

THE

# BALTIC SEA

AND THE IMPACT OF MINERAL FERTILIZER HANDLING IN PORTS



**How to reduce the loss of dry bulk fertilizers and contribute to a healthier Baltic Sea**



# RACE FOR THE BAL TIC



Race For The Baltic is a non-profit organization with a mission to ensure a healthy Baltic Sea. We focus on solution-oriented and cost-effective projects with measurable impact.

To achieve the greatest positive impact, we focus our efforts on reducing eutrophication, the predominant issue affecting the Baltic Sea. Eutrophication causes dead sea floors, algal blooms, fish mortality and decreased water transparency.

We join forces with researchers, governmental institutions, non-profit organizations, entrepreneurs, and the private sector to improve the Baltic Sea.

Race For The Baltic was founded and continues to be supported by Zennström Philanthropies.

**“With Zennström Philanthropies’ commitment to Race For The Baltic we hope to contribute to a healthier Baltic Sea for future generations.”**

***Niklas Zennström***

*Co-founder Zennström Philanthropies  
Co-founder Skype, CEO and Founding  
Partner Atomico*



# The Baltic Sea

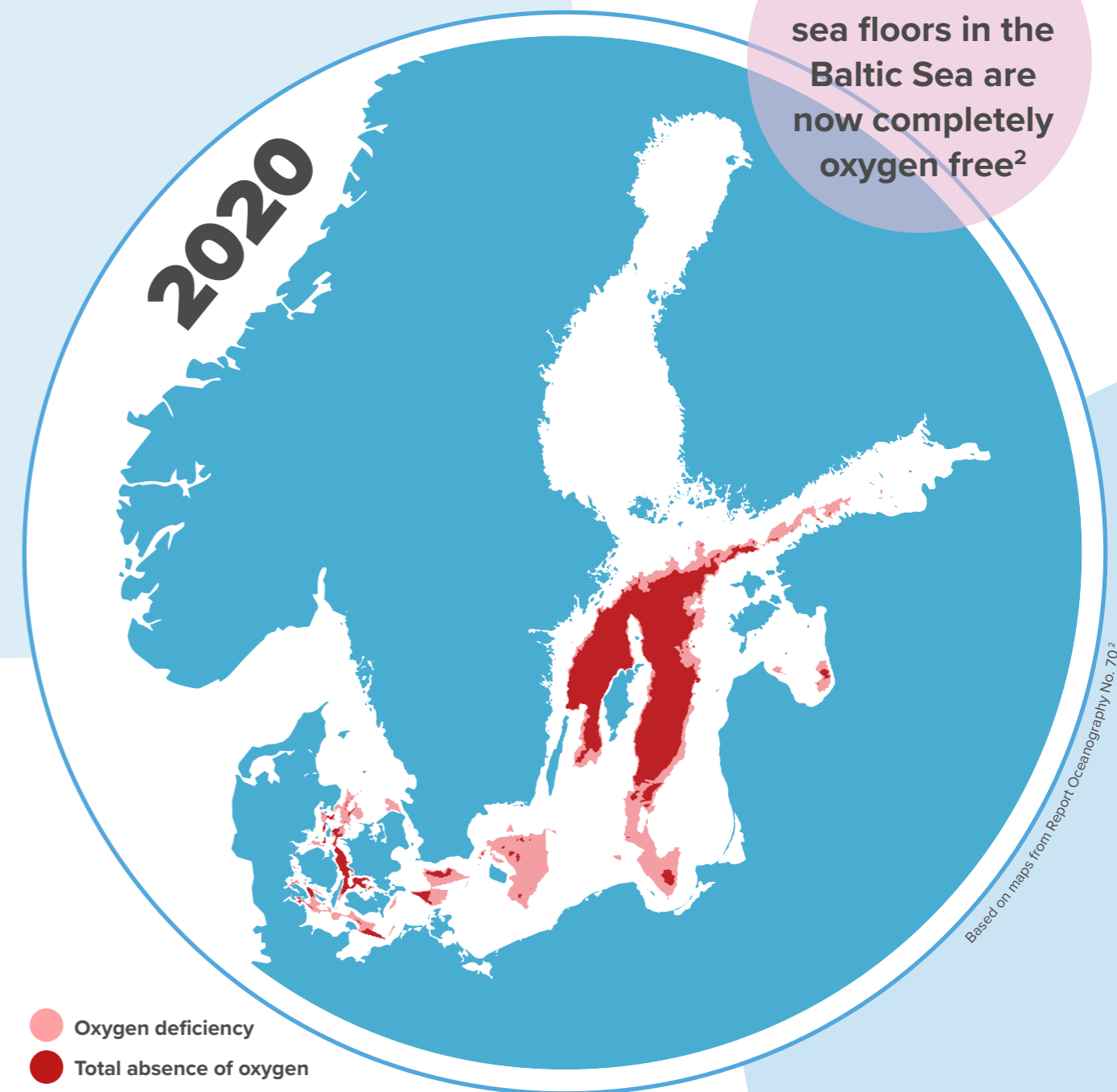
The purpose of this brochure is to inform you about the state of the Baltic Sea and provide examples of what a port that handles dry bulk mineral fertilizers can do to contribute to a healthier Baltic Sea.

