

*Progress report project indicators*

**Progress report 2**



**CLEAN INLAND SHIPPING**

Project: CLINSH – Clean Inland Shipping  
Goal: The objective of LIFE CLINSH is to improve air quality in urban areas situated close to ports and inland waterways, by accelerating IWT emission reductions.  
Project reference: LIFE15 ENV/NL/000217  
Duration: 2016 – 2021  
Project website: [www.clinsh.eu](http://www.clinsh.eu)



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## Introduction

At the start of the project indicators have been defined by the LIFE program to monitor the progress of the project. This report gives a brief overview of the status of the project indicators. A summary on the status of the indicators is given in Table 1.

**Table 1 - Overview of indicator scores**

Number		Reference (start project) (A)*	State of play (B)*	State of play end of project (C)* (target)	Progress (B-A)/(C-A) x 100%
<b>5**</b>	<b>Air</b>				
5.1a	Air pollutants - particulate matter: project ships (ton/y)	4.7	1.4	14	100%
5.1b	Air pollutants - particulate matter: EU IWT fleet (ton/y)	1,086	1,044	1,044	100%
5.2a	Air pollutants - NO <sub>x</sub> : project ships (ton/y)	130	98	98	100%
5.2b	Air pollutants - NO <sub>x</sub> : EU IWT fleet (ton/y)	28,204	27,822	27,822	100%
<b>11</b>	<b>Governance</b>				
11.1.1	Duty holder covered (ship owners/shipping companies)	0	> 120	120	> 100%
11.1.2	Supervisory/enforcement bodies involved	8	> 40	26	> 153%
11.2	Implication of NGO (mandatory)	0	18	At least 1	> 100%
<b>12</b>	<b>Information and awareness</b>				
12.1.1	Website (mandatory) Users No. of individual hits	0	67,192	50,000	134%
12.1.2	Other tools for reaching/raising awareness of the general public No. of individuals	0	> 100,000	60,000	> 166%
<b>13</b>	<b>Capacity building</b>				
13.1	Networking (mandatory) and other professional training or education No. of individuals informed	0	> 5,000	5,000	> 100%

Number		Reference (start project) (A)*	State of play (B)*	State of play end of project (C)* (target)	Progress (B-A)/(C-A) x 100%
<b>15</b>	<b>Economic growth</b>				
15.5.3	Entry into new geographical areas No. of countries	0	6	4	150%

\* Column A and C have been set at the beginning of the project, the state of play (column B) has been reported during the project to report the progress on the indicator and now gives the situation at the end of the project.

\*\* The emission at the start year and at the end of the project (the target) are different from the proposal as they have been adapted according to the emission calculations in the project. The 100% progress means that all emission reduction technologies are in operation.

Details on the indicators of Table 1 are given in the section hereafter.

## 1. Air pollutants

In the CLINSH project 15 demonstration ships have been supported to install abatement technologies to reduce NO<sub>x</sub> and PM emissions and to monitor the effects. In addition 28 monitoring ships, that already have installed an abatement technique, have been monitored on their NO<sub>x</sub> and PM emission level. With the 15 demonstration ships CLINSH has directly contributed to NO<sub>x</sub> and PM emission reduction. The monitoring results show that before installation of the abatement techniques, the emissions of the demonstration ships amounted 130 tonne NO<sub>x</sub> per year and 4.7 tonne particulate matter per year (see Table 1 Table 2). With the abatement techniques the emissions are reduced to 98 tonne NO<sub>x</sub> (25% reduction) and 1.4 tonne PM (69% reduction). The NO<sub>x</sub> emissions follow from the continuous monitoring results. The PM emissions are based on the sailing profiles from the continuous monitoring results and PM emission levels for the applied techniques according to literature, as the PM emission levels could not be directly determined from measurements.

