyclable items.

### MAKE SUSTAINABILITY SOCIAL

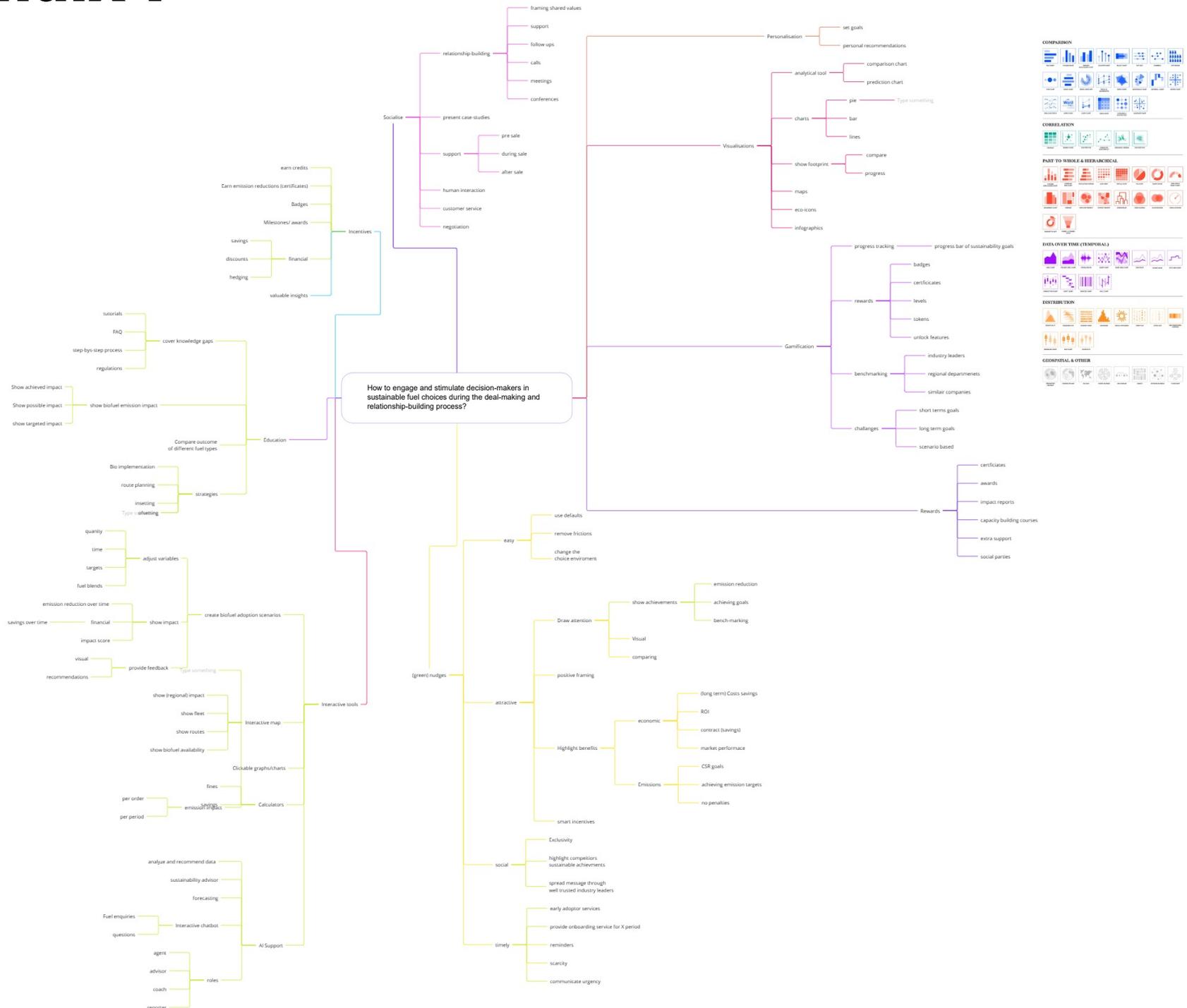
- **Highlight others' sustainable behaviour.**  
Example: Compare university departments' energy use to each other.
- **Harness identity and the right messengers.**  
Example: Spread messages via people with whom students identify.
- **Use social connections and peer pressure.**  
Example: Set up a food-sharing group to distribute leftovers on campus.

### MAKE SUSTAINABILITY TIMELY

- **Encourage pre-commitments and emphasize present benefits.**  
Example: Provide interest-free loans to help students buy public transport passes.
- **Harness or create timely moments.**  
Example: Give first-year students tips for sustainable food shopping.
- **Help people plan and follow through.**  
Example: Provide a checklist for reducing water use in student halls.



# Appendix F



**COMPARISONS**

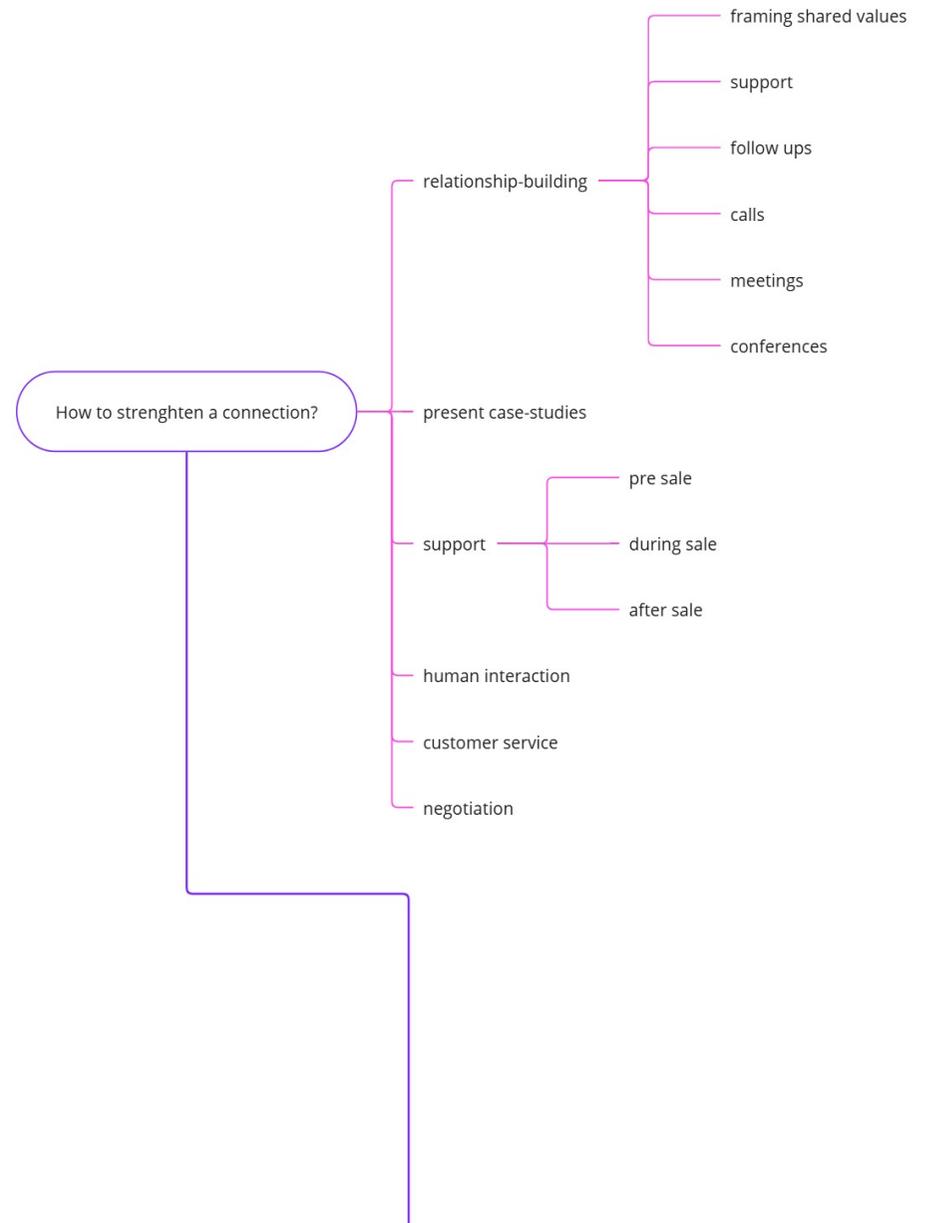
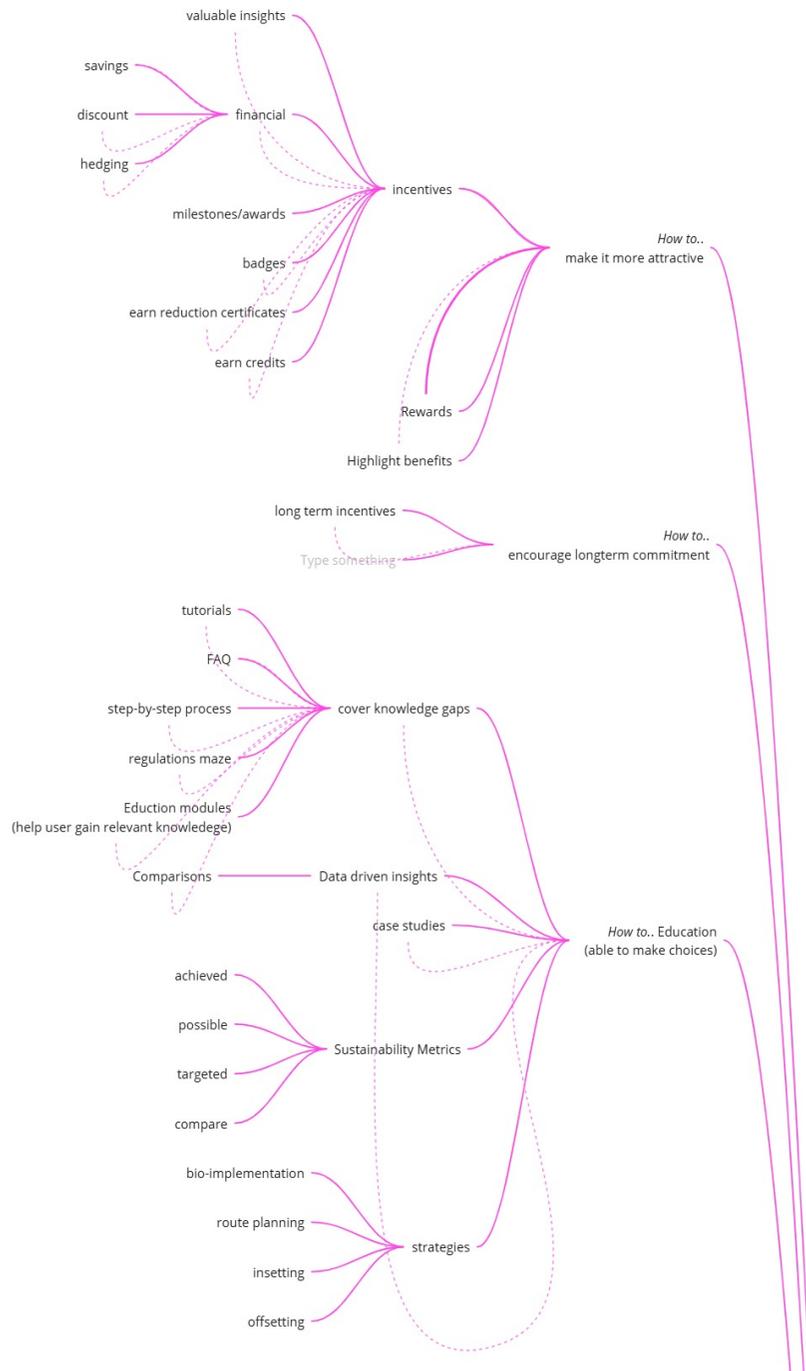
**CORRELATION**

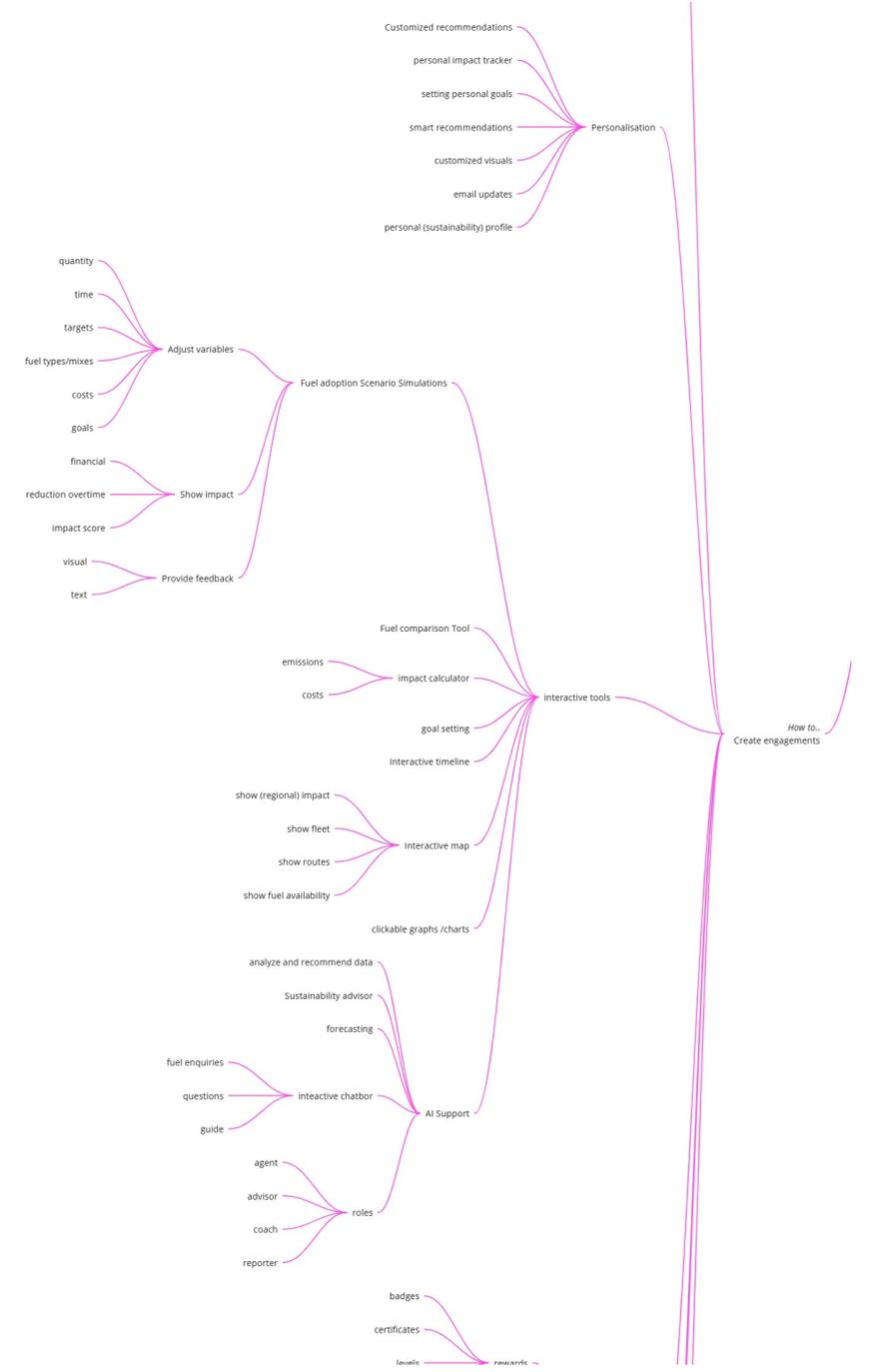
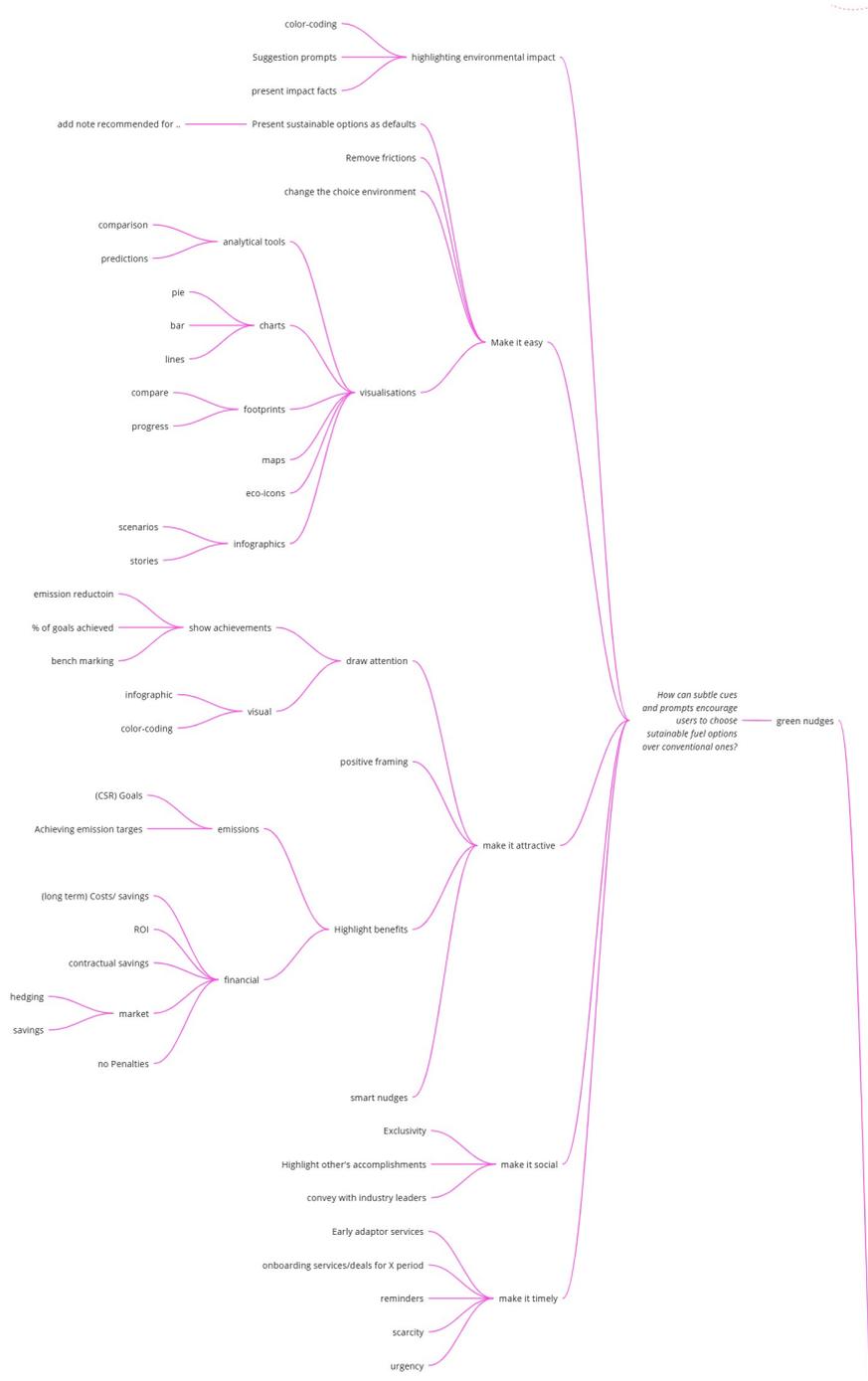
**PART TO WHOLE & HIERARCHICAL**