The Baltic Sea is one of the world's most polluted oceans. The greatest negative impact on the Baltic



Sea ecosystem is eutrophication.<sup>1</sup> According to the most recent data, almost 20% of the Baltic's sea floors are now completely devoid of oxygen.<sup>2</sup> Under such conditions, no forms of life other than bacteria can survive, cod and many other fish species cannot lay eggs and the biodiversity of the Baltic Sea is reduced.

While there are several factors contributing to the existence of oxygen-free sea floors, the most important one is the excess of phosphorus and nitrogen that has accumulated in the Baltic Sea.<sup>1</sup> These nutrients cause eutrophication, which is the main reason for the area of dead sea floors

increasing in size. Therefore, it is of utmost importance to do whatever can be done to reduce the amount of nutrients that enter the Baltic Sea. Reducing the inflow of nutrients also will improve water transparency and reduce the size and frequency of toxic algae blooms.



**20% of the sea floors in the Baltic Sea are now completely oxygen free<sup>2</sup>**

-  Oxygen deficiency
-  Total absence of oxygen

1) HELCOM (2018): State of the Baltic Sea – Second HELCOM holistic assessment 2011-2016. Baltic Sea Environment Proceedings 155  
2) REPORT OCEANOGRAPHY No. 70, 2020 Oxygen Survey in the Baltic Sea 2020 - Extent of Anoxia and Hypoxia, 1960-2020, Martin Hansson & Lena Viktorsson, Swedish Meteorological and Hydrological Institute

## OUR PROJECT:

# Improving dry bulk fertilizer handling in ports

Every year, millions of tonnes of dry bulk mineral fertilizers are transported and handled at ports in the Baltic Sea region. Until now, the loading, transport, and unloading of dry bulk mineral fertilizer in ports has been overlooked as a potentially significant source of nutrients contributing to the inflow of excess nutrients into the Baltic Sea. Because **just a few kilograms of nutrients can generate a large amount of algae**, it is critical that as little fertilizer as possible is lost when handled in port operations.

In collaboration with ports, dry bulk equipment companies, and fertilizer producers, Race For The Baltic has researched and developed cost-effective methods to minimize the loss of dry bulk fertilizer during handling in ports. Working with selected ports around the Baltic Sea, we also have been able to implement solutions and pinpoint areas for improvement.

Further, as part of this initiative, we have developed a business case, "Reducing Discharge of Nutrients at Ports," with support from Boston Consulting Group. The report includes a hands-on tool to identify and remedy areas of potential fertilizer leakage when unloading and loading. The document is available to all and can be found here: [www.raceforthebaltic.com/port-project](http://www.raceforthebaltic.com/port-project).



