50-021-8

EUROPEAN DREDGING ASSOCIATION POSITION PAPER ON DECARBONISATION OF DREDGING PROJECTS

This paper is intended for the public administrations, including IMO, European Commission and Flag States, regulating and enforcing reduction of ships' CO_2 emissions. This paper aims at providing policy insights on how to reduce CO_2 emissions from dredging projects, but not on carbon accounting, reporting on carbon, the EU Emission Trading System, the EU Green Deal or Green Taxonomy definitions.

Executive Summary

- Dredging is a global industry, which needs **global level playing field**;
- The European Dredging Industry is operating a large fleet of dredging ships worldwide providing globally essential specialised services to the waterborne infrastructures and offshore energy cluster in order to construct and maintain ports and waterways, to execute projects dealing with coastal protection, land reclamation, offshore renewable or fossil energy, aggregate mining and environmental remediation;
- The European Dredgers are reducing their CO_2 emissions and have been investing €11 bn from 2008 to 2017 in technology developments, innovative solutions and in further optimisation of dredging operations.
- With regard to the International and European emissions monitoring systems, the regulations, approaches and metrics need to be right and aligned and fully compatible with each other in order to avoid unnecessary duplication, administration or, worse, 'regional' competitive distortions;
- European dredging companies, although exempted from the EU MRV, are willing to report total CO_2 emissions per vessel; however, the IMO reporting format is not suitable for working vessels, such as dredgers and marine contracting vessels in general and the collected emissions data from vessels should be meaningful as the use of irrelevant or inappropriate data can lead to misinterpretation and/or misunderstanding and cause unnecessary economic damage
- No dredging projects are identical and the operational profiles of dredging equipment, using energy to both sail and work, differ significantly per project; this is the reason why CO_2 emissions for dredging should be optimised at **project** level, not at ship level; a **comprehensive approach** considering the main drivers of dredging projects (the design of projects and of equipment, as well as the execution of projects and the operational use of equipment) should be followed for the optimisation of CO_2 emissions from dredging projects;
- EuDA supports the introduction on a global basis of fair, effective and equitable Market-Based Measures (MBM) and legally enforced Operational Measures that will provide incentives to reduce CO_2 emissions; the European dredgers consider that a **GHG Levy Fund** is more suitable for their sector than emissions trading schemes and should warrant a worldwide level playing field.

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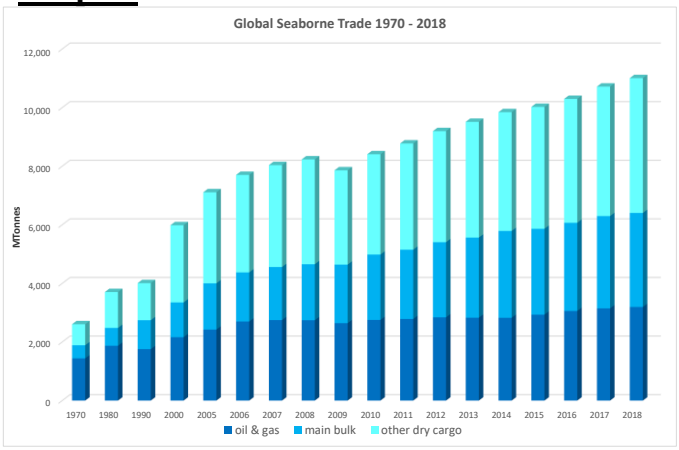
1. Introduction

1.1 Maritime Transport

In the global transport logistical chains, maritime transport plays a critical role: around 90% of Europe's international trade and 40% of the intra-EU trade is done through maritime transport. Maritime transport is a catalyst for economic development and prosperity, ensuring security of supply of energy, food and commodities. Consequently, around 80 % of the world's largest population centres are located in coastal areas, which are by definition more vulnerable to extreme events and sea level rise. These areas would need to adapt their defences in the coming decades. This could result in an increased demand for the European Dredgers' know-how and technology.

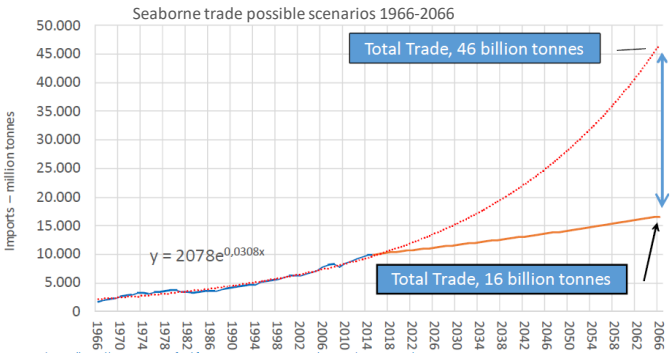
Due to its close connection to global commerce, international shipping plays a vital role in the facilitation of world trade. In the past decades, the developments in seaborne trade have been impressive and were made possible thanks to continuous technological developments.

Graph 1: Evolution of seaborne trade



Source: UNCTAD 2019

Graph 2: Forecast scenarios of seaborne trade



Source: Clarkson Research Services Ltd

In line with world trade, sea transport is predicted to continue to grow significantly. A global approach is needed to further improve energy efficiency and reduce GHG emissions. In the context of the Paris Agreement, the IMO ambitions are to reduce by 50% the Greenhouse Gas (GHG) emissions (including CO_2 emissions) of the shipping fleet by 2050 (compared to 2008).

The outbreak of COVID 19 had significant impacts on the global economy and seaborne trade in 2020. Some of these impacts may well be long lasting on the way global production and consumption will happen in the future.