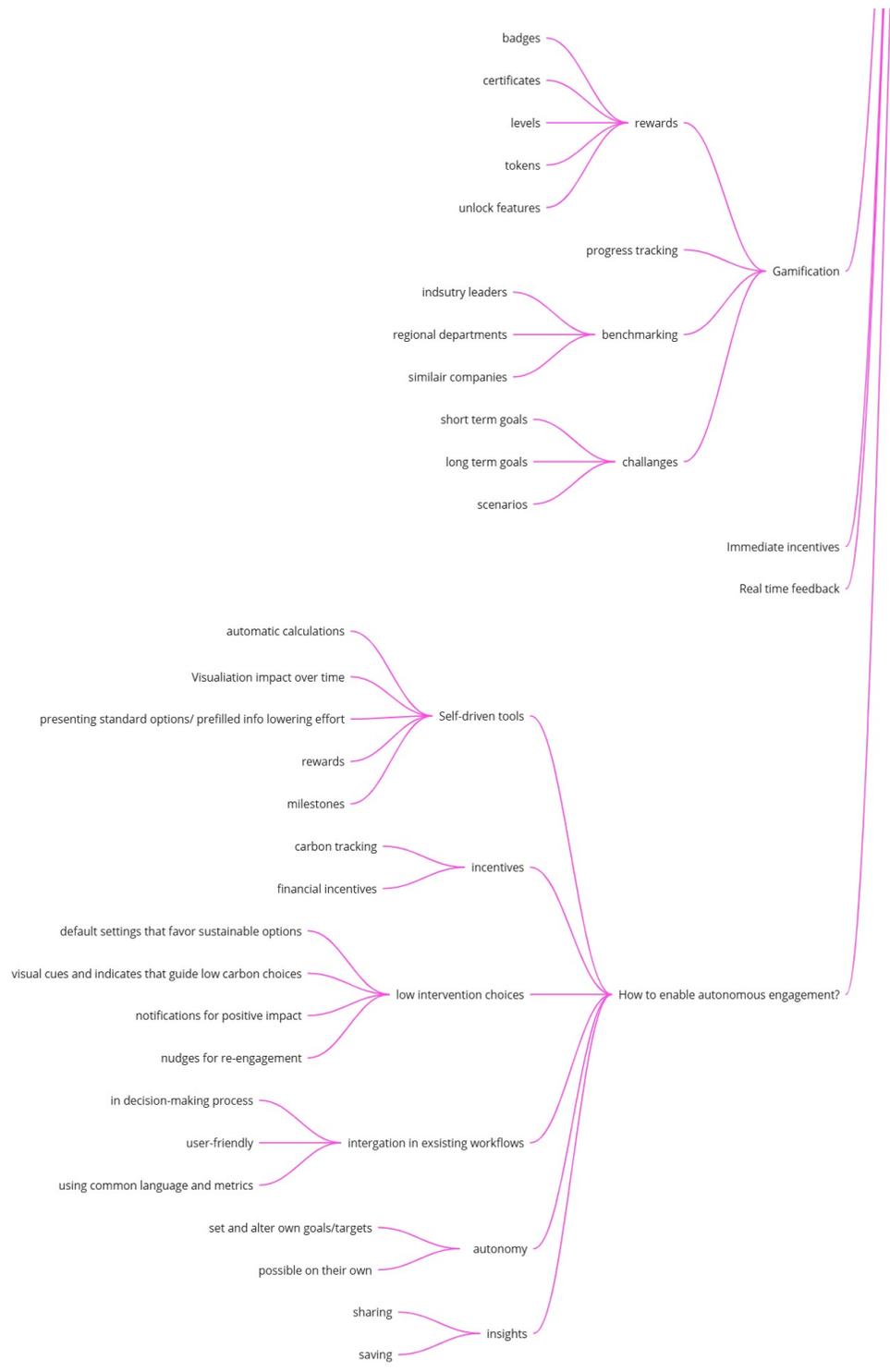
**DATA OVER TIME (TEMPORAL)**

**DISTRIBUTION**

**GEOSPATIAL & OTHER**





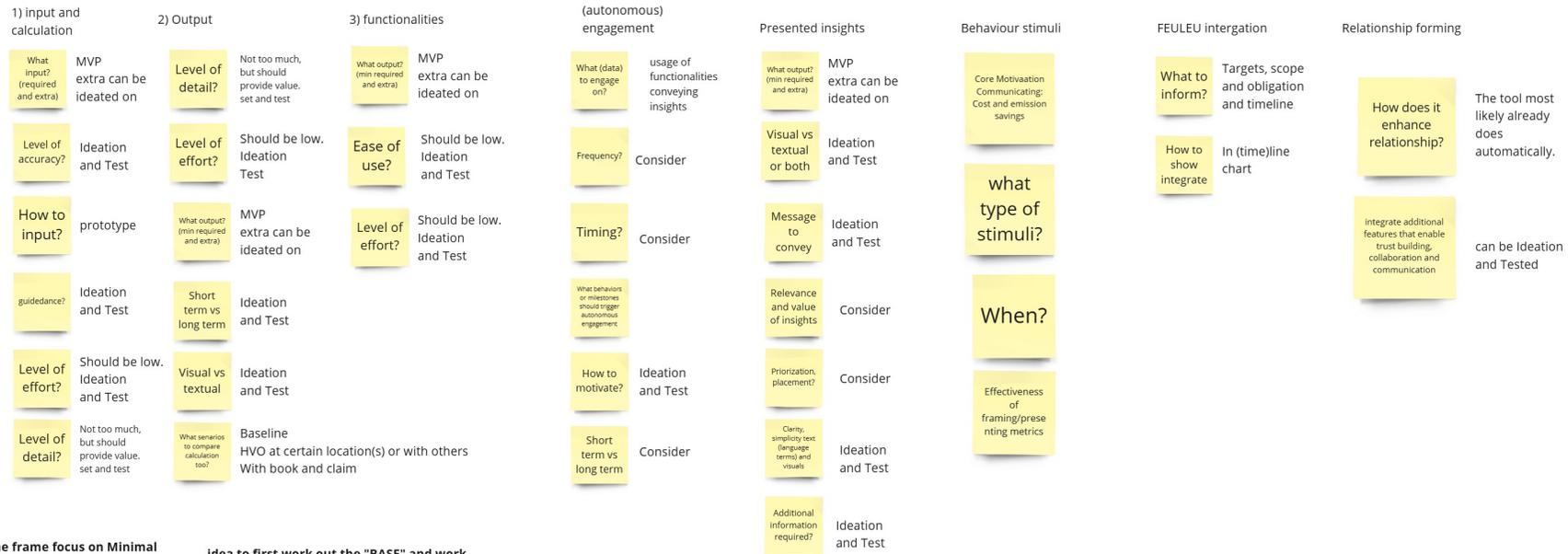


Brainstorming questions to answer based on calculation tool and simulation tool for scenario A

Branches are elements that need to be considered for development for scenario A

Branches (categories) for scenario A

things that should be considered during ideation



! for this time frame focus on Minimal required parts.

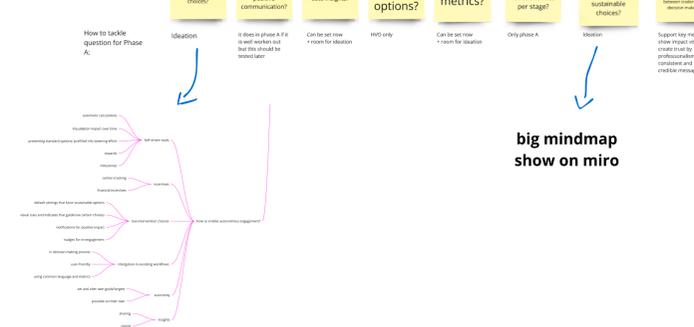
Idea to first work out the "BASE" and work further from there.

Support traders with a simulation dashboard that autonomously engages maritime fuel decision-makers in the assessment of sustainable fuel options, by providing clear insights into simulated data (costs and emissions outcomes). The dashboard enhances engagement by integrating attractive behavioural stimuli throughout the deal-making and the relationship-building process between parties.

Based on the vision I formed main questions to answer



Main questions



big mindmap show on miro

## Ideation session branch 1

### Questions

1) input and calculation

What input? (required and extra)

MVP extra can be ideated on

Level of accuracy?

Ideation and Test

How to input?

prototype

guidedance?

Ideation and Test

Level of effort?

Should be low. Ideation and Test

Level of detail?

Not too much, but should provide value. set and test

## forming 3 usage scenarios

increasing in detail and accuracy

1. Essential start, quick view,

*In this scenario user only need to fill in a little bit of information, a lot is set and estimates are given*

User input fields:

insert Average Fuel consumption (per month or year)  
HVO Blend % - set on standard for example 30

Assumptions or invisible input data:

- average market price
- baseline emission factor to compare with
- Industry averages

2. Enhanced and moderate Insight

3. more in-depth/advanced

# **Appendix G**



# Envisioned Scenario 2: Cold Calling - impact: brief interaction to introduce tool and strategy, gather data, and email tailored insights to deliver value and build interest for follow-up meeting.



	1) Kickstarting a cold call	2) Gathering input data	3) Presenting Insights	4) Prefilled Demo
	A trader calls a cold prospect, greets him, and introduces himself and his company, a global bunker supplier specializing in HVO. He mentions that they help shipping companies reduce fuel costs and emissions. "I thought this might be relevant given the industry's standards to reduce over the years," he adds. He gauges the prospect's interest and hopes to keep the call going to explore how their services might be beneficial.	Seeing that the prospect is still on the line, the trader takes the opportunity to dive a bit deeper. He briefly explains how their company can provide insights into potential savings from emission reductions and costs when purchasing HVO fuel from them. He asks some of quick questions to get a sense of the prospect's current fuel setup which he puts in the tool during the call.	After the sample data is entered, the trader can quickly see and tell the key highlights through the tool. He shares these insights with the prospect, highlighting how this tool and strategy can have a sustainable and financial impact and can provide insight into considerations for meeting future emission reduction targets. He sees that the prospect is interested, but not yet fully convinced.	The trader saves the results of the tool, which can now be emailed directly to the prospect, allowing him to capture the prospect's contact information and establish a clear line of communication for follow-up. The prospect looks forward to receiving the insights and the trader feels positive about the relationship they have built as he is able to offer value and professionalism through the tool which sets him apart from others.
<b>Key action</b>	<ul style="list-style-type: none"> <li>Trader calls the prospect</li> <li>introduces himself, the company and the offerings</li> </ul>	<ul style="list-style-type: none"> <li>The trader asks short questions about the prospect's fuel consumption and fleet size and enters this data directly into the tool.</li> </ul>	<ul style="list-style-type: none"> <li>Tool shows key insights</li> <li>Discussing insights</li> </ul>	<ul style="list-style-type: none"> <li>Save results as summary</li> <li>Prepare summary for email</li> <li>Send email with results to prospect</li> <li>Record prospect contact details</li> </ul>
<b>Touchpoints</b>	Phone call	Phone call, Data entry in the tool	Phone call, Visual and textual tool feedback	Phone, Tool, Email
<b>Decision points</b>	<ul style="list-style-type: none"> <li>Prospect decides whether he is interested in further information</li> </ul>	<ul style="list-style-type: none"> <li>Decide level of interest and need for emission and costs insights that come with renewable fuels</li> <li>Trader assess given input by the prospect and advises if needed</li> </ul>	<ul style="list-style-type: none"> <li>The trader checks whether the prospect shows interest in the insights</li> <li>The trader tries to determine the value the insights have for the prospects</li> </ul>	<ul style="list-style-type: none"> <li>Does the prospect want a saved result?</li> <li>Does the tool provide value?</li> <li>Does the prospect want to share his contact details?</li> <li>Does the prospect want a second meeting?</li> </ul>
<b>Need</b>	<ul style="list-style-type: none"> <li>A short, powerful pitch to explain the benefits of HVO and gain the prospect's interest.</li> </ul>	<ul style="list-style-type: none"> <li>Simple input options to quickly enter relevant prospect data into the tool</li> </ul>	<ul style="list-style-type: none"> <li>Clear visual and textual insights that allow the trader to explain the benefits of HVO and convince the prospect.</li> </ul>	<ul style="list-style-type: none"> <li>An email function to quickly save and send the results, so the trader can follow up with the prospect and leave a good impression.</li> <li>A clear and professional result email template</li> <li>Place to store contact details</li> </ul>
<b>Feelings</b>	Light tension, Hopeful	Goal oriented, Concentrated	Hopeful, Assured	Positive, Hopeful
<b>Obstacles</b>	Potential disinterest. A bad introduction could potentially make the prospect hesitant or skeptical	No overlap in interests, limited time, sceptical prospect. The prospect may be hesitant to share information or does not know	Relevance and need for the insights. The prospect may not show complete conviction right away	The prospect may ignore the email or not receive it. The prospect does not want a follow up
<b>Opportunity</b>	<ul style="list-style-type: none"> <li>Establishing initial trust</li> <li>Building interest to continue the conversation</li> <li>Early opportunity to present HVO benefits</li> </ul>	<ul style="list-style-type: none"> <li>Generate interest by addressing strategic points</li> <li>Leverage sustainability obligations and provide strategic value for this</li> <li>Acquiring relevant business information</li> </ul>	<ul style="list-style-type: none"> <li>By providing early insights, the trader profiles himself as a knowledge partner and not just as a seller, which strengthens the relationship.</li> <li>Ability to position sustainable options/insights as attractive choices with concrete benefits</li> <li>The tool supports the trader to have the conversation with convincing data, tailored to the needs of the prospect. This strengthens the credibility of the trader as a reliable partner.</li> <li>Increasing insight into sustainability, promote decision making.</li> </ul>	<ul style="list-style-type: none"> <li>Sending a personalized summary helps the trader to demonstrate his expertise and establish trust for further communication (Relationshipbuilding and trust)</li> <li>The trader can easily summarise and send the results of the calculation, reporting the most important insights.</li> <li>An email with personalized insights gives the prospect the space to independently reflect and reach out for follow-up and the trader tools to do this easily</li> </ul>
<b>Interaction Flow</b>		<p><b>Interaction type:</b> prefilling shareable scan</p> <p><b>Step 1:</b> The trader asks the prospect for an estimate of the average fuel consumption per vessel or fleet and fleet size and insert this in the tool.</p> <p><b>Step 2:</b> The trader discusses the desired HVO percentage in the fuel mix with the prospect and quickly selects an HVO mix percentage via a slider in the tool for a visually clear input indicating how much volume this corresponds to.</p>	<p><b>Step 1:</b> The tool shows a visual overview of the calculated results, including CO<sub>2</sub> savings, cost savings, and progress towards EU targets, displayed with graphs, KPIs and progress bars for clear insight into the HVO benefits.</p> <p><b>Step 2:</b> The trader briefly explains to the prospect what these initial insights mean, with emphasis on the potential savings and the effect of the chosen HVO mix, which he can easily read from the tool.</p> <p><b>Step 3:</b> The prospect would like to make some volume and blendmix adjustments and gain insight into this. The trader adjusts this on the screen and the results are automatically updated.</p> <p><b>Step 4:</b> The trader discusses with the prospect the different HVO scenarios and how it can benefit both financial and environmental goals. This can be quickly adjusted with the tool.</p>	<p><b>Step 1:</b> The trader saves the calculated results in the tool, including CO<sub>2</sub> savings, cost savings and progress towards EU targets. These results are stored uniquely for the client and the trader enters the contact details of the prospect.</p> <p><b>Step 2:</b> The trader sends the personalized summary by email to the prospect via the save button. The email also contains a short explanation and an invitation for further communication and a link to the tool with the saved input for the prospect to explore further.</p> <p><b>Step 3:</b> The trader can see afterwards whether the prospect has received the mail and used the tool.</p>
<b>Input metric</b>		<p>Inserted by user:</p> <ul style="list-style-type: none"> <li>Average fuel consumption (MT) per year – input field, autosuggestion sector averages</li> <li>Fleet size (number of ships) – input field, sector averages, autosuggestion</li> <li>HVO % Slider</li> </ul> <p>Inserted automatically:</p> <ul style="list-style-type: none"> <li>Emissionreduction factor for HVO</li> <li>Costsavings factor</li> <li>Baseline emissionfactor conventional marine fuel</li> </ul>	<p>Inserted by user:</p> <ul style="list-style-type: none"> <li>HVO Mix Percentage</li> <li>Volume Adjustments</li> </ul>	<ul style="list-style-type: none"> <li>Email and contact information prospect</li> </ul>
<b>Output Metric</b>			<ul style="list-style-type: none"> <li>CO<sub>2</sub> savings (in kg / %)</li> <li>Total HVO Fuel quantity (CBM / MT)</li> <li>Cost savings (€ / %)</li> <li>Progress towards EU targets (%)</li> <li>Visual representation with graphs, KPIs, progress bars</li> </ul>	<ul style="list-style-type: none"> <li>Sent summary email to prospect</li> <li>Confirmation that prospect received email</li> <li>Link to tool with saved data for further exploration by prospect</li> <li>Insight into prospect usage of tool</li> </ul>
<b>Impact regarding vision and design goals</b>	<ul style="list-style-type: none"> <li>Relationship building: groundwork, early trust</li> <li>view on the tool benefits</li> </ul>	<ul style="list-style-type: none"> <li>Because of the tool the trader already knows what is interesting to discuss and can easily form a valuable and interesting conversation</li> <li>By asking questions and collecting data, the trader demonstrates his expertise, engages and creates a personal connection.</li> <li>The trader can quickly enter basic information, leading to efficient interaction and a strong first impression of the tool.</li> <li>The simple input options allow the trader to quickly generate insights during the call.</li> </ul>	<ul style="list-style-type: none"> <li>The clearly presented insights strengthen the trader's advisory role and create prospect confidence.</li> <li>Visualizations and KPIs make the impact of HVO on sustainability and cost savings concrete and make it easy to gain insight and communicate.</li> <li>The tool shows how the chosen HVO mix can contribute to achieving EU emission reduction targets.</li> </ul>	<ul style="list-style-type: none"> <li>The summary nudges the prospect to autonomously experience how the tool supports compliance and savings, which strengthens engagement and the relationship and facilitates further autonomous use</li> <li>By sending a summary by email, the trader leaves a good impression and increases the chance of further communication.</li> </ul>
<b>Data Insights</b>		<ul style="list-style-type: none"> <li>First estimate of basic data</li> </ul>		<ul style="list-style-type: none"> <li>Saveable and shareable overview of key data insights, instantly available in a summary email with a link to the pre-filled tool</li> </ul>
<b>Provocations? How might we address user needs?</b>	<ul style="list-style-type: none"> <li>How can the trader communicate the benefits of HVO in a short and powerful way to convince the prospect?</li> <li>How can the first impression be designed in such a way that the prospect wants to continue the conversation?</li> </ul>	<ul style="list-style-type: none"> <li>How can we make the tool simple enough so that the trader can quickly enter basic data and gain valuable insights?</li> </ul>	<ul style="list-style-type: none"> <li>How can we make the visualizations and KPIs clear, so that the trader and prospect can easily understand and communicate the results?</li> <li>How can the tool provide relevant insights that highlight sustainability and financial benefits?</li> </ul>	<ul style="list-style-type: none"> <li>How can the email summary be made attractive to encourage the prospect to make follow-up contact and try out the tool?</li> <li>How can we motivate the prospect to actively use the tool after the email has been sent?</li> </ul>
<b>Design / Feature ideas</b>	<ul style="list-style-type: none"> <li>Highlight a short introductory text about HVO benefits for a quick start.</li> <li>Suggest relevant activity and capture additional information to highlight the relevance of HVO.</li> </ul>	<ul style="list-style-type: none"> <li>Simple input fields for basic data with an autosuggestion number of vessels available</li> <li>Auto suggestions based on average sector values</li> <li>Clear titles in input fields</li> <li>HVO % slider</li> </ul>	<ul style="list-style-type: none"> <li>Visual progress bar displays emissions targets to convey impact.</li> <li>Cost and emission savings graphs to make the benefits immediate and clearly visible.</li> <li>Comparison graphs for comparing multiple scenarios (baseline, mixed HVO with savings)</li> <li>Personalized insights with success stories and testimonials</li> </ul>	<ul style="list-style-type: none"> <li>Save and email function to send results as summary and link to tool for contact details</li> <li>Personalized insights with success stories and testimonials</li> <li>Section in the Email with Success Stories and Testimonial</li> <li>shortcut for scheduling an appointment</li> </ul>
<b>Evaluation criteria metrics to test and validate</b>	<ul style="list-style-type: none"> <li>Number of conversations where the prospect continues the conversation after the introduction.</li> <li>Percentage of cold calls where the prospect discusses the benefits of the tool</li> </ul>	<ul style="list-style-type: none"> <li>Engagement Measurement and willingness to provide input (for personalized scenarios)</li> <li>Number of prospects willing to share data during the first conversation.</li> <li>Time required to enter basic data and generate insights.</li> </ul>	<ul style="list-style-type: none"> <li>Positive response from the prospect to insights presented.</li> </ul>	<ul style="list-style-type: none"> <li>Percentage of prospects who open and read the summary, and click the tool.</li> <li>Number of prospects who show interest in a follow-up appointment after the email.</li> <li>Number and times the tool has been used afterwards.</li> </ul>
<b>Assumptions</b>	<ul style="list-style-type: none"> <li>1.1 The prospect will be willing to listen to the benefits of HVO if they are introduced briefly and relevantly.</li> <li>1.2 The trader can effectively convey the benefits of calculation tool to the prospect.</li> </ul>	<ul style="list-style-type: none"> <li>2.1 The prospect is interested in reducing emissions and costs information for an initial evaluation.</li> <li>2.2 The prospect feels comfortable sharing some basic information for an initial evaluation.</li> <li>2.3 The data obtained is sufficient to make a first impression about HVO benefits.</li> </ul>	<ul style="list-style-type: none"> <li>3.1 Visual graphs elements and KPIs help the trader to understand and use it to quickly discuss selling points.</li> <li>3.2 The trader sees the value of the tool in the conversation and uses it to quickly discuss selling points.</li> </ul>	<ul style="list-style-type: none"> <li>4.1 An email summary reinforces the impression that the trader is providing professional and valuable advice, which encourages interest in a follow-up appointment.</li> <li>4.2 The email summary supports the prospect in further decision-making.</li> <li>4.3 The summary contributes to a positive experience by making the information process seamless and efficient, allowing the trader to spend more time on relationship building and advising</li> </ul>
<b>Hypothesis</b>	<ul style="list-style-type: none"> <li>1.1 The prospect will be more likely to engage in the conversation if relevant HVO benefits are mentioned quickly</li> <li>1.2 By introducing the benefits briefly and concisely, the trader increases the likelihood that the prospect will continue the conversation.</li> </ul>	<ul style="list-style-type: none"> <li>2.1 The simplicity of entering data encourages the prospect to share (more) information.</li> <li>2.2 Specific questions regarding sustainability (emission reduction, profitability) increase the chance that the prospect will show interest in discussing further sustainable offerings.</li> <li>2.3 The trader can enter basic information quickly, leading to efficient interaction and a strong first impression of the tool with the prospect, increasing the likelihood of further interest in sustainable fuel options.</li> <li>2.4 Using auto-suggestions for fuel consumption increases the trader's confidence when the prospect needs advice and reduces the time required to enter the data.</li> </ul>	<ul style="list-style-type: none"> <li>3.1 The visual representation of CO<sub>2</sub> and cost savings helps the trader to convey complex information simply and quickly, increasing the likelihood that the prospect will immediately understand and appreciate the benefits of HVO.</li> <li>3.2 The ability to customize real-time HVO scenarios allows the trader to respond to prospect questions and interest, increasing the likelihood of a positive impression and further interest in sustainable fuel options.</li> </ul>	<ul style="list-style-type: none"> <li>4.1 Sending the results creates more confidence in the trader and the tool, which can lead to a follow-up appointment.</li> <li>4.2 The ability to easily share and save the summary helps the prospect review the results, autonomously increasing the likelihood that the prospect will independently decide on a sustainability initiative.</li> <li>4.3 The trader can involve clients in sustainable options more easily.</li> <li>4.4 Providing the prospect with a link to a demo version of the tool in the email lowers the threshold for trying out the tool independently, helping the prospect feel more comfortable with the insights and possibilities.</li> </ul>

