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Background

HELCOM MARITIME 18-2018 approved the establishment of the GREEN TEAM Reporting mechanism and method based on the traffic light idea and agreed on the proposal to develop a digitalized reporting system to be established on the HELCOM website as a tool. The Finnish Maritime Cluster offered to finance the development of this tool. The [GREEN TEAM Reporting Mechanism](#) was published on the HELCOM Website as an online survey in June 2019. The first results of the Reporting Mechanism were considered by GREEN TEAM 3-2019. The Meeting also provided comments and suggested improvements to the survey, which the Secretariat carried out in September 2019.

The GREEN TEAM reporting mechanism is established to find out the main barriers, obstacles and challenges hindering the development on green technologies and alternative fuels in the Baltic Sea shipping. The results will be used to facilitate knowledge and information sharing among the public and private sectors, as well as decision making bodies, and to promote an early introduction of new technological solutions and alternative fuels.

The survey will be kept continuously open for contributions by GREEN TEAM contact points, observers and other interested stakeholders, with the intention to consider results of the Reporting Mechanism annually at meetings of the GREEN TEAM and to be further reported to HELCOM MARITIME for action as appropriate.

This document contains the results of the GREEN TEAM Reporting Mechanism survey received by 26 August 2020. The results of the survey are set out below and the survey questions are found in Annex 1 for information.

The Meeting is invited to identify the main obstacles hindering the development of the green shipping and alternative fuels deployment in the Baltic Sea area in the respect of the topics “Vessel, Infrastructure, Finance, R&D and Regulation”, as agreed as part of the establishment of the GREEN TEAM Reporting Mechanism and Method. The Meeting is also invited to further develop the survey for future reporting, as appropriate.

Action requested

The GREEN TEAM meeting 3-2019 is invited to:

- consider the results of the Reporting Mechanism survey presented in this document;
- discuss and identify the main challenges to be further reported to HELCOM MARITIME 20-2020 for action as appropriate; and
- agree on any identified needs for improvement of the survey.

GREEN TEAM Reporting mechanism – results

The GREEN TEAM reporting mechanism is established to discover the main barriers, obstacles and challenges hindering the development and investments in green technology and alternative fuels in the Baltic Sea. The aim is to have structured and transparent collaboration among the public and private sector actors for a safer, more environmentally friendly and energy efficient transport by sea. The reporting mechanism will be used to share information and experiences, and to find common, workable and sustainable solutions.

The proposed reporting mechanism and method is based on the zero-vision-tool (ZVT) traffic-light reporting and further developed for the HELCOM GREEN TEAM purposes.

The reported issues and outcomes are from the following areas:

- Vessel (technology and design);
- Infrastructure (port development, alternative fuel infrastructure and fuel supply);
- Finance (financing, risk sharing, guarantees, co-funding and incentives to support investments);
- Regulation (new and updates);
- R&D (new identified areas and required pilots);

The traffic light approach is used in reporting:

- Red – when obstacles arise and actions are needed from the HELCOM co-operation (either industry, administrations and/or academia);
- Yellow – when guidance is required from the HELCOM co-operation;
- Green – when the issues can be solved and results are shared.

Knowledge and information are shared based on real-life cases i.e. on-going R&D, pilot and investment projects in the Baltic Sea region. The GREEN TEAM participants, HELCOM observers (e.g. port and shipping associations), the flagship projects of the EU strategy for the Baltic Sea Region and the identified platforms (e.g. ZVT, Green Ship of the future, Saint-Petersburg Initiative) as well as other maritime research and investment projects have been invited to report of their results, progress and the main obstacles related to green technologies and alternative fuels in the shipping sector of the Baltic Sea Region.

The first reporting for annual consideration of the GREEN TEAM Reporting Mechanism was opened on 28 June 2019 and the responses submitted by 9 August 2019 were taken into account in [document 3-2](#) submitted to GREEN TEAM 3-2019. The results considered in the following report were received from 9 August 2019 to 26 August 2020.

