



DEME

**Dredging, Environmental
& Marine Engineering**

Participations and Chain Initiatives

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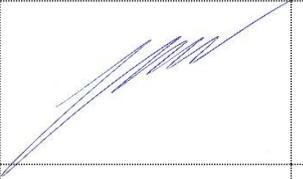
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Table of Contents

1. PARTICIPATIONS	4
1.1 PROGRAMMES.....	4
1.2 SECTOR ORGANISATIONS.....	6
2. INITIATIVES	8
2.1 DEVELOPMENT OF DUAL FUEL LNG HOPPER DREDGERS.....	8
2.2 METHANOL AS AN ALTERNATIVE FUEL	8
2.3 BLUE CLUSTER	8
2.4 SANDWINDMILL.....	9
2.5 TIDAL ENERGY.....	9
2.6 BLUE CARBON.....	9
2.7 ANTIFOULING	9

1. PARTICIPATIONS

This section describes DEME's participation in sector and chain initiatives in relation to energy and CO₂ reduction. Reference is made to the CO₂ Performance Ladder manual v.3.0

DEME's efforts to reduce energy consumption and CO₂ emissions also include supporting different governmental and NGO initiatives.

1.1 Programmes

SDG charter

DEME has signed the Belgian SDG charter. As a charter signatory DEME commits itself to the realization of the Sustainable Development Goals (SDG's). The 17 SDGs, also known as Global Goals, build on the success of the Millennium Development Goals (MDGs) and aim to go further to end all forms of poverty. The new Goals are unique in that they call for action by all countries, poor, rich and middle-income to promote prosperity while protecting the planet. They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and addresses a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection.

Green Deal Sustainable Infrastructure 2.0 (Duurzaam GWW 2.0)

DEME has signed the Green Deal Sustainable Infrastructure 2.0, a partnership between clients, contractors and research institutes which aims to promote innovation, sustainability, energy savings and cost reduction in construction projects. This Green Deal also fully supports the CO₂ reduction ambitions of the Dutch authority Rijkswaterstaat, which is responsible for the design construction, management and maintenance of the waterways and roads in the Netherlands. DEME is also member of the workgroup 'monitoring' to measure the results of the GreenDeal. The next step is Green Deal 3.0 Duurzaam GWW.

Full Sail Ahead with Savings (Het voortvarend varen)

DEME subsidiary De Vries & van de Wiel participates in the Dutch 'Full Sail Ahead with Savings' programme. This is comparable to eco driving, but with the focus on fuel economy and CO₂ reduction in the fluvial transport sector. DEME Building Materials also implements this programme for its outsourced inland water transport.

Offshore Wind

DEME is contributing to the EU-wide 2020 renewables targets by the design, installation and project development of wind farms in the North Sea. An active engagement in the pioneering C-Power wind farm formed a start to a mature Offshore Wind Farm business – reflected in the active participation in Otary for the development, construction and operation of other Belgian OWF projects (Rentel-SeaStar-Mermaid) but also a further international exploration. In order to achieve the 2020 objective that 20 % of total energy output should be produced by renewable sources of energy (RES), Belgium has committed itself to generate 13 % of its electricity from RES.

Horizon 2020

Energy efficiency is a no-regret option for Europe, addressed by both short-term and long-term EU policies. The EU is aiming to progressively decrease primary energy consumption by 2020 and 2030. In the framework of this policy Europe has launched the Horizon 2020 Research and Innovation programme (from 2014 to 2020). In this programme there are different research area sections.

DEME participates in both the 'smart, green and integrated transport' work research programme in order to make vessels more efficient and less polluting and 'secure, clean and efficient energy', work research programme with the intention to develop new technologies and emerging designs in the field of ocean energy.

Flemish Climate Policy

DEME is fully engaged in the formally stated Climate Policy (01/12/2016) of the Flemish Government. On the public website (<http://www.vlaamseklimaatop.be>), DEME repeats its corporate policy on energy efficiency and the climate change challenges.

