



Needs



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Needs

*Dynamic Techno - Economical Scenario  
Simulation Model for Sustainable  
Waterborne Activities and Transport*

**D 5.6 Plan for the exploitation of results**



<b>Document information</b>	
Short description	The Deliverable addresses the future use of the simulation framework in projects, the dissemination of its learnings and the way to sustain financially and technically its development.
Work Package	WP5 – Impact analysis for different development scenarios
Task	Task 5.6: Plan for the exploitation of results
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## 1. Introduction

This document pertains to Work Package 6, specifically addressing Task 5.6 under the title "Pan for the Exploitation of Results." The deliverable, D18, is an exploration of the potential use of the tool in future projects and the way it will be financially sustained and further developed.

Several actions have been already undertaken during the project itself, in order to anticipate the further development of the framework. Those actions concern internal resources from participants, as well as external links towards projects or interest users. All those current and future actions are described in the present report.

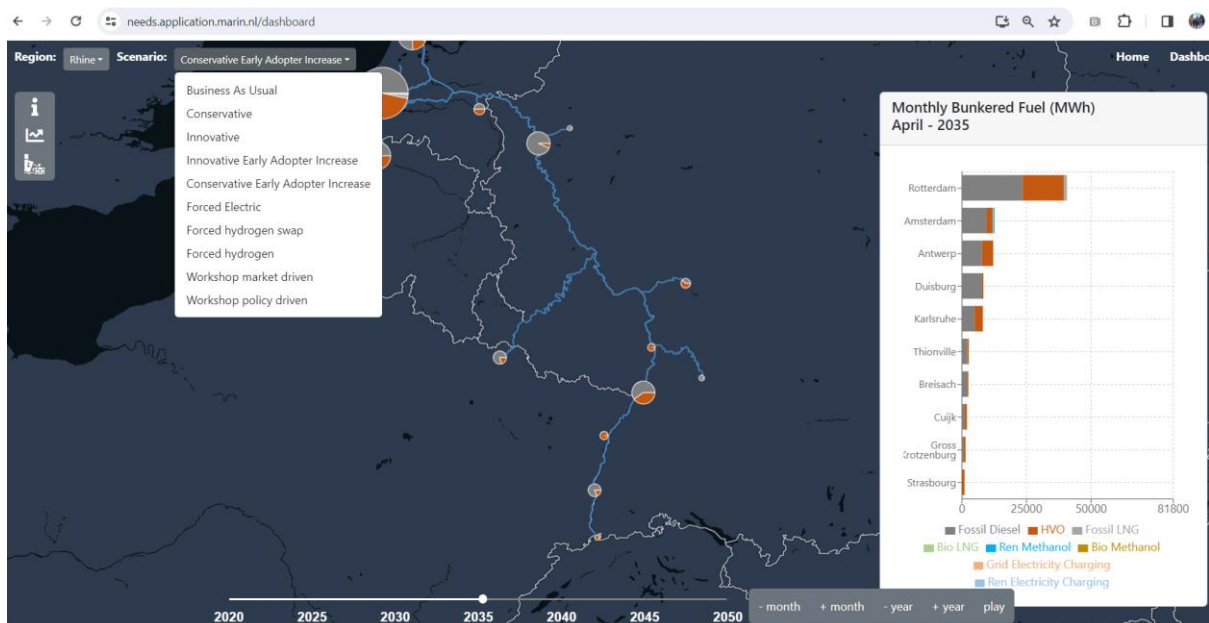
## 2. Public access to database and results of simulations

Without considering new scenarios, a new fleet or regions, there are already quite some learnings in the existing scenarios.

In order to disseminate learnings from the studies performed for the Greek and Rhine regions, all input, assumptions and results are fully detailed in the interactive portal of the NEEDS project. Because such portal and results are free access, we are receiving questions on the work that was performed.

Part of the input used in the simulations, in particular those concerning the energy carrier and power pathways, with evaluation of the Life Cycle Assessment of the energy and power, are also provided in public access on a dedicated portal. Questions and remarks concerning the realised techno-economic simulations give often the chance to provide the source and the site of the energy carrier database and power conversion.

In this way, all knowledge and information gathered in the two applications are easily sharable with those who have interest in.



Portal of the NEEDS framework: <https://needs.application.marin.nl> containing several scenario's for two specific regions.