The level of emissions before installation of the abatement techniques (130 tonne NO<sub>x</sub> and 4.7 tonne PM) is lower than was estimated in the proposal phase (227 tonne NO<sub>x</sub>/year and 10 tonne PM/year. The reference values in Table 1 on the project indicator values has therefore been updated to the value following from the monitoring.

Table 1 gives an overview of the average results per technique. The highest relative NO<sub>x</sub> reduction is reached by Euro VI engines, that also meet the IWT stage V standards, followed by SCR-DPF. The NO<sub>x</sub> emission reduction of SCR-DPF (28%) is quite lower than expected based on literature (70-90%). Although some ships do reach reductions of about 70%, some other reach only 8 or 16%. The exact reason for the low NO<sub>x</sub> reduction results are not known, but it is expected that some SCR installations will improve over time, with optimization of the system. (See for more details the deliverable C1: Socio-economic study CLINSH.) The NO<sub>x</sub> emission reduction of FWE and GTL reach levels as expected.

In total the relative NO<sub>x</sub> emission reduction is lower than expected on forehand, which is attributed mainly to the lower emission reduction of some of the SCR-DPF installations and the fact that the estimation on forehand (in the proposal) was completely based on emission reduction of SCR-DPF and not on GTL or FWE, technologies with a lower NO<sub>x</sub> reduction potential.

As the abatement techniques are operational now, and in principle no further emission reduction is expected. We therefore reported a progress of 100% in Table 1.

Apart from the effect on the demonstration ships, CLINSH has not led to any other reduction of the European IWT fleet, directly. Based on the modelling in CLINSH, the air polluting emission at the start of the project are estimated at 28.2 kilo-tonne NO<sub>x</sub> and 1.09 kilo-tonne PM in 2016 (the start year of CLINSH). In 2020 by the end of the project the emission are lowered to 1.04 kilo-tonne PM and 27.8 kilo-tonne NO<sub>x</sub> per year. The reduction is caused for 92% by autonomous engine renewal and for 8% by the CLINSH sponsored ships. The policy measures to be proposed by CLINSH will have an effect when implemented, after the project has ended.

**Table 2 - Emission before and after installation of emission abatement techniques**

Technology	Number of ships	NO <sub>x</sub> emission (tonne/year)			PM emission (tonne/year)		
		Before (2016)	After (2021)	Reduction %	Before (2016)	After (2021)	Reduction %
SCR-DPF	6	60	43	28%	2.2	0.2	90%
FWE	4	50	42	16%	1.8	0.9	50%
Euro VI engine and hybrid	3	5.9	0,6	89%	0.2	0.01	94%
GTL	2	14	12	15%	0.4	0.3	30%
<b>Total</b>	<b>15</b>	<b>130</b>	<b>98</b>	<b>25%</b>	<b>4.7</b>	<b>1.4</b>	<b>69%</b>

Source: Deliverable C1.

## 2. Coverage/range of the environmental/climate change impact

The number of people and the area affected are based on the area in which the inland ships are active. Besides the Rhine region (proposal) the pilot ships are also active at the east coast of the UK, France, Hungary and Austria.

## 3. Governance

At the moment there are over 120 duty holders involved in the CLINSH project. This includes the 43 skippers and 38 ship owners (some overlap) involved in the demonstration and monitoring, 26 skipper that have participated in the energy scan for OPS, about 22 companies that are involved in monitoring or supplying equipment, 7 companies that are CLINSH partners, and 11 companies that signed the Declaration of Nijmegen, which was co-initiated by CLINSH. In the proposal an incorrect number of 1000 of duty holders was estimated. Within the project period this number is unrealistic and at an earlier stage in the project we proposed a number of 120 duty holders to be covered. This number has been reached. After 5 years, the demonstration ships, the CLINSH policy recommendations and the deliverables of CLINSH are expected to inspire a much larger group of duty holders to take action for clean air.