Navigating a changing Climate

Recently DEME became an active supporter of the PIANC "Navigating a Changing Climate"-initiative, an international initiative following the COP21 in Paris. This initiative is designed to encourage the owners, operators and users of waterborne transport infrastructure to reduce greenhouse gas emissions, to shift to low carbon maritime and inland navigation infrastructure, to improve resilience, and to adapt inland and maritime navigation infrastructure to the effects of a changing climate.

1.2 Sector organisations

DEME participates actively in different task groups and emission-related committees.

ADEB-VBA

DEME is a active member of the Green Board of the ADEB-VBA, the association of major Belgian contractors. The Green Board is a working group where different environmental issues are discussed, and initiatives are launched. One of the environmental issues concerns the reduction and energy consumption on construction sites.

Dutch Association of Dredging Contractors (Vereniging van Waterbouwers)

DEME is participating in the sustainability working group of the 'Dutch Association of Dredging Contractors' or 'Vereniging van Waterbouwers' (VvW). This working group also focuses on the Dutch procurement tool "CO₂ Performance Ladder". Since 2019, DEME is an active member of the workgroup 'Vergroening van de Waterbouw'. The focus is on legislation and techniques on the reduction of emissions.

European Dredging Association (EUDA)

DEME is a member of the European Dredging Association. EUDA provides a centralised platform for sector communication and represents the industry when dealing with international institutions- such as the International Marine Organisation (IMO) and the European Commission. The EUDA is engaged in a wide range of discussions with the EU, including those concerning CO₂ and sulphur emissions from marine vessels. Paul Vercrujssse is an active member of the Environment Committee of EUDA. From there, DEME is fully supporting and assists external communications on CO₂-emissions from dredging ships, the publication of international papers on Blue Carbon or the direct preparation of support documents for the MEPC (Marine Environment Protection Committee)-meetings of IMO.

Permanent International Association for Navigation Congresses (PIANC)

DEME is member of the Permanent International Association for Navigation Congresses (PIANC). The PIANC is working on technical, economic and environmental issues pertaining to waterborne transport infrastructures. Members include private companies, national governments and public authorities.

DEME participates in working group 188 of the PIANC "Carbon Management for Port and Navigation Infrastructure". The objective of this WG is to help the navigation sector complying with emerging regulatory requirements and provide options and recommendations for good practice in terms of carbon management (reducing, offsetting or sequestering carbon) in port and navigation industry. Filip Vandeputte is actively engaged in defining and evaluating the so-called carbon management life cycle for navigation infrastructure and projects – as an operational tool to manage and control carbon balance over a project.

Central Dredging Association (CEDA)

DEME is participating in the Environmental Commission of the CEDA, a non-governmental organisation, which is engaged in relevant advisory boards at international and national levels in the fields of dredging and marine construction.

2. INITIATIVES

2.1 Development of dual fuel LNG hopper dredgers

DEME and the Dutch shipbuilder IHC are leading the way in the development of LNG-fuelled hopper dredgers. The project aims at introducing LNG environmental friendly, sustainable technology in the power generating systems of dredging vessels. As these vessels often operate in densely populated maritime port areas in Europe, the air emissions of these vessels are too high with the current traditional techniques, being traditional marine fuel oil. Compared with marine fuel oil, LNG engines are estimated to produce less CO₂ (+/- 20% reduction) and much lower levels of NO_x (90% reduction), SO_x (> 95% reduction) and particulate matter (>95% reduction). In order to obtain further insight in the emission reduction results, DEME will put in place an emission measurement and analysis programme on one of its new LNG vessels.

2.2 Methanol as an alternative fuel

DEME takes part in Work package 5 of the EU research study LeanShips. Work package 5 is carried to demonstrate a high-speed marine diesel engine converted to dual fuel operation on methanol and diesel while achieving significant reductions of emitted pollutants (reduction of 15% CO₂, 60% NO_x, 95% particulate matter and 99% SO_x). For this study DEME is collaborating with different other companies and the university of Ghent. Methanol could become a cost-effective and environmentally friendly alternative to conventional transportation fuels. This latter aspect is especially important as the industry must comply with the ambitious International Maritime Organization and EU emission reduction targets.