# Envisioned Scenario 3: In-Depth Meeting - impact: Presentation to build trust, showcase customized tool insights, and plan trial supply



	1) Warm Welcome & Agenda	2) Collaborative Data Entry	3) Presenting & Adjusting Key Insights	4) Saving and Next Steps					
	The trader greets the prospect and his associate in the conference room, which has a big screen for their presentations. He outlines the agenda: a company and service walkthrough followed by an in-depth tool demonstration to illustrate the emissions reduction, cost savings, and FuelEU Maritime compliance impacts possible when working together.	After the presentation the trader transitions into the tool demonstration. The analyst sits alongside the prospect in front of the presentation screen, and together they enter fleet specs into the tool, including parameters like vessel type and fuel usage. Technically, it's an easy process, with interactive prompts and motivational cues to keep them engaged as they complete each field. This joint participation not only tallies the insights but also strengthens their relationship through the shared experience.	Once the data has been entered, the tool quickly and easily shows an overview of the possible costs and emission reductions. The trader can easily see and tell the key insights. Based on the results, he explains how HVO can be used to align with FuelEU Maritime and achieve their emissions and cost targets. The prospect's case different scenarios into account, which the trader adjusts on the spot by adjusting some variables. The tool immediately shows how different choices influence the results. This interactive experience provides the prospect with real, actionable insights, building their trust and confidence in both the tool and the trader's expertise.	After reviewing the customized scenarios, the trader saves the results in a quick, shareable format to email to the prospect. It's a convenient recap they can easily look over later or pass along to their team. The trader suggests a trial period for HVO fuel and a follow-up meeting to assess the early results. The trial gives the prospect a chance to see proven impact and results. With these personalized insights in hand, the trader leaves the meeting feeling good. They've built a solid connection and proven the tool's real value, making it a key piece in the prospect's journey toward sustainability.					
<b>Key action</b>	<ul style="list-style-type: none"> <li>Welcome prospect and colleague</li> <li>Presentation agenda</li> <li>Company introduction</li> </ul>	<ul style="list-style-type: none"> <li>Trader and prospect enter data together</li> <li>Specify vessel type and fuel consumption</li> <li>Use interactive prompts in the tool</li> </ul>	<ul style="list-style-type: none"> <li>Trader presents calculated insights on cost and emission reduction</li> <li>Adjust scenarios at the request of the prospect</li> <li>Tool immediately shows the effect of each choice</li> </ul>	<ul style="list-style-type: none"> <li>Trader saves the results</li> <li>Sending a clear summary by email</li> <li>Proposing a trial period for HVO</li> <li>Scheduling a follow-up meeting to evaluate the results</li> </ul>					
<b>Touchpoints</b>	Physical Meeting, Presentation screen	Laptop, Presentation Screen, Tool	Laptop, Presentation Screen, Tool	Laptop, Tool, Email, Email Template					
<b>Decision points</b>	-	Trader decides whether the prospect is open enough to a joint data entry to encourage interaction and trust.	The trader notices whether the prospect has confidence in the tool, finds input and scenarios valuable, and responds to this.	The trader decides whether the prospect is ready for a trial period and follow-up meeting					
<b>Need</b>	Clear company introduction, time, Presentation screen	Interactive prompts and visual feedback, clear the data entry fields to keep the prospect closely engaged	Direct, clear presentation of (scenario) results with the possibility of adjustments	A shareable, clear summary and a concrete proposal for next steps to further guide the prospect with links to the tool for further exploration.					
<b>Feelings</b>	Curiosity, Openness	Involvement, Collaboration	Conviction, trust	Positive, Motivated					
<b>Obstacles</b>	time issues, personal connection, technical issues, information overload	Prospect may feel reluctant to share data or may not see the value of the tool	Prospect may have doubts about the applicability of the insights to their situation.	Prospects may be hesitant to commit to a trial without tangible results from previous users or confidence in the insights.					
<b>Opportunity</b>	<ul style="list-style-type: none"> <li>Establishing initial trust</li> <li>gauge interest</li> <li>A strong impression</li> </ul>	<ul style="list-style-type: none"> <li>By involving the prospect in the data entry process, the trader can demonstrate how simple and intuitive the tool works, which builds trust.</li> </ul>	<ul style="list-style-type: none"> <li>By directly adjusting the results, the prospect gains real-time insight into the flexibility of the tool, value of HVO and learns how to use the tool.</li> </ul>	<ul style="list-style-type: none"> <li>Continued stimulated interest</li> <li>Autonomous and shareable after use</li> <li>easier to convince the team afterwards</li> <li>insights in usage and engagement afterwards</li> </ul>					
<b>Interaction Flow</b>	-	<p><b>Step 1:</b> The trader and prospect enter the vessel type into the tool, choosing from a list of commonly used types relevant to the prospect's fleet.</p> <p><b>Step 2:</b> Next, they enter the average fuel consumption per vessel or for the entire fleet and fleet size, with the option to see guidelines and suggestions for industry standard consumption values.</p> <p><b>Step 3:</b> The trader sets the desired HVO mix percentage via a slider (for example 10%, 20%, 50%, or 100%), whereby the share of sustainable fuel (in MT) is immediately visible.</p>	<p><b>Step 1:</b> After pressing the calculate button, the tool automatically calculates the expected CO<sub>2</sub> savings, cost savings and progress towards EU targets based on the entered data and the HVO percentage.</p> <p><b>Step 2:</b> The results are presented clearly in visual elements such as progress bars and graphs. The trader can now discuss with the prospect how the chosen HVO mix contributes to compliance and shows possible benefits by means of KPIs.</p> <p><b>Step 3:</b> If desired, the trader adjusts the HVO mix percentage to simulate alternative scenarios, with the tool updating the calculations immediately. This gives the prospect insight into the impact of different HVO mixes on CO<sub>2</sub> and cost savings and lets them discuss alternative scenarios.</p>	<p><b>Step 1:</b> The trader saves the calculated results and contact details in the tool. This data is automatically summarized in a clear visual report for sharing via email.</p> <p><b>Step 2:</b> The trader includes options in the email for a follow-up conversation, suggestion date and a trial period with HVO fuel, so the prospect can continue immediately without further explanation.</p> <p><b>Step 3:</b> The trader sends the summary to the prospect via email. The email contains a personalized message with a short explanation of the results, an inviting call-to-action to explore the tool further, and a link to the saved scenarios.</p> <p><b>Step 4:</b> The trader receives an automatic notification when the tool is used</p>					
<b>Input metric</b>	-	<p>Inserted by user:</p> <ul style="list-style-type: none"> <li>Average fuel consumption (MT) per year - input field, autosuggestion sector averages</li> <li>Fleet size (number of ships) - input field, sector averages, autosuggestion-</li> <li>HVO % Slider</li> </ul> <p>Inserted automatically:</p> <ul style="list-style-type: none"> <li>Emissionreduction factor for HVO</li> <li>Costsavings factor</li> <li>Baseline emissionfactor conventional marine fuel</li> </ul>	<p>Inserted by user:</p> <ul style="list-style-type: none"> <li>Average fuel consumption (MT) per year - input field, autosuggestion sector averages</li> <li>Fleet size (number of ships) - input field, sector averages, autosuggestion-</li> <li>HVO % Slider</li> </ul> <p>Inserted automatically:</p> <ul style="list-style-type: none"> <li>Emissionreduction factor for HVO</li> <li>Costsavings factor</li> <li>Baseline emissionfactor conventional marine fuel</li> </ul>	<ul style="list-style-type: none"> <li>Calculation results - CO<sub>2</sub> savings, cost savings, and progress towards EU targets</li> <li>Contact details - Prospect's name, email address, and any specific details</li> <li>Follow-up options - Suggested follow-up call date and HVO trial option</li> <li>Personalized message - Brief explanation of results and an inviting call to action</li> <li>Scenario storage - Saved scenarios in the tool, ready to share with the prospect (personal account created)</li> </ul>					
<b>Output Metric</b>	-	<ul style="list-style-type: none"> <li>Share of HVO (in MT)</li> </ul>	<ul style="list-style-type: none"> <li>CO<sub>2</sub> savings (in kg / %)</li> <li>Total HVO Fuel quantity (CBM / MT)</li> <li>Cost savings (€ / %)</li> <li>Progress towards EU targets (%)</li> <li>Visual representation with graphs, KPIs, progress bars</li> <li>Scenario's (alternating/comparisons?)</li> </ul>	<ul style="list-style-type: none"> <li>Visual Report - Summarize calculated results in a visual overview, such as graphs and progress bars</li> <li>Email Open Notification</li> <li>Tool Usage Insights</li> <li>Prospect Follow-up Actions</li> </ul>					
<b>Impact regarding vision and design goals</b>	-	<ul style="list-style-type: none"> <li>Jointly entering data promotes relationships and increases engagement</li> <li>Visual feedback and prompts during data entry keep the prospect active and engaged in the process.</li> <li>Collaborating on data entry creates a shared experience that builds trust in the trader and the tool.</li> </ul>	<ul style="list-style-type: none"> <li>Flexible scenario options clarify the benefits of HVO and contribute to stimulating sustainable choices, as intended in the design vision.</li> <li>Direct scenario adaptation provides tangible insights that encourage the prospect to consider how HVO can practically contribute to their goals</li> </ul>	<ul style="list-style-type: none"> <li>A personalized summary and trial proposal easily provide the prospect with concrete next steps towards sustainability and strengthen engagement. Without huge effort from the trader.</li> </ul>					
<b>Data Insights</b>	-	<ul style="list-style-type: none"> <li>Expected HVO quantity</li> <li>speculated data suggestions</li> </ul>	CO <sub>2</sub> and cost savings, compliance progress towards EU targets, personalized for the prospect.	Summary of all relevant data insights that the prospect can later consult and share with colleagues.					
<b>Provocations? How might we address user needs?</b>	<ul style="list-style-type: none"> <li>How can we make the prospect feel that this tool is uniquely valuable to their industry and business goals?</li> </ul>	<ul style="list-style-type: none"> <li>How can we make data entry so easy that it encourages trust and engagement with the prospect and trader?</li> </ul>	<ul style="list-style-type: none"> <li>How can we make scenario adjustments even more attractive and intuitive, so that the prospect himself wants to experiment with different variables?</li> <li>How can the tool further align the benefits of HVO with the prospect's compliance and cost savings goals?</li> <li>How can we further simplify the presentation of the results to achieve maximum persuasiveness?</li> </ul>	<ul style="list-style-type: none"> <li>How can we design the email and summary in a way that encourages the prospect to continue working with the tool and reach out?</li> <li>How can we design the summary and follow-up email in such a way that the trader has to provide minimal support, but the prospect still receives all the necessary information and motivation for next steps?</li> <li>How can the tool help the trader get immediate feedback on the report sent and the prospect's interest, so that the trader knows when and how best to initiate follow-up contact?</li> </ul>					
<b>Design / feature ideas</b>	-	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 30%;">Interactive prompts and visual guidance during data entry to help prospects engaged, facilitate and encourage scenario entry</div> <div style="border: 1px solid black; padding: 5px; width: 30%;">Memory function for already entered data to facilitate future iterations.</div> <div style="border: 1px solid black; padding: 5px; width: 30%;">Smart auto Suggestion Data-Input</div> </div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 20%;">Long term / predictive prognosis</div> <div style="border: 1px solid black; padding: 5px; width: 20%;">Benchmarking and compliance insights / comparisons</div> <div style="border: 1px solid black; padding: 5px; width: 20%;">Insight card with key takeaways</div> <div style="border: 1px solid black; padding: 5px; width: 20%;">Goal settings</div> </div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 15%;">Downloadable pdf and email template</div> <div style="border: 1px solid black; padding: 5px; width: 15%;">Reminders mail</div> <div style="border: 1px solid black; padding: 5px; width: 15%;">Share insights button for internal usage</div> <div style="border: 1px solid black; padding: 5px; width: 15%;">Incentives</div> </div>					
<b>Virtual fleet visualizer</b>	<b>Gamified input</b>	<b>Eco feedback on input immediately</b>	<b>Highlighting KPI's</b>	<b>Eco score / badges</b>	<b>Integration with testimonials</b>	<b>Button to plan trial supply or get in contact with trader</b>	<b>Prospect Activity Dashboard for the Trader</b>	<b>Further options and features in the Tool</b>	<b>Future impact goals stimulation elements</b>
<b>Evaluation criteria metrics to test and validate</b>	<ul style="list-style-type: none"> <li>Level of interest and attention of attendees</li> <li>Feedback</li> </ul>	<ul style="list-style-type: none"> <li>Level of ease, speed, engagement and collaboration of data entry</li> <li>Feedback on clarity of prompts and interface.</li> </ul>	<ul style="list-style-type: none"> <li>Number of scenario adjustments requested by prospect.</li> <li>Measured understanding and response to the insights presented.</li> <li>Appreciation of immediately visible impact by the prospect.</li> </ul>	<ul style="list-style-type: none"> <li>Percentage of prospects who open the email and summary.</li> <li>Number of follow-up appointments and trial periods entered into after the meeting.</li> <li>Feedback on clarity and usefulness of the summary by the prospect and trader.</li> <li>How can the tool help the trader get immediate feedback on the report sent and the prospect's interest, so that the trader knows when and how best to initiate follow-up contact?</li> </ul>					
<b>Assumptions</b>	<ul style="list-style-type: none"> <li>Prospect/company is interested in sustainability and cost efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>The prospect finds it enjoyable and helpful to do data entry in a collaborative manner, which builds trust.</li> <li>The prospect has a basic understanding of their fleet data, such as vessel type and fuel consumption, and can easily share this data with the trader during the demonstration.</li> <li>The tool's interactive prompts and auto-suggestions help prospects understand industry standards and provide confidence in the accuracy of the data entered.</li> <li>The prospect feels more involved in the demonstration through the joint data entry and will therefore be more open to discussing sustainable fuel options such as HVO.</li> <li>The prospect appreciates the clear and intuitive entry process, which helps eliminate complexity and focus on the benefits that can be presented quickly.</li> </ul>	<ul style="list-style-type: none"> <li>Visual and customizable insights help the prospect see HVO as an attractive option.</li> <li>The trader trusts the tool as a visual aid that makes it easier to explain the benefits of HVO clearly and convincingly.</li> <li>The ability to immediately adjust scenarios gives the trader more flexibility in the conversation, which helps to respond to specific questions from the prospect and show and convey the impact of the alternations. It makes the trader feel more flexible and able to respond better.</li> <li>The tool removes the need for the trader to perform detailed calculations manually, allowing him to focus entirely on building the relationship and advising the prospect.</li> </ul>	<ul style="list-style-type: none"> <li>A personalized message and link to saved scenarios reinforce the impression that the trader understands the prospect's specific needs, increasing their engagement.</li> <li>The trader can rely on the tool to convey relevant insights autonomously, supporting the design goal of clear and accessible data insights without the trader having to provide additional explanations.</li> <li>The automated email with visual summary and follow-up options allows the trader to efficiently and easily suggest a follow-up action, creating positive communication and strong relationships.</li> <li>The tool strengthens the trader's role as a strategic advisor by encouraging the prospect to independently consider follow-up actions through visual reporting and follow-up options, minimizing further explanation and attractively increasing engagement.</li> <li>The integration of a visual summary and clear KPIs supports the trader in communicating compliance and sustainability benefits, increasing the likelihood of a positive response from the prospect. When the tool provides automatic feedback on the prospect's engagement and usage, the trader can follow up in a more targeted and effortless manner.</li> <li>By enriching the summary with an inviting call-to-action and concrete options for trial periods or follow-up appointments, it becomes easier for the trader to motivate the prospect without active support</li> </ul>					
<b>Hypothesis</b>	<ul style="list-style-type: none"> <li>By emphasizing the relevance of the tool early on, the prospect is more likely to seriously consider using the tool and becomes more engaged.</li> <li>By briefly stating the purpose and benefits of the tool, the prospect can more quickly understand how the demonstration contributes to their business and compliance goals.</li> </ul>	<ul style="list-style-type: none"> <li>By entering data together, the prospect will feel more involved and will have more confidence in the tool and process.</li> <li>Involving the prospect in the data entry process will increase trust in the tool as the prospect sees how the data is instantly translated into relevant insights.</li> <li>The auto-suggestions and sector default values increase the accuracy of the entered data, resulting in more realistic and convincing calculations for CO<sub>2</sub> and cost savings.</li> </ul>	<ul style="list-style-type: none"> <li>Instant scenario adjustments make the tool credible and strengthen the prospect's confidence in the reliability of the insights.</li> <li>The tool increases trader productivity through an intuitive interface and real-time feedback, allowing him to provide insightful answers quickly.</li> <li>The visuals and KPIs in the tool make it easier for the trader to convey complex information such as CO<sub>2</sub> and cost savings in an understandable and convincing way to the prospect.</li> </ul>						

# Appendix H



## Empowering Sustainable Maritime Fuel Decisions

Designing a simulation dashboard that helps fuel traders to present sustainable choices clearly, attractively and convincingly to shipping companies.