The survey will be kept continuously open for contributions by GREEN TEAM contact points, observers and other interested stakeholders and future results will be analyzed annually at GREEN TEAM meetings.

A total of 23 responses were received by 26 August 2020 and 17 of them were used for this summary. The responses are related to actions in Finland (11), Germany (1) and Sweden (1). A total of 4 respondents did not mention their country. (cf. Figure 1).

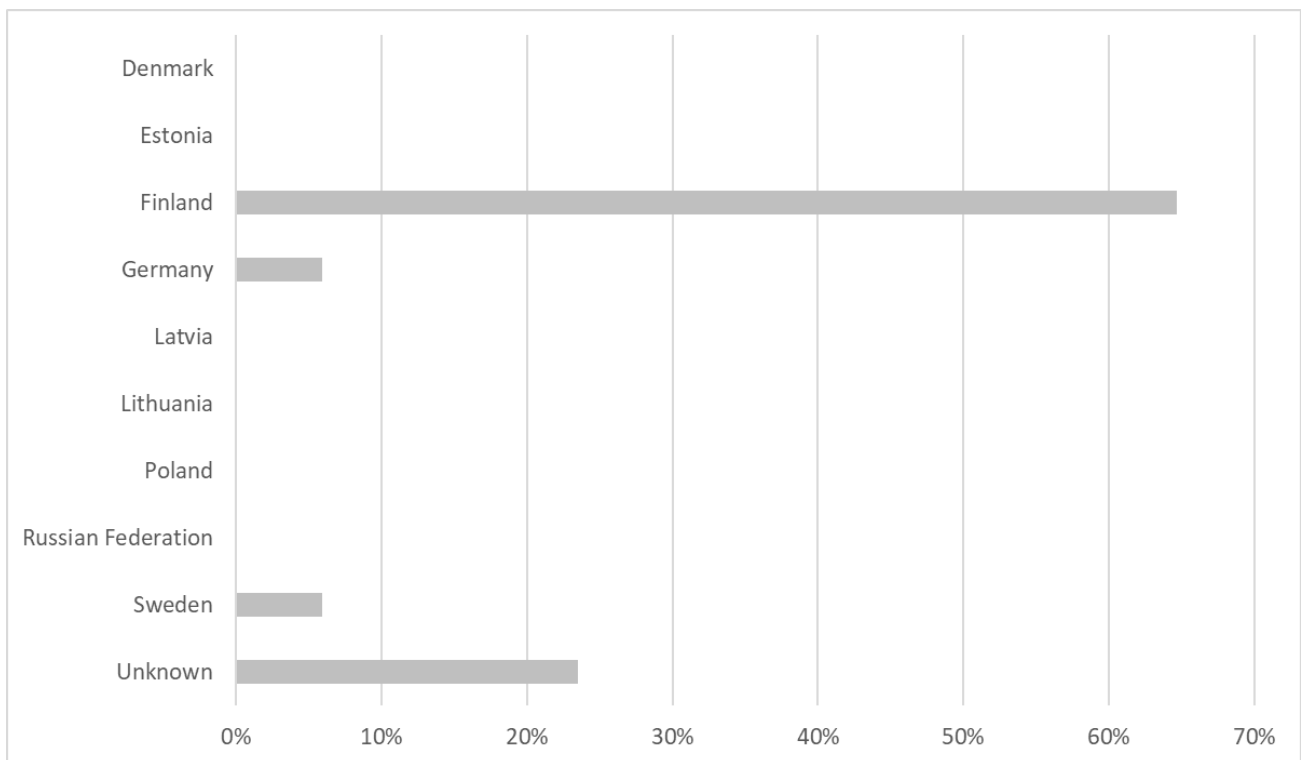


Figure 1. Countries the responses i.e. the projects, investments, developments or plans are based in.

