

Eutrophication of the Baltic Sea and nutrients load. current status and future challenges

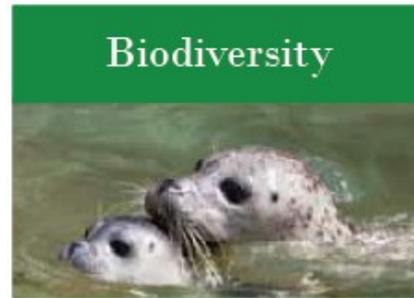
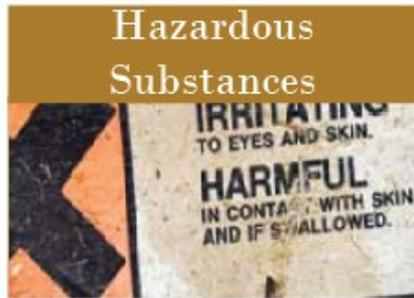
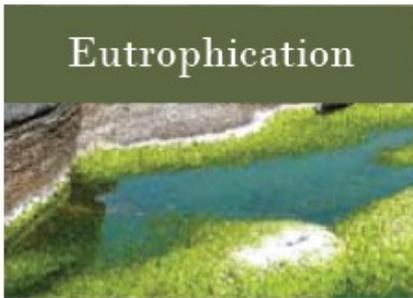
Dmitry Frank-Kamenetsky
HELCOM Professional Secretary



HELCOM

HELCOM Baltic Sea

Action Plan "Achieve a Baltic Sea in good environmental status by 2021"



Baltic Sea unaffected by eutrophication

Baltic Sea life undisturbed by hazardous substances

Favourable status of Baltic Sea biodiversity

Maritime activities in the Baltic Sea carried out in an environmentally friendly way