1.2 The European Dredging Industry

Maritime dredging *is the maritime extraction, transportation and relocation of natural materials from one part of the water environment to another by specialised sea-going self-propelled dredging ships.*

The European dredging companies manage globally a large fleet of working ships, which are deployed worldwide to execute projects under often stringent environmental

requirements with its multidisciplinary, multicultural and specialised teams providing state of the art knowledge, know-how, equipment and environmentally sound methods. The dredging fleet is used to transport material and provide essential specialised services to the waterborne infrastructures and offshore energy cluster in order to construct and maintain ports and waterways, to execute projects dealing with *seabed stabilisation, land reclamation, coastal protection, offshore renewable or fossil energy installations, pipe/cable laying, aggregate mining, environmental remediation and dredging*.

No dredging projects are identical, and their diversity requires **operational flexibility** that should be taken into distinct consideration when estimating, assessing their energy consumption and subsequent CO_2 emissions pattern. Indeed, the operational profiles of dredging equipment differ significantly per project. The project, not the vessel, provides the most appropriate frame for the optimisation of its CO_2 emissions

Within maritime transport and the broader EU maritime cluster, maritime dredging plays a critical role in building and maintaining waterborne transport infrastructures as well as offshore energy infrastructures, and can provide coastal and flood defences for protecting the activities, assets and populations along the coasts. The European Dredgers are the natural allies of the European shipping and port industries: *without dredging, there would be no harbours, no ports, no access channels and ultimately no global trade and economic development, as we know them today*.

While dredging activities are not necessarily well known by the larger public, European dredging companies are world market leaders in their trade and service about 80% of the worldwide open dredging market.

2. Brief overview of maritime CO_2 Emissions

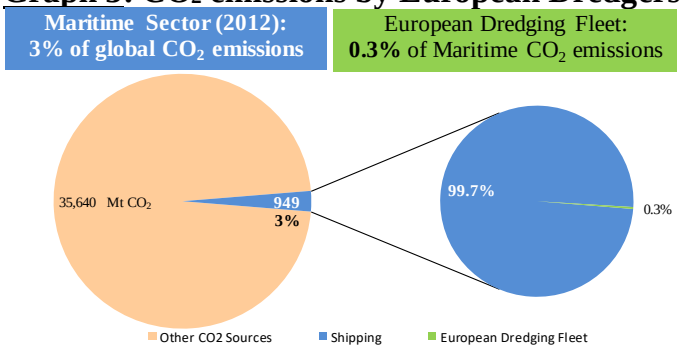
Maritime shipping is the most environmentally-friendly and energy efficient mode of mass transport (on a tonne-mile basis)[1]. Indeed, while moving a considerable part of world trade, shipping is only a modest contributor to the total global CO_2 emissions (estimated at around 3 % [2]; see graph 3 below).

[1] (First) IMO GHG Study 2000

[2] (Third) IMO GHG Study 2014: Total Shipping was estimated to have emitted **949 million tonnes of CO_2 in 2012**. Shipping emitted on average to 3% of the global emissions during the period 2007–2012. International shipping was estimated to have emitted 796 million tonnes of CO_2 in 2012 (2.2% of the global emissions).

Compared to the overall shipping fleet, the European dredging fleet represents about 0.3% of the capacity (in GT). The corresponding CO_2 emissions are in the same order of magnitude (0.3%, see graph 3 below). Although relatively limited, emissions reduction is an objective for the dredging sector.

Graph 3: CO_2 emissions by European Dredgers



Sources: IMO, EuDA

Evolution of CO_2 emissions from the EuDA fleet

To know and better understand the emissions of its fleet, EuDA is collecting statistical data on actual fuel consumption and emissions since 2008.

Table 1: EuDA fleet CO_2 emissions (2009-2018).

EuDA Sea-Going Fleet		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Global Operations											
Installed Power	MW	1,587	1,591	1,779	1,845	1,666	1,599	1,298	1,264	1,516	1,421
Fuel Consumption	*kton*	*1,016*	*999*	*1,003*	*986*	*881*	*847*	*959*	*751*	*777*	*677*
CO_2 Emissions	kton	**3,211**	**3,155**	**3,163**	**3,108**	**2,775**	**2,673**	**3,033**	**2,371**	**2,449**	**2,143**
European Operations											
Installed Power	MW	511	654	637	502	527	531	409	306	369	485
Fuel Consumption	*kton*	*307*	*420*	*357*	*283*	*220*	*229*	*223*	*207*	*195*	*241*
CO_2 Emissions	kton	**1,088**	**1,326**	**1,126**	**896**	**696**	**724**	**713**	**663**	**624**	**771**

Source: EuDA

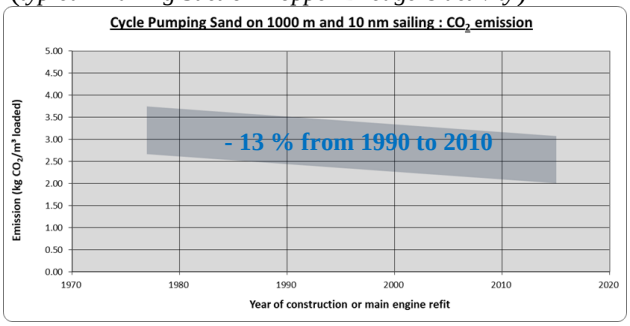
In absolute numbers, the world seagoing dredging fleet was estimated to have produced 6.3 Mton of CO_2 in 2008. The emissions of the European Dredgers (EuDA members) in 2008 were about 3.4 Mton. From 2009, the European dredgers' CO_2 emissions continuously dropped to 2.7 Mton in 2014. In 2015, the emissions raised to 3.0 Mton mainly due the surge of activity linked to the expansion of the Panama and Suez Canals. In 2016 and 2017 the EuDA fleet emissions went back down to a level around 2.4 Mton (below the level of 2014) and reached 2.1 Mton in 2018.