The number of supervisory/enforcement bodies and NGO's involved/influenced by CLINSH (> 40) meets the targets set in the proposal (26). Governments and enforcement bodies are involved with CLINSH as partners (7), in discussions on CLINSH policy recommendations (5 EC members and CCNR), in the CLINSH advisory board (representing 16 national and regional waterway managers and a promotion bureau). Furthermore, CLINSH partners have been actively participating in the Declaration of Nijmegen, the OPS initiative for inland ports and the Dutch 'Clean air initiative', reaching over 14 other governmental originations on the CLINSH results and recommendations .

With CLINSH partners being active in the Declaration of Nijmegen and the Dutch Green Deal Shipping and Ports also 18 NGO's have been actively informed on our results and policy recommendation. EICB, as a CLINSH partner is actively using the CLINSH results to inform skippers.

More details on the governance are given in Annex 1.

## **4. Information and awareness**

The website has 67,192 individual hits, reaching 134% of the set target. There are 11,324 unique visitors and 5,675 returning visitors.

It is estimated that way over 100,000 people (general public) have been reached by the CLINSH video, brochures, flyers, newsletter and articles in newspapers. This is over 166% of the targeted number of people.

More details on awareness are given in Annex 2.

## **5. Capacity building**

CLINSH partners have given presentations and have participated on several networking events reaching over 5,000 people (> 100% of target).

More details on capacity building are given in Annex 3.

## **6. Economic growth (entry into new geographical areas)**

The CLINSH ships are active in at least 8 countries (United Kingdom, Belgium, the Netherlands, Germany, France, Luxembourg, Austria, Hungary).

## Annex 1: Detail on project indicator 11.1

**Table 3 - Overview of duty holders covered by CLINSH**

Duty holders (parties/ companies in action)	Number	Remark
Skipper (individual ships)	43	
Ship owners	38	Some ship owner are also skippers. There is some overlap, which is not quantified.
Suppliers	22	Minimum number of suppliers involved. At least 22 have been mentioned in the proposal for the subsidies of the CLINSH ships.
Companies in Declaration of Nijmegen	11	With signing the declaration the companies committed themselves to improve air quality.
CLINSH partners	7	New Energy Coalition, MSE, TNO, CE Delft, Shell, Agiplan, Energy Engineers.
Skipper participation in energy scan program for OPS	26	A 26 ships have participated in a scan to check the electrical system on board on use for OPS. The scan was part of the CLINSH project.
<b>Total</b>	<b>147</b>	

**Table 4 - Overview of supervisory enforcement bodies involved in CLINSH (PI 11.1.2)**

Activity/parties involved	Number	Parties involved
CLINSH partners	7	PZH, LANUV, DCMR, Nijmegen, Flanders, Port of Antwerp, North seaport
Discussion on policy with EC	5	DG env, DG mobility, DG research & innovation, INEA, CEF Transport
Governments signing Declaration of Nijmegen	3	Province of Utrecht and Gelderland, Dutch ministry of Infrastructure and Water management (besides already mentioned governments)
Involvement of CLINSH partners in 'Schone lucht akkoord'	3	Province Zeeland, Municipality of Rotterdam, Utrecht (besides already mentioned governments)
Advisory board of CLINSH	18	16 national and regional waterway managers are in the board
Active discussion on CCNR studies and CLINSH	1	CCNR
Participation in 'Walstroom collectief'	8	(Inland) ports and municipalities (at least port of Zwolle, Twente, Harlingen and municipalities Zwijndrecht, Papendrecht, Altena, Zutphen and Nieuwegein
<b>Total</b>	<b>45</b>	



