

This factsheet provides information about the new Regulation (EU) 2016/1628 on requirements relating to pollutant emission limits for non-road mobile machinery. Furthermore, it offers insights into the structure of the Danube fleet and the age of inland vessels used for transportation of cargo.

FACT SHEET

Why to modernise inland vessels?



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In cooperation with

DANUBE INLAND WATERWAY VESSELS ¹ (STATUS 2016)

STRUCTURE OF THE DANUBE FLEET - CARGO VESSELS

In Europe, there are around 10,000 inland vessels in Rhine countries, and more than 3,000 vessels in Danube countries. In Rhine countries, 72% of all vessels are dry cargo vessels (self-propelled units or dumb barges). Tanker vessels account for 15% and push & tug boats for 13%. 75.4% of **all 3,214 vessels in the Danube fleet** are dry cargo vessels (self- & non-propelled). 18.3% are push or tug boats and 6.3% are liquid cargo vessels (self- & non-propelled). The total loading capacity of the Danube fleet amounts to 3.4 million tonnes, of which 93% is dry cargo tonnage and only 7% liquid cargo tonnage.

Romania has the largest Danube fleet with a 49.7% share in the number of vessels and a 54.1% share in the total loading capacity. The Romanian fleet has been increasing for several years, while the fleets of other Danube countries – in particular those from Hungary, Slovakia and Serbia – are shrinking.

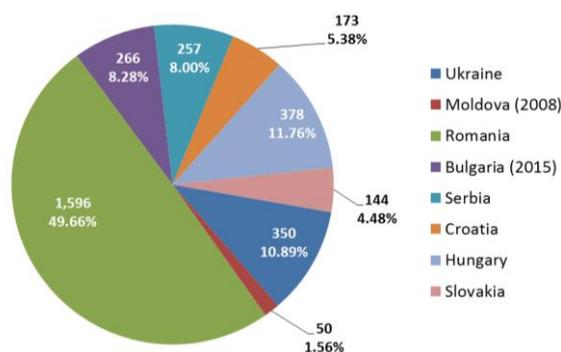


Figure 1: Inland vessels per country. Figures are for 2016.

[Source: Danube Commission. Chart: Pro Danube]

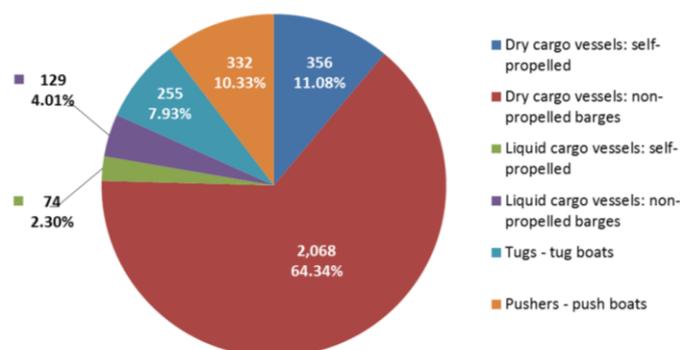


Figure 2: Types of Danube inland vessels. Figures are for 2016.

[Source: Danube Commission. Chart: Pro Danube]

TYPES OF DANUBE CARGO VESSELS

Only 356 out of 2,424 **dry cargo** vessels in Danube countries were self-propelled. The reason for this rather low share of self-propelled dry cargo vessels has to do with the different types of operation on the Danube. The push boat and tug boat operation with barges – often in the form of convoys involving up to 16 barges being pushed by push boats – is of high importance on the Danube. The share of self-propelled vessels is thus lower than in Rhine countries.

The **tanker sector** is dominated by the Romanian fleet which has a share of 46%, followed by Serbia (18%), Croatia (14%) and Bulgaria (9%). With a total of 203 tanker vessels (self- & non-propelled) registered in Danube countries, the tanker fleet segment only has a share of 6% of the total Danube fleet.