Analysis of the evolution

The data in the graphs 4-5-6 show that there is a clear downward trend. This trend demonstrates a continuous improvement of CO_2 averaged performance owing to the continuous improvement of dredging performance (fuel efficiency per m³ of dredged sand).

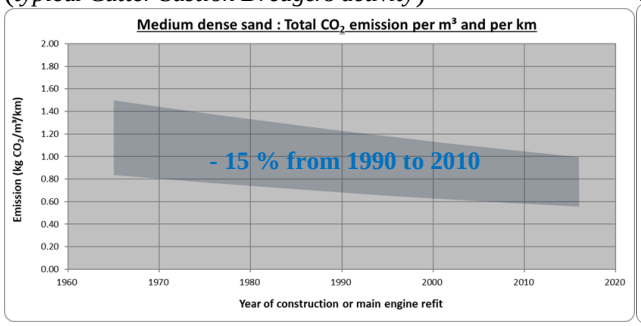
Graph 4: EuDA TSHD CO_2 emissions

(*typical Trailing Suction Hopper Dredgers activity*)



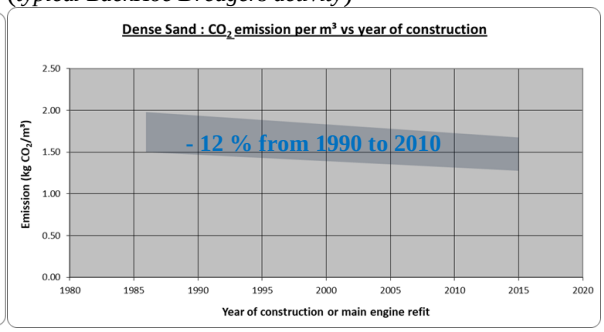
Source: EuDA

Graph 5: EuDA CSD CO_2 emissions
(*typical Cutter Suction Dredgers activity*)



Sources: EuDA

Graph 6: EuDA BHD CO_2 emissions
(*typical BackHoe Dredgers activity*)

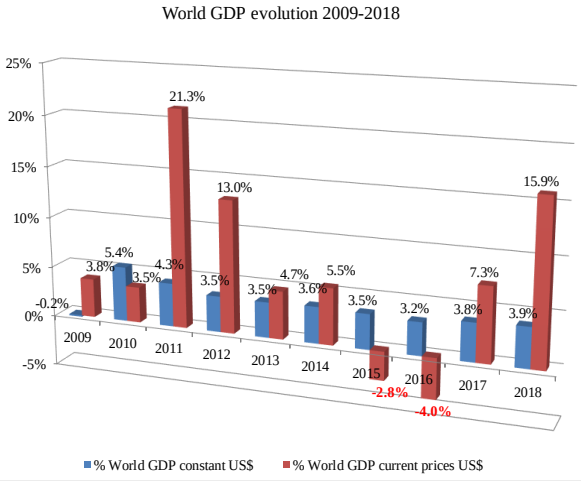


Source: EuDA

These improvements have been achieved for a large part by up-scaling equipment and installing modern engines as well as energy management systems on board of dredging ships.

The growth of the global economy has been slowing down since the financial and economic crises in 2008. The variations of the ratios between constant and current prices growth rates are indicative of issues with global inflation-deflation. Since 2017, the growth of the global economy was positive both in current prices and in constant prices. This global economy is restarting a new upper trend. However, in 2018 the growth in current prices (15.9%) was significantly higher than the one in constant prices (3.9%), showing signs of overheating and speculation linking to the trade war between US and China, which may significantly alter global trade.

Graph 7: Evolution of World GDP (2009-2019)

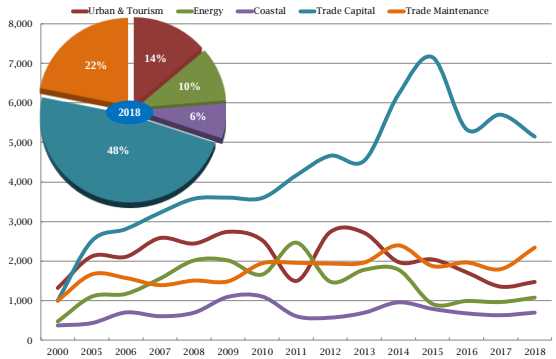


Source: IMF

Due to the COVID 19 pandemic, 2020 will show a significant decrease in all activities.

The main drivers for the European dredging companies are various and not correlated, providing the sector with a form of acyclicality and with a reasonably steady growth.

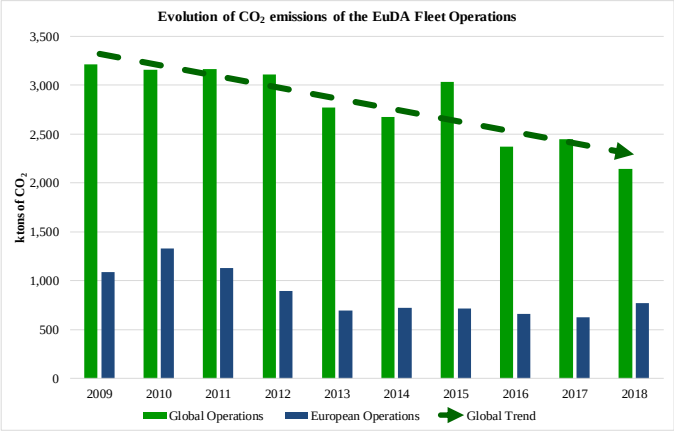
Graph 8: Dredging Turnover Evolution per driver (2018)



Source: IADC-EuDA

The general trend in Graph 9 above confirms that the worldwide CO_2 emissions of the European Dredgers are steadily decreasing for the last 10 years. The reduction in the CO_2 emissions can partly be attributed to the effects of the financial and economic crises, reducing the level of occupancy after 2008. However, with the surge of activity due to Suez and Panama, the global emissions of the European Dredging fleet in 2015 raised to the level of 2012. Inside Europe, a similar peak occurred in 2010 corresponding to the peak of activity for the reclamation of Maasvlakte 2 in the Netherlands. The level of CO_2 emissions in Europe is still decreasing nearing the 600 ktons of CO_2, well below 2008. 2017 emissions at over 2.4 Mt were below the figures of 2014 and confirmed the general downward trend of the European Dredgers' emissions

Graph 9: EuDA fleet CO_2 emissions (2009-2018).