HELCOM

**FIRST VERSION OF THE
'STATE OF THE BALTIC SEA' REPORT
– JUNE 2017** TO BE UPDATED IN 2018



 **STATE OF THE
BALTIC SEA**
– HOLISTIC ASSESSMENT –
First version 2017

Baltic Sea Environment Proceedings No. 152



Baltic Marine Environment Protection Commission

Sources and pathways of nutrients to the Baltic Sea

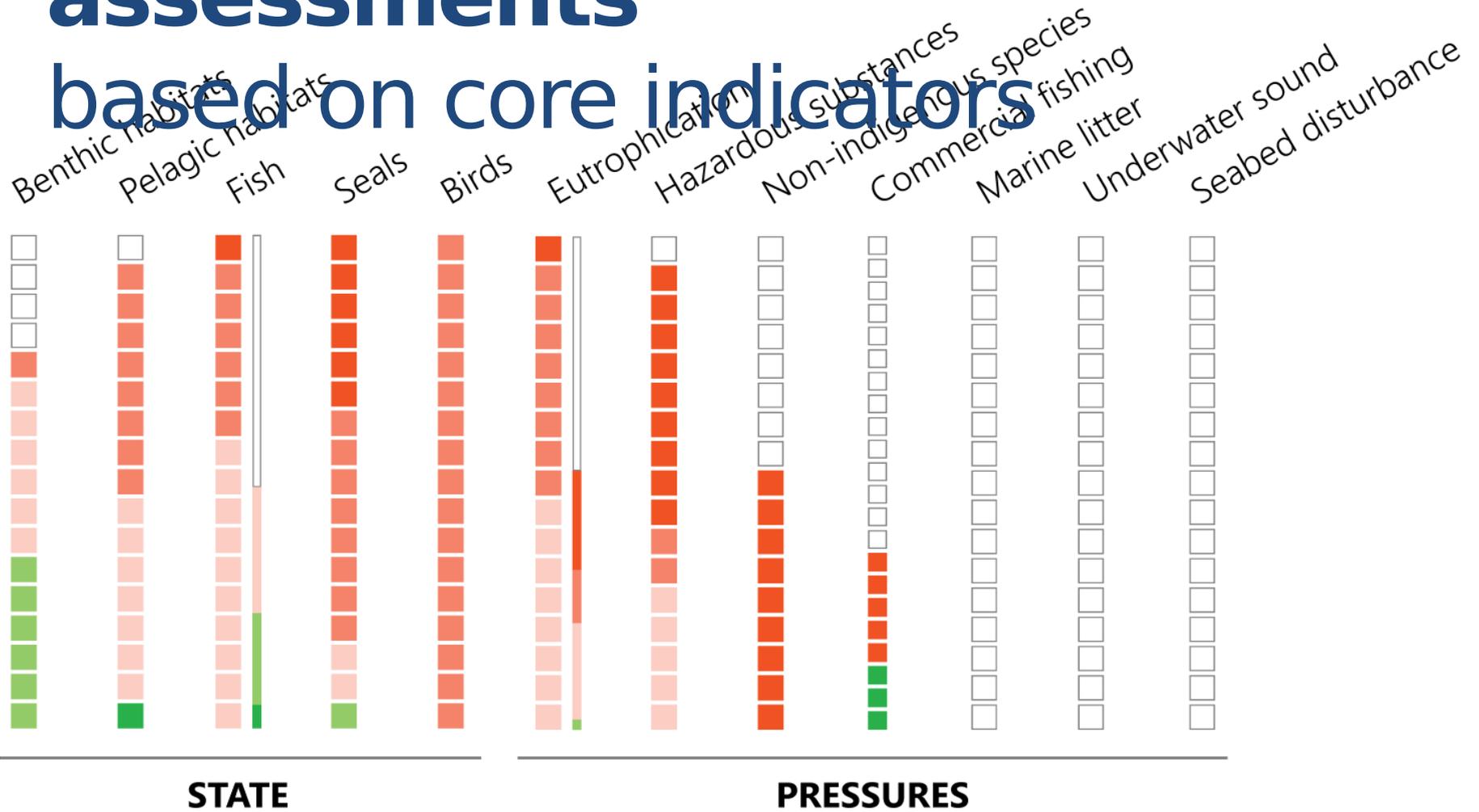
HELCOM PLC-6



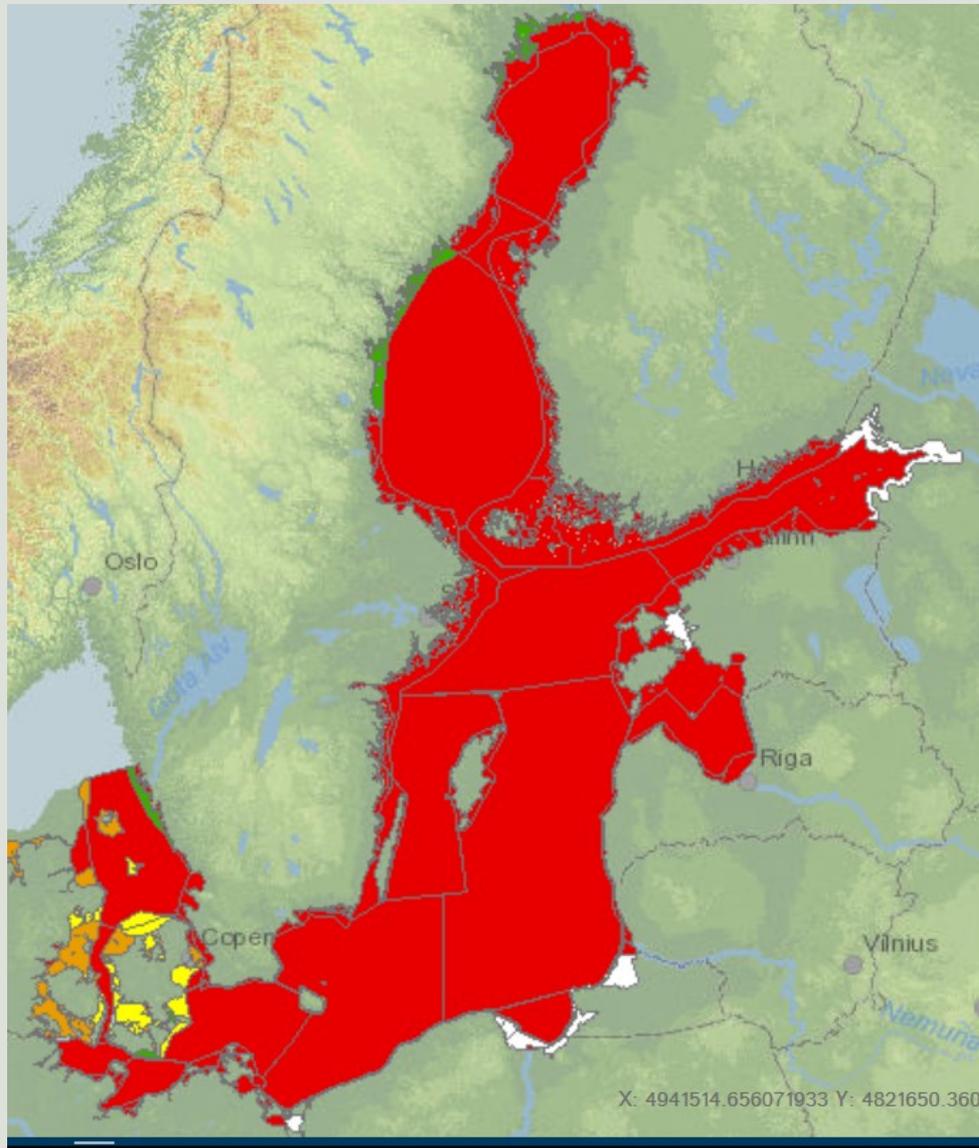
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Integrated assessments

based on core indicators



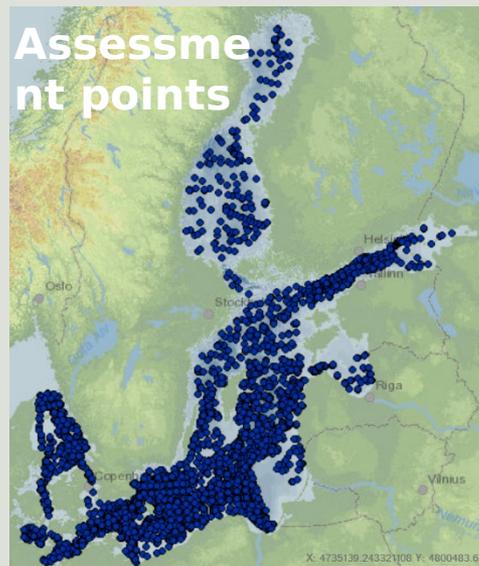
Integrated eutrophication assessment



assessment

- Good
- Not good
- Not assessed
- WFD: Good
- WFD: Moderate
- WFD: Moderate potential
- WFD: Poor
- WFD: Bad

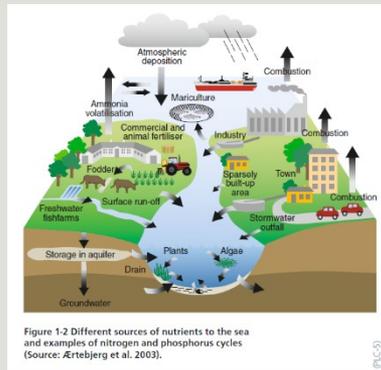
HELCOM core indicators used for the Integrated eutrophication status assessment



Assessment unit	Core indicator results									Integrated status assessment
	Nutrient levels				Direct effects			Indirect effects		
	DIN	TN	DIP	TP	Chla	Secchi	Cyano*	O ₂	Zoob*	
	Dec-Feb	All year	Dec-Feb	All year	Jun-Sep	Jun-Sep	20 Jun-31 Aug	All year	May-Jun	
Kattegat	↔	↔	↔	↔	↘	↔	N	N		↔
Great Belt	↘	↔	↔	↔	↘	↘	N	N		↘
The Sound ¹¹	↗	↔	↔	↗	↘	↔	N	N		↗
Kiel Bay	↘		↔		↔	↘	N	N		↔
Bay of Mecklenburg	↔		↔		↔	↔	↗	N		↔
Arkona Basin	↔		↔		↔	↔	↔	N		↔
Bornholm Basin ¹²	↗		↔		↗	↔	↔	↔		↗
Gdansk Basin	↘	↔	↘	↔	↘	↔	↘	↔		↘
Eastern Gotland Basin	↔	↔	↔		↘	↔	↔	↔		↔
Western Gotland Basin	↔	↔	↔	↔	↘	↔	↔	↔		↔
Gulf of Riga	↗	↔	↗	↗	↗	↔	↗	N		↗
Northern Baltic Proper	↗	↔	↗	↘	↗	↔	↔	↔		↗
Gulf of Finland	↔	↔	↔	↗	↗	↔	↔	↔		↗
Åland Sea	↔	↔	↗	↔	↘	↔	N		↔	↔
Bothnian Sea	↔	↔	↗	↔	↔	↗	↔		↔	↗
The Quark	↔	↔	↗	↔	↔	↔	N	N	↔	↗
Bothnian Bay	↔	↔	↔	↔	↔	↗	N		↔	↔

