

# WP6: Policy and drivers/barriers for change in the Nordic maritime sector

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# WP6: Policy and drivers/barriers for change in the Nordic maritime sector

## Task 6.1

Identify the drivers and barriers associated with the implementation of hydrogen / fuel cells for the Nordic shipping industry

## Task 6.2

Comparative cost effectiveness and assessment of the policy options to enhance Nordic uptake

# WP6.1: Drivers and Barriers

## Task 6.1

Aim: To identify the drivers and barriers, including economic, legal and safety aspects associated with implementation of hydrogen/fuel cells in Nordic shipping; stakeholder analysis

- **Subtask 6.1.1 Preparation:** Desktop study of the relevant national and local regulations that will be encountered during the commercialization and diffusion stage as well as literature review of the drivers and barriers including various economic and safety aspects that are likely to emerge.
- **Progress: Completed**
  - The desktop study/literature review has been completed.
  - Key literature has been identified.
  - The documents were coded to identify relevant national and local regulations as well as the key drivers and barriers.

# WP6.1: Drivers and Barriers

- **Subtask 6.1.2. Interviews:** Open-ended and semi-structured interviews with relevant stakeholders; revealing underlying concerns, barriers and drivers and explore with interviewees how these could be addressed through changes e.g. in the regulatory environment specific to the shipping sector.
- **An article has been submitted to an international peer reviewed journal**
- **Progress: Completed**
  - 8 types of key stakeholders were identified along with potential interviewees for each type.
  - An interview framework was prepared and used for each interview.
  - 38 interviews were conducted during June-October 2021. All the interviews were transcribed and coded.
  - An interim report was delivered in August to The Icelandic Center for Research (Rannís).
  - The article has been submitted and is under review by the journal.

# WP6.1: Drivers and Barriers - Findings

## Notes:

This slide contained a figure that indicates the different internal, connecting, and external drivers that motivate Nordic shipping companies to adopt hydrogen fuel cells.

The figure has been removed from this presentation due to publication rights.

# WP6.1: Drivers and Barriers - Findings

## Notes:

This slide contained a figure that indicates the behavioral, economic, organizational, and operational barriers that Nordic shipping companies face for adopting hydrogen fuel cells.

The figure has been removed from this presentation due to publication rights.

# WP6.1: Drivers and Barriers - Findings

## Notes:

This slide contained a figure that indicates the number of interviews in which each driver was mentioned.

The figure has been removed from this presentation due to publication rights.

# WP6.1: Drivers and Barriers - Findings

## Notes:

This slide contained a figure that indicates the number of interviews in which each barrier was mentioned.

The figure has been removed from this presentation due to publication rights.



# WP6.1: Findings – the decision to adopt HFC – Policy implications

## Notes:

This slide contained a figure that shows how the decision to adopt hydrogen fuel cells is affected by drivers and barriers in the form of feedback loops (positive and negative). This slide showed the case of a balanced case in which the drivers and the barriers are balanced.

The figure has been removed from this presentation due to publication rights.

# WP6.1: Findings – the decision to adopt HFC – Policy implications

## Notes:

This slide contained a figure that shows how the decision to adopt hydrogen fuel cells is affected by drivers and barriers in the form of feedback loops (positive and negative). This slide showed the case in which the relative influence of the barriers outweigh the relative influence of the drivers in the decision.

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# WP6.1: Findings – the decision to adopt HFC – Policy implications

## Notes:

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# WP6.1: Findings – the decision to adopt HFC – Policy implications

## Notes:

This slide contained a figure that shows how the decision to adopt hydrogen fuel cells is affected by drivers and barriers in the form of feedback loops (positive and negative). This slide showed three cases side by side for comparison.

The figure has been removed from this presentation due to publication rights.

# WP6.1: Drivers and Barriers

- **Subtask 6.1.3.** Workshop involving a range of stakeholder groups to identify key action steps to facilitate commercialization and diffusion and investment in hydrogen/fuel cells. The work will identify the requirements for large scale deployment and how such deployment can be fitted into the current regulatory environment.
- **Progress:**
  - The workshop will take place online on the 5th of May of 2022.

# WP6.2: Cost effectiveness and policy options

## Task 6.2

Cost effectiveness and policy options: Assess policy options to enhance Nordic uptake (national, EU, global), e.g., CO2 tax, cost for CO2-permits

- **Subtask 6.2.1. Preparation.** Desktop study identifying policy options to address the drivers and barriers identified in task 6.1.2. and including results from 6.1.3. Creation of policy bundles.
- **Subtask 6.2.2. Comparative cost-effectiveness** analysis of different technological options to decarbonize Nordic shipping without additional policies. Techno-economic analysis including internalized external costs.

- **Progress:**

- The desktop study/literature review has been conducted.

- The comparative cost-effectiveness has begun and will be conducted during Jan-Sept 2022

# WP6.2: Cost effectiveness and policy options

- **Subtask 6.2.3. Policy analysis.** Revealing the relative implications of each policy option (or bundle from task 6.2.1) on goal effectiveness and economic feasibility. Recommendations to Nordic policy-makers.

## Deliverables:

- **Policy brief for stakeholders - Policies for energy innovation chain**
- **Article submitted to an international peer reviewed journal**

## ● Progress:

- The work on this task will begin after the workshop takes place. This will also be informed by 6.2.1.

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