<https://www.leanships-project.eu/home/>

2.3 Blue Cluster

DEME is one of the founding members of the Blue Cluster. The Blue Cluster has been set up as a partnership that focuses on the development and promotion of economic activities at sea and tackles the challenges in climate change, ocean pollution, the energy issue, healthy food and good maritime accessibility.

One of the focus areas for DEME is renewable energy. The mission of the Blue Cluster is develop 100% renewable electricity production at sea using a wide range of different technologies, wind and floating PV. The objective is to realise an installed capacity of several hundreds of MW and a storage capacity of several thousands of MWh. Besides, the Blue Cluster aims at stimulating the development (R&D) of wave and tidal energy converters.

<https://www.blauwecluster.be/>

2.4 Sandwindmill

A collaboration between Sweco, IHC and DEME takes initiative in a new and innovative beach nourishment concept, the Sandwindmill. This concept fits in the Dutch Coastline Challenge. The potential CO₂ reduction for this project is 185kTonnes CO₂ equivalent each year.

<https://debouwcampus.nl/co-creatie-lab/praktijkopgaven/kustlijnzorg>

2.5 Tidal energy

DEME is active in the development of tidal energy projects and energy transport at sea. For the development and research of its technology DEME cooperates closely with academic centres and specialised partners (Port authorities and energy suppliers).

2.6 Blue Carbon

DEME is currently working on an operational tool to integrate, evaluate and validate carbon sequestration in their marine works – showing how the value of Blue Carbon is incorporated in e.g. coastal restoration projects all over the world. Blue Carbon hereby refers to the GHG sequestered by, stored in or released by coastal wetlands, salt tidal marshes, sea grass beds or mangroves.

2.7 Antifouling

DEME has launched a study to investigate the boundary layer and surface roughness characteristics of three commercially available hull coatings: a tin-free SPC, a new generation Foul Release coating and a novel nanostructured coating. The study was conducted by the University of Newcastle and showed some remarkable results. Further exploration of the impact of dynamic changes experienced by coatings in-service is being explored further in the University's dynamic slime farm and by tests on a research vessel.

2.8 Emissieloos netwerk infra

ENI is open to anyone who can bring "emission-free working" closer to infrastructure. The end justifies the means. The degree of cooperation with others and the structure in which cooperation takes place are derived from the goal. If parties can bring the goal of "zero-emission working" in a structured way closer and faster, they will work together.

2.9 Green Maritime Methanol

A consortium of leading international maritime companies, supported by Maritime Knowledge Centre, have joined forces to further investigate the feasibility of methanol as a sustainable alternative transport fuel in the maritime sector.

<https://greenmaritimemethanol.nl/>

2.10 Hyport Green hydrogen plant in Ostend and Duqm

Port of Oostende, DEME and PMV propose an ambitious green energy plan and aim to reduce CO2 emissions in Flanders by around 500,000 to 1,000,000 tons per year by producing green hydrogen.

<https://www.deme-group.com/news/hyportr-green-hydrogen-plant-ostend>

https://www.cfe.be/sites/default/files/Hyport%20Duqm_NL.pdf

2.11 Transport of Hydrogen

The climate target to have CO2 emissions in Belgium by 80% lower by 2050 than in 2005 is a major challenge. Hydrogen has an important role to play in the mix of solutions to achieve results. That is why Deme, Engie, Exmar, Fluxys, Port of Antwerp, Port of Zeebrugge and WaterstofNet are joining forces. A joint study is the basis to focus specifically on concrete projects that shape the production, transport and storage of hydrogen.

Bringing expertise together

<https://newsroom.portofantwerp.com/primeur-in-belgie-zeven-toonaangevende-spelers-tekenen-samenwerkingsakkoord-voor-transport-van-waterstof>