Follow up implementation of HELCOM Nutrient Reduction Scheme MAI

Maximum allowable inputs: the basin-wise maximal nitrogen and phosphorus inputs that will result in a development towards reaching the

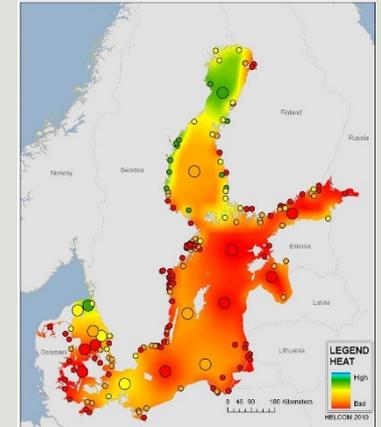


targets

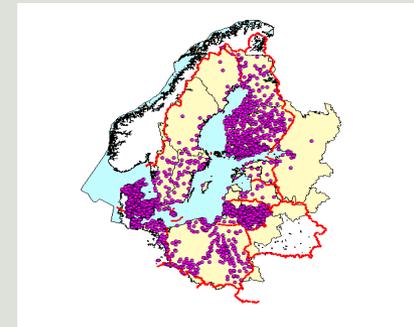
CART

Country-wise allocation of reduction

targets: the necessary nutrient input reduction distributed per Country according to agreed principles

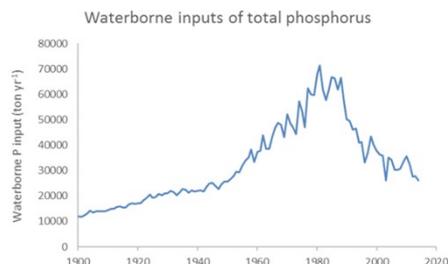
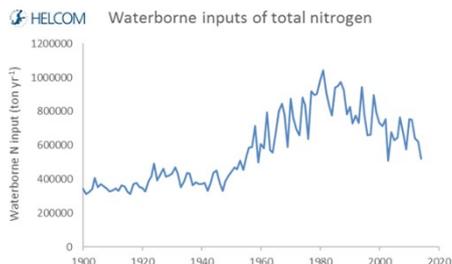


Identification of sources and pathways of nutrients into the Baltic Sea



Allocation principles

Needed reduction is the difference between the **total loads** to the basin and the **Maximum Allowable Input**