Source: EuDA

These figures also confirm that steady progress on CO_2 emissions per m^3 (relative CO_2 emissions) is achieved by the European Dredging industry. However, it is important to realise that absolute CO_2 emissions achievements cannot be disconnected from global activity in general and sector activity in particular. Satisfying the global market's demand and achieving the absolute CO_2 emissions targets require a Sector Strategy that pursues the efforts on emissions reduction (CO_2 emissions per m^3) while additionally acting on atmospheric CO_2 concentrations, through offsetting measures such as the restoration of blue carbon habitats.

3. Regulatory Aspects

3.1 Global Developments: the Paris Agreement

The Paris Agreement on Climate Change was adopted on 12/12/2015 and aims to achieve the UN FCCC Convention's objectives. This Agreement established a Global Goal on Adaptation of *enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal of 1.5°C*. The Paris Agreement foresees financial support (from developed to developing countries, such as Small Island Developing States) as well as technology transfer and capacity building (to respond to the adaptation challenges). The **Paris Agreement was ratified** and **entered into force on 05/11/2016**.

With respect to the **C**ommon **B**ut **D**ifferentiated **R**esponsibilities (CBDR) principle, all (UN FCCC) Parties have to achieve their nationally determined contributions through ambitious efforts, with stocktaking every 5 years. It is important to note that this UN FCCC CBDR principle is in conflict with the IMO principle of no more favourable treatment and **cannot be applied to the maritime sectors** without having serious consequences on the Flags (e.g. mass reflagging to the most generous, least demanding Flag).

3.2 Global Developments in IMO

Shipping is a truly global industry and ships are competing in a single global market. Therefore, in order to be environmentally effective (avoid carbon leakage) and to maintain a **global level playing field** for all shipping sectors, irrespective of flag, ownership or type of ship, regulation to reduce GHG emissions by the shipping industry should be developed and implemented at global level by a **global organisation** with **maritime competence** at the global scale, namely the **IMO**.

In the context of the Paris Agreement, the IMO is the first global institution to have adopted regulations for the monitoring of shipping GHG emissions, in particular CO_2 emissions, as well as a roadmap of ambitious emissions reduction targets. The IMO is reducing CO_2 emissions from shipping by imposing **technical measures** (e.g. improving fuel efficiency through more energy efficient ship designs, better performing engines, etc.) and **operational measures** (improving the best practices and optimising the fuel consumption during operations; see Annex I at the end of the document). The process will be accelerated soon with **market incentives** (financially motivating the economic players to implement available solutions and/or to offset their CO_2 emissions).

3.2.1 *Key Principles of a Global Regulation*

The Marine Environment Protection Committee (MEPC), which is the responsible body within IMO, has set out to define common agreed principles for emissions reduction measures. In April 2008, MEPC 57 agreed with an overwhelming majority on the following principles:

A coherent and comprehensive IMO regulatory framework should be

1. *effective in contributing to the reduction of total GHG emissions;*
2. *binding and equally applicable to all flag States in order to avoid evasion;*
3. *cost-effective;*
4. *able to limit, or at least, effectively minimise competitive distortion;*
5. *based on sustainable environmental development without penalising global trade and growth;*
6. *based on a goal-based approach and not prescribe specific methods;*
7. *supportive of promoting and facilitating technical innovation and R&D in the entire shipping sector;*
8. *accommodating to leading technologies in the field of energy efficiency; and*
9. *practical, transparent, fraud free and easy to administer.*

3.2.2 *IMO Data Collection System*

Confirming the International Maritime Organization's (IMO) commitment to climate change mitigation, the IMO Marine Environment Protection Committee approved in April 2016 (MEPC 69) mandatory requirements for ships to record and report their fuel consumption.

Under the new requirements, ships of 5,000 gross tonnage and above will have to collect consumption data for each type of fuel oil they use, as well as other, additional, specified data including proxies for transport work. These ships account for approximately 85% of CO_2 emissions from international shipping. The collected data will provide a firm basis on which future decisions on additional measures, over and above those already adopted by IMO, can be made.

In fact, the data collection system is part of a broader three-step process:

1. mandatory **data collection** system (Jan. 2019);
2. **analysis of the data** collected (Sep. 2020); and
3. decision on the need for **further measures** (Mar. 2021) to enhance energy efficiency and address GHG emissions from international shipping.

The aggregated data will be reported to the Flag State after the end of each calendar year and the Flag State, having determined that the data has been reported in accordance with the requirements, will issue a **Statement of Compliance** to the ship. Flag States will be required to subsequently transfer this data to the IMO Ship Fuel Consumption Database (the Data Collection System).

IMO would have to produce an annual report to the MEPC, summarising the data collected. Data would be anonymised so individual ship data would not be recognised.

The mandatory data collection requirements entered into force in March 2018 and data collection started on 01/01/2019.