The number of **push & tug** vessels slightly decreased from 2010 onwards, mainly due to the reduction of the Ukrainian (-25%) and Hungarian (-27%) fleets. From 2015 to 2016, the strong decrease was due to a reduction of Serbian push and tug boats. The Romanian fleet, having been reduced until 2014, has grown very strongly during 2015 and 2016. Romania is in fact the only country where the number of push & tug boats has increased since 2005. In all other countries, there were negative trends. [Source: CCNR & Danube Commission]

¹ <https://www.inland-navigation-market.org/en> & http://www.danubecommission.org/uploads/doc/STATISTIC/en_stat_2015_2016.pdf

AGE OF DANUBE CARGO VESSELS

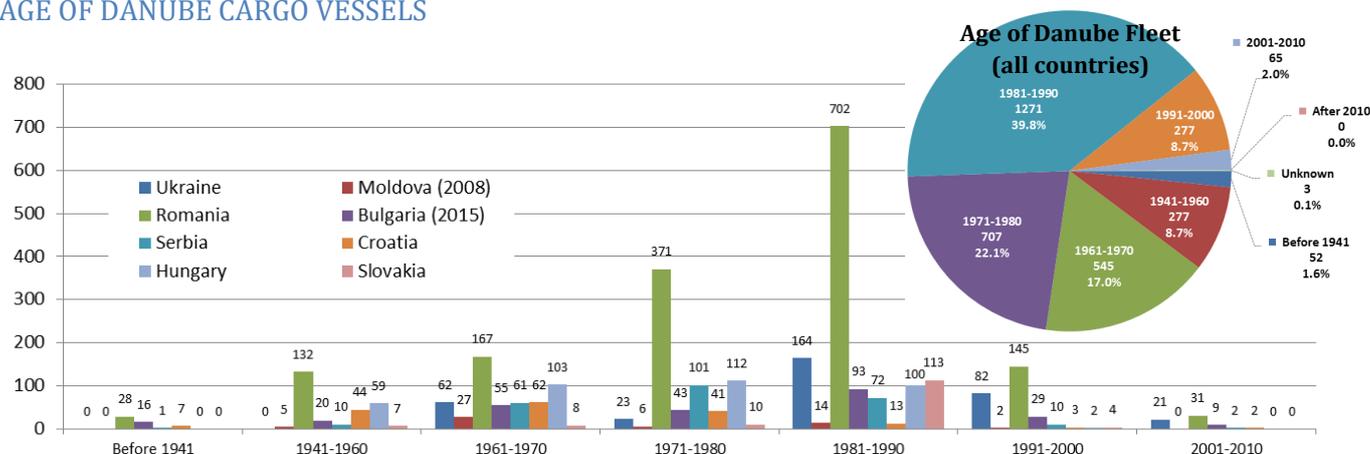


Figure 3: Summary data on Danube fleet by years of construction (as of 31 December 2016). Source: Danube Commission. Charts: Pro Danube

PASSENGER VESSELS ON THE DANUBE

The river cruise fleet in Europe grew by 182 vessels from 2004 to 2017 – **an increase of 111%**. With 346 active cruise vessels, Europe has the largest river cruise fleet in the world. Despite the lower newbuilding rates, the expansion of the fleet also continued in 2017, with 17 new vessels coming on the European market. The traffic figures of cruise vessels on the Rhine were 20% higher in 2017 than the previous year. Despite this notable increase, the Rhine remains in 2nd position behind the Danube, as far as the number of cruise vessels transiting the locks is concerned.²

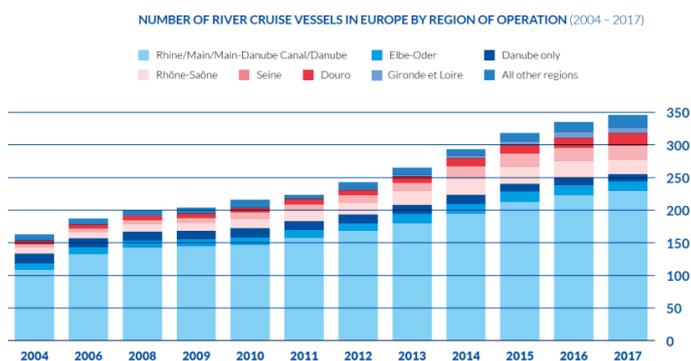


Figure 4: Source: Hader, A. (2017), The River Cruise Fleet

In terms of greening measures, it should be mentioned that for passenger vessels, the share of vessels that were equipped with at least one greening measure was 54% in 2014, 57% in 2015 and 61% in 2016, and the upwards trend continues in 2017. The intensity of the intention to make the fleet more ecologically friendly thus increased constantly between 2014 and 2017. It can be added that the greening rate was generally higher in passenger shipping than in goods transport.³