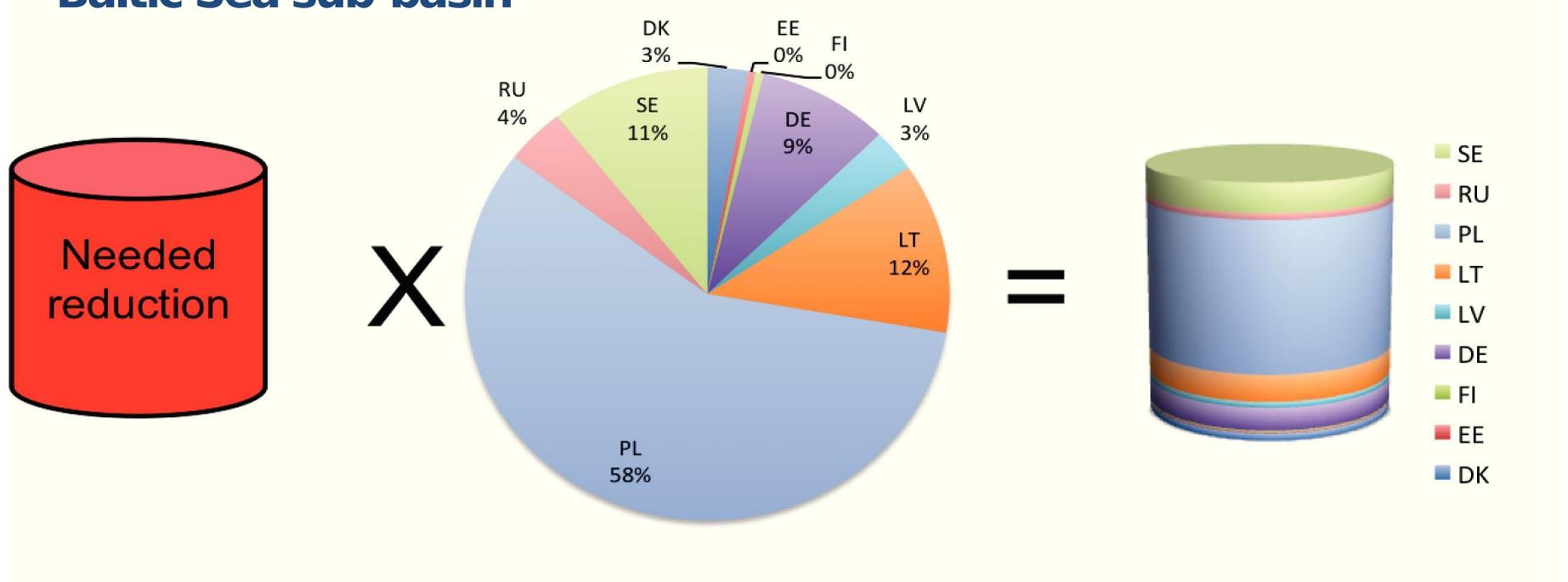
Allocation principles

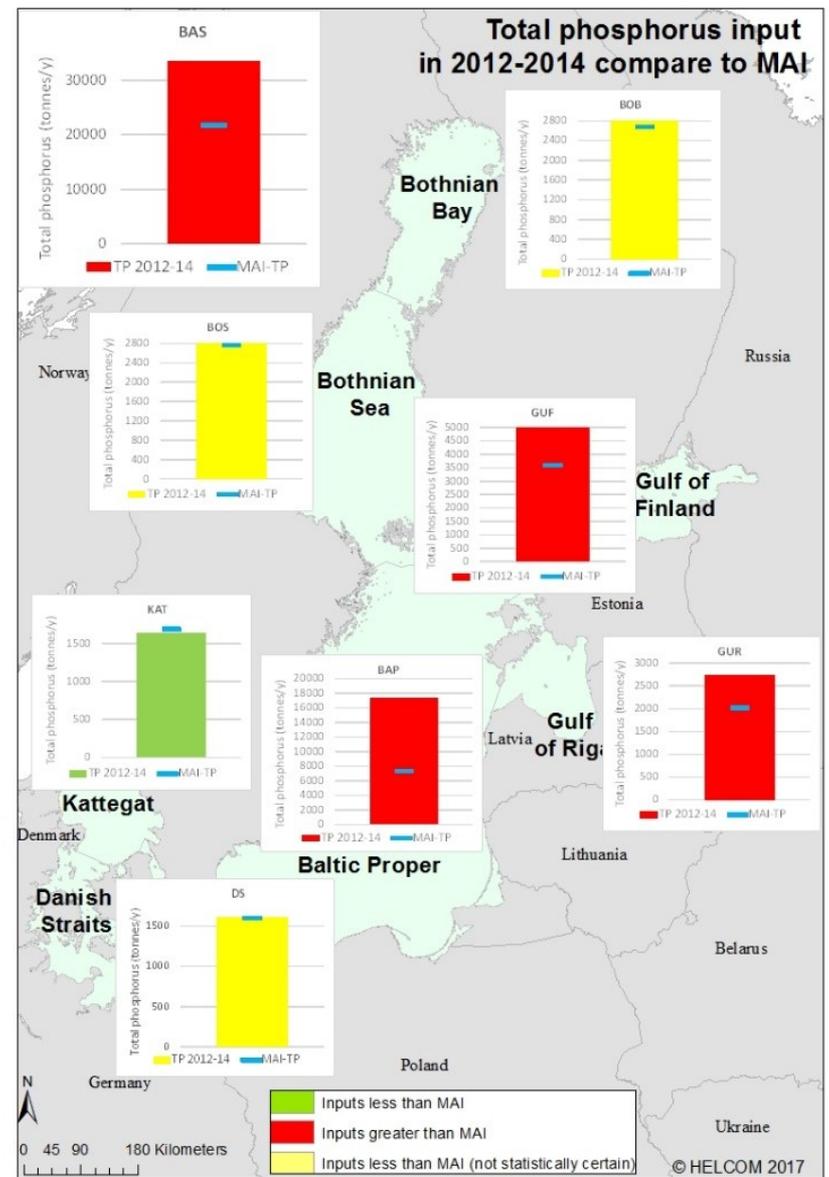
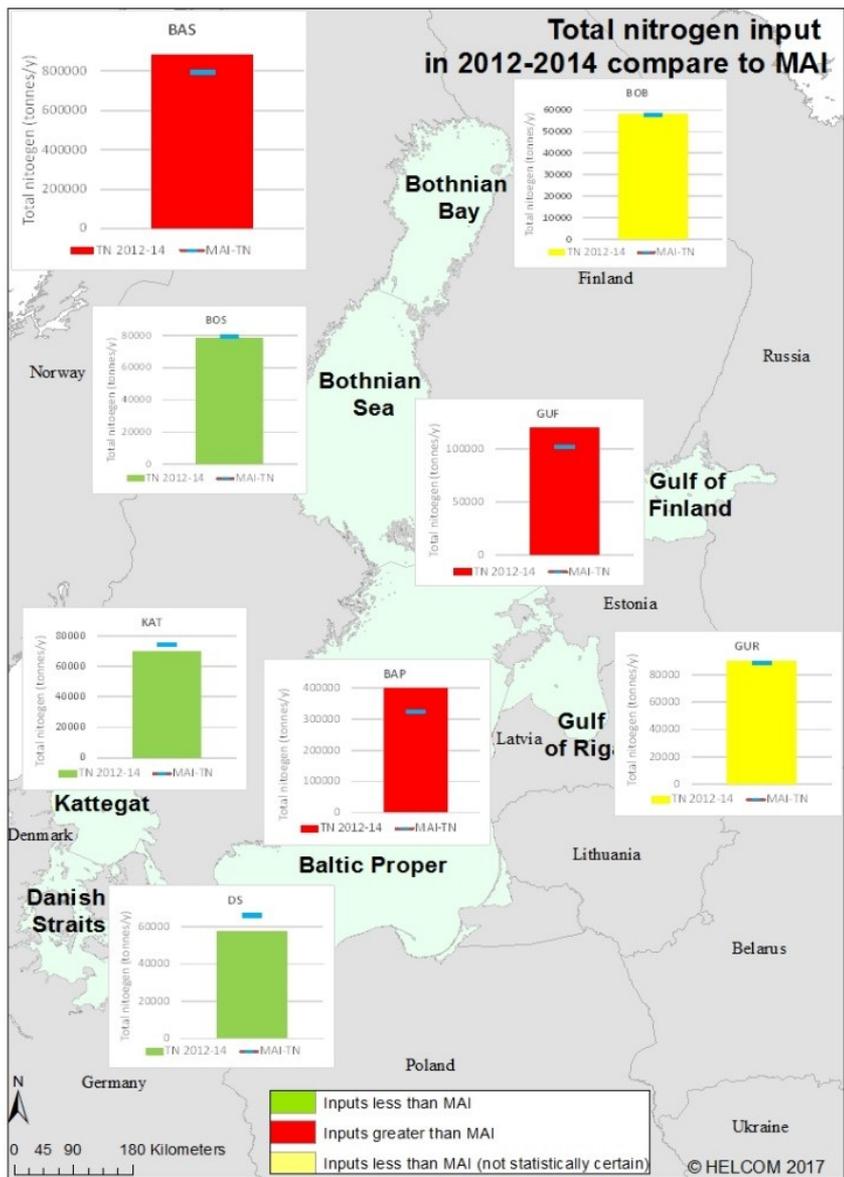
Contributions of Contracting Parties to total input to each Baltic Sea sub-basin were identified
Example of Baltic Proper



Allocation principles

The reduction targets are allocated proportionally to contribution of Contracting Parties to total input to a Baltic Sea sub-basin





HELCOM Baltic Sea Action Plan – Eutrophication

Reduction of nitrogen input

Change between 1997–2003
and 2012–2014

- Significant decrease of input
- Non-significant decrease of input

Total
Baltic Sea
-13%

Bothnian
Sea
-14%

Bothnian
Bay
-9%

Gulf of
Finland
-5,4%

Gulf of
Riga
-10%

Kattegat
-21%

Baltic
Proper
-14%

Danish
Straits
-21%



Reduction of phosphorous input

Change between 1997–2003
and 2012–2014

- Significant decrease of input
- Non-significant decrease of input
- Non-significant increase of input

