



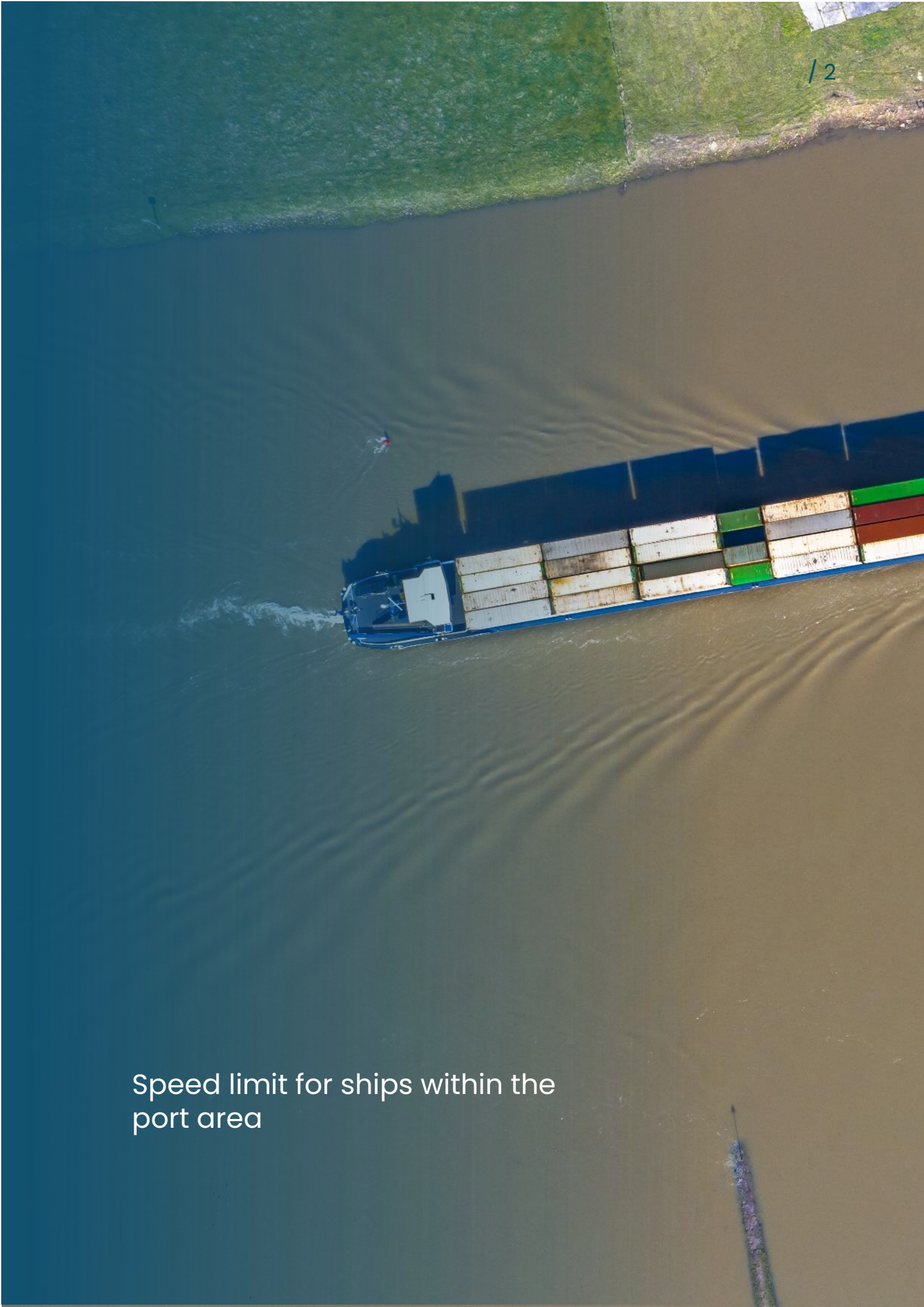
 **Green** Inland Ports

Good Practices

Funded by
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Speed limit for ships within the port area



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1.1 Description

By implementing a (decreased) speed limit for ships within the port area, a reduction in fuel consumption can be achieved, resulting in a reduction of greenhouse gas (GHG) emissions, air pollutant emissions, and (underwater) noise. As there is a cube law between speed and fuel consumption per day, the higher a ship's speed is, the more her emissions can be reduced by speed reduction (Psaraftis et al., 2009). Part of this is reducing idle and creep time by turning engines, for example. This also reduces wear and tear on the engine. In general, the reduced speed applies to a zone in and around the port.