Gigi Bouman  
Master Thesis TU Delft  
Interview Introduction



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## Maritime Decarbonization

### SECTOR CHALLENGES

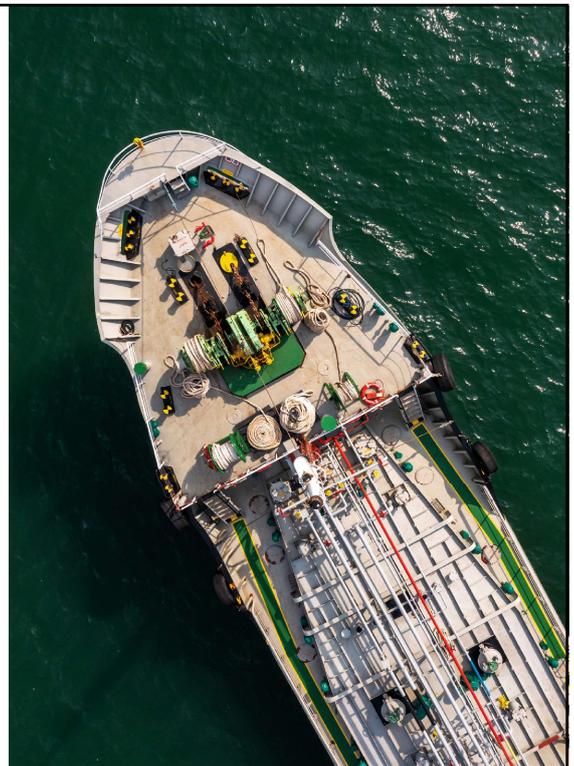
- Complexity of decision-making in sustainable fuel adoption.
- Regulatory pressure ( Fuel EUMaritime, IMO)
- Uncertainty regarding fuel options for vessel owners and dependency on fuel providers

### RESEARCH INSIGHTS

- A big group of shipping companies expect to still use fossil fuel in 2030 and do not have an adoption plan for biofuel.
- Fuel producers should deepen the dialogue with vessel owners to ensure transparency on fuel options and demand and promote alternative fuels.
- To achieve more sustainable practices, parties should collaborate.

### WHY THE EMISSION TOOL IS NEEDED

- To simplify the decision making process for bunkering biofuels.
- To stimulate collaboration, communication and transparency which is needed for future decarbonization targets.
- Helping traders with effectively conveying the value and benefits of the available options
- Position the company as a leader in driving decarbonization within the maritime industry.



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## 3 Scenario's

Zooming in on: Forming a Business Relationship



Networking



Cold  
Calling



Business  
Meeting

3

## Scenario 1

Network event - Quick Scan Tool



### 1. First Informal Contact

Traders meets a prospect, a fleet or operations manager, at a networking event. They have an informal conversation, exchanging industry challenges.

### 2. Identifying Interest Areas

Now, the trader takes the discussion on a more strategic path by asking the prospect about his feelings in relation to emission regulations, renewable fuels and fuel costs. The prospect is interested in emission reduction and biofuels - but at the same time, he wants to assure profitability.

### 3. Introduction of the Tool

This is where the trader informs the prospect about his tool, which would be able to provide information about reductions and cost savings through the advanced services of the company in line with the identified areas of interest. In the interest of this, business cards get exchanged. The trader has added a QR code to his card to directly link to his profile, the tool, and the company's website for easy access to all the information.

### 4. Quick Demo

Sensing the prospect's interest, the trader quickly fires up the tool on his phone, enters some sample data, and swiftly walks him through how potential emissions and cost savings could look. He explains how the tool aligns with regulatory goals and can create personalized scenarios to give specific insights. The prospect shows clear interest in a follow-up meeting to discuss business solutions.

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# Scenario 1

## Network event - Quick Scan Tool



### 1. First Informal Contact

Traders ontmoeten een potentiële klant, zoals een vloot- of operationeel manager, op een netwerkvenement. Ze voeren een informeel gesprek en wisselen uitdagingen in de sector uit.

### 2. Identifying Interest Areas

De trader stuurt het gesprek in een strategischere richting door de prospect te vragen naar zijn gevoelens over emissieregels, hernieuwbare brandstoffen en brandstofkosten. De prospect toont interesse in emissiereductie en biobrandstoffen, maar tegelijkertijd wil hij de winstgevendheid waarborgen.

### 3. Introduction of the Tool

Op dit punt informeert de trader de prospect over zijn tool, die inzicht kan bieden in emissiereducties en kostenbesparingen dankzij de geavanceerde diensten van het bedrijf, afgestemd op de geïdentificeerde interessegebieden. Om dit verder te faciliteren, worden visitekaartjes uitgewisseld. De trader heeft een QR-code aan zijn kaart toegevoegd die direct linkt naar zijn profiel, de tool en de bedrijfswebsite, zodat alle informatie gemakkelijk toegankelijk is.

### 4. Quick Demo

De trader merkt de interesse van de prospect en opent snel de tool op zijn telefoon. Hij voert wat voorbeeldgegevens in en laat in een paar stappen zien hoe mogelijke emissie- en kostenbesparingen eruit zouden kunnen zien. Daarbij legt hij uit hoe de tool aansluit bij de regelgeving en gepersonaliseerde scenario's kan creëren om specifieke inzichten te bieden. De prospect toont duidelijke interesse in een vervolgspraak om zakelijke oplossingen te bespreken.

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# Scenario 2

## Cold Call - Prefilled Demo



### 1. Kickstarting a cold call

A trader calls a cold prospect, greets him, and introduces himself and his company: a global bunker supplier specializing in HVO. He mentions that they help shipping companies reduce fuel costs and emissions, "I thought this might be relevant given the industry's standards to reduce over the years," he adds. He gauges the prospect's interest and hopes to keep the call going to explore how their services might be beneficial.

### 2. Gathering input data

Seeing that the prospect is still on the line, the trader takes the opportunity to dive a bit deeper. He briefly explains how their company can provide insights into potential savings from emission reductions and costs when purchasing HVO fuel from them. He asks some of quick questions to get a sense of the prospect's current fuel setup which he puts in the tool during the call.

### 3. Presenting Insights

After the sample data is entered, the trader can quickly see and tell the key highlights through the tool. He shares these insights with the prospect, highlighting how this tool and strategy can have a sustainable and financial impact and can provide insight into considerations for meeting future emission reduction targets. He sees that the prospect is interested, but not yet fully convinced.

### 4. Prefilled Demo

The trader saves the results of the tool, which can now be emailed directly to the prospect, allowing him to capture the prospect's contact information and establish a clear line of communication for follow-up. The prospect looks forward to receiving the insights and the trader feels positive about the relationship they have built as he is able to offer value and professionalism through the tool which sets him apart from others.

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## Scenario 2

### Cold Call - Prefilled Demo



#### 1. Kickstarting a cold call

Een trader belt een potentiële klant zonder voorafgaand contact, begroet hem en stelt zichzelf en zijn bedrijf voor: een wereldwijde bunkerleverancier gespecialiseerd in HVO. Hij vermeldt dat ze scheepvaartbedrijven helpen brandstofkosten en emissies te verminderen. "Ik dacht dat dit relevant zou kunnen zijn, gezien de steeds strengere eisen in de industrie om emissies te verlagen," voegt hij eraan toe. Hij peilt de interesse van de prospect en hoopt het gesprek voort te zetten om te verkennen hoe hun diensten van toegevoegde waarde kunnen zijn.

#### 2. Gathering input data

De trader merkt dat de prospect nog steeds aan de lijn is en grijpt de kans om wat dieper in te gaan. Hij legt kort uit hoe hun bedrijf inzicht kan bieden in mogelijke besparingen op emissies en kosten bij de aanschaf van HVO-brandstof via hen. Vervolgens stelt hij een paar snelle vragen om een idee te krijgen van de huidige brandstofsituatie van de prospect, die hij tijdens het gesprek in de tool invoert.

#### 3. Presenting Insights

Nadat de voorbeeldgegevens zijn ingevoerd, kan de trader snel de belangrijkste inzichten via de tool zien en delen. Hij bespreekt deze inzichten met de prospect en benadrukt hoe de tool en strategie zowel een duurzame als financiële impact kunnen hebben. Daarnaast laat hij zien hoe de tool kan helpen bij het nemen van beslissingen om te voldoen aan toekomstige emissiereductiedoelstellingen. De trader merkt dat de prospect interesse toont, maar nog niet volledig overtuigd is.

#### 4. Prefilled Demo

De trader slaat de resultaten van de tool op, die nu direct naar de prospect kunnen worden gemaaid. Hiermee verzamelt hij de contactgegevens van de prospect en legt hij een duidelijke communicatielijnen vast voor een vervolg. De prospect kijkt uit naar het ontvangen van de inzichten, en de trader voelt zich positief over de relatie die ze hebben opgebouwd. Door waarde en professionaliteit te bieden via de tool, onderscheidt hij zich van anderen in de markt.

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## Scenario 3

### In-Depth Meeting - Meeting Demo



#### 1. Warm Welcome & Agenda

The trader greets the prospect and his associate in the conference room, which has a big screen for their presentations. He outlines the agenda: a company and service walkthrough followed by an in-depth tool demonstration to illustrate the emissions reduction, cost savings, and FuelEU Maritime compliance impacts possible when working together.

#### 2. Gathering input data

After the presentation the trader transitions into the tool demonstration. The analyst sits alongside the prospect in front of the presentation screen, and together they enter fleet specs into the tool, including parameters like vessel type and fuel usage. Technically, it's an easy process, with interactive prompts and motivational cues to keep them engaged as they complete each field. This joint participation not only tailors the insights but also strengthens their relationship through the shared experience.

#### 3. Presenting Insights

Once the data has been entered, the tool quickly and easily shows an overview of the possible costs and emission reductions. The trader can easily see and tell the key insights. Based on the results, he explains how HVO can be used to align with FuelEU Maritime and achieve their emissions and cost targets. The prospects take different scenarios into account, which the trader adjusts on the spot by adjusting some variables. The tool immediately shows how different choices influence the results. This interactive experience provides the prospect with real, actionable insights, building their trust and confidence in both the tool and the trader's expertise.

#### 4. Prefilled Demo

After reviewing the customized scenarios, the trader saves the results in a quick, shareable format to email to the prospect. It's a convenient recap they can easily look over later or pass along to their team. The trader suggests a trial period for HVO fuel and a follow-up meeting to assess the early results. The trial gives the prospect a chance to see proven impact and results. With these personalized insights in hand, the trader leaves the meeting feeling good. They've built a solid connection and proven the tool's real value, making it a key piece in the prospect's journey toward sustainability.

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# Scenario 3

## In-Depth Meeting - Meeting Demo



### 1. Warm Welcome & Agenda

De trader begroet de prospect en zijn collega in de vergaderruimte, waar een groot scherm klaarstaat voor hun presentatie. Hij schetst de agenda: een overzicht van het bedrijf en de diensten, gevolgd door een uitgebreide demonstratie van de tool. Deze demonstratie laat zien welke emissiereducties, kostenbesparingen en effecten op de naleving van de FuelEU Maritime-voorschriften mogelijk zijn bij een samenwerking.

### 2. Gathering input data

Na de presentatie gaat de trader over naar de demonstratie van de tool. De analyst zit samen met de prospect voor het presentatiescherm en samen voeren ze de specificaties van de vloot in, zoals het scheepstype en het brandstofgebruik. Het proces verloopt technisch eenvoudig, met interactieve prompts en motiverende aanwijzingen die hen betrokken houden bij het invullen van elk veld. Deze gezamenlijke deelname zorgt niet alleen voor op maat gemaakte inzichten, maar versterkt ook de relatie door de gedeelde ervaring.

### 3. Presenting Insights

Zodra de gegevens zijn ingevoerd, toont de tool snel en eenvoudig een overzicht van de mogelijke kosten- en emissiereducties. De trader kan de belangrijkste inzichten gemakkelijk zien en toelichten. Op basis van de resultaten legt hij uit hoe HVO kan worden ingezet om te voldoen aan de FuelEU Maritime-regels en hun emissie- en kostendoelen te behalen. De prospects nemen verschillende scenario's in overweging, waarbij de trader ter plekke enkele variabelen aanpast. De tool laat direct zien hoe verschillende keuzes de resultaten beïnvloeden. Deze interactieve ervaring biedt de prospect concrete, toepasbare inzichten en versterkt hun vertrouwen in zowel de tool als de expertise van de trader.

### 4. Prefilled Demo

Na het bespreken van de gepersonaliseerde scenario's slaat de trader de resultaten op in een snel, deelbaar formaat om naar de prospect te e-mailen. Dit biedt een handig overzicht dat de prospect later eenvoudig kan bekijken of met zijn team kan delen. De trader stelt een proefperiode met HVO-brandstof voor en een vervolgspraak om de eerste resultaten te evalueren. De proefperiode geeft de prospect de kans om de bewezen impact en resultaten in de praktijk te zien. Met deze gepersonaliseerde inzichten op zak verlaat de trader de vergadering met een goed gevoel. Ze hebben een solide verbinding opgebouwd en de echte waarde van de tool aangetoond, waardoor deze een sleutelrol speelt in de reis van de prospect naar duurzaamheid.

9

## 3 concept ideas

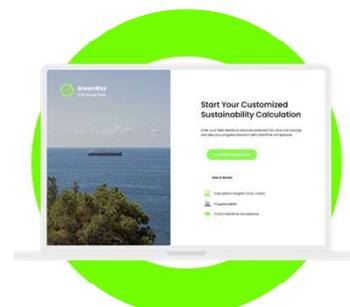
Based on the envisioned user experience insights - in progress



Quick Scan



Prefilled Demo

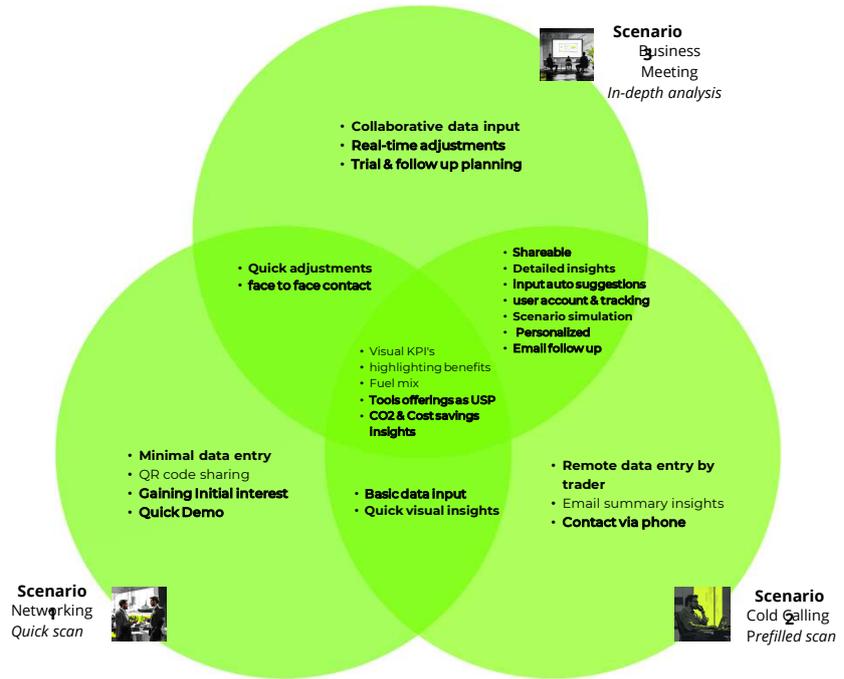


Meeting Demo

10

# 3 Scenario's

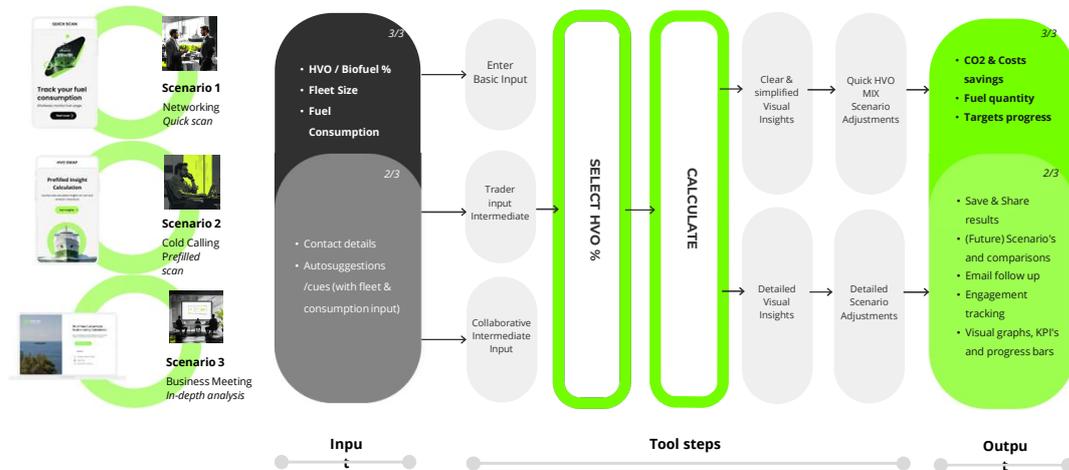
Overlap & unique features  
Venn diagram



11

# 3 Scenario's

Flow diagram - Tool usage

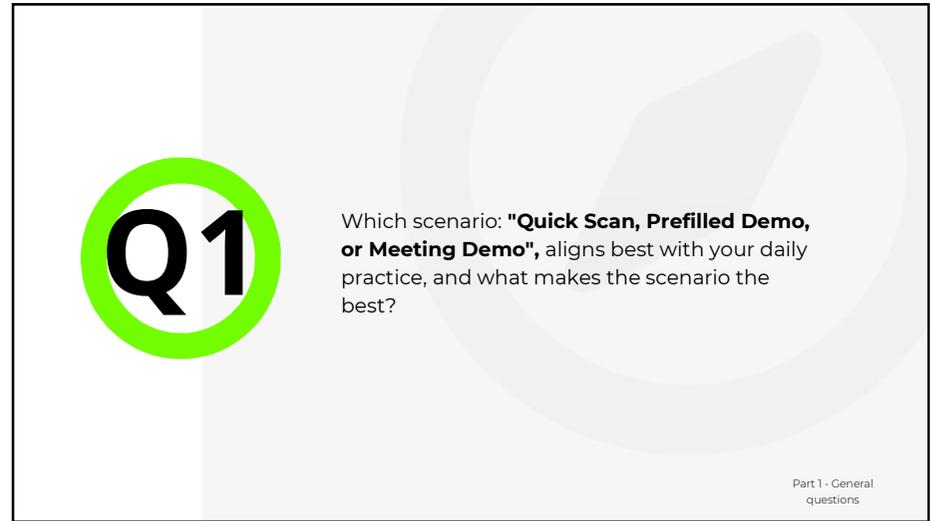


12

# THE INTERVIEW

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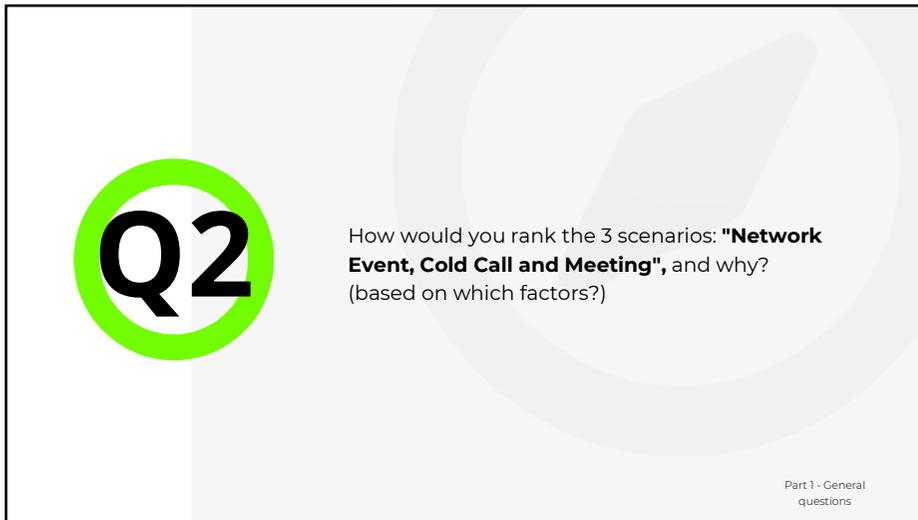
13



**Q1** Which scenario: "**Quick Scan, Prefilled Demo, or Meeting Demo**", aligns best with your daily practice, and what makes the scenario the best?