Total
Baltic Sea
-19%

Bothnian
Sea
-11%

Bothnian
Bay
-7,8%

Gulf of
Finland
-50%



Kattegat
-11%

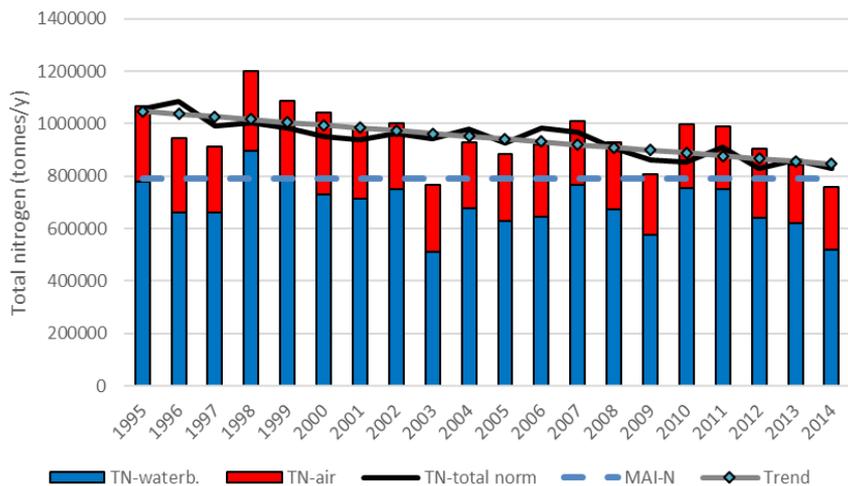
Gulf of
Riga
+3,2%

Baltic
Proper
-11%

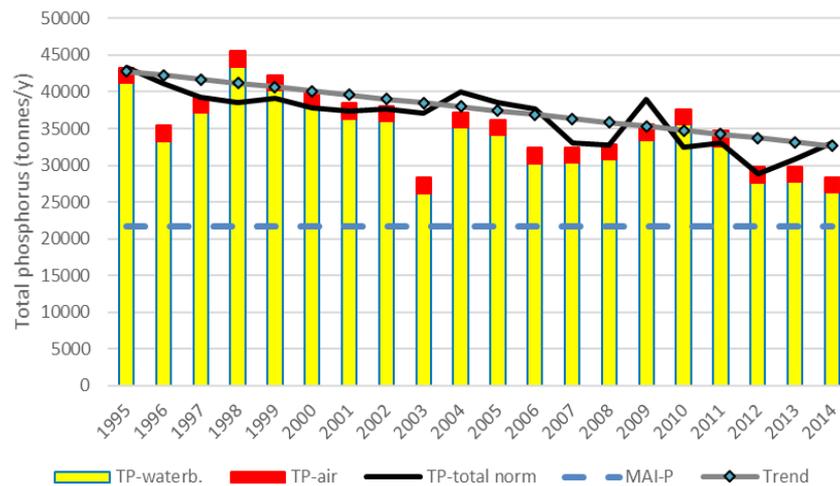
Danish
Straits
-7,4%

Time series of total N and P inputs to the Baltic Sea and Baltic Proper

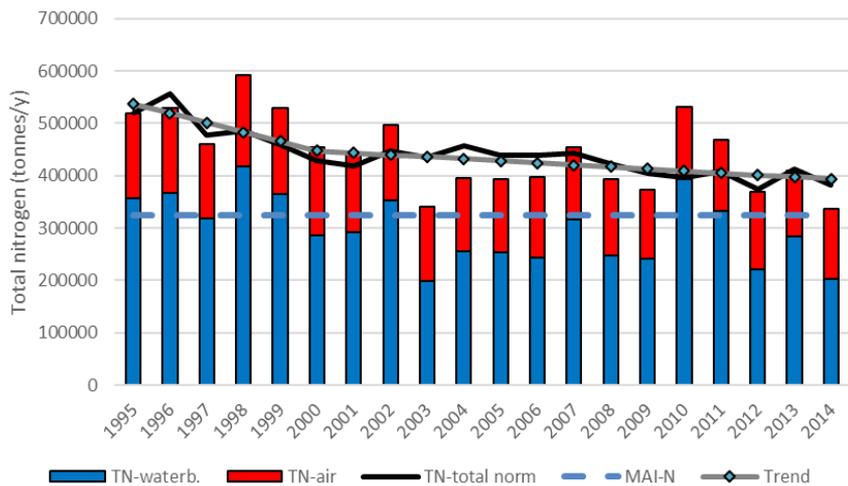
TN BAS



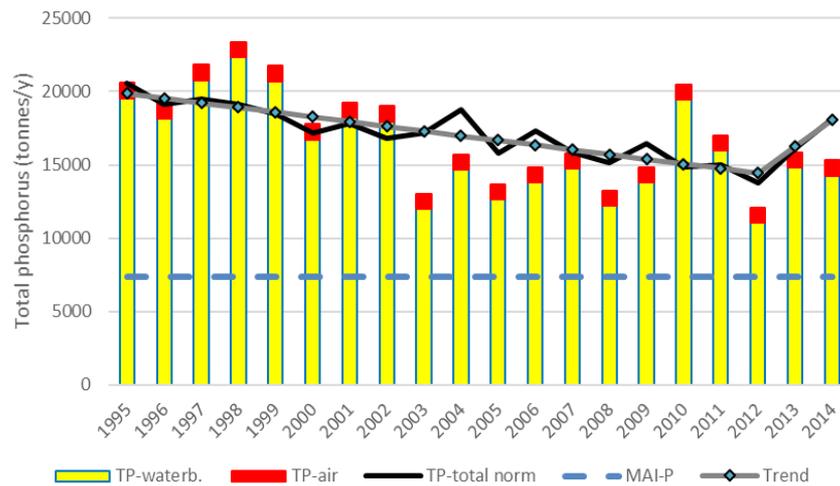
TP BAS



TN BAP

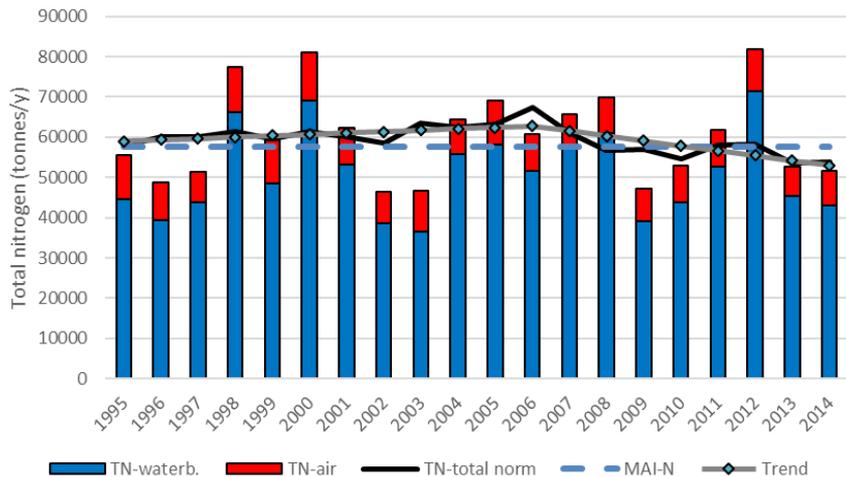


TP BAP

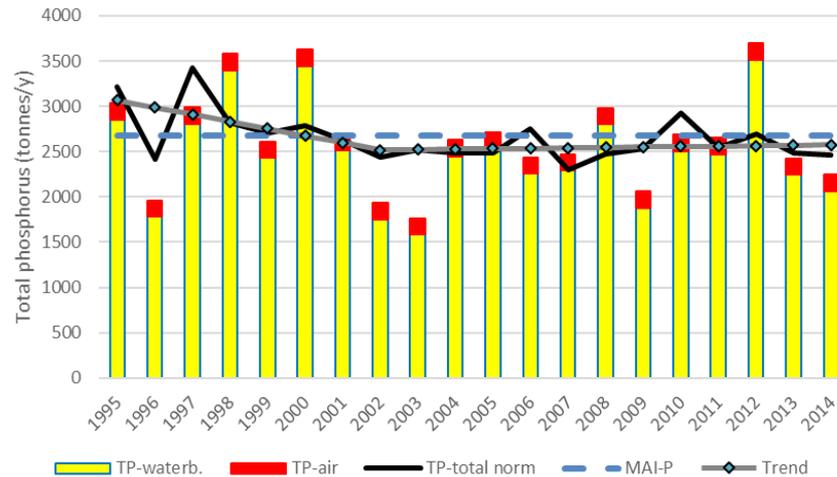


