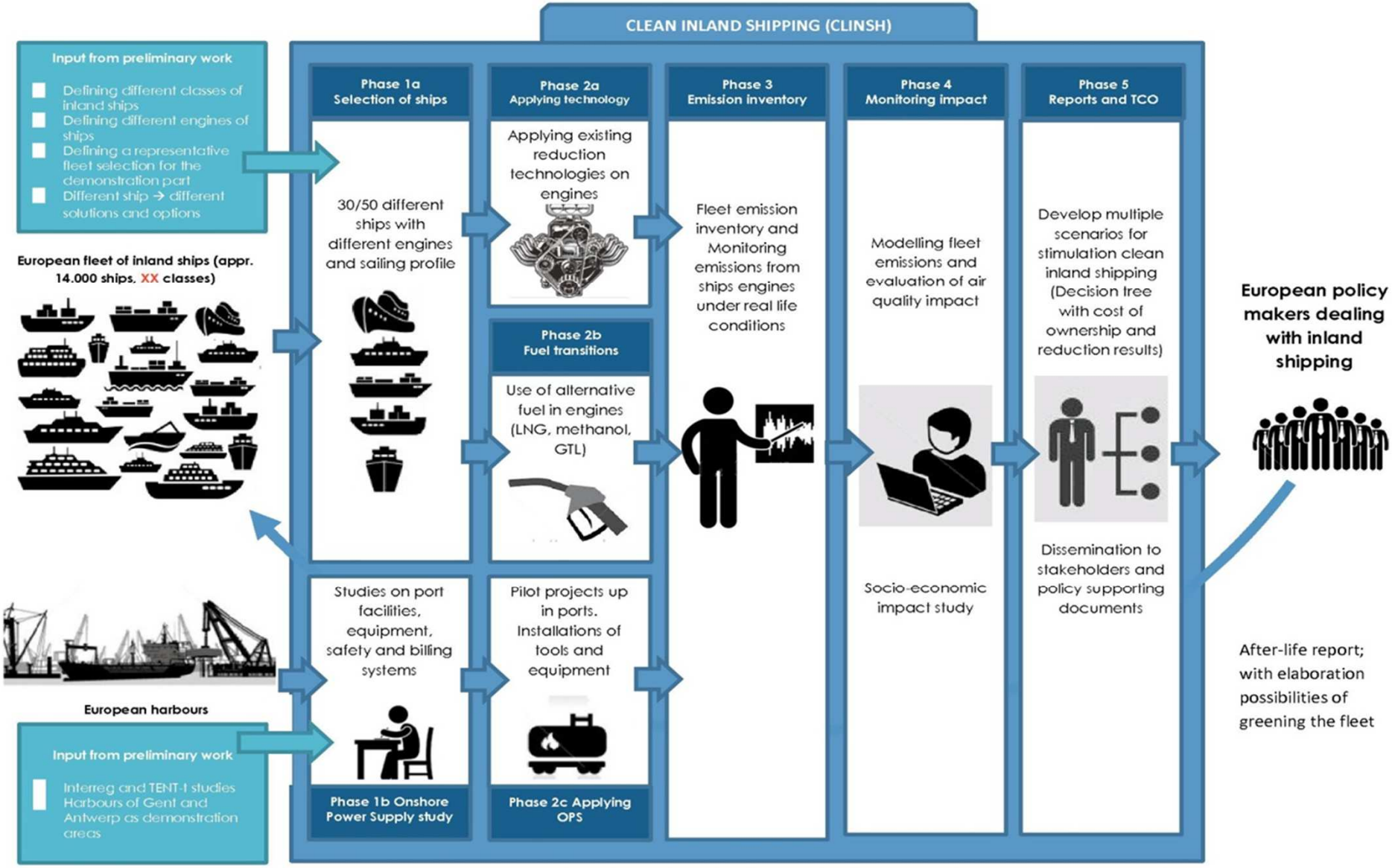
CLINSH
CLEAN INLAND SHIPPING

Goals

- Accelerate emission reduction in inland waterway transport
- Demonstrate the impact of the use of emission reduction technologies, alternative fuels and Onshore Power Supply
- Improve air quality in urban areas



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Abstract

This abstract elaborates on the CLean INland SHipping project (CLINSH). It briefly explains the problem targeted, the CLINSH objective and describes the project. The project will be submitted to the European LIFE fund in October 2015. If it is granted by LIFE, execution of CLINSH will start in July 2016.

Problem targeted by CLINSH

Inland shipping has long been the most environment-friendly mode of transport. However, the environmental competitiveness of inland navigation compared to road transport has decreased since the introduction of Euro standards for trucks. The inland waterway transport sector has been underexposed in EU legislation. This, combined with the long lifespan of ship engines results in relatively large environmental impacts of the inland navigation sector.