Part 1 - General questions

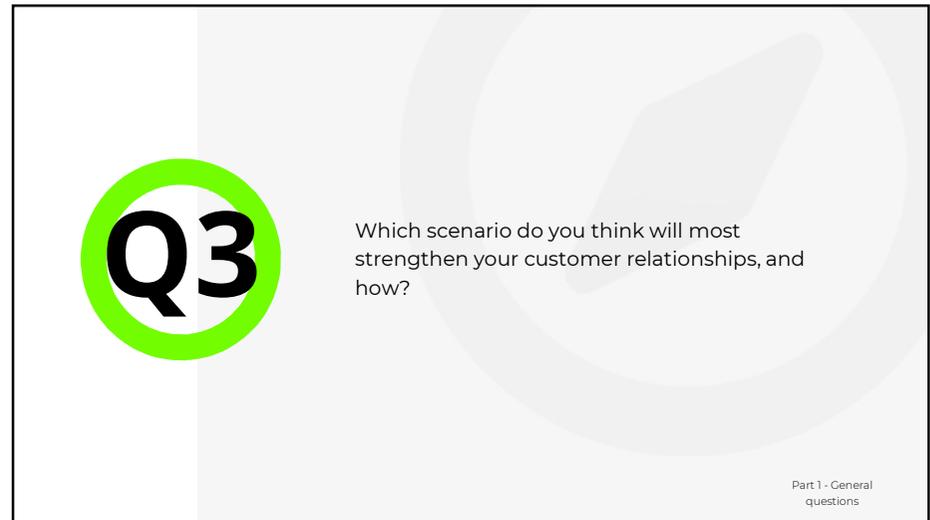
14



**Q2** How would you rank the 3 scenarios: "**Network Event, Cold Call and Meeting**", and why? (based on which factors?)

Part 1 - General questions

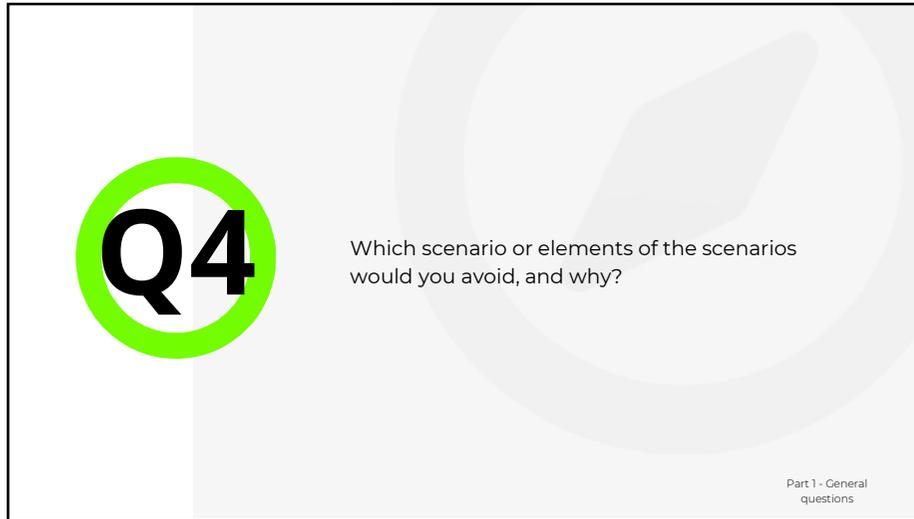
15



**Q3** Which scenario do you think will most strengthen your customer relationships, and how?

Part 1 - General questions

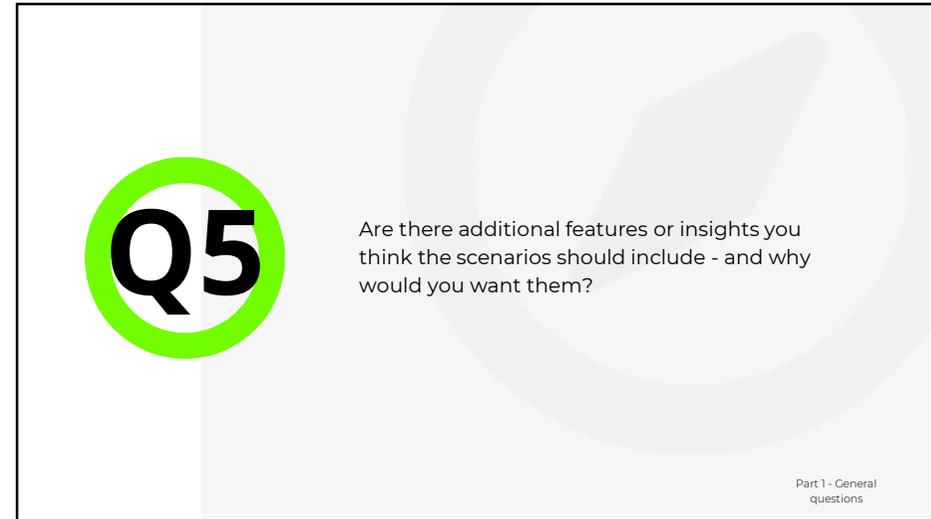
16

A slide for question Q4. It features a large green circle with the text 'Q4' in black. To the right of the circle is the question text. The background is light gray with a faint, large-scale graphic of a hand holding a pen. In the bottom right corner, there is a small text label.

**Q4** Which scenario or elements of the scenarios would you avoid, and why?

Part 1 - General questions

17

A slide for question Q5. It features a large green circle with the text 'Q5' in black. To the right of the circle is the question text. The background is light gray with a faint, large-scale graphic of a hand holding a pen. In the bottom right corner, there is a small text label.

**Q5** Are there additional features or insights you think the scenarios should include - and why would you want them?

Part 1 - General questions

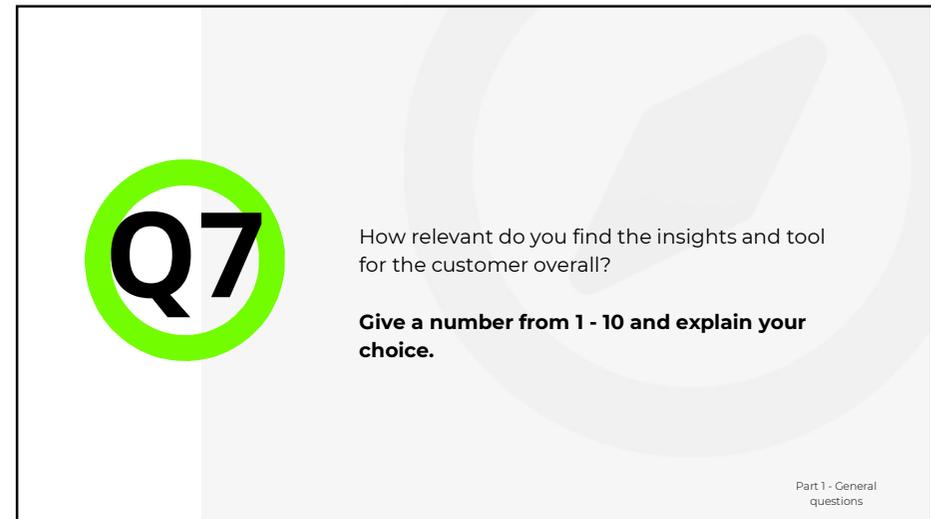
18

A slide for question Q6. It features a large green circle with the text 'Q6' in black. To the right of the circle is the question text. The background is light gray with a faint, large-scale graphic of a hand holding a pen. In the bottom right corner, there is a small text label.

**Q6** What would make a tool inconvenient or disruptive in your daily practice?

Part 1 - General questions

19

A slide for question Q7. It features a large green circle with the text 'Q7' in black. To the right of the circle is the question text and a bold instruction. The background is light gray with a faint, large-scale graphic of a hand holding a pen. In the bottom right corner, there is a small text label.

**Q7** How relevant do you find the insights and tool for the customer overall?

**Give a number from 1 - 10 and explain your choice.**

Part 1 - General questions

20



Q8

Which scenario creates the most business opportunities and which faces the most rejection? What factors lead to opportunities, and what causes rejection?

Part 2 - Scenario  
Value

21



Q9

How would incorporating data and insights (e.g., emission reductions, cost savings, or regulatory targets) enhance your customer conversations?

Part 2 - Scenario  
Value

22



Q10

What do you think about the fact that the tool can be used autonomously and shared with the client and his team?

Part 2 - Scenario  
Value

23



Q11

Do you find it important for the tool to provide insights into how customers use it?

**Give a number from not important 1 – 10 very important and explain why.**

Part 2 - Scenario  
Value

24

A large green circle containing the text 'Q12' in a bold, black, sans-serif font.

What do you think would be most attractive to customers:

- 1) **financial benefits**
- 2) **emissions reduction statistics**
- 3) **compliance benefits**

Part 2 - Scenario  
Value

25

A large green circle containing the text 'Q13' in a bold, black, sans-serif font.

Which insights do you think are most compelling to customers? Choose up to three options and rank them.

- A) **CO<sub>2</sub> reduction percentages**
- B) **Cost savings in euros**
- C) **Comparison with traditional fuels**
- D) **Tracking achieved goals over a timeline (Costs, emissions, biofuel quantities)**
- E) **Scenario comparisons with clear benefits (Fuel quantities and %, future reduction goals)**

Part 2 - Scenario  
Value

26

A large green circle containing the text 'Q14' in a bold, black, sans-serif font.

How do you currently communicate sustainability to customers?

Part 3 -  
Sustainability

27

A large green circle containing the text 'Q15' in a bold, black, sans-serif font.

What challenges do you face in making sustainable options appealing or actionable?

Part 3 -  
Sustainability

28

# Q16

What sustainability metrics do you think resonate most with your customers?

- A) CO<sub>2</sub> reductions (absolute figures or percentages)
- B) Financial benefits linked to sustainability
- C) Targets and Compliance with regulations such as FuelEU Maritime
- D) Impact on ecosystem ( For example CO2 reduction equals 1.000 trees or 1 Ship a year)

Part 3 -  
Sustainability

29

# Q17

How important is it for you to have a tool that provides customers with relevant sustainability insights and helps achieve customer compliance targets?

**Give a number from not important 1 – 10 very important and explain why.**

Part 3 -  
Sustainability

30

# Q18

What type of results or insights do you find most valuable to share with clients?

Part 3 - Technical  
requirements

31

# Q19

How detailed should the insights be (see points) and why?

- A) **Not detailed: key figures and insights based on estimates**
- B) **Medium level of detail**
- C) **In-depth and technical details: including calculations – high level of accuracy**

Part 3 -  
Sustainability

32

**Q20**

How critical is it for the tool to require minimal input during customer interactions and quickly show insights?

**Give a number from not critical 1 – 10 very critical and explain why.**

**How many minutes?**

Part 3 - Technical requirements

33

**Q21**

How important is flexibility in adjusting data inputs during live discussions with customers?

**Give a number from not critical 1 – 10 very critical and explain why.**

Part 3 - Technical requirements

34

**Q22**

What input data do you expect to see prefilled or have guidance with, and what should you be able to fill in yourself?



Part 3 - Technical requirements

35

**Q23**

Is a mobile version essential, why it is or is not?

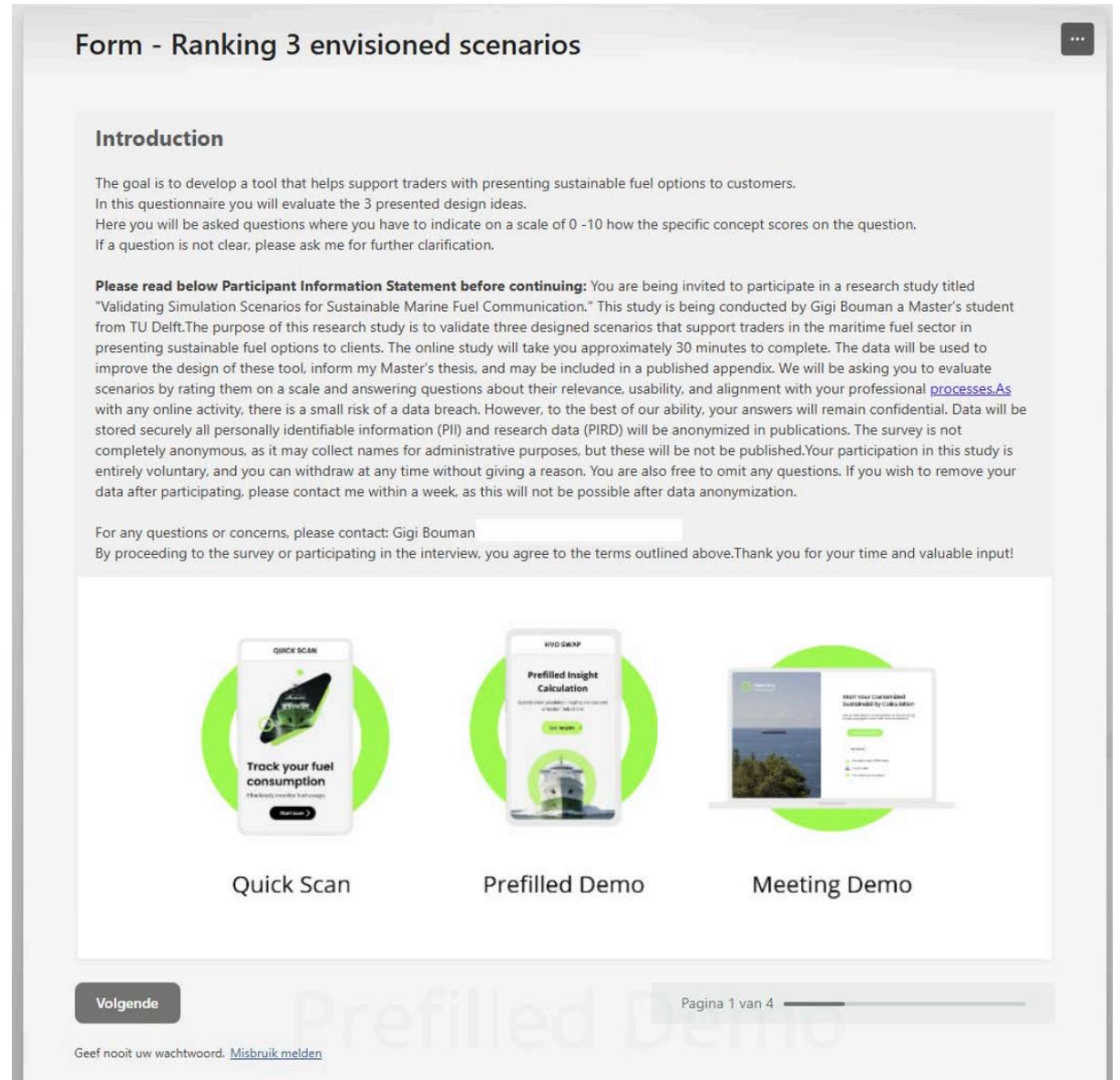
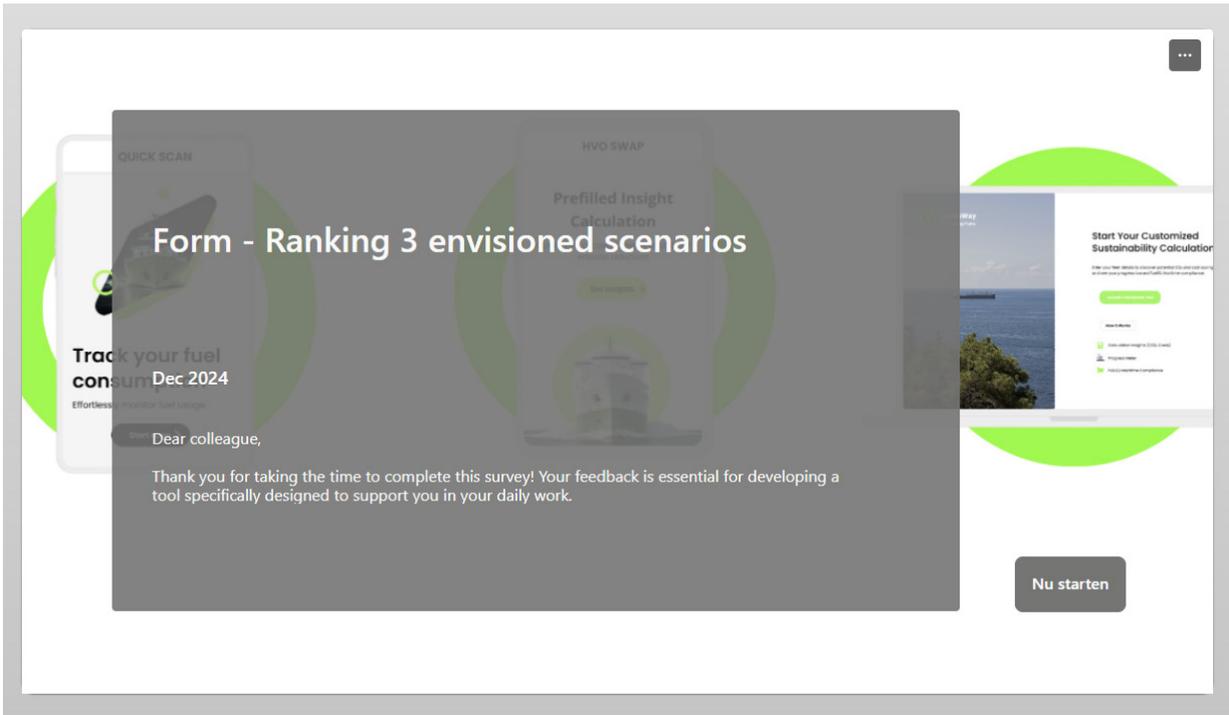
Part 3 - Technical requirements

36



**THANK YOU  
FOR PARTICIPATING!**

# Appendix I



## Form - Ranking 3 envisioned scenarios

\* Vereist

### Scenario 1: Quick Scan - Network event

From here we will evaluate scenario and concept 1: Networking event - Quick Scan

Please read scenario 1 again and the tool interactions below:

#### 1.A. Scenario

**1) First Informal Contact** - Traders meet a prospect, a fleet or operations manager, at a networking event. They have an informal conversation, exchanging industry challenges.

**2) Identifying Interest Areas** - Now, the trader takes the discussion on a more strategic path by asking the prospect about his feelings in relation to emission regulations, renewable fuels and fuel costs. The prospect is interested in emission reduction and biofuels - but at the same time, he wants assure profitability.

**3) Introduction of the Tool** - This is where the trader informs the prospect about his tool, which would be able to provide information about reductions and cost savings through the advanced services of the company in line with the identified areas of interest. In the interest of this, business cards get exchanged. The trader has added a QR code to his card to directly link to his profile, the tool, and the company's website for easy access to all the information.

**4) Quick Demo** - Sensing the prospect's interest, the trader quickly fires up the tool on his phone, enters some sample data, and swiftly walks him through how potential emissions and cost savings could look. He explains how the tool aligns with regulatory goals and can create personalized scenarios to give specific insights. The prospect shows clear interest in a follow-up meeting to discuss business solutions.

#### 1.B. Tool interaction scenario 1

**Interaction type:** Quick scan

**Step 1:** Trader enters the average fuel consumption (MT) per vessel or for the entire fleet and set fleet size.

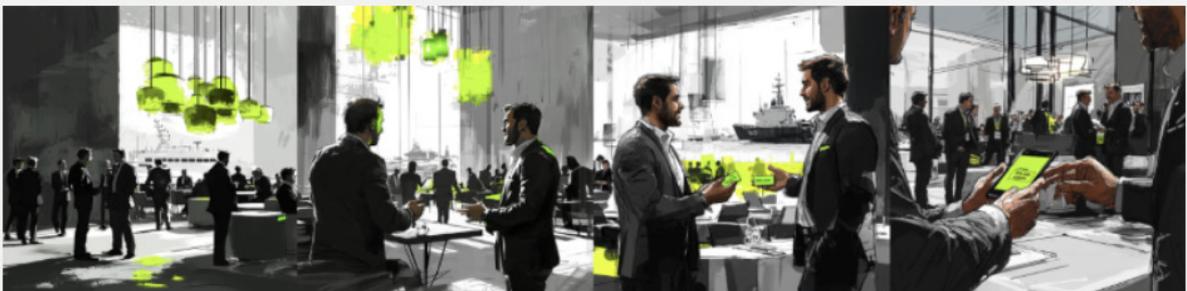
**Step 2:** Trader selects the % Fuel Mix (HVO), for example 10%, 20%, 30%, or 100% HVO, to include the share of sustainable fuel in the calculations.

**Step 3:** The tool automatically calculates the expected CO<sub>2</sub> savings, cost savings based on the entered data and the selected HVO percentage.

**Step 4:** The tool presents the results in visual elements such as progress bars, graphs and the specific % towards the EU FuelEU target, showing how the chosen HVO mix supports compliance and highlighting the benefits through KPIs.