Time series of total N and P inputs to Bothnian Bay and Bothnian Sea

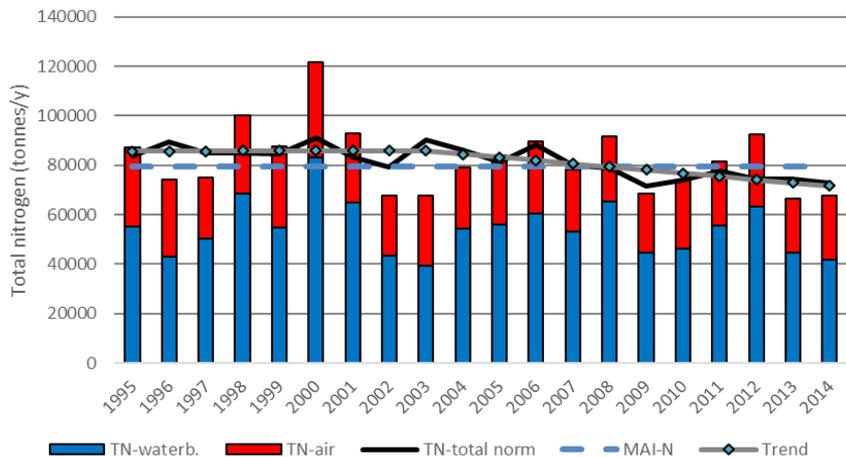
TN BOB



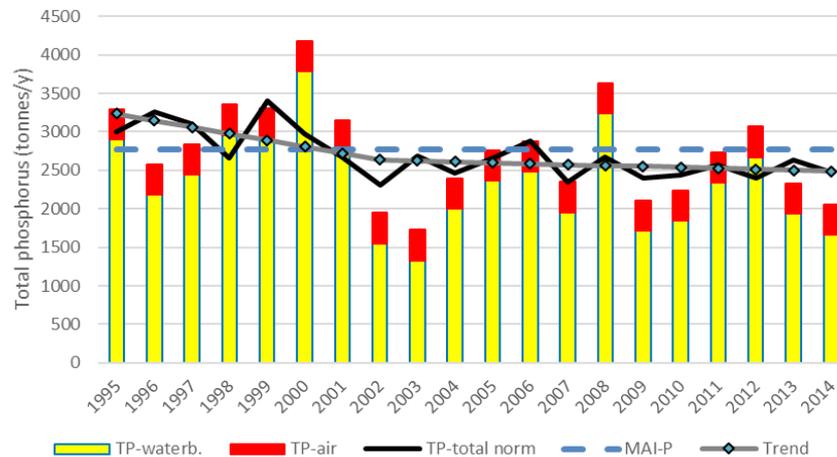
TP BOB



TN BOS

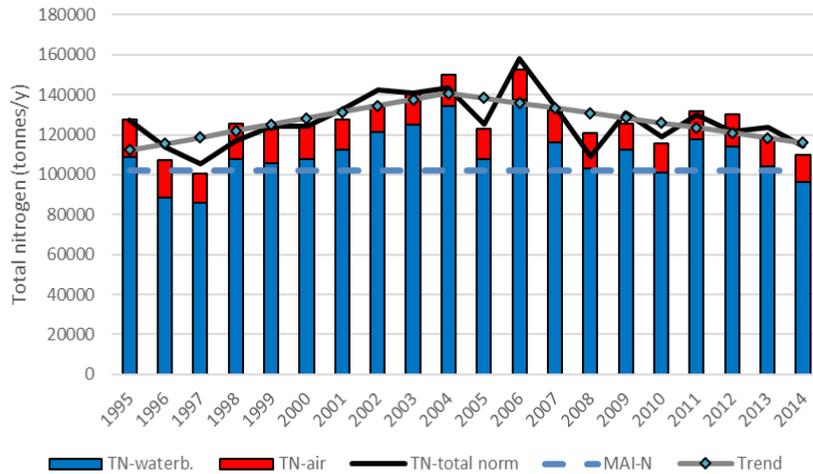


TP BOS

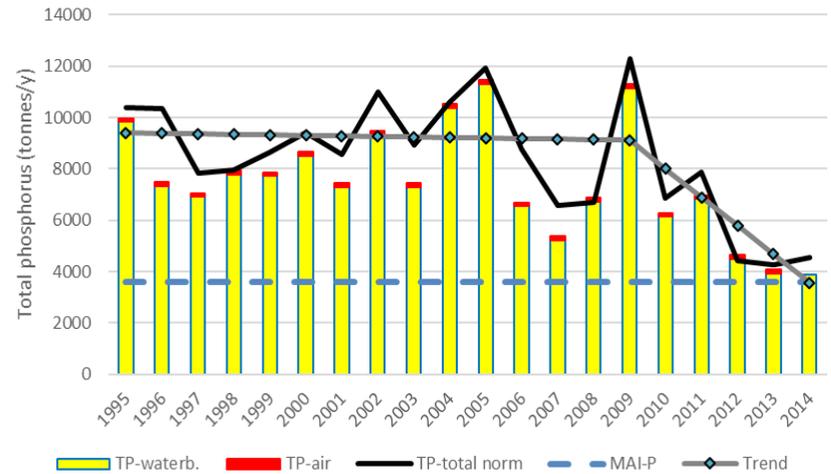


Time series of total N and P inputs to the Gulf of Riga

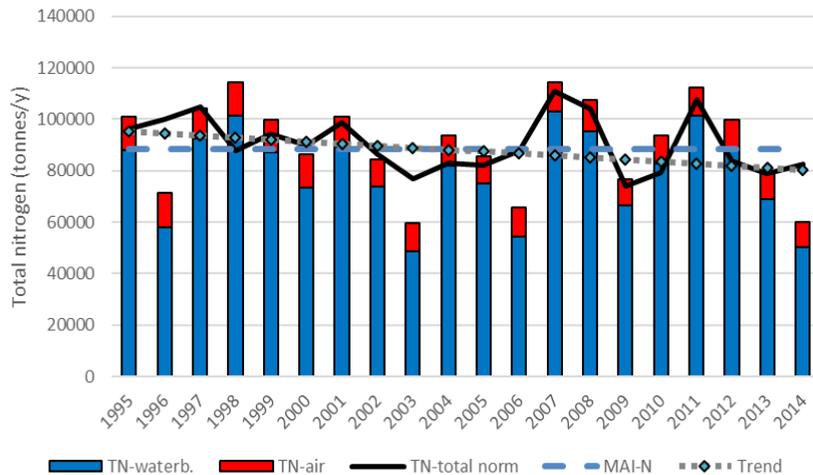
TN GUF



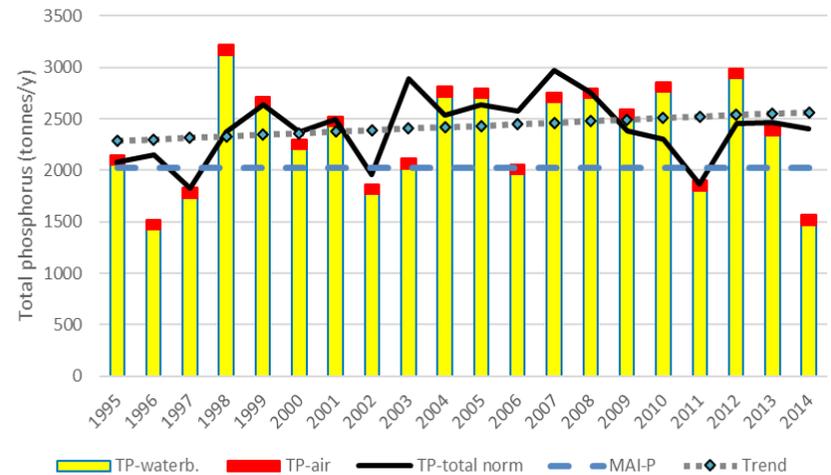
TP GUF



TN GUR

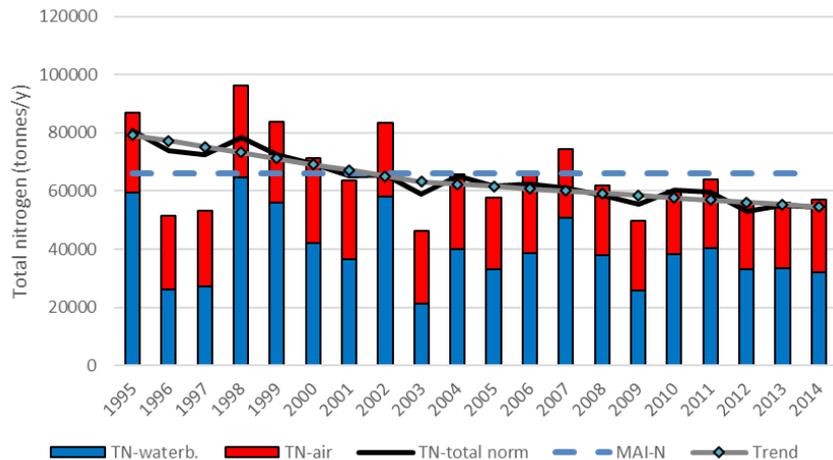


TP GUR

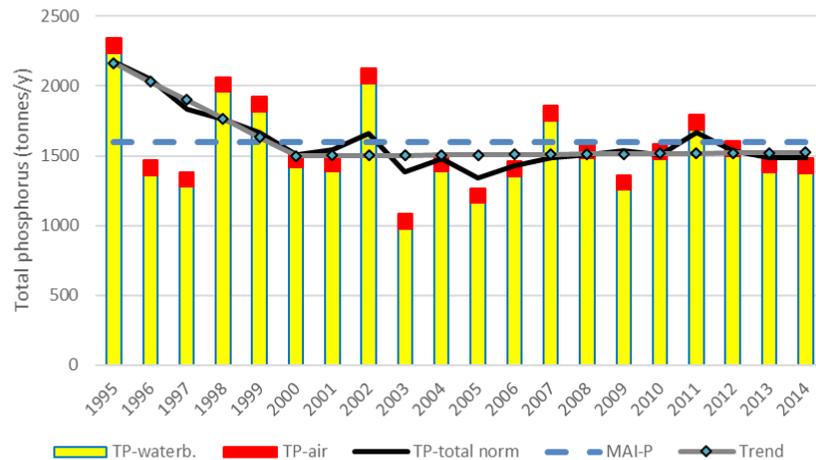


Time series of total N and P inputs to Danish straits and Kattegat