**Table 5 - NGOs informed on CLINSH and committed to support action on emission reduction**

<b>NGO</b>	<b>Connection with CLINSH</b>
EICB	Involved in Declaration of Nijmegen 12/13 April 2018
Nederlandse Vereniging van Binnenhavens (NVB)	Involved in Declaration of Nijmegen 12/13 April 2018
Centraal Bureau voor de Rijn- en Binnenvaart	Signatory Green Deal Shipping and Ports
Koninklijke Vereniging van Nederlandse Reders	Signatory Green Deal Shipping and Ports
Nederland Maritiem Land	Signatory Green Deal Shipping and Ports
Netherlands Maritime Technology	Signatory Green Deal Shipping and Ports
Vereniging van Waterbouwers	Signatory Green Deal Shipping and Ports
Nederlandse Vereniging van Zeehavens	Signatory Green Deal Shipping and Ports
BICEPS Network	Signatory Green Deal Shipping and Ports
Evofenedex	Signatory Green Deal Shipping and Ports
Deltalinqs	Signatory Green Deal Shipping and Ports
Federatie van Nederlandse Expediteursorganisaties	Signatory Green Deal Shipping and Ports
Nederlandse Waterstof en Brandstofcel Associatie	Signatory Green Deal Shipping and Ports
Platform Duurzame Brandstoffen	Signatory Green Deal Shipping and Ports
Green Award	Signatory Green Deal Shipping and Ports
ProSea	Signatory Green Deal Shipping and Ports
TLN	Signatory Green Deal Shipping and Ports
Vereniging van Nederlandse Inland Terminal Operators (VITO)	Signatory Green Deal Shipping and Ports

## Annex 2: Details on project indicator 12.1.2

Table 6 - Overview of articles for general public

Article name/description	Publication date	Number of individuals reached	Website
Verbod op varend ontgassen van benzeen houdende stoffen	13 October 2015	1,000	<a href="#">Transport-online</a>
De binnenvaart gaat elektrisch, dankzij Bon Jovi	8 September 2017	100,000	<a href="#">Trouw</a>
'Schone schepen op de Waal, dat is nog een hele forse opgave'	26 September 2017	113,000	<a href="#">Gelderlander</a>
Landesumweltamt misst erstmals Abgase aus Binnenschiffen	24 October 2017	800	<a href="#">Welt</a>
Vessels selected for EU's CLINSH project	30 October 2017	800	<a href="#">ship-technology</a>
Meting aan Waalkade: hoe vervuilend is elk schip?	7 April 2018	113,000	<a href="#">Gelderlander</a>
Schipper 'Vera Pax': "Vergroening binnenvaart commercieel onleefbaar"	1 March 2018	1,000	<a href="#">www.flows.be</a>
'Onze' schepen moeten van de fossiele brandstof af	2 February 2018	7,500	<a href="#">Volkskrant</a>
Umweltbundesamt entlastet Binnenschiffe in Emissionsdebatte	8 May 2018	1,500	<a href="#">Binnenschiffahrt-online.de</a>
2 press releases (March, June)	12 June 2019	10,000	
North Sea Port zet verder in op walstroom voor binnenvaart	1 March 2019	5,000	<a href="#">fluxenergie.nl</a>
Green Deal für die Binnenschiffahrt	1 September 2019	5,000	<a href="#">Binnenschiffahrt-online.de</a>
Overheid remt vergroening van de binnenvaart	1 February 2019	5,000	<a href="#">Nieuwsbladtransport</a>
Emissionsmessungen auf dem Laborschiff 'Max Prüss' nach Ausrüstung mit einem SCRT-System - Ein Beitrag zum Projekt Clean Inland Shipping (CLINSH)	1 January 2020	500	<a href="#">www.lanuv.nrw.de</a>
Lanuv - several publications	1 December 2021	500	<a href="#">www.lanuv.nrw.de</a>
Schuttevaer - CLINSH slotconferentie: 'Beschamend dat verlader niet kiest voor groen'	3 December 2021	2,500	<a href="#">www.schuttevaer.nl</a>
nt - 'Europees vergroeningsfonds broodnodig voor binnenvaart'	1 December 2021	2,500	<a href="#">www.nt.nl</a>
Scheepvaartkrant - CLINSH-project voor schone scheepvaart na vijf jaar afgerond	1 December 2021	3,000	<a href="#">yudu.com</a>