**Step 5:** The trader can simulate different scenarios by adjusting the HVO mix percentage, allowing the prospect to see how higher or lower HVO usage rates impact CO<sub>2</sub> and cost savings, as well as progress towards EU FuelEU targets.

**Insights:** CO<sub>2</sub> Savings per KG, Estimated cost savings, Total Fuel quantities, % achieved reduction goals



1

To what extent are the Quick Scan tool's functionalities and insights clearly presented and illustrated in this scenario? \*

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all

A lot

2

To what extent do you find the insights presented in this scenario relevant for sustainable fuel assessment? \*

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all

A lot

3

To what extent do you think customers will independently use the Quick Scan tool to gain more insights after this scenario? \*

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all

A lot

4

How likely is it that the Quick Scan tool contributes to building a positive relationship with the prospect? \*

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all

A lot

5

How suitable is this scenario and the Quick Scan tool in the early phase of the relationship building process? \*

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all

A lot

6

How suitable is this scenario and the Quick Scan tool in the process of closing a bunkering deal? \*

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all

A lot

7

To what extent do you think the Quick Scan tool helps you save time to promote sustainable fuel alternatives? \*

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all

A lot

8

How effective do you find this scenario and the Quick Scan Tool in demonstrating the value of sustainable fuel options? \*

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all

A lot

9

How strongly does this scenario and the Quick Scan tool motivate customers to consider sustainable choices? \*

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all

A lot

Terug

Volgende

## Scenario 2: Prefilled Demo - Cold Calling

From here we will evaluate scenario and concept 2: Prefilled Demo - Cold Calling  
Please read scenario 2 again and the tool interactions below:

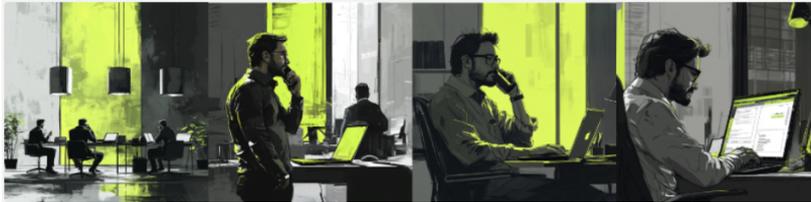
### 2.A. Scenario

- 1) Kickstarting a cold call** - A trader calls a cold prospect, greets him, and introduces himself and his company; a global bunker supplier specializing in HVO. He mentions that they help shipping companies reduce fuel costs and emissions. "I thought this might be relevant given the industry's standards to reduce over the years," he adds. He gauges the prospect's interest and hopes to keep the call going to explore how their services might be beneficial.
- 2) Gathering input data** - Seeing that the prospect is still on the line, the trader takes the opportunity to dive a bit deeper. He briefly explains how their company can provide insights into potential savings from emission reductions and costs when purchasing HVO fuel from them. He asks some of quick questions to get a sense of the prospect's current fuel setup which he puts in the tool during the call.
- 3) Presenting Insights** - After the sample data is entered, the trader can quickly see and tell the key highlights through the tool. He shares these insights with the prospect, highlighting how this tool and strategy can have a sustainable and financial impact and can provide insight into considerations for meeting future emission reduction targets. He sees that the prospect is interested, but not yet fully convinced.
- 4) Prefilled Demo** - The trader saves the results of the tool, which can now be emailed directly to the prospect, allowing him to capture the prospect's contact information and establish a clear line of communication for follow-up. The prospect looks forward to receiving the insights and the trader feels positive about the relationship they have built as he is able to offer value and professionalism through the tool which sets him apart from others.

### 2.B. Tool interaction scenario 2

**Interaction type:** prefiling shareable scan

- Step 1:** The trader asks the prospect for an estimate of the average fuel consumption per vessel or fleet and fleet size and insert this in the tool.
- Step 2:** The trader discusses the desired HVO percentage in the fuel mix with the prospect and quickly selects an HVO mix percentage via a slider in the tool for a visually clear input indicating how much volume this corresponds to.
- Step 3:** The tool shows a visual overview of the calculated results, including CO<sub>2</sub> savings, cost savings, and progress towards EU targets, displayed with graphs, KPIs and progress bars for clear insight into the HVO benefits.
- Step 4:** The trader briefly explains to the prospect what these initial insights mean, with emphasis on the potential savings and the effect of the chosen HVO mix, which he can easily read from the tool.
- Step 5:** The prospects would like to make some volume and blendmix adjustments and gain insight into this. The trader adjusts this on the screen and the results are automatically updated.
- Step 6:** The trader discusses with the prospect the different HVO scenarios and how it can benefit both financial and environmental goals. This can be quickly adjusted with the tool.
- Step 7:** The trader saves the calculated results in the tool, including CO<sub>2</sub> savings, cost savings and progress towards EU targets. These results are stored uniquely for the client and the trader enters the contact details of the prospect.
- Step 8:** The trader sends the personalized summary by email to the prospect via the save button. The email also contains a short explanation and an invitation for further communication and a link to the tool with the saved input for the prospect to explore further.
- Step 9:** The trader can see afterwards whether the prospect has received the mail and used the tool.



## Scenario 3: Meeting Demo - In-Depth Meeting

From here we will evaluate scenario and concept 3: Meeting Demo - In-Depth Meeting  
Please read scenario 3 again and the tool interactions below:

### 3.A. Scenario

- 1) Warm Welcome & Agenda** The trader greets the prospect and his associate in the conference room, which has a big screen for their presentations. He outlines the agenda: a company and service walkthrough followed by an in-depth tool demonstration to illustrate the emissions reduction, cost savings, and FuelEU Maritime compliance impacts possible when working together.
- 2) Collaborative Data Entry** After the presentation the trader transitions into the tool demonstration. The analyst sits alongside the prospect in front of the presentation screen, and together they enter fleet specs into the tool, including parameters like vessel type and fuel usage. Technically, it's an easy process, with interactive prompts and motivational cues to keep them engaged as they complete each field. This joint participation not only tailors the insights but also strengthens their relationship through the shared experience.
- 3) Presenting & Adjusting Key Insights** Once the data has been entered, the tool quickly and easily shows an overview of the possible costs and emission reductions. The trader can easily see and tell the key insights. Based on the results, he explains how HVO can be used to align with FuelEU Maritime and achieve their emissions and cost targets. The prospects take different scenarios into account, which the trader adjusts on the spot by adjusting some variables. The tool immediately shows how different choices influence the results. This interactive experience provides the prospect with real, actionable insights, building their trust and confidence in both the tool and the trader's expertise.
- 4) Saving and Next Steps** After reviewing the customized scenarios, the trader saves the results in a quick, shareable format to email to the prospect. It's a convenient recap they can easily look over later or pass along to their team. The trader suggests a trial period for HVO fuel and a follow-up meeting to assess the early results. The trial gives the prospect a chance to see proven impact and results. With these personalized insights in hand, the trader leaves the meeting feeling good. They've built a solid connection and proven the tool's real value, making it a key piece in the prospect's journey toward sustainability.



### 2.B. Tool interaction scenario 3

**Interaction type:** Meeting Demo

- Step 1:** The trader and prospect enter the vessel type into the tool, choosing from a list of commonly used types relevant to the prospect's fleet.
- Step 2:** Next, they enter the average fuel consumption per vessel or for the entire fleet and fleet size, with the option to see guidelines and suggestions for industry standard consumption values.
- Step 3:** The trader sets the desired HVO mix percentage via a slider (for example 10%, 20%, 50%, or 100%), whereby the share of sustainable fuel (in MT) is immediately visible.
- Step 4:** After pressing the calculate button, the tool automatically calculates the expected CO<sub>2</sub> savings, cost savings and progress towards EU targets based on the entered data and the HVO percentage.
- Step 5:** The results are presented clearly in visual elements such as progress bars and graphs. The trader can now discuss with the prospect how the chosen HVO mix contributes to compliance and shows possible benefits by means of KPIs
- Step 6:** If desired, the trader adjusts the HVO mix percentage to simulate alternative scenarios, with the tool updating the calculations immediately. This gives the prospect insight into the impact of different HVO mixes on CO<sub>2</sub> and cost savings and lets them discuss alternative scenarios.
- Step 7:** The trader saves the calculated results and contact details in the tool. This data is automatically summarized in a clear, visual report for sharing via email.
- Step 8:** The trader includes options in the email for a follow-up conversation, suggestion date and a trial period with HVO fuel, so the prospect can continue immediately without further explanation.
- Step 9:** The trader sends the summary to the prospect via email. The email contains a personalized message with a short explanation of the results, an inviting call-to-action to explore the tool further, and a link to the saved scenarios.
- Step 10:** The trader receives an automatic notification when the prospect opens the email and usage insights when the tool is used

# Appendix J

Questions	Insights	(average) score	Most suiting scenario	overlap	differences	Theme	Tone	design implications
Question 1: Which scenario: "Quick Scan, Prefilled Demo, or Meeting Demo", aligns best with your daily practice, and what makes the scenario the best?	scenario 3 favored for its ability to foster in-depth discussions, personalization, and impactful interactions. Scenario 1 and 2 lead to scenario 3. all have its place. Scenario 2 is a daily use tool but is hard to execute as cold calling has limited engagement.			scenario 3 preferred choice for impactfulness and personal client interactions, 3 cold calls are less engaging	some participants rely less on cold calls	Human-Centered Interaction	Extremely positive towards scenario 3, positive towards 1 and negative towards 2.	Focus on Tailored Interaction, Seamless Visuals and Clarity, Prefilled Demos for Established Users, Integration with Other Scenarios
Question 2: How would you rank the 3 scenarios: "Network Event, Cold Call and Meeting", and why? (based on which factors?)	Networking event requires quick and mobile friendly interactions, meetings valued as most effective for achieving business and building relationships, cold calls are essential for initiating contact despite their negative tone.		Meeting Demo: Ranked #1 by 5 participants (83.3%). Cold Call: Ranked #2 by 3 participants (50%), while others placed it last due to its challenges. Network Event: Ranked #3 by 4 participants (66.6%), primarily due to its situational nature and infrequent occurrence.	strong overlap in rank 3 scenario 3 as most effective	some prioritize cold call for daily practice (frequency)	Strategic Engagement	Positive for meetings, neutral for networking events, and mixed for cold calls.	Integration with Other Scenarios, follow up, simple data input
Question 3: Which scenario do you think will most strengthen your customer relationships, and how?	Dominant choice for meeting demo to strengthen relationship most, reasons: showcase expertise, builds trust, provides clear value, demonstrating professionalism	5/6 meeting demo strengthens most the customer relationship		trust is key to strengthening relationships. The tool helps 3 this by showing expertise	1 person prefers networking events because they are informal	Building Trust through Expertise and Personal Connection:	Positive towards the tool and scenario's effectiveness in relationship building	For Meetings: Enhance Interactive Features: Tools should facilitate interactive demos and tailored solutions. Provide Detailed Information: Include regulatory insights, product details, and clear value propositions. Customization: Ability to answer specific client questions effectively. For Networking Events: Support Informal Engagement: Tools or materials that are easily shareable in casual settings. Mobile Accessibility: Ensure tools are accessible on mobile devices for on-the-go interactions.
Question 4: Which scenario or elements of a scenario would you avoid, and why?	no scenario should be avoided all are valued. Cold calling has limitations, tool must adapt to customer needs and be clear in communication.	n.a.	all	see insights	some value networking more while others see a lack of data. Some find cold calling essential whilst another consider it not very impactful. Some would like the tool simple while others want additional functions.	tailored , need for data	neutral	Simplify Cold Calling: Reduce effort by pre-filling basic data or providing quick summaries for initial conversations. Networking Focus: Include features for informal interest generation, such as quick demos or visual summaries. Adaptive Tool Features: Allow the tool to flexibly align with customer mindsets and preferences. Enhance Pre-meeting Features. Enable pre-meeting data collection (e.g., fuel usage, vessel details) to deliver tailored results during demos. Include functionality to request and process client-specific inputs ahead of time. Simplified and Visual Comparisons: Provide comparison options for different fuel mixes (e.g., 100% gas oil vs. biofuel blends) with clear visuals on cost, emissions, and compliance outcomes. Offer tools to calculate annual carbon output and track progress for multiple vessels. Integrated Follow-Up Capabilities: Add features for automated follow-ups, such as sending summaries or insights via email after network events or cold calls. Connect follow-ups with CRM tools for agenda management and follow-up triggers. Educational and Informational Elements: Include explanations of regulations, biofuels, and CO <sub>2</sub> reduction benefits within the tool to enhance understanding. Develop testable and auditable data outputs for compliance and annual reporting needs (e.g., CSRD). Self-Reliance Features: Ensure the tool fosters independence by offering intuitive, easy-to-
Question 5: Are there additional features or insights you think the scenarios should include - and why would you want them?	pre-meeting data inputs, regulation features, visual comparisons	n.a.		tailored solutions, explanations, simplified inputs, summaries reports 3 and compliance features	some focus more on giving basic and some advanced functionalities as ideas. Educational insights vs cost and marketing elements	Compliance, Customization, Simplification, Follow-Up, Engagement.	positive	
Question 6: What would make the tool inconvenient or disruptive in your daily practice?	excessive data entry, irrelevant data, a lot of pop-ups and complexity are disruptive	n.a.		minimize manual input, avoid frequent pop ups, reensure relevance and simplicity 3	pricing, but that is not that applicable	Input burden, simplicity, data relevance, push notifications,	neutral to slightly negative	Pre-fill or customize data to reduce input. Avoid excessive notifications. Simplify the interface for clarity. Adapt to pricing fluctuations, or use it in favour
Question 7: How relevant do you find the insights and the tool for customers overall? Give a number from 1 to 10 and explain your choice.	tool is highly valued, smaller companies will benefit most, larger already have alternatives 8.0			clear and actionable insights are crucial, appreciated that 3 the tool simplifies the process	focus on regulation vs usability	Clear Insights, Accessibility, Smaller Companies, Process Simplification, Compliance.	positive	Prioritize clear, actionable insights with a focus on accessibility. Integrate compliance tools to enhance relevance.
Question 8: Which scenario creates the most business opportunities and which faces the most rejection? What factors lead to opportunities and what causes rejection?	Meeting demo most business opportunities because people are already invested, builds trust and you can give in depth tailored insights. Most rejection: cold calling for customer disinterest and higher rejection rate. n.a.			3 see insights,	no differences	Opportunities: Tailored engagement, relationship-building, and client readiness. Rejection: Disinterest, impersonal approach, and busy schedules.	neutral	support tailored, in-depth discussions and real-time calculations during meetings.

Questions	Insights	(average) score	Most suiting scenario	overlap	differences	Theme	Tone	design implications	
Question 9: How would incorporating data and insights enhance your customer conversations?	Incorporating data and insights enhances credibility, enables informed decision-making, and makes conversations more tailored and convincing	n.a.		importance of data-driven insights to improve credibility and simplify decision-making, tailoring for clients	3 needs	some value more specific insights: cost savings, regulatory insights, visualisations	Credibility Tangible Results Personalization Simplified Data Problem-Solving	positive	By prioritizing clarity, customization, and credibility,
Question 10: What do you think about the tool being used autonomously by clients and their teams?	Autonomous use is generally seen as positive because it empowers customers, improves efficiency, and increases transparency. However, there are concerns that customers may abuse the tool to shop around. Limited access or demo versions can address this risk while still providing value to customers for planning and decision-making.	n.a.		improves for the client and reduces workload for trader	3	shopping around, sharing is good	Empowerment Transparency Efficiency Risk of Misuse	negative	Limited access or demo use, only for users that the company deals with, sharing features
Question 11: Do you find it important for the tool to provide insights into how customers use it? Give a number from not important 1 – 10 very important and explain why.	While most participants find value in customer usage insights, privacy concerns and relevance over time make it less critical.		6,3	can help traders, but monitoring can lead to discomfort	3	only relevant during certain periods eg when closing a deal	Early Engagement Value Privacy Concerns and Permissions	neutral	Optional Usage Insights: Allow customers to opt in for tracking to address privacy concerns. Focus on non-intrusive data
Question 12: What do you think would be most attractive to customers: 1) financial benefits 2) emissions reduction statistics 3) compliance benefits	Financial benefits are consistently ranked as the most attractive as cost savings are primary driver for client		Financial Benefits ranked 1st by 5/6 participants. Emission Reduction Statistics consistently ranked 2nd or tied for relevance. Compliance Benefits ranked 3rd overall, with one exception where it was ranked 1st (P3).	3 see score	p3 finds compliance most important	price-driven decisions.	positive	Focus on Financial Insights: Emphasize cost savings prominently in the tool.	
Question 13: Which insights do you think are most compelling to customers? Choose up to three options and rank them. A) CO <sub>2</sub> reduction percentages B) Cost savings in euros C) Comparison with traditional fuels D) Tracking achieved goals over a timeline (Costs, emissions, biofuel quantities) E) Scenario comparisons with clear benefits (Fuel quantities and %, future reduction goals)	A, D, and E are equally strong contenders, showing that CO <sub>2</sub> reduction, tracking goals, and scenario comparisons are highly valued. C remains very relevant but slightly lower in priority B was only selected by one participant, making it less representative overall.	n.a.							
Question 14: How do you currently communicate sustainability to customers?	Sustainability is communicated only when necessary. Communication is often minimal, reactive, or dependent on regulations.	n.a.		education needed for marine clients, regulation is driving force	3	market familiarity	Regulations, cost savings, reduction factors, market familiarity, education, compliance.	negative	Simplify Sustainability Messaging, Link Regulations to Tangible Benefits, Ensure Regulatory Clarity
Question 15: What challenges do you face in making sustainable options appealing or actionable?	A:	n.a.		high costs as barrier, availability, regulatory challenges + reluctance	3	customer fear on quality	Cost, availability, regulatory clarity, customer reluctance.	negative	Highlight clear cost savings or offset opportunities to mitigate pricing concerns, availability insights.
Question 16: What sustainability metrics do you think resonate most with your customers? A) CO <sub>2</sub> reductions (absolute figures or percentages) B) Financial benefits linked to sustainability C) Targets and Compliance with regulations such as FuelEU Maritime D) Impact on ecosystem ( For example CO2 reduction equals 1.000 trees or 1 Ship a year)	C: Ranked 1st by 3 participants s A: not mentioned by p1 and p3. B: ranked 3rd 3 times.		1. C (Compliance and Regulations) 2. A (CO <sub>2</sub> Reductions) 3. B (Financial Benefits) 4. D (Ecosystem Impact)						
Question 17: How important is it for you to have a tool that provides customers with relevant sustainability insights and helps achieve customer compliance targets? Give a number from not important 1 – 10 very important and explain why.	participants rated between 7-10 showing the impoartance is valued highly	8.6		All participants agree on the tool's importance for customer compliance and sustainability goals. Most emphasize visualization, accuracy, and ease of use as critical features.	3	risk of poor execution	Compliance, Sustainability goals, Customer Engagement, efficiency CO <sub>2</sub> Reductions, Financial Impact, Regulatory Compliance, Comparative Insights, Education on Sustainability.	positive	Ensure accurate, cross-checkable data to improve trust and efficiency, user friendly, visually show compliance and sustainability impact
Question 18: What results or insights do you find most valuable to share with clients?	All participants agree on the importance of cost savings and CO <sub>2</sub> reductions (mentioned by 5) as central insights. Comparative insights and regulatory compliance also appear as shared themes.			3 see insights				positive	highlight, co2 reductions, emphasize financial benefits, offer comparative insights and track compliance + educate on it
Question 19: How detailed should the insights be (see points) and why? A) Not detailed: key figures and insights based on estimates B) Medium level of detail C) In-depth and technical details: including calculations – high level of accuracy	Medium level detail preferred as it balances between clarity, providing enough information and engaging the client Some like to start with A in the customer journey and then move to B		Preferred Level: Medium Detail (B). Count: 4 out of 6 participants favor Medium-level detail. Scenarios: Medium detail suits most scenarios, with Key Insights (A) being useful for quick engagements and In-Depth Details (C) reserved for advanced meetings.	n.a.	see insights	only C for advanced meetings	Medium Detail (B) Key Figures (A) Clear and Digestible Avoid Overload Scenario-Specific Depth	positive	Provide Medium-Level Insights: Focus on delivering clear, actionable insights without overwhelming users. Still offer Key Figures for Quick Scans: Offer simplified insights (A) for scenarios like cold calls or networking events.