There is growing awareness that inland shipping contributes disproportionately to the concentrations of NOx and PM (2-6 µg NO2/m3) along waterways and in urban areas. Air pollution remains the prime environmental cause of death in the EU, whilst also continuing to affect ecosystems and obstructing economic development. To improve air quality, many regions implemented measures that mainly focus on the reduction of industrial and road traffic emissions in urban areas. CLINSH focuses on the inland waterway sector. Within CLINSH we will demonstrate how improving the emission performance of inland shipping can accelerate air quality improvement and ensure compliance with EU limit values set under directive 2008/50/EC.

CLINSH objective

The main objective of CLINSH is to accelerate emission reduction in Inland Waterway Transport. CLINSH will demonstrate the impact of the use of emission reduction technologies in order to improve European air quality in urban areas and comply with EU limit values for air quality.

Sub objectives:

1. Demonstrate and measure to what extent emission reduction technologies and alternative fuels can reduce air pollutant emissions in real-world conditions (NOx, PM10 and soot) caused by the current European IW fleet.
2. Demonstrate how emission reduction technologies, fuel transition and onshore power supply can be applied to the existing European IW fleet in various demonstration projects. scenarios. The demonstrations will reveal information on the costs and benefits of the various measures
3. Demonstrate the effect of different scenario's on air quality by using high resolution modelling.
4. Increase awareness among skippers and (local, regional and national) policymakers on cleaner inland shipping and the costs and benefits of available techniques.

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Description

In CLINSH the performance of various emission reduction techniques, alternative fuels and onshore power supply will be tested and measured under real-world conditions on 30 ships. In order to find out which measure is most suitable for which type of ship, demonstration projects will be executed in which emission-reduction rates and costs of ownership are demonstrated under real-life circumstances. By doing so, skippers are supported in their decision making process to make their ships more environment friendly. Besides, the real-life information also supports (local, regional, national, European) policymakers in developing policies and strategies aimed at reducing emissions from the inland waterway sector (e.g. setting emission standards, financial instruments).

Emission standards have proven to be effective instruments in many fields, however they may not suffice to achieve the objectives of cleaner inland shipping. High upfront investments in emission reduction, fuel transition and onshore power supply technologies with uncertain payback times may lead to reservations of ship owners and impede a fast uptake of these clean technologies. Therefore, CLINSH also addresses financial and legal conditions that are needed to implement the measures to the entire European fleet. Measures will be needed on all levels of policy making ranging from EU, CCNR, national, regional and local level. Effectiveness will increase when there is alignment of measures and instruments between the policy levels as well as geographically.

The CLINSH effect and EU added Value

The European inland fleet amounts to approximately 14.800 ships (passenger vessels included). The objective of CLINSH is to accelerate the introduction of NOx and PM reduction measures in the fleet. Not all ships are appropriate for technical solutions for NOx and or PM reduction. CLINSH will provide insight in economic and technical feasibility of these solutions. The emission levels of CCR1 and CCR2 engines are still high compared to emission standards proposed for phase V in the NRMM directive (expected to be effective from 2020 on). Therefore CLINSH focuses on engines with CCR2 standard or older (CCR0 & CCR1).

These ships will not be adjusted without incentive. CLINSH will provide cost effective incentive options for policy makers and will make transparent costs and bates for ship owners. A rough estimation of the effect of CLINSH on the acceleration of emission abatement is given in figure 1, in which the green line represents the acceleration rate, the CLINSH effect. Presumes ships with engines from before 2020 (CCR2 or older) to take CLINSH measures and thereby reducing NOx emissions: 25% of engines in 2025 and 50% of engines in 2030. Total effect 2020-2030 is a reduction of 141 ktons NOx equal to external (=social) benefits of 1.6 billion euro's (CE, 2014) (source Analysis CE based on Panteia 2013, TNO 2015 and IFEU 2013)4).

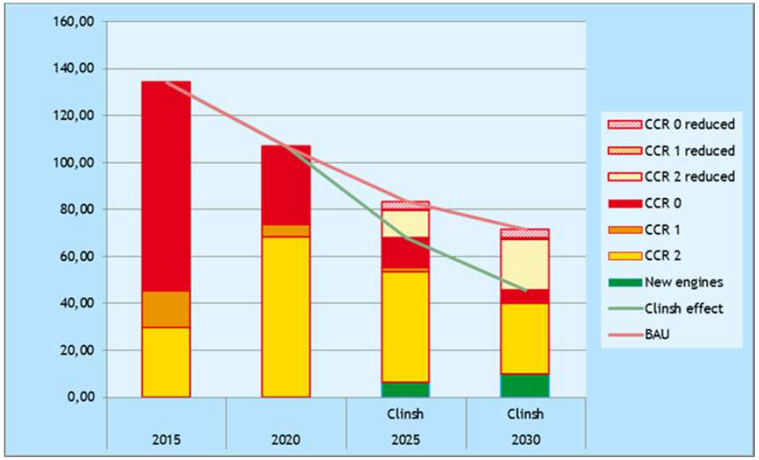

Figure 1: The CLINSH effect (source: CE Delft).