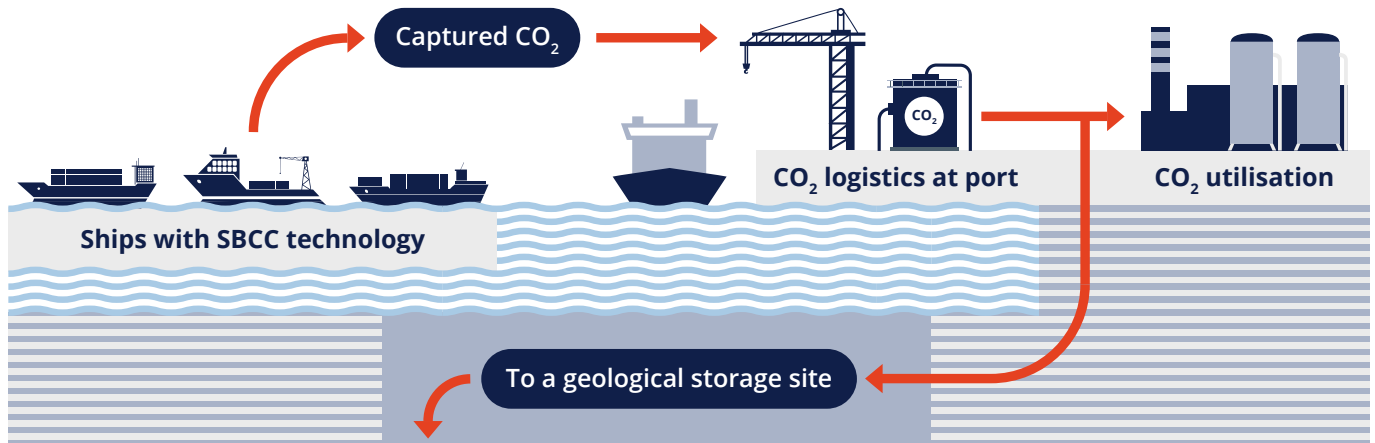


## Forging ahead towards zero-emission shipping

EverLoNG aims to encourage the uptake of ship-based carbon capture (SBCC) by demonstrating its use on LNG-fuelled ships. Our research will optimise the technology and consider how best to integrate it into existing ship and port infrastructure. Our experts will tackle both the technical and economic challenges of SBCC.



## Objectives

- 🚢 Develop strategies for reducing shipping's CO<sub>2</sub> emissions by at least 70%
- 🚢 Demonstrate effectiveness of SBCC on LNG-fuelled ships
- 🚢 Evaluate impact of SBCC on ship infrastructure, stability and safety
- 🚢 Demonstrate emission reduction potential of SBCC
- 🚢 Identify any major safety hazards associated with SBCC and highlight safeguards
- 🚢 Bring CO<sub>2</sub> capture and onboard storage costs to below €100 per tonne by 2025 and €50 per tonne for follow-on developments
- 🚢 Evaluate the cost of offloading, transport, utilisation and/or storage in different carbon capture, utilisation and storage (CCUS) chains
- 🚢 Develop offloading strategies that guide onboard post-treatment of CO<sub>2</sub> and port infrastructure needs
- 🚢 Establish a CO<sub>2</sub> Shipping Interoperability Industry Group and develop a scale for evaluating port CCUS readiness levels
- 🚢 Propose a roadmap for a European CO<sub>2</sub> offloading network

## Funding



EverLoNG is a three-year international research initiative involving the maritime, R&D and engineering sectors and co-funded by the ERA-NET ACT3 programme. Project number: 327332.

## Why is this project needed?

International shipping – the transport of goods and products between nations – has the lowest carbon footprint per tonne for long-range transport. However, it still produces around 2.5% of global CO<sub>2</sub> emissions and this figure is expected to rise significantly unless steps are taken.

### WP1 •

#### Demonstrating ship-based carbon capture



Ship-based carbon capture (SBCC) will be demonstrated on board two types of LNG-fuelled ships provided by TotalEnergies and Heerema and using TNO's capture plant prototype. The onboard capture plant prototype is a key innovation.

### WP2 •

#### Ship-based carbon capture in the full CCUS chain



We are taking a holistic view of SBCC as part of international CCUS networks. Our CO<sub>2</sub> Shipping Interoperability Industry Group will connect European ports with developing CCUS projects.

### WP3 •

#### Impact of SBCC on shipping infrastructure



We are studying the flexibility of SBCC for large-scale use in different scenarios – for retrofitting or new build vessels – and on board any LNG-fuelled ships from bulk carriers and ferries to cruise ships.

### WP4 •

#### Environmental impact, LCA & techno-economic aspects



Our Life Cycle Assessment (LCA) considers the full chain of SBCC, including the fate of captured CO<sub>2</sub> once offloaded – either transported to long-term geological storage or used in the manufacture of everyday products.

### WP5 •

#### Regulatory frameworks



We will bring together technology developers and three major classification societies – Bureau Veritas Norway AS, Lloyds Register and DNV – to ensure SBCC technology complies with safety regulations supporting its uptake at large-scale.

### WP6 •

#### Dissemination & knowledge sharing



Sharing our results is key to the uptake of SBCC R&D by stakeholders – including the international shipping community, workforces, policymakers and governments – and its acceptance by the wider public.

The EverLoNG project consortium comprises 16 project partners from five countries – Germany, the Netherlands, Norway, the UK and the USA. It is supported by an Advisory Board of representatives from port authorities, marine and shipping contractors, industry organisations and CCUS project developers.