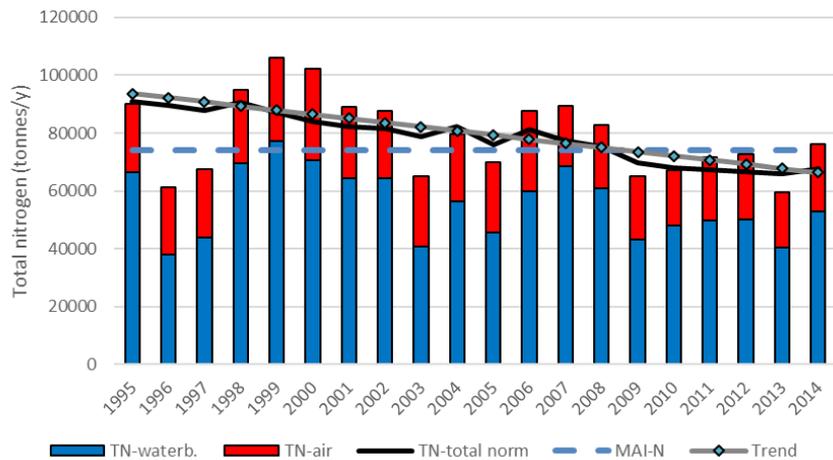
TN DS



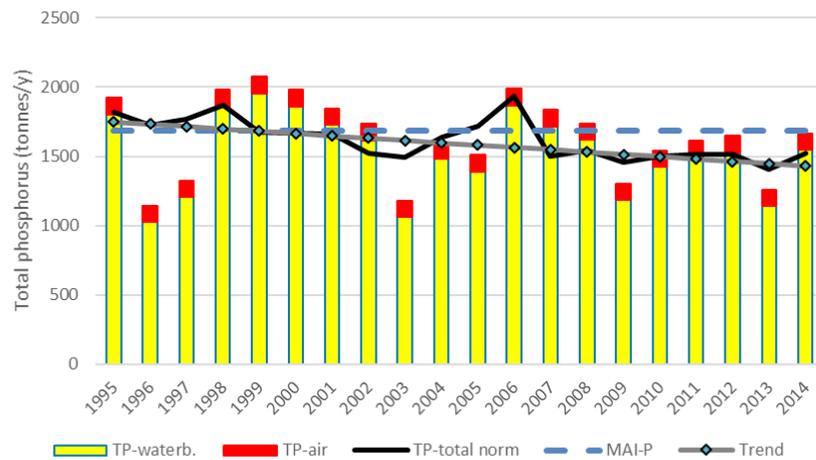
TP DS



TN KAT



TP KAT



Progress towards national reduction targets for nitrogen input in 2012-2014.

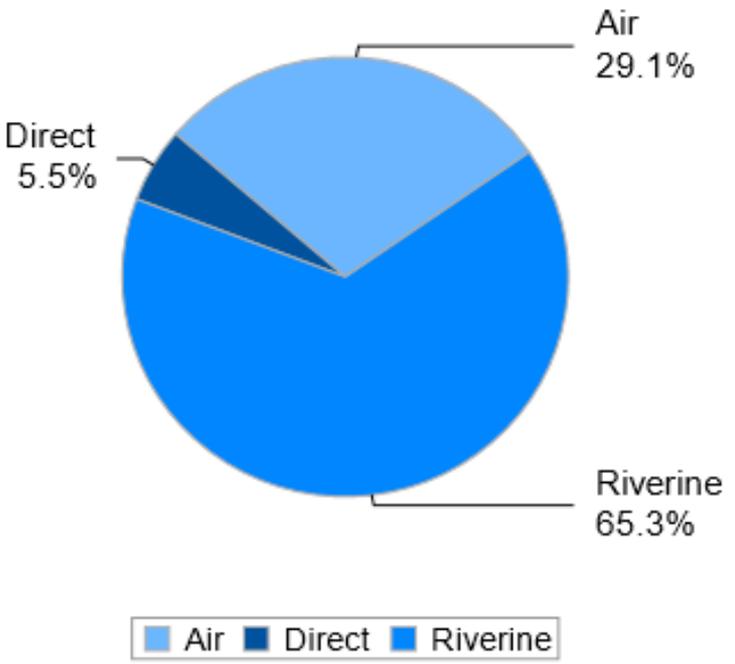
Country/ basin	BOB	BOS	BAP	GUF	GUR	DS	KAT
Denmark	↓	↓	↓	↓	↓	↓	↓
Estonia	↓	↓	↓			↓	
Finland			↓		↓	↓	↓
Germany	↓	↓	↓	↓	↓	↓	↓
Latvia	↓	↓				↓	↓
Lithuania		↓		↓			
Poland	↓	↓	↓	↓	↓	↓	↓
Russia	↓	↓	↑			↓	
Sweden	↓	↓	↓	↓	↓		↓
Belarus							
Czech Republic							
Ukraine			↑				