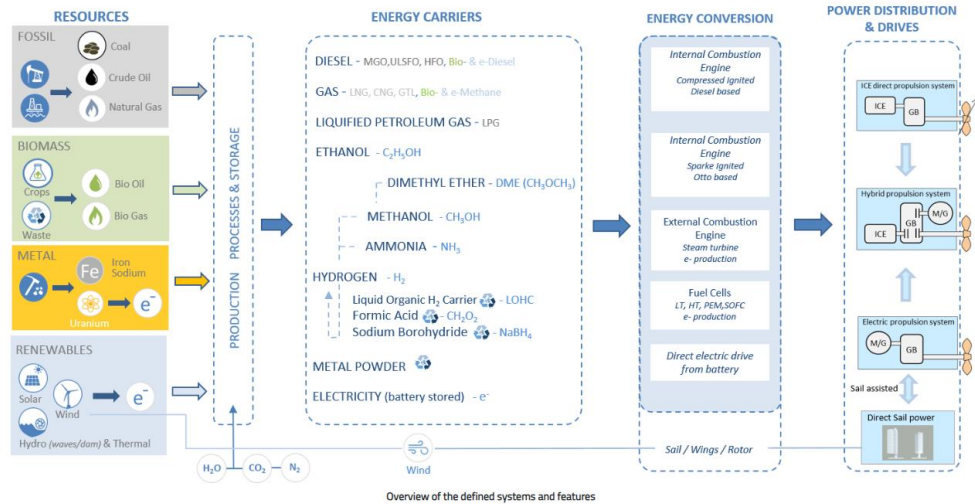
sustainablepower.application.marin.nl



Home Data table Energy carriers Well-to-Wake Pathways

The content of this portal is sustained by ongoing strategic research on zero emission maritime transport conducted at MARIN, the Maritime Research Institute Netherlands, and made possible thanks to the European Commission, by means of its working group on Sustainable Alternative Power for Ships (SAPS), part of the European Sustainable Shipping Forum (ESSF).

The ESSF-SAPS working group agreed in 2020 to give public access to its ongoing work and dataset concerning energy carriers and their emission pathways, likely to be used for maritime transport. This working group is composed of experts from all Europe, from major energy providers, ship owners, shipyards, harbour authorities, to flag states, ministries, classification societies, engine manufacturers, energy carriers producers, branch organisations or NGO's.



The public portal providing information on energy and power conversion for different pathways, including WTW CO<sub>2</sub>eq. GWP <https://sustainablepower.application.marin.nl/>

### 3. Publications and workshops

The description of the generic model and the applications to the two different regions has been presented in different conferences and a workshop in 2023.

Those activities are listed in detail in several deliverables and provided again in the table below, including future planned events.

Main organiser	Date	Location	Description
MARIN	2 November 2022	Wageningen, the Netherlands	Public presentation of the R&D plan of MARIN 2022, with focus on Human factors, Blue Growth and Zer Emission Shipping
MARIN & EICB	15 December 2022	Online	Needs workshop which we organised for the IWT part in WP1&WP3. It can be seen as a communication event in which we invited experts from CCR, DST (SN network) and IWT Platform to inform about our project and to get input to the model and IWT application.
MARIN	2 November 2022	Wageningen, the Netherlands	MARIN 2022 R&D Seminar
MARIN	2 March 2023	Hamburg, Germany	International Academic Conference on Shipping, Sustainability & Solutions 2023
SPB, WAT, MARIN	22-24 May 2023	Lisbon, Portugal	ITS Lisbon
MARIN, SINTEF	19 April 2023	Palma de Mallorca, Spain	BlueWeek2023
SPB	23-25 May 2023	Gorinchem	Maritime Industry
WAT & MARIN	12-13 September 2023	Wageningen	NEEDS Public Workshop On site and online, with about 100 participants in total.
MARIN	8 – 12 April 2024	Venezia, Italy	Specific presentations on the results obtained for the two regions will be presented during day 2 of the BlueWeek. Highlight of potential application for the public waterborne transport of the laguna of Venezia will be provided. The kick-off of the NEEDS user-group will also be organised, formed by all parties who showed interest in learning and using the framework.



## 4. Use of the model in projects

### 4.1 Internal research projects at MARIN

Resources are allocated in the technology and research plan of MARIN for the further development of modules of the framework. The Ships department of MARIN has also budgeted financial resources in 2024 (and beyond) to keep the portal up to date and alive. Additional features will be potentially developed and maintenance will guarantee a continuous access to the information and public cases.

### 4.2 Contractual research projects

The use of the simulation framework NEEDS is also proposed since October 2023 within contractual research at MARIN. Several quotations have been written to use some of the functionalities of the framework for applications within the existing simulated regions or new ones.