3.2.3 IMO emissions' reduction targets

With regard to the Paris Agreement, IMO took the lead on the contribution of shipping to global CO_2 emissions reduction (Intended IMO Determined Contribution (INDC) for CO_2 reduction from shipping). Urged by the shipowners, the IMO adopted significant CO_2 reduction objectives in order to match the ambition of the Paris Agreement on climate change:

1. to maintain international shipping's annual total CO_2 emissions **below 2008 levels**;
2. to reduce CO_2 emissions per transport work, as an average across international shipping, **by at least 40% by 2030**, pursuing efforts towards **70% by 2050, compared to 2008**; and
3. to reduce total annual GHG emissions **by at least 50% by 2050**, **compared to 2008** (whilst pursuing efforts towards phasing them out).

3.3 EU Regulations and Policies

3.3.1 The new Commission's 'Green Deal'

With the new von der Leyen Commission and its ambitious 'Green Deal', the top priority is to achieve the Paris Agreement targets and possibly become the first climate neutral continent (by 2050). To achieve this ambition, Europe is planning a comprehensive climate action plan, including a European 'Climate Law' (announced for Summer 2020), decarbonisation of the energy system through energy taxation and carbon border tax, smart infrastructure for climate neutrality, …

The von der Leyen Commission wants its 'Green Deal' to be an opportunity for Europe and its industries: therefore, sustainability will be 'mainstreamed' in all its policies and an Industrial Strategy for clean and circular economy will provide support to these policies through green financing, green national budgets, stimulating green innovation and green education and training.

3.3.2 EU MRV Regulation

Europe is currently at the forefront on the CO_2 reduction issue and has made it its top priority under the President Ursula von der Leyen. Through its specialised services in DG Climate Action (DG CLIMA), the European Commission has been instrumental in influencing and accelerating the IMO process with the adoption of its *global data collection system for GHG emissions from ships*.

Following extensive consultations with the sector and the Member States, DG CLIMA concluded on three simple principles to apply in the context of monitoring, reporting and verifying CO_2 emissions from shipping:

- ☞ fuel consumption should be monitored;
- ☞ the ship should be the reporting entity (as too many possibilities exist involving ship-owner/operator/charterer, cargo-owner);
- ☞ the implementation should remain simple, a yearly based exercise making use of existing systems and available data (e.g. IMO SEEMP requirements, ISO 14064);

The Regulation on Monitoring, Reporting and Verification (MRV) was adopted on 29/04/2015 and entered into force on **01/07/2015**. The regulation is focusing on CO_2 emissions from ships of more than 5,000GT making voyages into, out of and between EU ports. In a first phase, this regulation explicitly excludes dredgers (and other working ships) from its scope.

> Recital (14):
> *"[…] since this Regulation focuses on maritime transport, it should not establish monitoring, reporting and verification requirements for ship movements and activities not serving the purpose of transporting cargo or passengers for commercial purposes, such as **dredging**, ice-breaking, pipe laying or offshore installation activities."*

In making this decision, DG CLIMA took into account the following facts:

- the MRV Regulation is targeting maritime transport (cargo and passengers) ships;
- dredging ships and the other exempted ships use energy to both sail and work (the consumption and operational profiles of the emissions patterns of these ships are very different by the nature of their activities; see also 3.4 hereafter);
- with regard to dredging, the best reference to optimise emissions is the project not the ship (*as a ship may work on different projects in the same calendar year with different working conditions and requirements, which makes it impossible to interpret in terms of energy efficiency; while at project level, an estimate of the workload is done at the tender phase and, with the guidance of the recently developed industry-backed methodology (see 3.4.2 hereafter), this can be translated into a reasonable estimate of the CO_2 emissions to be expected*);
- moreover, as far as European Dredgers are concerned, their fleet's emissions represent 0.3% of the total global shipping emissions;
- the European Dredgers' fleet is regularly renewed or refitted due to the significant wear and tear associated with their type of activities;

The roadmap of the Commission's policy (COM(2013)479) includes:

- ☞ to implement MRV and establish CO_2 emissions from maritime transport;
- ☞ to establish a global energy efficiency standard;
- ☞ to consider introduction of a Market Based Measures (MBM) at global level (otherwise at EU level).

Following the adoption of the IMO Data Collection System, DG CLIMA assessed, via a consultation in 2017, whether the EU MRV Regulation needs to be amended and to what extent.

3.3.3 Necessary alignment between international and European regulations

Like shipping, dredging is a global industry competing in a single global market, which needs global level playing field. It is therefore essential that the European and IMO regulations and monitoring systems are **aligned and fully compatible** with each other to avoid unnecessary duplication, administration or, worse, the creation of 'regional' competitive distortions.

3.4 Considerations for Dredging

3.4.1 General Aspects

Dredging companies need special consideration as they manage a fleet of working ships, which not only transport material, but also perform specific tasks (seabed stabilisation, offshore windfarms installation, pipe/cable laying, dredging, ...).

Over the last 25 years the EuDA members have invested billions in newer dredging equipment and in the upgrading of older equipment with new installations and engines (e.g. over the period 2008-2017 EuDA members have invested around 11 billion € in new equipment).

This has resulted in a European dredging fleet that is the most powerful and technologically advanced in the world and at the same time has become more and more energy efficient. For example, when we compare the fleet of Trailer Suction Hopper Dredgers (TSHD's) over the years on a typical project (dredging, transporting over 10 NM[3] and pumping ashore) figures show that the newest generation of dredging ships (including refitted older ships) is on average 12% to 15% more energy efficient than the ship generation that was built around 1990 (see graphs 4-5-6 above). This overall improvement is the result of new ships being larger in size and of increased general energy efficiency. At the same time, many of the older ships have been refitted with new main engines and this has also significantly contributed to the overall increase of the energy efficiency of the EuDA fleet.