CHALLENGES OF DANUBE INLAND VESSELS

Improve the **environmental performance** of inland vessels through

- Reduction of energy / fuel consumption resulting in reduced operational costs
- Reduction of air pollutant emissions resulting in a reduced carbon footprint
- Use of renewable energies and alternative fuels
- Optimisation of the management of the energies on board

Improve the **integration of IWT into the logistic supply chains** through

- Attracting and capturing new cargo transported via inland waterways
- Consolidation of inland waterborne services
- Improve the logistical performance of the inland vessels
- Leveraging the possibilities of digitalisation

² CCNR Market Observation - Annual report 2018

³ See Market Report 2014-2017 (NAIADES II Progress report) - Main features and trends of the European Inland Waterways Transport sector, CCNR

REGULATION FOR EMISSIONS FROM NON-ROAD MOBILE MACHINERY (NRMM)

In 2016 the European Parliament and the Council have adopted the new Regulation on requirements relating to pollutant emission limits for non-road mobile machinery (Regulation (EU) 2016/1628, hereinafter as well “NRMM Regulation”), which **applies as well to inland waterway vessels**. The Regulation applies to new builds and also to new inland waterway vessel engines for conversion.

The objective of the Regulation is to progressively improve the air quality by reducing the pollutant emissions from non-road mobile machinery and by gradually phasing out the most polluting engines.

The NRMM Regulation defines emission limits for NRMM engines for different power ranges and applications. It also lays down the procedures engine manufacturers have to follow in order to obtain type-approval of their engines – which is a prerequisite for placing their engines on the EU market.

The EU Regulation sets the emission limits for so called Stage V engines, which replaces stages I to IV and

thereby the limits according to CCNR II. New limits are imposed on vessel owners regarding engine performance (its power range (kW)), when installed after the effective date of the regulation. For main and auxiliary engines with a reference power of less than 300 kW, the EU Stage V emission standards will enter into force on 1 January 2019. The implementation date for main and auxiliary engines with a reference power equal and above 300 kW, is set for 1 January 2020.

The Stage V calls for limit values for emissions of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NO_x) for internal combustion engines installed in inland waterway vessels. It as well sets the limits for emissions of ultrafine particulate pollutants (PM).

Under the EU Stage V, engine emissions must be significantly reduced. The Stage V emission limits, according to the table below, are applicable to IWP and auxiliary (IWA) engines over 19 kW, regardless of the type of engine ignition.

Engine sub-category	Power range (kW)	Date ⁽¹⁾	CO (g/kWh)	HC ^a (g/kWh)	NO _x (g/kWh)	PM (g/kWh)	PN (#/kWh)
IWP/IWA-v/c-1	19 ≤ P < 75	2019	5.00	(HC + NO _x ≤ 4.70)		0.30	-
IWP/IWA-v/c-2	75 ≤ P < 130	2019	5.00	(HC + NO _x ≤ 5.40)		0.14	-
IWP/IWA-v/c-2	130 ≤ P < 300	2019	3.50	1.00	2.10	0.10	-
IWP/IWA-v/c-2	P ≥ 300	2020	3.50	0.19	1.80	0.015	1 x 10 ¹²

⁽¹⁾ IWP - engines exclusively for use in inland waterway vessels, for their direct or indirect propulsion, or intended for their direct or indirect propulsion

⁽²⁾ IWA - auxiliary engines exclusively for use in inland waterway vessels

⁽³⁾ Dates of application of the State V emission limits for engine categories (placing on the market of engines)

⁽⁴⁾ A = 6.00 for gas engines

PM: ultrafine particulate pollutants (PM)

CO: carbon monoxide (CO),

HC: hydrocarbons

NO_x: nitrogen oxides (NO_x)

Table 1: Stage V emission limits overview

Important links and documents with information relevant for Stage V limits set by NRMM:

- [Regulation \(EU\) 2016/1628 \(NRMM\)](#)
- [EUROMOT FAQ on Regulation \(EU\) 2016/1628 \(NRMM\)](#)
- [CESNI FAQ on Regulation \(EU\) 2016/1628 \(NRMM\) and ES-TRIN for inland waterways transport sector](#)
- [CESNI website](#)

CONTACT

Pro Danube International
Handelskai 265, 1020 Vienna, Austria
www.prodanube.eu

✉ grendel@prodanube.eu

✉ office@indanube.eu

GRENDEL www.interreg-danube.eu/grendel

INDanube www.indanube.eu