Most of the responses were submitted by shipowners (7) showing the interest of shipowners in the development of green technologies and alternative fuels investments. The other respondents were from the research and development organisations (2), port authority (2), technology or software supplier (2), non-governmental organization (1), cargo-owner (1) or authority (1). Only 1 respondent did not specify its type of organization (cf. Figure 2).

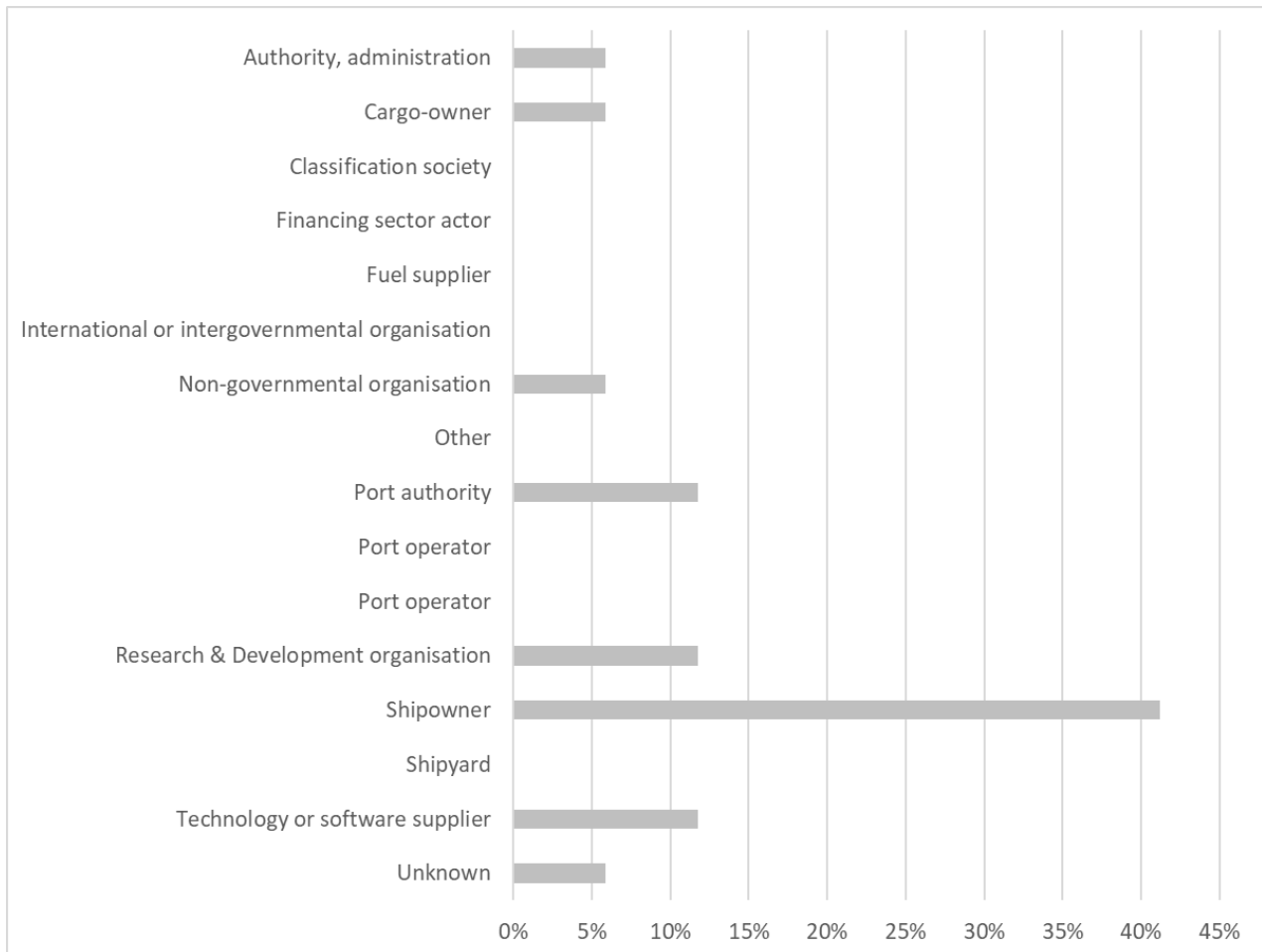


Figure 2. Organizations the respondents are representing.