It is important to note that on projects with limited navigational depth or very short transport distances (part of the operational profile of a project), the smaller and older ships can match and even outperform the larger new dredgers. The large size dredgers will simply not be able to work in an optimal energy efficient mode when they need to sail with limited payload due to depth restrictions or when their dredging cycle is restrained by manoeuvrability issues. When relatively small quantities need to be dredged smaller dredgers can be more energy efficient than larger dredgers by avoiding significant mobilisation and de-mobilisation emissions for the larger dredgers. In a real project, evaluators should not only look at minimising CO_2 emissions, but at optimising the different aspects of sustainable development and the overall economical, societal and ecological impact and cost of the project. For smaller projects, it may make more sense to use smaller dredgers already available in the project area rather than larger ships that need to be mobilised from a different part of the globe.

3.4.2 A Comprehensive Approach is needed

As mentioned above, the European dredging companies have been investing billions to improve their technology, to find innovative solutions and to further optimise their operations, which overall resulted continuous reduction of their CO_2 emissions.

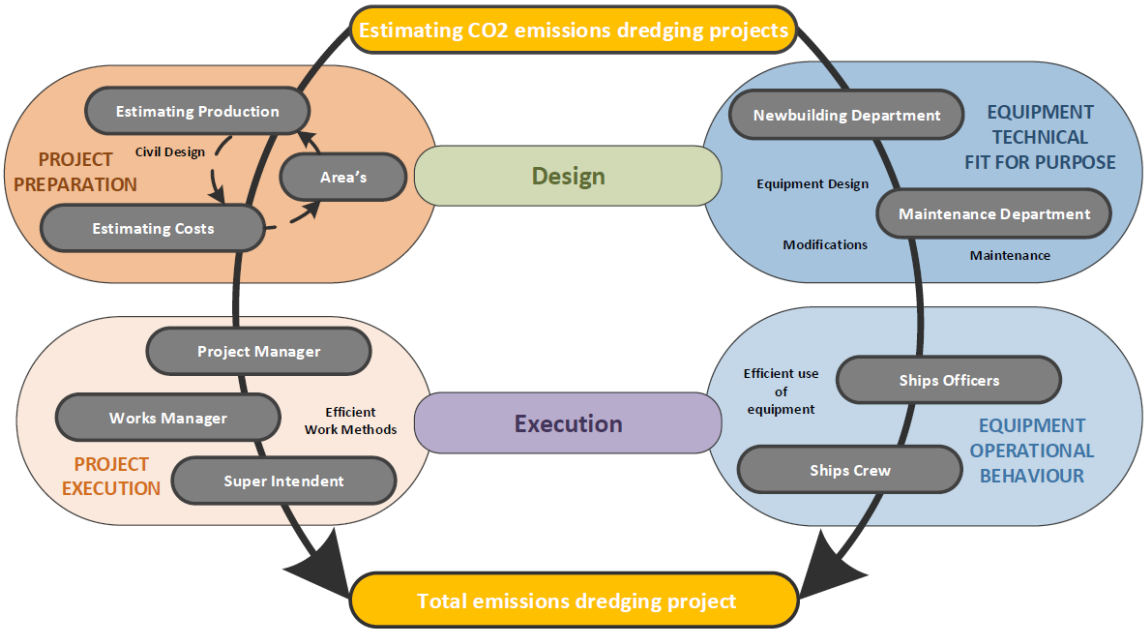
[3] Nautical miles (= 1,852 metres).

When regulating, the **operational complexity of dredging projects** should be taken into consideration. Operational profiles of dredging equipment differ significantly per dredging project, therefore optimisation of CO_2 emissions should be done per project (not per ship).

In order to optimise the CO_2 emissions from dredging projects, a **comprehensive approach**, taking into account the main aspects of the project and its execution, **is needed**.

Four main interconnected aspects affect the total CO_2 emissions from dredging projects:

- the design of projects (often determined by clients),
- the design of equipment (translating the vision and know-how of dredgers),
- the execution of projects (working methods, type of equipment) and
- the operational use of equipment (optimal efficiency and skilled crew).



In their decades of investments, the European Dredgers have mainly improved the design and operational use of their equipment. However, the European Dredgers have also initiated and co-funded research programmes (such as Building with Nature and Vlaamse Baaien) to explore innovative and sustainable design solutions for projects.

3.4.3 *Alternative 'Industry Approach' to CO_2 Emissions Reduction*

In 2010, the European Dredging Association (EuDA) and the International Association of Dredging Companies (IADC) circulated a joint statement to IMO, where the dredging associations pointed out that the Energy Efficiency Design Index (EEDI) in its current format could not be applied to the dredging sector. Instead, they proposed an industry specific alternative including:

- a set of fact-based CO_2 emission figures valid for different types of operations under normalised conditions;
- a transparent calculation method based on energy performance of specific types of ships for variable project specifications;
- a benchmark for future emission reduction.

To implement this alternative 'industry approach', EuDA established an ad hoc **Task Group on Emission Figures**, gathering experts from the dredging industry (Jan De Nul, DEME, Boskalis and Van Oord).

The main findings of this expert group confirmed the following:

> *Each dredging project has a different scope and is carried out under specific conditions and technical requirements. This has resulted in a worldwide fleet of dredging ships with very diverse specifications adapted to the projects' specific requirements. The combination of unrepeatable project conditions and very diverse equipment specifications makes it impossible to transpose efficiency indices and indicators for regular shipping to dredging operations for assessing CO_2 emissions on a dredging project. The optimisation of CO_2 emissions on a dredging project can best be achieved by evaluating the specific project conditions in the light of the different execution methods and available dredging equipment.*
>
> *Therefore, EEDI, as is, cannot be applied in its current format to dredging ships.*

This conclusion was also conveyed to the European Commission (DG CLIMA) which concluded that indeed working ships, including dredgers, needed a specific treatment with regard to the measurement and the optimisation of the CO_2 emissions from their activities and therefore should be excluded from the scope of the EU MRV Regulation in a first phase (see 3.3 above).