Article name/description	Publication date	Number of individuals reached	Website
Vergroening binnenvaart kost scheepseigenaren 760 miljoen euro	27 November 2021	3000	<a href="http://Schuttevaer.nl">Schuttevaer.nl</a>

Figure 1 - Painting of CLINSH ship in Port of Ghent (PI 12.1.2)



Table 7 - Other communication on CLINSH to general public

Item	Comments	Number of individuals reached
Newsletters	11 Newsletters haven been sent	1,500
MSE email Newsletters		3,303
Leaflets/flyers		100
Brochures		1000
Television item on RTV Rijnmond 1 March 2019		10,000
Videos on Youtube	<a href="https://www.youtube.com/watch?v=Hg_caVnekG0">https://www.youtube.com/watch?v=Hg_caVnekG0</a>	1,260
	<a href="https://www.youtube.com/watch?v=xlcKmdPLbYc">https://www.youtube.com/watch?v=xlcKmdPLbYc</a>	152
	<a href="https://www.youtube.com/watch?v=sPMHc68rark">https://www.youtube.com/watch?v=sPMHc68rark</a>	234

Item	Comments	Number of individuals reached
	<a href="https://www.youtube.com/watch?v=w7NOVt2HViw">https://www.youtube.com/watch?v=w7NOVt2HViw</a>	78
	<a href="https://www.youtube.com/watch?v=AOP_erW0ly8">https://www.youtube.com/watch?v=AOP_erW0ly8</a>	162
	<a href="https://www.youtube.com/watch?v=-fD2m7F-emg">https://www.youtube.com/watch?v=-fD2m7F-emg</a>	147
	<a href="https://www.youtube.com/watch?v=dDVEbNKnuT8">https://www.youtube.com/watch?v=dDVEbNKnuT8</a>	167

## Annex 3: Details on project indicator 13.1

Table 8 - Presentation given about CLINSH by CLINSH partners

Event	Date	Number of individuals reached
Mini-symposium Schone Scheepvaart Nijmegen	4 April 2016	36
Corridorweek Rotterdam (PZH)	5 November 2018	425
Regionale Bijeenkomst Innovatieve Energiedragers (Regional Meeting Future Innovative Energy carriers)	1 November 2018	150
Corridor week Aachen	6 November 2018	425
Ports and the City conference Nijmegen	12 April 2018	300
LNG Roadmap workshop, Düsseldorf	29 May 2018	500
Declaration of Nijmegen follow-up zero-emission IWT	19 November 2018	35
Infosessie: Vergroening in de Binnenvaart; PoA	16 November 2018	30
Workshop CLINSH at river dating	29 November 2018	120
Know-How Transfer Event, Modernisation of Danube Vessels Fleet, Vienna	7 March 2019	?
Greening Inland Shipping Conference & Exhibition (London)	10 September 2019	200
EU Green Week	3 June 2021	?
Workshop Federal Institute of Hydrology (BfG)	17 January 2022	?
Presentation at CE Delft	31 January 2022	40
Work session with European committee, Brussels	13 March 2019	?
CLINSH mid term conference, Brussels	13 March 2019	150
Clean Air Forum Bratislava	29 November 2019	2,000
Presentation CLINSH to DG MOVE (September)	1 September 2020	50
Presentation CLINSH at the POLIS 2020 Arnhem-Nijmegen	30 November 2020	200
TAIEX - Technical Assistance and Information Exchange instrument of the European Commission	1 March 2021	50
Roadmap Green Gas Mobility 2021	18 November 2021	250
CLINSH end conference (physical + online)	25 November 2021	180
<b>Total (at minimum)</b>		<b>5,141</b>



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Rijnmond

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lebenswertes Land



North  
Sea  
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Nijmegen

**agiplan**  
gedacht. getan.

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