Within Europe there are large differences in the maximum speeds that may be applied within the (inland) ports. In the port of Rotterdam, for example, two sections (Nieuwe Maas at Noordereiland and Hartelkanaal between junction Hartelkanaal/Oude Maas and Harmsenbrug) are subject to a dynamic speed limit of 13 kilometres per hour for inland shipping until January 1, 2025. This was introduced to ensure that the air quality in the Rijnmond area does not deteriorate during the construction of Maasvlakte 2 (Port of Rotterdam, n.d.).

Another example is the port of Cuxhaven (Niedersachsen Ports), where there is no concrete speed limitation. The definition reads *"Ships shall reduce speed as much as possible in a timely manner and manoeuvre in such a way that other vessels and installations are not endangered by suction or washout"* (Niedersachsen Ports, 2021). This description paints the picture that the speed limit serves mainly to prevent dangerous situations, and the environmental impact is not the main priority.

1.2 The aim of a speed limit

A speed limit for ships within the port area can have multiple goals, namely:

- A reduction of fuel consumption and thereby a reduction of fuel costs for shipowners;
- Reduction of GHG emissions;
- Reduction of air pollutant emissions;
- Reduction of noise;
- And an increase in safety and fewer incidents within the port.

The maximum speed within the measure may differ for each country and each port.

1.3 Ports that have implemented speed limits

- Port of Rotterdam
- Compagnie Nationale du Rhône (Port of Lyon)
- Port of Giurgiulesti
- Port of Seville
- Port of Venlo

1.4 Stakeholders

- Port authority: In general, the port authority is responsible for everything that happens within the port area. They are the party to implement this good practice and they are responsible for communicating and enforcing of the regulations.
- Ships: They are the party that must comply with the new rules/regulations.
- European and national government: Regulations can also be prescribed at a European or national level, making it necessary for all ports and ships within a certain area to adhere to these regulations.

1.5 Voluntary or mandatory

Within a port, ships can (almost) never sail at full speed. Therefore, they only use a part of their maximum power. However, there are not always hard speed limits in ports, as mentioned in the example of the port of Rotterdam. Speed limits can be better specified or further reduced to increase safety and emissions. Unless regulations are established at national/European level, this good practice is voluntary for ports.

1.6 Realised/potential impact

Reduction of speed results in a reduction of fuel consumption and thus in a reduction of GHG and air pollutant emissions. The main engine savings are proportional to the cube of the speed reduction (IMO, n.d.). For example, a 10% speed reduction leads to a 27% reduction in energy consumption of the main engine per unit of time¹. A 20% speed reduction leads to a 48% reduction in energy consumption of the main engine per unit of time².

Speed reduction also leads to a reduction in underwater noise. A reduction of underwater noise improves the living conditions of underwater biodiversity in the port area and terrestrial biodiversity near the water.

1.7 Possible obstacles

- Lower vessel speeds within the port area increase the likelihood of port congestion (Guo et al., 2024). Along with the increased likelihood of port congestion, lower speeds can also lead to delivery delays and longer transit times, resulting in increased inventory costs during transit (Sinay, 2024; Wu, 2020).
- Communication to the industry association is essential, according to the port of Rotterdam. If this does not happen or not enough, the chances of creating support within the sector will be jeopardised. There will always be disadvantages (the port of Rotterdam also specifically mentions undesirable delays), but sustainability and emission reduction are an important task to which the inland shipping sector must contribute (Nordbeck, 2024).
- Introducing or expanding speed limits requires more enforcement, which will lead to higher investment costs for the authorities involved. The port of Rotterdam implemented this by

¹ $1-(1-10\%)^3 = 27,1\%$

² $1-(1-20\%)^3 = 48,8\%$

carrying out several enforcement actions over the years, which resulted in verbalisation of several shippers (Nordbeck, 2024).

- Results from the Green Inland Ports survey (2024) show that ports generally find this easy to implement (score of 4.3 on a scale from 1 (very easy) to 10 (very difficult)).

1.8 Key learnings

The introduction of a speed limit for ships within a port area is a good measure to reduce emissions within a port area, as long as you take the safety aspects into account. Sailing too fast in port areas can create safety risks, but sailing too slow can also create safety risks. Ships must have enough power to manoeuvre in a timely and safe manner.

1.9 Sources

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