The EuDA expert group also established an **industry-backed common calculation methodology for the CO_2 emissions** that can be expected in typical operational dredging profiles for the main categories of dredging ships (Trailing Suction Hopper Dredgers, Cutter Suction Dredgers and Backhoe Dredgers). Interested public administrations, port authorities, private project owners or legislators can obtain this common calculation method on request from the European dredging companies with whom they work and cooperate. This industry-backed methodology is also promoted as best practice by relevant authorities in the field, such as PIANC (the World Association of Waterborne Transport Infrastructures, http://pianc.org/), and allows the interested administrations to establish an initial benchmark for assessing CO_2 emissions **at project level**.

3.4.4 *EuDA's Views on the Regulations*

Referring to the *key principles for a global regulation* (see 3.2.1 above), EuDA has regularly highlighted the following points:

1. *effective in contributing to the reduction of total GHG emissions;*
   an effective system should include a robust Monitoring element (collecting meaningful data that can effectively be used to measure progress);
2. *binding and equally applicable to all Flag States in order to avoid evasion;*
   EU's and IMO's data collection systems should be aligned and compatible;
3. *cost-effective;*
   priority should be given to existing systems and available information, as well as to avoiding duplication of systems or incompatible systems;
4. *able to limit, or at least, effectively minimise competitive distortion;*
   as shipping is a global industry competing in a single global market, global regulation is required to maintain a level playing field for all ships, irrespective of flag or ownership;
   separate, incompatible systems are likely to create competitive distortions;
5. *based on sustainable environmental development without penalising global trade and growth;*
   absolute targets, such as -70% by 2050, cannot be achieved solely with relative measures on emission sources, especially when the global economy is booming; unless the economic growth is capped, complementary work needs to be considered on the atmospheric concentrations of CO_2 with an effective MBM system from which additional emissions can be borrowed from other industries or bought through carbon offsetting measures (e.g. restoration of Blue Carbon Habitats);
   an optimisation approach consistent with sustainable development would consider CO_2 emissions as one parameter and would have less negative externalities;
6. *based on a goal-based approach and not prescribe specific methods;*
   the Paris Agreement provides clear goals but unfortunately does not cover shipping;
   shipowners have voiced their support to this agreement and IMO took the lead on the shipping contribution in achieving the Paris Agreement goals;
   moreover, prescriptive legislations 'kill' innovation;
   one-size-fits-all approaches cannot be suitably and equally applied to all (shipping) sectors, in the particular case of the dredging industry, a constructive dialogue should be maintained in order to effectively select the most suitable and effective approach;
7. *supportive of promoting and facilitating technical innovation and R&D in the entire shipping sector;*
   see point 6 above;
   European Dredgers promote innovative solutions that include technical, technological and eco-dynamic (Building with Nature) concepts;

8. *accommodating to leading technologies in the field of energy efficiency; and*
   see points 6 & 7 above;
9. *practical, transparent, fraud free and easy to administer.*
   this is a very important principle: an overly complicated and impossible to implement system is unlikely to produce any positive effects (see also point 3 above);
   so keep it simple (focus on fuel consumption) and practical (avoid duplication of systems, complexity and unnecessary administrative burden).

In view of these principles, EuDA welcomed and rightfully supports the pragmatic approach included in the European MRV Regulation:

- *"Focus on CO_2 as predominant GHG emitted by ships and [...] at this stage, the proposed MRV system should be implemented for CO_2 emissions only;*
  Although in principle, the MRV system could also cover emissions of other greenhouse gases, climate forcers and air pollutants such as SO_x and NO_x, the MRV system, especially in an introductory stage, should be based on existing documents and equipment on board of ships (which currently could not be used to measure other emissions than CO_2);
  moreover, with the establishment of the European SECA/NECA areas and the IMO decision on the earlier deadline (2020) for the implementation of the low sulphur fuel (0.5%) outside the emission-controlled areas, the SO_x and NO_x will be less present in the emissions from shipping;

- *Calculate annual CO_2 emissions based on fuel consumption and fuel type and energy efficiency using available data from log books, noon reports and bunker delivery notes*;
  when they are in operations, dredging ships are not making voyages as defined under the MRV regulation, the modus operandi cannot be compared with regular shipping. Voyage information (if required) may therefore not be the most appropriate;
  per project aggregated data or annual data would provide more meaningful information for dredging ships with much lower costs and administrative burden;

- *Use existing structures and bodies of the maritime sector, in particular recognised organisations to verify emission reports and to issue documents for compliance;*
  where the information or the structure exist, they should be used (the information and data gathered in the context of an ISO 14064 certification, where GHG accounting and verification are implemented, or in the context of certification schemes such as the Dutch CO_2 performance scale should be acceptable for both International and European monitoring systems);

- *Exclude small emitters (ships below 5,000 GT) which represent about 40% of the fleet, but only 10% of the total emissions;*
  reducing this threshold at this introductory phase would be premature;

- *Exclude working ships (ships that use energy to both sail and work).*
  until an equivalent proxy (making use of the industry-backed methodology and per project approach) can be meaningfully applied to this type of ships, misinterpretations and/or misunderstandings will be difficult to avoid.
  As mentioned above (3.5 point 6.), a constructive dialogue with the dredging industry should be maintained in order to effectively develop the most suitable and effective proxies for its ships;

3.5 Strategic considerations

In order to achieve the Paris Agreement targets, the only effective solution needs to be found in alternatives to fossil fuels. In a dedicated workshop, EuDA members investigated the possibilities for an energy transition towards a carbon neutral footprint for the dredgers. At this stage, no alternative energy solution can yet fully replace fossil fuels for dredging projects. This means that in the meantime European Dredgers are working on **transitioning towards carbon neutrality**, building up knowledge (e.g. on biofuels, on LNG, on exhaust fumes cleaning) and testing possibilities.