The reported projects or investments were related to vessel new-building (8), retrofit (4), port infrastructure (3), piloting of new technology (2), Academic research (2), Regulatory development (1), LNG and automooring (1). A total of 4 respondents did not precise the type of project or investment (cf. Figure 3).

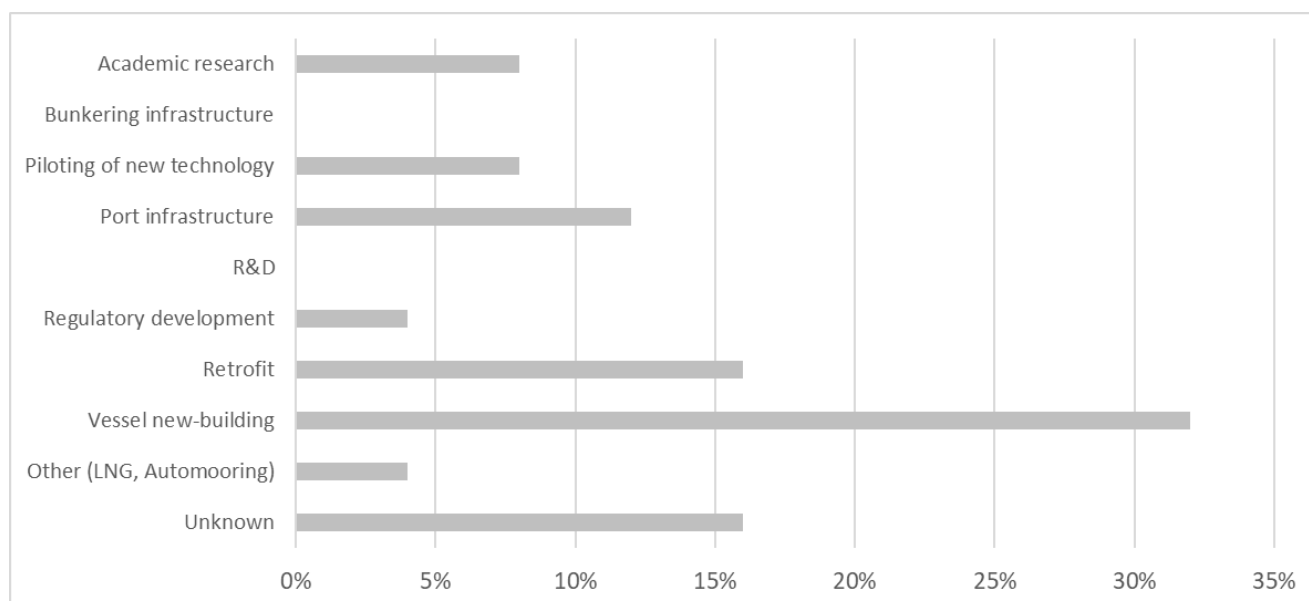


Figure 3. Type of the reported projects.

The results were divided to the five areas as shown in Table 1 below. Finance was the area where most of the challenges have been experienced.

Table 1. The areas where the challenges were experienced most.

Answer choices	Responses	
	%	n
Finance (e.g. lack of financing, risk sharing, guarantees, co-funding, incentives)	23.5	4
Infrastructure (e.g. port development, port infrastructure, alternative fuels, infrastructure and fuel supply)	17.6	3
R&D (e.g. research and/or piloting new technologies or fuels)	5.9	1
Regulation (e.g. regulation, recommendations, standards, guidelines)	17.6	3
Vessel (e.g. technology, design)	17.	3
No answer	17.6	3
Total		17

The traffic-light scale can help to understand the main challenges identified by the survey respondents. In the table 2 below, the main challenges reported as a red traffic-light were related to the access to information and the lack of financing. It is important to note that some respondents did not provide an answer for all the challenges.