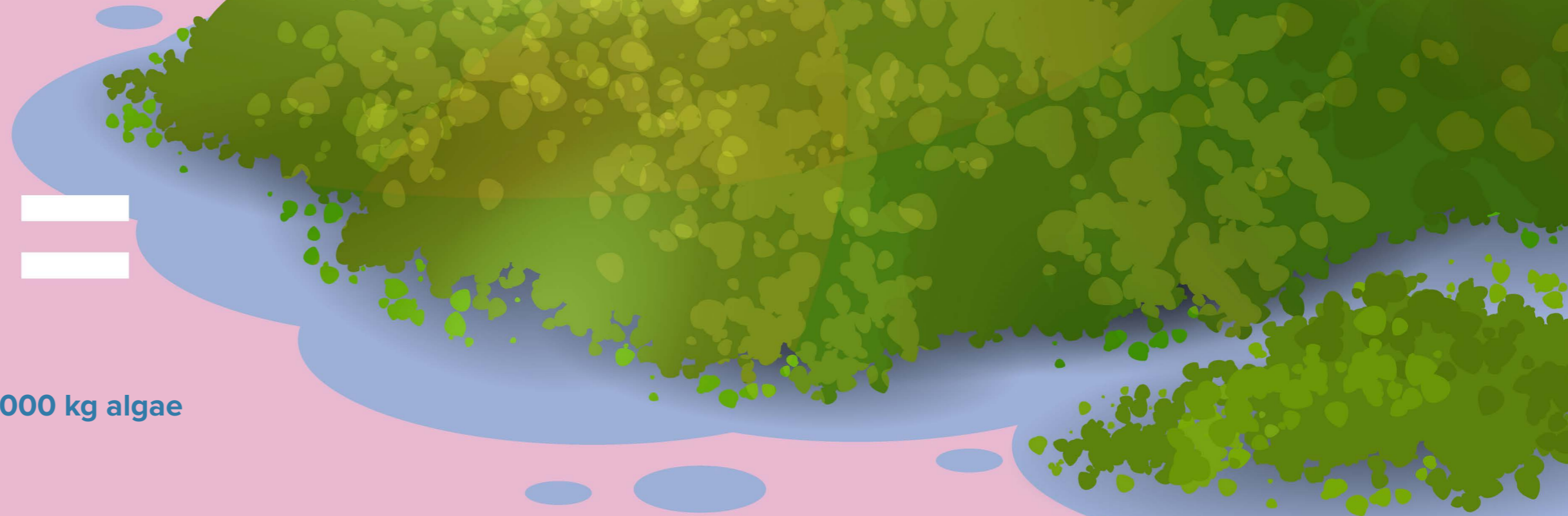
Algae

10000Kg



=

NPK (P 5%) 20 kg = 1 000 kg algae



# With a LITTLE effort you can make a BIG difference

Let's recap:

1. Phosphorus and nitrogen contribute to toxic algal blooms and eutrophication in the Baltic Sea.
2. Phosphorus and nitrogen are some of the most common components in dry bulk mineral fertilizer and comprise the raw materials in fertilizer products.
3. Poor handling of dry bulk mineral fertilizer in ports can lead to leakage of phosphorus and nitrogen into the Baltic Sea.


But by making a few small changes in how loose dry bulk mineral fertilizer is handled, you can make a big contribution to a healthier Baltic Sea – one that has higher biodiversity, more transparent water, and fewer poisonous algal blooms.


**Your port is crucial for the health of the Baltic sea**





Girl swimming in algae bloom water outside Gotland, Sweden. By implementing leakage preventing measures in your port you support SDGs 6, 9, 14 and 17. Photo: A Maslennikov/Azote


## Here's what you can do!


1. A prevention cover is an inexpensive and innovative way to reduce the amount of spillage between the ship and quay. 


2. Make sure unloading and loading equipment is upgraded regularly and not leaking. Ensure clamshell bucket equipment is in good condition and ensure proper maintenance to avoid spillage. Alternatively invest in a completely closed system (like a bucket chain unloader or a vertical screw unloader). 


3. The more "closed" the handling system is, the less the leakage. Implement closed conveyor belts and if possible use chutes instead of grab cranes. Additional measures that reduces the leakage are: shortening the length of the conveyor belt, ensuring the correct slopes on the belt, limiting the number of switching points and, in some cases, changing the dust filters regularly. 

4. Minimize loose dry bulk handling and use early bagging as much as possible. 

5. Ensure proper training and experience of the crane driver. 

6. Follow our recommended CLEANING ROUTINES (Check out our poster for suggestions) 

7. Monitor the storm water appropriately and regularly. If necessary, consider stormwater filters or store the stormwater from the unloading/loading area for later processing by a third party. 

8. Share this material with relevant staff in the port to make them aware of what they can do for the Baltic. 



# Your port is crucial for the health of the Baltic sea



A key starting point for any port handling dry bulk fertilizers is for management to have environmentally friendly operations high on the agenda. And, by doing the following, you and your port can demonstrate that you care about improving the Baltic Sea:

1. Distribute this brochure to relevant port and terminal staff.
2. When you have your next staff meeting, search for “Race For The Baltic” on YouTube and watch the movie, “Eutrophication and Ports”.
3. Contact us at Race For The Baltic if you have any questions.

*By taking these simple steps to reduce the leakage of fertilizer and the raw materials that go into its production into the Baltic Sea, you will make a significant positive contribution to the health of the Baltic Sea.*

*Thank you!*



## About Race For The Baltic

Race For The Baltic was founded by Zennström Philantropies in 2013. The organization works to convene forward-thinking politicians, industry professionals, NGOs and local governments who are determined to improve the Baltic Sea environment and ensure the region's long-term economic viability.

We are grateful to our sponsor: **Postkodsstiftelsen**

A special thanks to **Boston Consulting Group** and **Mannheimer Swartling** that have given us their support throughout the project.

Last but not the least, we would like to thank all the ports around the Baltic Sea that have so generously shared their knowledge. Especially we would like to thank **Landskrona port**, **Vänerhamn** and **Åhus port**.

**“The Baltic Sea is our closest sea, but continuous eutrophication contributes to dead sea floors and a dead sea. We are therefore pleased to be able to support Race For The Baltic in their work to reduce the amount of phosphorus and nitrogen that ends up in the water when handling dry bulk fertilizer in ports and thereby reducing the eutrophication and creating better conditions for a healthy Baltic Sea”**

*Marie Dahllöf  
Secretary General for  
the Swedish Postcode Foundation*



[www.raceforthebaltic.com](http://www.raceforthebaltic.com)