It will take some time to define such studies in details but it is the ambition to apply such tool to help the waterborne sector to simulate and study different scenarios for given regions and fleets.

### 4.3 Collaborative and European projects

In 2013, several EU funded projects or research projects have been granted containing work necessitating scenario simulations at fleet and regional level.

It is the case within the EU project Synergetics (<https://www.synergetics-project.eu/>).



Because such project focuses for a large part on inland shipping and within the Rhine region, use will be made of the NEEDS framework to exploit the data of the existing simulation but also to develop additional scenarios or include additional features in the simulations.





On academic side, the learning of the NEEDS framework will be used to help PhD students involved with the Path2Zero programme (<https://www.tudelft.nl/en/2022/citg/path2zero-transition-to-zero-emission-inland-shipping> ).

In 2023, NWO (Nederlandse Organisatie voor Wetenschappelijk Onderzoek - Dutch National Organisation for Academic Research) has awarded a research grant to a consortium led by Alex Kirichek for the project PATH2ZERO: PAVing THE way towards Zero-Emission and RObust inland shipping. PATH2ZERO aims to contribute to the transition to zero-emission inland shipping in cooperation with the inland shipping sector. The consortium of researchers, companies and social organisations will start developing sustainable business models and action perspectives. Partners in the inland navigation chain, such as skippers and shippers, can make use of this.

The research programme should provide insight into what the transition to zero-emission requires from the various partners in the inland shipping chain, such as skippers, shippers and funding institutions. By developing a virtual representation of the inland shipping system, that can be used for assessing the efficiency of zero emission strategies. This digital twin will represent the real system with all relevant components and will focus on three main aspects: the individual vessels, the logistic chains and the infrastructure. Potential interventions will be considered ranging from the application of new technologies for individual vessels to policy measures for an entire shipping corridor. Future scenarios can be imposed on the digital twin and their efficiency can be evaluated for the right path towards zero emission shipping.

This project was granted within the NWA research programme 'Zero-emission inland shipping', initiated by the Ministry of Infrastructure and Water Management (I&W) and the top sector for logistics (Dinalog).

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PATH2ZERO: transition to zero-emission inland shipping

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## 5. User groups NEEDS

### 5.1 Target user-group members

The NEEDS simulation model has been presented in several conferences and a call for potential user and organisation interested in developing further the tools has been made during the NEEDS public workshop. Thereby, a number of interested stakeholders showed interest into the model. Based on the experience and taking into account the benefits the simulation results have to offer, the following target groups are identified:

- Shipping companies
- Port authorities
- Energy producer and supplier
- Associations (Shipbuilding, Shipping, Maritime equipment)
- Research institutes
- Authorities and political bodies

### 5.2 Organisation of the NEEDS user-group

Several user-groups exists around simulation methods and NEEDS will make use of MARIN experience in creating and maintaining such user-group.

The group will form a strong backbone of users, defining the future needs and requirements for the simulation framework. Thanks to a yearly financial contribution, each participants will have the same voice to vote for specific requirements and developments.

Two different types of user are foreseen within the group:

- Advanced simulation users: organisation who want to be able to re-use existing regional framework and vary input parameters to re-run scenarios. Workshops and courses will be organised by MARIN.
- Expert users & framework developers: organisation and people who want to acquire in-depth knowledge of the different modules and be able to develop them within the coordination of MARIN. Such level will require obviously programming skills as well as an expert knowledge of the elements within the modules. Those members will be able to create new regions and fleet definition for example. Expert courses will be organised by MARIN.

The kick-off of the NEEDS user-group is planned during the BlueWeek 2024, that will be hosted this year in Venezia, Italy, by the Public Waterborne Transport Company of the laguna (see more details on [www.blueforum.org](http://www.blueforum.org) ).



## 6. Conclusion

The NEEDS EU funded Horizon projects has allowed a group of organisation to create a generic framework and explore its application for two different regions.

Such projects has delivered a simulation framework that has raised a lot of interest of several parties within the waterborne community. Such interest has been seen within presentations and workshop and is materialising in different initiatives going beyond the end of the project: re-use of the simulation framework within contractual research, EU funded projects or academic research, and future creation of a user-group to co-develop the tool for additional features and new applications.

We trust that such project and the deliverable is contributing to support the waterborne community in simulating credible energy transition pathways and anticipate future needs and actions to conduct it successfully at regional level.