Table 2 Traffic-light scale answers to green technologies, alternative fuel technologies or other related issues beforehand identified for the survey.

		Green	Yellow	Red
Emission abatement technology	%	46.2	30.8	23.1
	n	6	4	3
Energy efficiency measures	%	61.5	30.8	7.7
	n	8	4	1
LNG	%	80.0	10.0	10.0
	n	8	1	1
Methanol	%	0.0	71.4	28.6
	n	0	5	2
Biofuels	%	14.3	85.7	0.0
	n	1	6	0
Hydrogen	%	0.0	57.1	42.9
	n	0	4	3
Fuel cell applications	%	0.0	85.7	14.3
	n	0	6	1
Liquified biogas (LBG)	%	37.5	50.0	12.5
	n	3	4	1
Electric and/or hybrid vessels	%	50.0	50.0	0.0
	n	5	5	0
On-shore power supply	%	54.5	27.3	18.2
	n	6	3	2
Other alternative fuel or energy source	%	37.5	37.5	25.0
	n	3	3	2
Bunkering infrastructure	%	33.3	55.6	11.1
	n	3	5	1
Bunkering supply	%	20.0	60.0	10.0
	n	2	6	1
Port infrastructure (e.g. quay structure, draught)	%	55.6	33.3	11.1
	n	5	3	1
Port reception facilities	%	40	50	10
	n	4	5	1
Access to information (e.g. just-in-time arrival, optimisation ,information sharing)	%	33.3	33.3	33.3
	n	2	2	2
Digital solutions	%	50.0	50.0	0.0
	n	3	3	0
Regulatory gaps	%	20	50	30
	n	2	5	3
Harmonised rules	%	20.0	50.0	30.0
	n	2	5	3

Lack of financing	%	12.5	37.5	50.0
	n	1	3	4

Furthermore, open-ended questions help to identify the main obstacles such as biofuels (Regulation) and on-shore power supply (Infrastructure). The other obstacles described in the open answers are listed in Table 3 below.

Table 3. The main obstacles described in the open answers.

AREA	The main obstacles	Responsible body addressing the challenge (if mentioned)
Vessel	For most cases, real-life technical solutions are still missing and regulations are lagging/not considering the issues holistically. There is a need for more cooperation between the responsible bodies and the industry.	Industry, Classification societies, National administrations, EU, IMO
Infrastructure	Unless no incentives are given to the shipping industry all alternative fuels and CO2 emission reduction measures will not be competitive against conventional fossil fuels. International and global cooperation is needed.	IMO
	Lack of LNG / LBG terminals. Speed up the building rate of LNG / LBG terminals, and also give to governments the funding for building bunker vessels, so we don't need to have all our bunker suppliers to be on the road.	Industry, National administrations
	The port infrastructures have to be modified in order to fit the new vessel in 2020. Ports and other stakeholders in the maritime transport sector should meet and change information re best practices and agree upon certain standards. The business should apply with the same regulations and methods in the Baltic Sea Area at least.	Industry, Ports authorities, National administrations, EU, HELCOM (e.g. Green Team, Maritime)
Finance	Battery technology is expensive and slowing down investments of smaller shipping companies. The availability of compensation financial tool is important.	EU
	Financing for investments beyond today's rules, cooperation between ports and ship/ cargo owners are a bottleneck. There is a need of initiative from authorities to start cooperation.	Industry, EU, IMO
	More interactions and discussions between stakeholders. Common demonstration projects.	Industry
Regulation	The taxation challenge regarding energy provided through OPS is a real bottle neck	National administrations, EU
	Stricter emissions regulations motivating / forcing towards energy efficiency investments would be welcome.	EU, IMO
	Too many organisations involved and stiff bureaucracy. Someone to look into how infrastructures and shoreline & local laws can be easier to manage with expertise	Industry, classification societies, National administrations, IMO

R&D	Too little research has been done on alternative fuels. The supply of alternative fuels is very limited at present.	Industry, EU, IMO
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Following the respondents' answers, the EU and the industry are the responsible bodies that were the most highlighted to address these challenges (cf. table 4 below).