Questions	Insights	(average) score	Most suiting scenario	overlap	differences	Theme	Tone	design implications
<p>Question 20: How critical is it for the tool to require minimal input during customer interactions and quickly show insights?</p> <p>Give a number from not critical 1 – 10 very critical and explain why.</p> <p>How many minutes?</p>	<p>Respondents consistently rate minimal input and quick insights as very critical. Scenario-Based Timing: Quick input for network events or cold calls, and slightly longer input for meetings or demos.</p> <p>Intuitive Calculations: Respondents agree that inputs should lead to instant, clear outputs with minimal effort.</p>	9.4	all	<p>Quick Interactions (Scenarios 1 &amp; 2): 30 seconds to 1.5 minutes.</p> <p>Detailed Interactions (Scenario 3): 3-5 minutes, up to 10 minutes for deeper discussions.</p>		<p>Simplicity</p> <p>Speed</p> <p>Engagement</p> <p>30 seconds to 5 minutes</p> <p>Avoid Boredom/Overt</p> <p>oad</p>	positive	<p>Quick Inputs: Ensure the tool works like a calculator with rapid, digestible insights.</p> <p>Scenario-Based Timing: Customize input flexibility based on the context (cold call vs meeting).</p> <p>Minimal Data Required: Limit inputs to only essential information to reduce friction.</p> <p>Visual Outputs: Provide immediate, visually compelling insights to maintain engagement.</p>
<p>Question 21: How important is flexibility in adjusting data inputs during live discussions with customers?</p> <p>Give a number from not critical 1 – 10 very critical and explain why.</p>	<p>Valued as crucial. The ability to refine and update data inputs during live interactions ensures relevance, enhances discussions, and delivers meaningful insights.</p>		9			<p>Flexibility</p> <p>Real-Time Adjustments</p> <p>Refined Inputs</p> <p>Meaningful Insights</p> <p>Customer Engagement</p>	positive	<p>Live Data Adjustments</p> <p>Pre-Filled Baseline Data:</p> <p>Include standard company, fleet, and fuel metrics. Automate compliance benchmarks for faster assessments. Customizable inputs:</p> <p>Allow for real-time manual inputs, especially in tailored scenarios like meetings.</p> <p>Use dynamic guidance (e.g., prompts or algorithms) for inputs requiring assumptions.</p> <p>Scenario-Specific Features:</p> <p>For cold calls: Minimal data entry with instant results for basic metrics.</p> <p>For meetings: Comprehensive and customizable input capabilities.</p> <p>For network events: Flexible inputs to adapt to variable attendee information.</p> <p>Usability Enhancements:</p> <p>Minimize unnecessary data fields (e.g., contact details already known to clients).</p> <p>Provide auto-fill suggestions for routine data to reduce manual effort.</p>
<p>Question 22: What input data do you expect to see prefilled or have guidance with, and what should you be able to fill in yourself?</p>	<p>Agreement on the need for pre-filled basic data (e.g., company details, fleet size) to save time.</p> <p>Consensus that manual inputs should focus on customer-specific or scenario-specific data.</p> <p>Pre-filled regulatory and compliance data ensures customers can align with benchmarks quickly.</p>					<p>Scenario-Specific Adjustments</p>	positive	
<p>Question 24: Is a mobile version essential?</p>	<p>mobile version is needed</p>	5/6 valued as crucial			<p>1 persons more uses laptop but is nice to have</p>			

# Appendix K

Research has been done to use synthetic AI users or feedback and AI prototyping as additional research layers, however due to time constraints and priorities, this was disregarded in the later phases of the project.

## ▶ 2.2.1 User Research

Figure X, shows 4 ways in which AI can assist in user research. This is considered as it was not feasible within this project to engage with (multiple) clients. Tests will be done with human participants, however incorporating AI can add extra value. When incorporating AI, the following limitations should be considered:

- ChatGPT's feedback might be overly positive because it always has the time and knowledge to understand everything or you can/have to optimise it, unlike real users who may not take the test seriously or give human errors. This could lead to a deviation. Or AI could understand it differently/wrongly without knowing.
- Limitations of synthetic users: "Unrealistic View of Human Behavior - Values, Desires, and Needs Are Too Shallow - Imagined Experiences Are Not Reliable." (Source)

## ▶ 2.2.2 lo-fi prototyping

Figure X includes 2 lo-fi interactive (interactive) python prototypes that generated with the help of AI.

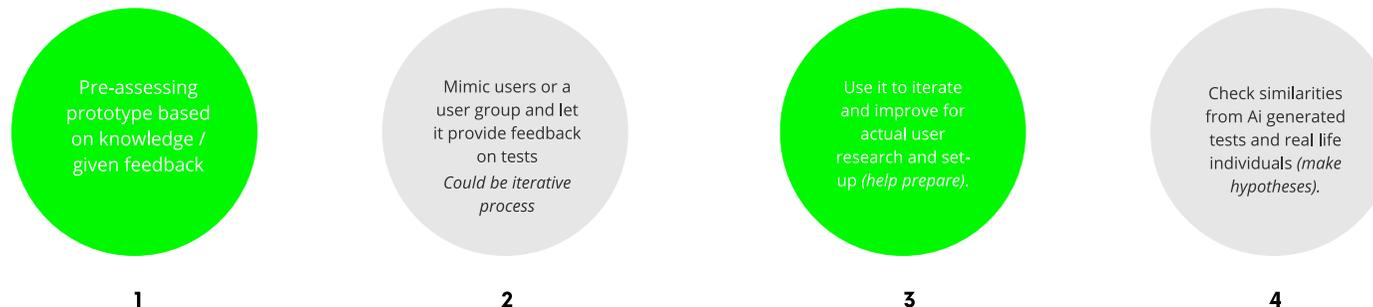
This made it possible to quickly create visual and interactive dashboards that could also be easily improved. This is beneficial towards and speeds up the ideation phase by supporting rapid exploration and experimentation.

Furthermore, it can reduce the time spent on the initial layout, as AI helps in visualizing data logically by using more familiar design patterns and applying logical structures based on the trained model. This can also enhance visual representation.

However, limitations should be taken into consideration, because despite the benefits, AI prototypes may lack advanced features, the user experience and visual designs are limited, and creating more defined prototypes is hard or time-consuming.

## AI user research

Use AI for:



## Biofuel Dashboard for Vessel Owners

User Profile 12 x 23

Total Emissions Reduction

200 tCO<sub>2</sub>e

Cost Savings

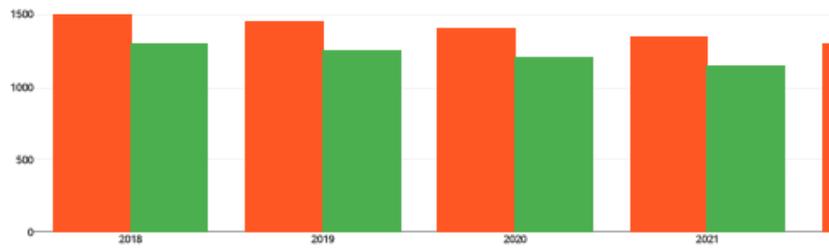
\$5000

Sustainability Impact

Positive

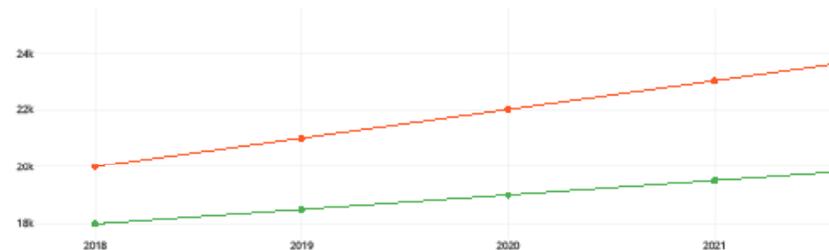
### Emissions by Fuel Type

Emissions by Fuel Type



### Cost Comparison

Cost Comparison



### Biofuel Usage Trends



## Biofuel Dashboard for Vessel Owners

Total Reduced This Year

2000 tCO<sub>2</sub>e

Total Reduced This Month

150 tCO<sub>2</sub>e

Total Saved This Year

\$50000

Total Saved This Month

\$4000

Industry Benchmark

85%

of vessel owners

Top 3 Performing Vessels

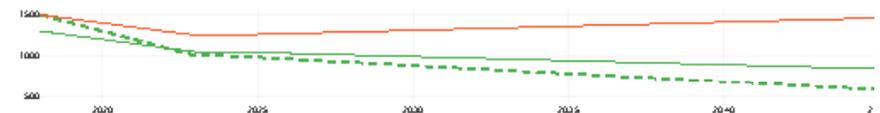
- Vessel A: 500 tCO<sub>2</sub>e reduced, \$15000 saved
- Vessel B: 450 tCO<sub>2</sub>e reduced, \$14000 saved
- Vessel C: 400 tCO<sub>2</sub>e reduced, \$13000 saved

### Achievements and Rewards

- 🏆 Emissions Champion: Reduced 500 tCO<sub>2</sub>e
- 📉 Cost Saver: Saved \$10,000 in fuel costs
- 🌱 Sustainability Star: Credits fully used biofuel for 6 months

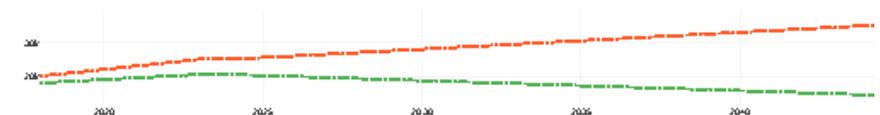
### Emissions Projections

Emissions Projections to 2050



### Cost Projections

Cost Projections to 2050



### Fuel Calculator

Calculate potential savings and emissions reduction by switching to biofuel.

Enter fuel consumption in

Enter fuel consumption to see savings.

### Quick Order Fuel

Place orders for biofuel directly from the dashboard.

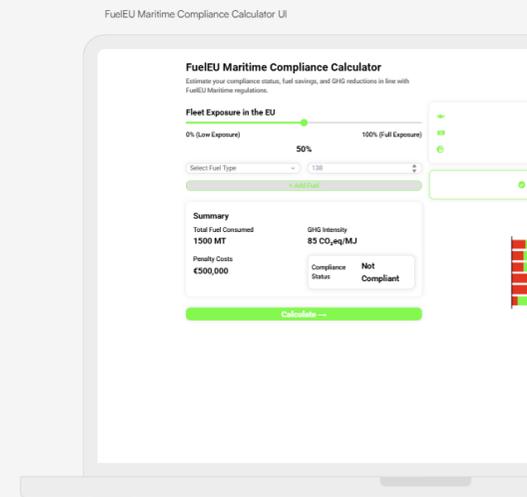
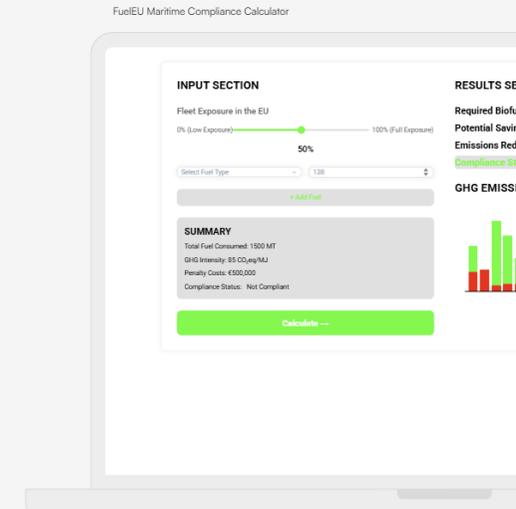
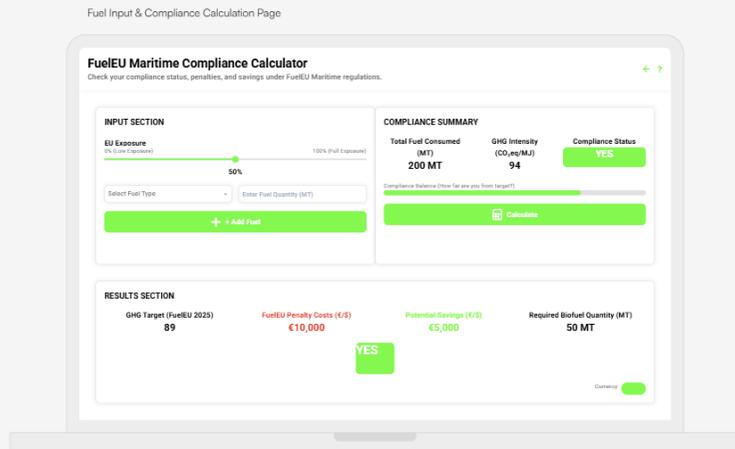
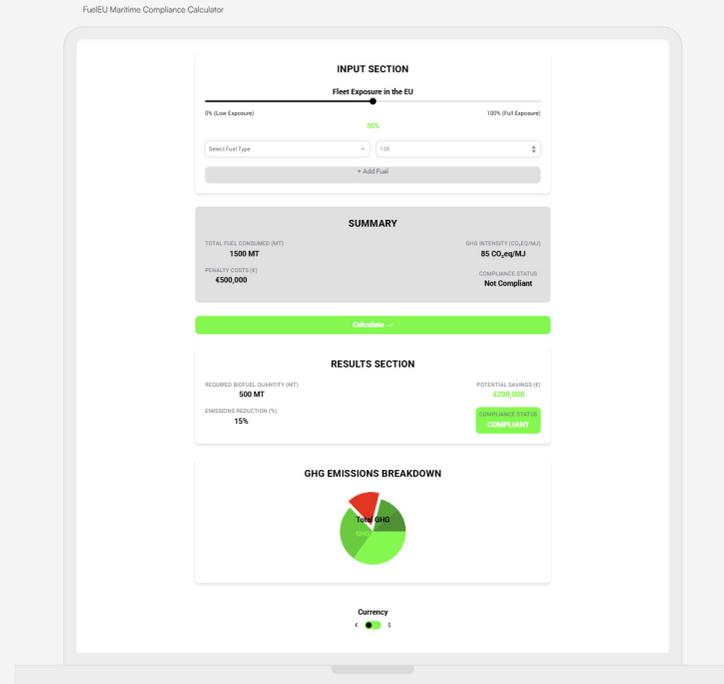
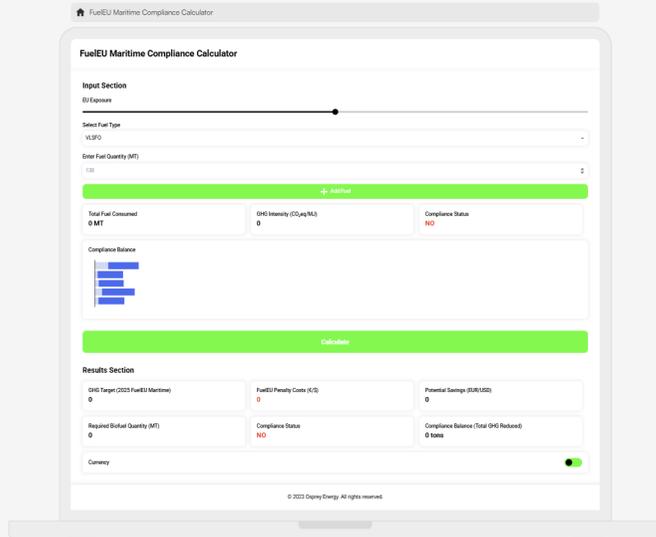




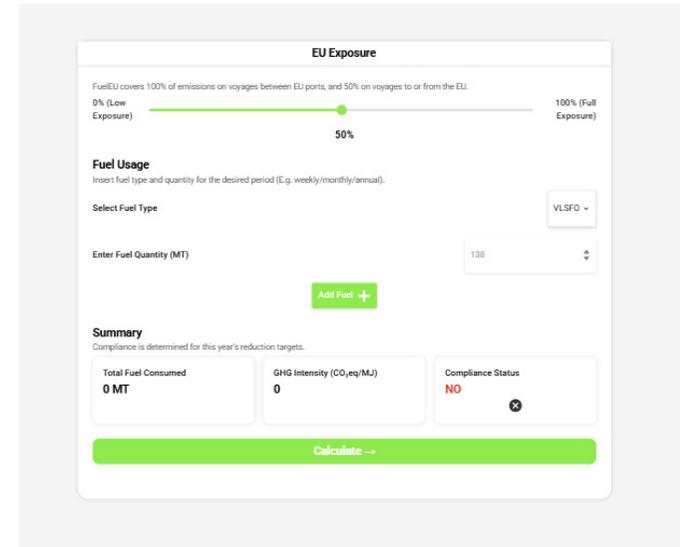
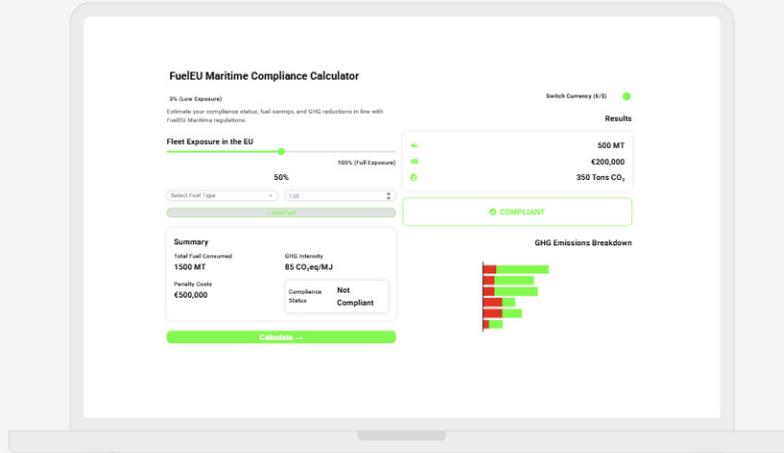
# Appendix M



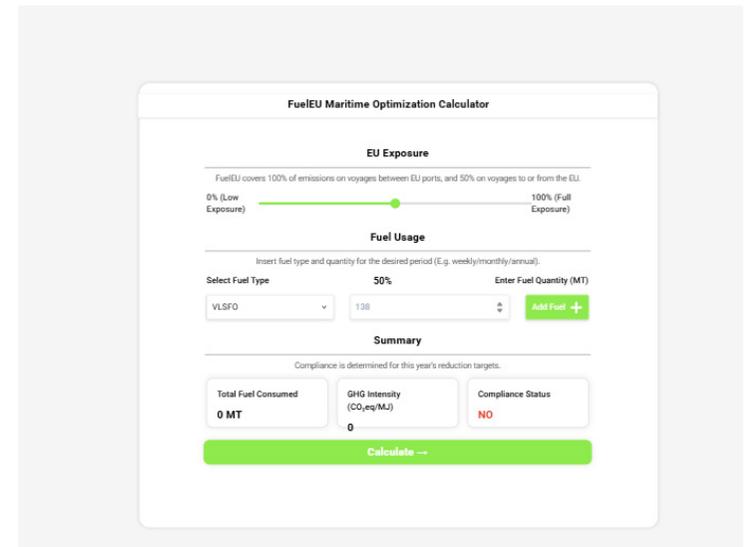
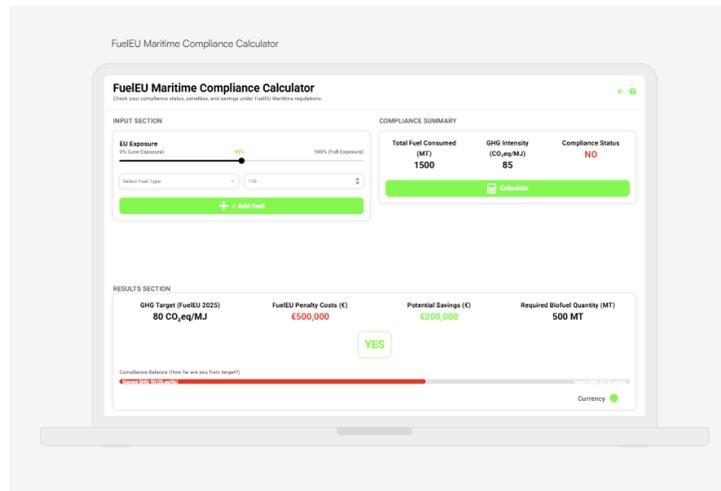
# Appendix N



FuelEU Maritime Compliance Calculator UI



FuelEU Maritime Compliance Calculator



# Appendix O

### FuelEU Maritime Optimization Calculator

#### EU Exposure

FuelEU covers 100% of emissions on voyages between EU ports, and 50% on voyages to or from the EU.