Improving fuel efficiency is an obvious source of significant CO_2 emissions reduction. When considering the improvement of ships' fuel efficiency, one must also take into account the possible "economies of scale": *the larger the ship is (at a given speed), the lower the fuel consumption per unit of cargo*. However, physical port limitations (e.g. draught), trade considerations or cargo logistics issues often hamper such potential economies of scale. As far as physical port limitations are concerned, they can be reduced through the development of *maritime (and energy) infrastructures for the future generations of climate neutral ships*. The European Dredging Industry can play an important role in **building tomorrow's sustainable maritime infrastructures**.

The IMO is considering introducing economic and financial incentives to reduce CO_2 emissions in the form of **market-based measures**. The European dredgers support such measures and have a marked preference for a **levy fund** that is more practical. The levy fund is comparable to and can be managed as an additional (CO_2 or GHG) tax. The advantage is that the money collected will be reinjected in research, pilots, … that will further contribute to the CO_2 emissions reduction. As far as the Emissions Trading Scheme is concerned, there are increased uncertainties (regarding availability and price) that will increase the risks for the dredging companies. Such MBM instruments should also be linked to carbon offsetting measures (e.g. restoration of blue carbon habitats) and long-term sector strategies.

Finally, EuDA recommends not to publish individual ship data, to keep administration simple and focus on fuel consumption (IMO Data Collection System). To this end, it is important that only meaningful data is collected, therefore, EuDA recommends that **'working ships' (including dredgers) should be exempted from reporting information such as 'time at sea' and 'distance sailed'** (which are irrelevant to their activities), until an equivalent and meaningful proxy can be applied to these various types of ships. EuDA is offering its knowledge and expertise to help developing meaningful proxies for its ships.

4. Conclusions

Dredging is a global industry, which needs **global level playing field**, as dredging is a maritime sector providing globally its specialised services to the waterborne infrastructures and offshore energy cluster.

The European Dredgers are contributing to CO_2 emissions' reduction and have invested €11 bn from 2008 to 2017 to improve their technology, to find innovative solutions and to further optimise their operations. Dredging activities are using energy for working and for sailing. Therefore, the **operational complexity of dredging projects** should be taken into consideration when regulating. Operational profiles of dredging equipment differ significantly per dredging project, therefore **optimisation** of CO_2 emissions should be done **per project** (not per ship).

A comprehensive approach is needed to optimise the CO_2 emissions from dredging projects. Four main interconnected aspects affect the total CO_2 emissions from dredging projects: the **design of projects**, the **design of equipment**, the **execution of projects** and the **operational use of equipment**.

The aggregated EuDA fleet CO_2 emissions are published yearly since 2008, and to quantify CO_2 emissions from dredging projects, EuDA established an industry-backed methodology[4] that is promoted as best practice by PIANC[5], the World Association for Waterborne Transport Infrastructures, gathering dredging-relevant national authorities.

With regard to the International and European **CO_2 emissions Regulations**:

- ☞ European dredging vessels are exempted from the scope of the EU MRV, due to the complexity of their operations, but they are obliged to report total annual CO_2 emissions per vessel to EU flags and IMO;
- ☞ the data collected by the EU flags and IMO on emissions from vessels should be meaningful for working vessels, such as dredgers and marine contracting vessels in general, therefore the requested data should be adapted accordingly; moreover, the IMO and EU systems should be aligned;
- ☞ CO_2 emissions should be optimised per project (not per ship) using the industry-backed methods.

When developing regulations on CO_2 or establishing CO_2 targets for dredging projects, it is important to consider all the aspects driving the CO_2 emissions in a comprehensive manner. Legally enforced Market-Based Measures (MBM) and Operational Measures will provide incentives to reduce CO_2 emissions. EuDA considers that a **GHG Levy Fund** is more suitable than an emissions trading scheme for the dredging industry and should warrant a worldwide level playing field.

[4] "*Estimating the Carbon Footprint of a dredging project by TSHD, CSD and BHD*", available on demand only, addressed to any EuDA member.

[5] https://www.pianc.org/about

EuDA

Celebrating its 25th Anniversary in 2018, the European Dredging Association ("**EuDA**") was founded in 1993 as a non-profit industry organisation for European dredging companies and related organisations to interface with the various European Union's ("**EU**") Institutions and also some International Organizations (such as IMO, HELCOM or ILO). EuDA members employ approximately 25,000 European employees directly "on land and on board of the ships" and more than 48,300 people indirectly (through the suppliers and services companies). The combined fleet of EuDA's members counts approximately 750 seaworthy EU-flagged ships.

Dredging activities are not well known by the wider public, but as a matter of fact, the European dredging companies, members of EuDA, are world market leaders with about 80% share of the worldwide open dredging market and a turnover of 8.6bn Euro in 2018. Although 70% of operations take place outside Europe, 90% of the returns flow back to Europe.

The Association assists its members with all kinds of requests related to dredging issues, presently strongly focusing on Social, Environmental, Technical and Trade issues. These issues are coordinated by the Secretariat and executed by its specialised working groups composed of experts from the member companies.

EuDA has registered as Interest Representative Nr 2492574893-58 under the EU transparency register. The Association will pursue its goals by endorsing policies to create fair and equitable conditions for competition; commits to respecting applicable national, European and international rules and regulations; commits to operating its fleet safely, effectively and responsibly.