Table 4 The responsible bodies for implementing the actions to tackle the main challenges

Answer choices	Responses	
	%	N
Industry	24.1	7
Classification society	6.9	2
Port authority	3.4	1
National administration	17.2	5
EU	24.1	7
International Maritime Organization (IMO)	20.7	6
HELCOM (e.g. Green Team, Maritime)	3.4	1
Academia	0	0

An overview of the survey is available as Annex 1.

Annex 1

HELCOM MARITIME GREEN TEAM - Reporting mechanism**Background information**

1. An organization you are representing

- Shipowner
- Technology or software supplier
- Shipyard
- Cargo-owner
- Fuel supplier
- Port authority
- Port operator
- Financing sector actor
- Classification society
- Authority, administration
- Non-governmental organisation
- International or intergovernmental organisation
- Research & Development organisation
- Other, please specify

2. Optional background information

(only for the use of the HELCOM Secretary/GREEN TEAM, not presented in the survey results)

Name of the project,
investment,
development or plan

Implementation time

Other project partners,
if any

Summary of the
project, investment or
plan

Expected outcome

3. In which country is the project, investment, development or plan based in?

- Denmark
- Estonia
- Finland
- Germany
- Latvia
- Lithuania
- Poland
- Sweden
- Russian Federation
- Other, please specify

4. Type of the project

- Vessel new-building
- Retrofit
- Piloting of new technology
- Port infrastructure
- Bunkering infrastructure
- R&D
- Academic research
- Regulatory development
- Other, please specify

Bottlenecks and challenges in green shipping investments

* 5. In which of the following areas have you experienced challenges the most?

-  Vessels (e.g. technology, design)
-  Finance (e.g. lack of financing, risk sharing, guarantees, co-funding, incentives)
-  Infrastructure (e.g. port development, port infrastructure, alternative fuels infrastructure and fuel supply)
-  Regulation (e.g. regulation, recommendations, standards, guidelines)
-  R&D (need for e.g. research and/or piloting new technologies or fuels)

* 6. Regarding the area chosen in question 5, how would you specify the challenges and rate them according to a traffic light scale?

Green – issues can be resolved and results are shared within the HELCOM public&private co-operation

Yellow – guidance is required from the HELCOM public&private co-operation

Red – obstacles arise and actions are needed from the HELCOM public&private co-operation

	Green	Yellow	Red	N/A
Emission abatement technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy efficiency measures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LNG	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Methanol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biofuels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hydrogen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fuel cell applications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liquified biogas (LBG)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electric and/or hybrid vessels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On-shore power supply	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other alternative fuel or energy source	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bunkering infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bunkering supply	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Port infrastructure (e.g. quay structure, draught)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Port reception facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to information (e.g. just-in-time arrival, optimisation, information sharing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Digital solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulatory gaps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Harmonised rules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of financing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other, please specify

7. Please describe shortly the challenges above.

Actions to overcome the challenges

* 8. What would you propose should be done for addressing the challenges? Please identify in your answer which specific challenge(s) your proposals are related to.

9. In your opinion which is the responsible body for implementing these actions?

- Industry
- Classification society
- Port authority
- National administration
- EU
- International Maritime Organization (IMO)
- HELCOM (e.g. Green Team, Maritime)
- Academia
- Financing sector
- Other, please specify