0% (Low Exposure)  100% (Full Exposure)

#### Fuel Usage

Insert fuel type and quantity for the desired period (E.g. weekly/monthly/annual).

Select Fuel Type 50% Enter Fuel Quantity (MT)

VLSFO  Add Fuel +

#### Summary

Compliance is determined for this year's reduction targets.

Total Fuel Consumed <b>0 MT</b>	GHG Intensity (CO <sub>2</sub> eq/MJ) <b>0</b>	Compliance Status <b>NO</b>
------------------------------------	---	--------------------------------

Calculate →



**Decarb Compass**  
Navigate Smart Fuel Decisions

More detailed insights and solutions?

Reach us out at [contact@decarbcompass.com](mailto:contact@decarbcompass.com)

#### FuelEU Maritime Overview

**EU Exposure** FuelEU covers 100% of emissions

0% (Low Exposure)

**Fuel Usage**

Select Fuel Type Enter Fuel Quantity (MT)

VLSFO 138

**Summary**

Total Fuel Consumed <b>0 MT</b>	GHG Intensity (CO <sub>2</sub> eq/MJ) <b>0</b>
------------------------------------	---

Calculate

#### Annual Results

#### Projected Yearly Costs

Under FUELEU Maritime

FUELEU GHG Intensity Reduction Targets

Costs Non-Compliant Fuels	Costs with Biofuels
---------------------------	---------------------

**GHG Target (FuelEU 2025)**  
**80 CO<sub>2</sub>eq/MJ**

**FuelEU Penalty Costs (Migated, €)**  
**€ 5000**

**Required Biofuel Quantity (MT)**  
**500 MT**

! The calculated information provides an overview and deviations the presented data should be used as indicative numbers.

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decarbcompass@ospreyenergy.eu

### FuelEU Maritime Optimization Calculator

€ | 🌞 | \$

**EU Exposure** FuelEU covers 100% of emissions between EU ports and 50% for voyages to or from the EU.

0% (Low Exposure) 50% 100% (Full Exposure)

**Fuel Usage** Insert fuel type and quantity for the desired period (e.g. weekly/monthly/annual).

Select Fuel Type: VLSFO | Enter Fuel Quantity: 138 | + Add Fuel

**Summary** Compliance is determined for this years reduction targets (2025).

Total Fuel Consumed <b>0 MT</b>	GHG Intensity (CO <sub>2</sub> eq/MJ) <b>0</b>	Compliance Status <b>NO</b>
------------------------------------	---	--------------------------------

Calculate →

### Annual Results

Please fill in your contact info to reveal the results

<input type="text" value="Name"/>	<input type="text" value="Company Name"/>
<input type="text" value="Email"/>	<input type="text" value="Phone"/>

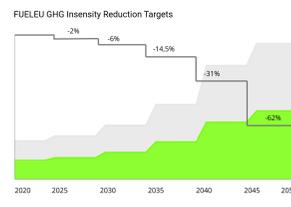
I confirm sharing personal data  
 I agree to the [privacy policy](#)

Show the Results →

### Annual Results

**Projected Yearly Costs** Under FUELEU Maritime

FUELEU GHG Intensity Reduction Targets



Year	Costs Non-Compliant Fuels	Costs with Biofuels
2020	High	Low
2025	Medium-High	Medium-Low
2030	Medium	Medium
2035	Low-Medium	High
2040	Low	Very High
2045	Very Low	Extremely High
2050	Minimal	Maximal

GHG Target (FuelEU 2025) <b>80 CO<sub>2</sub>eq/MJ</b>	Reduced Emissions <b>1200 kg CO<sub>2</sub>eq</b>
FuelEU Penalty Costs (Migated, €) <b>€ 5000</b>	Potential Savings using Biofuel (€) <b>€3500</b>
Required Biofuel Quantity (MT) <b>500 MT</b>	Compliance Status using Biofuel <b>COMPLIANT</b>

ⓘ The calculated information provides an estimate for informational purposes. Due to accuracy and deviations the presented data should be interpreted as a guidance and and not be considered as definite numbers.

Download the Report

# Appendix P



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decarbcompass@espreyenergy.eu

### FuelEU Maritime Optimization Calculator

€  \$

**EU Exposure** FuelEU covers 100% of emissions between EU ports and 50% for voyages to or from the EU.

0% (Low Exposure)  100% (Full Exposure)

50%

**Fuel Usage** Insert fuel type and quantity for the desired period (e.g. weekly/monthly/annual).

Select Fuel Type: VLSFO

**Summary** Compliance is determined for this years reduction targets (2025).

Total Fuel Consumed <b>0 MT</b>	GHG Intensity (CO <sub>2</sub> eq/MJ) <b>0</b>	Compliance Status <input checked="" type="radio"/> NO
------------------------------------	---	--

### Annual Results

Please fill in your contact info to reveal the results

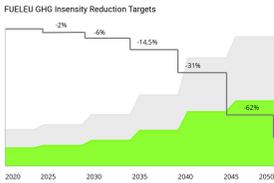
<input type="text" value="Name"/>	<input type="text" value="Company Name"/>
<input type="text" value="Email"/>	<input type="text" value="Phone"/>

I confirm sharing personal data  
 I agree to the [privacy policy](#)

### Annual Results

#### Projected Yearly Costs Under FUELEU Maritime

FUELEU GHG Intensity Reduction Targets



2020	2025	2030	2035	2040	2045	2050
-	-2%	-6%	-14.3%	-31%	-	-62%

Costs Non-Compliant Fuels (grey) | Costs with Biofuels (green)

GHG Target (FuelEU 2025) <b>80 CO<sub>2</sub>eq/MJ</b>	Reduced Emissions <b>1200 kg CO<sub>2</sub>eq</b>
FuelEU Penalty Costs (Migated, €) <b>€ 5000</b>	Potential Savings using Biofuel (€) <b>€3500</b>
Required Biofuel Quantity (MT) <b>500 MT</b>	Compliance Status using Biofuel <input checked="" type="checkbox"/> <b>COMPLIANT</b>

! The calculated information provides an estimate for informational purposes. Due to accuracy and deviations the presented data should be interpreted as a guidance and not be considered as definite numbers.

Old version



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**More detailed insights and solutions?**

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decarbcompass@ospenergy.eu

### FuelEU Maritime Optimization Calculator

€  \$

**EU Exposure**  
FuelEU covers 100% of emissions between EU ports and 50% for voyages to or from the EU.

0% (Low Exposure) 
50%
 100% (Full Exposure)

**Fuel Usage**  
Insert the fuel type and total quantity consumed per year.

Select Fuel Type:  Enter Fuel Quantity (MT):  + Add Fuel

**Summary**  
Compliance is determined for this years reduction targets (2025).

Total Fuel Consumed

**0 MT**

GHG Intensity (CO<sub>2</sub>eq/MJ)

**0**

Compliance Status

**NO**

Calculate →

### Annual Results

Please fill in your contact info to reveal the results

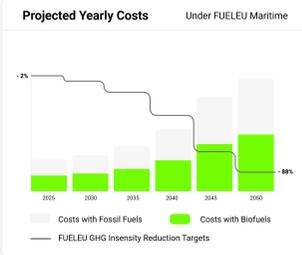
I confirm sharing personal data   
  I agree to the [privacy policy](#)

Show the Results →

### Annual Results

Your Results are in - Explore the impact and fuel smarter with these insights!

**Projected Yearly Costs** Under FUELEU Maritime



Legend: ■ Costs with Fossil Fuels, ■ Costs with Biofuels, — FUELEU GHG Intensity Reduction Targets

GHG Target (FuelEU 2025)

**80 CO<sub>2</sub>eq/MJ**

Reduced Emissions

**1200 kg CO<sub>2</sub>eq**

FuelEU Penalty Costs (Migated, €)

**€ 5000**

Potential Savings using Biofuel (€)

**€3500**

Required Biofuel Quantity (MT)

**500 MT**

Compliance Status using Biofuel

✔ **COMPLIANT**

ⓘ The calculated information provides an estimate for informational purposes. Due to accuracy and deviations the presented data should be interpret as a guidance and not be considered as definite numbers.

Email Report Now ✉

Revised Final Version

# Appendix Q

## Calculation

\*chatgpt has been used in some cases to clearly describe the concept and steps based on provided input from the sources formulas and have been simplified or tailored.

EU Exposure: factor %

0% --> N.A. want niet in EU (compliance status)

50% --> EU nr non EU 70% -- X 0.7

Ieder fuel heeft bepaalde eigenschappen (factoren die moeten in een database komen)

kiest type quantity

quantity X EU Exposure %. 0.7 \* 200 MT = 140 MT. hier moeten we uitstoot van coveren.

total fuel consumed: SOM van fuel usage.

- Waarschijnlijk fuel mix

GHG intensity:

$$GHG\ Intensity_{actual} = \frac{m_{fuel} \cdot LCV_{fuel} \cdot (EF_{WT} + EF_{TW})}{m_{fuel} \cdot LCV_{fuel} + E_{electricity}}$$

Zonder elektriciteitsverbruik wordt de formule voor GHG-intensiteit onder FuelEU Maritime als volgt vereenvoudigd: deze klopt wss niet helemaal samen naar kijken

GHG Intensity =  $\sum (F_i \times Wt_i LCV_i + F_i \times TtW_i LCV_i) / \sum (F_i LCV_i)$   

$$GHG\ Intensity = \frac{\sum \left( \frac{F_i \times Wt_i}{LCV_i} + \frac{F_i \times TtW_i}{LCV_i} \right)}{\sum \left( \frac{F_i}{LCV_i} \right)}$$

Zonder elektriciteitsverbruik wordt de formule voor GHG-intensiteit onder FuelEU Maritime als volgt vereenvoudigd:

$$GHG\ Intensity = \frac{\sum \left( \frac{F_i \times Wt_i}{LCV_i} + \frac{F_i \times TtW_i}{LCV_i} \right)}{\sum \left( \frac{F_i}{LCV_i} \right)}$$

- **FIF<sub>IFi</sub> (g fuel)** = Hoeveelheid verbruikte brandstof i (in gram).
- **Wt<sub>i</sub> (gCO<sub>2</sub>e/MJ)** = Well-to-Tank emissiefactor van brandstof i (CO<sub>2</sub>-uitstoot van productie en transport van de brandstof).
- **TtW<sub>i</sub> (gCO<sub>2</sub>e/MJ)** = Tank-to-Wake emissiefactor van brandstof i (CO<sub>2</sub>-uitstoot bij verbranding aan boord).
- **LCV<sub>i</sub> (MJ/g fuel)** = **Lower Calorific Value** van brandstof i, oftewel de energie-inhoud per gram brandstof.

## Stap-voor-stap uitleg

### 1. Bepaal de totale WtT-emissies voor de brandstofmix:

Vermenigvuldig de brandstofmassa (**FIF<sub>IFi</sub>**) met de Well-to-Tank emissiefactor (**Wt<sub>i</sub>**).

In the case of fossil fuels, only the default values contained in Annex II shall be used.

- For biofuels and RFNBOs, actual values as described under the Renewable Energy Directive (RED) methodology may be used. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/<https://static1.squarespace.com/static/6155b5bdada6ea1708c2c74d7/664ed72533fb8f3f3559f71e/1716442919671/EU+RED+Directive+2023-2413.pdf>
- List
- Deel dit door de **Lower Calorific Value (LCV<sub>i</sub>)** om de emissies per MJ energie te krijgen. The lower calorific value can be found in Annex II of the [FuelEU Maritime Regulation \(EU\) 2023/1805](#).

### 1. Bepaal de totale TtW-emissies voor de brandstofmix:

- Vermenigvuldig de brandstofmassa (**FIF<sub>IFi</sub>**) met de Tank-to-Wake emissiefactor (**TtW<sub>i</sub>**).
- Deel dit door de **Lower Calorific Value (LCV<sub>i</sub>)** om de emissies per MJ energie te krijgen.

### 2. Tel de Well-to-Tank en Tank-to-Wake emissies bij elkaar op.

### 3. Bereken de totale energie-inhoud van de brandstofmix:

- Sommeer de energie-inhoud van alle brandstoffen in de mix.

### 4. Bereken de gemiddelde GHG-intensiteit:

- Deel de totale emissies door de totale energie-inhoud.

Next

Compliance status:

baseline: 2020: 91,16 gCO<sub>2</sub>e/MJ. This will start at a 2% reduction in 2025

Mean ghg input fuel lager/gelijk dan 2% vd baseline: YES, erboven? NO, 0% --> N.A.

eU ets euas <https://tradingeconomics.com/commodity/carbon>

### Stap 1: Nieuwe formule voor FuelEU Savings

Volgens FuelEU Maritime (EU 2023/1805):

- Vaste boete per ton VLSFOe = €2,400 per ton VLSFO-equivalent
- Vaste boete per ton CO<sub>2</sub>e = €640 per ton CO<sub>2</sub>e

De nieuwe formule voor FuelEU Savings is:

$$\text{FuelEU Savings} = \Delta CO_2 \times 640$$

Waarbij:

- $\Delta CO_2$  = Bespaarde CO<sub>2</sub>-uitstoot door biofuel (ton CO<sub>2</sub>e)
- 640 €/ton CO<sub>2</sub>e = Vastgestelde FuelEU-boete

#### Voorbeeldberekening:

Uit onze eerdere berekening hebben we 6.89 ton CO<sub>2</sub>e bespaard bij 110 MT brandstof.

$$6.89 \times 640 = 4,409.60 \text{ euro bespaard}$$

### Stap 2: Formule voor EU ETS Savings (blijft hetzelfde)

$$\text{ETS Savings} = \Delta CO_2 \times \text{ETS Price per ton CO}_2\text{e} \times \text{ETS Coverage Fraction}$$

Voor 2025, waarbij 70% van de emissies onder ETS valt en een geschatte ETS-prijs van €90 per ton CO<sub>2</sub>e:

$$6.89 \times 90 \times 0.7 = 434.06 \text{ euro bespaard}$$

we hebben KG co2 dus moet /1000 en dan heb je ton.

en eventueel nog dollar versie |

Table 2. This table is the default fuel and emission factors table used by Sustainable Ships for calculating GHG intensity, taken from [Annex II](#) of the FuelEU Maritime regulation and RED where possible. In particular with regards to the pathways for the actual LCVs and Wt values can vary significantly. Always check with fuel supplier or verifier for the correct numbers as per the biofuels or RFNBO certificates.

Pathway name	Fuel class	LCV	E	CO <sub>2</sub> eq/Wt	Fuel Consumer Unit C	CF (CO <sub>2</sub> )	CF (CH <sub>4</sub> )	CF (N <sub>2</sub> O)	Calc
-	-	MJ / g <sub>fuel</sub>	gCO <sub>2</sub> eq/MJ	gCO <sub>2</sub> eq/MJ		g / g <sub>fuel</sub>	g / g <sub>fuel</sub>	g / g <sub>fuel</sub>	%
HFO	Fossil	0.0405	-	13.5	ALL ICES	3114	0.00005	0.00018	0
LFO	Fossil	0.0410	-	13.2	ALL ICES	3151	0.00005	0.00018	0
MDO	Fossil	0.0427	-	14.4	ALL ICES	3206	0.00005	0.00018	0
MGO	Fossil	0.0427	-	14.4	ALL ICES	3206	0.00005	0.00018	0
LNG Otto - Medium Sp	Fossil	0.0491	-	18.5	LNG Otto (duaf fuel n	2750	0	0.00011	31
LNG Otto - Slow Sp	Fossil	0.0491	-	18.5	LNG Otto (duaf fuel n	2750	0	0.00011	17
LNG Diesel - Slow Sp	Fossil	0.0491	-	18.5	LNG Diesel (duaf fuel	2750	0	0.00011	0.2
LNG - LBS	Fossil	0.0491	-	18.5	LBS	2750	0	0.00011	26
LPG	Fossil	0.0460	-	7.8	ALL ICES	3000	0.00005	0.00018	0
H2	Fossil	0.1200	-	132	Fuel cells & ICES	0.000	0	0.00018	0
MEG	Fossil	0.0186	-	121	Fuel cells & ICES	0.000	0	0.00018	0
Methanol	Fossil	0.0199	-	31.3	ALL ICES	1375	0	0.00018	0
Ethanol	Biofuels	0.0270	35.4	-35.4	ALL ICES	1913	0.00005	0.00018	0
Bio-diesel	Biofuels	0.0370	27.3	-49.3	ALL ICES	2834	0.00005	0.00018	0
HVO	Biofuels	0.0440	37.4	-33.4	ALL ICES	3115	0.00005	0.00018	0
Bio-LNG Otto - Mediu	Biofuels	0.0500	30.0	-25.0	LNG Otto (duaf fuel n	2750	0	0.00011	31
Bio-LNG Otto - Slow S	Biofuels	0.0500	30.0	-25.0	LNG Otto (duaf fuel n	2750	0	0.00011	17
Bio-LNG Diesel - Slow	Biofuels	0.0500	30.0	-25.0	LNG Diesel (duaf fuel	2750	0	0.00011	0.2
Bio-LNG - LBS	Biofuels	0.0500	30.0	-25.0	LBS	2750	0	0.00011	26
Bio-methanol	Biofuels	0.0200	13.4	-53.4	ALL ICES	1375	0	0.00018	0
Other	Biofuels	0.040	24.9	-57	ALL ICES	3115	0.00005	0.00018	0
Bio-H2	Biofuels	0.1200	-	30.0	Fuel cells & ICES	0.000	0	0.00018	0
e-diesel	RFNBO	0.0427	-	27.3	ALL ICES	3209	0.00005	0.00018	0
e-methanol	RFNBO	0.0199	-	13.4	ALL ICES	1375	0.00005	0.00018	0
e-LNG Otto - Medium	RFNBO	0.0491	-	30.0	LNG Otto (duaf fuel n	2750	0	0.00011	31
e-LNG Otto - Slow Sp	RFNBO	0.0491	-	30.0	LNG Otto (duaf fuel n	2750	0	0.00011	17
e-LNG Diesel - Slow S	RFNBO	0.0491	-	30.0	LNG Diesel (duaf fuel	2750	0	0.00011	0.2
e-LNG - LBS	RFNBO	0.0491	-	30.0	LBS	2750	0	0.00011	26
e-H2	RFNBO	0.1200	-	30.0	Fuel cells & ICES	0.000	0	0.00018	0
e-MEG	RFNBO	0.0186	-	30.0	Fuel cells & ICES	0.000	0	0.00018	0
e-LPG	RFNBO	0.0460	-	30.0		3.000	0.00005	0.00018	0
e-DME	RFNBO	0.0390	-	30.0		1.90	0.00005	0.00018	0

Balance

/ MJ)  
/ MJ)  
e (in g fuel)  
fuel type (in MJ / g fuel)

ound in Annex II of the FuelEU Maritime Regulation (EU) 2023/1805, the actual  
d under Step 1, and the target GHG intensity is 93.34 g CO<sub>2</sub>e / MJ as per Article  
ision (EU) 2023/1805.

$$\text{Target} = \text{GHG Intensity}_{\text{fossil}} \cdot (M_{\text{fuel}} \cdot \text{LCV}_{\text{fuel}} + E_{\text{electricity}})$$

Penalty

/ MJ)  
n calculated under Step 1, the compliance balance has been calculated under

$$\text{Penalty} = \frac{|CB| \cdot 2400\text{€}}{\text{GHG Intensity}_{\text{fossil}} - 41,000}$$

Costs.

amount total input in case of fossil. ( nu alleen fossil input  
maken), fixed amount door company

### Formule voor de CO<sub>2</sub>-besparing

tot  $\Delta CO_2$  wordt berekend met:

$$\Delta CO_2 = F_{\text{fossil}} \times \frac{GHG_{\text{fossil}}}{LCV_{\text{fossil}}} - F_{\text{bio}} \times \frac{GHG_{\text{bio}}}{LCV_{\text{bio}}}$$

(fossiele brandstof)

(fuel)

$$\text{VLSFO: } GHG_{\text{fossil}} = 91 \text{ gCO}_2\text{e/MJ}$$

$$\text{HVO: } GHG_{\text{bio}} = 30 \text{ gCO}_2\text{e/MJ}$$

$$CV_{\text{fossil}} = 40.5 \text{ MJ/kg}$$

$$CV_{\text{bio}} = 43.8 \text{ MJ/kg}$$

NT green (want dat scenario wordt berekend).

Savings

cs.com/commodity/carbon