Baltic Sea shipping							
Other countries	↓	↓	↓	↓	↓	↓	↓
MAI	↓	↓	↓			↓	↓

Progress towards national reduction targets for phosphorus input in 2012-2014.

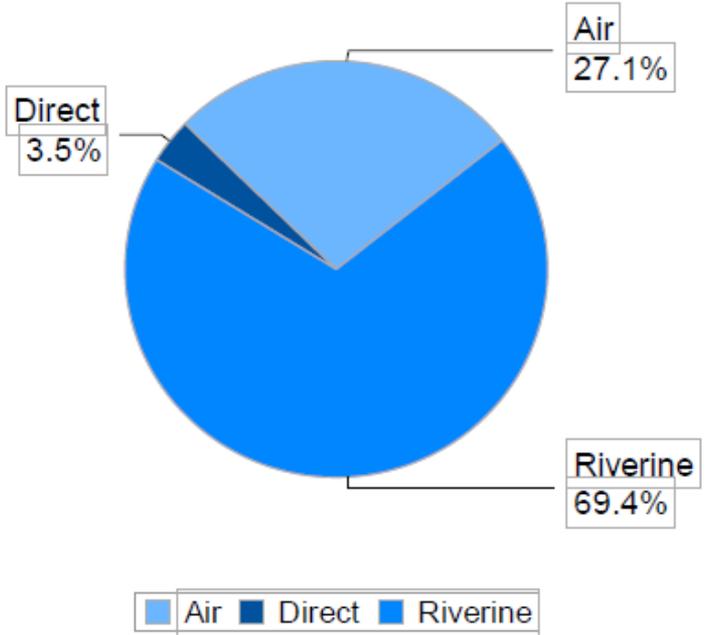
Country/ basin	BOB	BOS	BAP	GUF	GUR	DS	KAT
Denmark			↓				↓
Estonia				↓			
Finland	↓						
Germany							
Latvia							
Lithuania			↓		↓		
Poland							
Russia			↑	↓			
Sweden		↓	↓			↓	
Belarus							
Czech Republic							
Ukraine			↑				
Baltic Sea shipping							
Other countries							
MAI				↓			↓

Major pathways of nitrogen to the BS

1995 (1,056,922 tonnes)

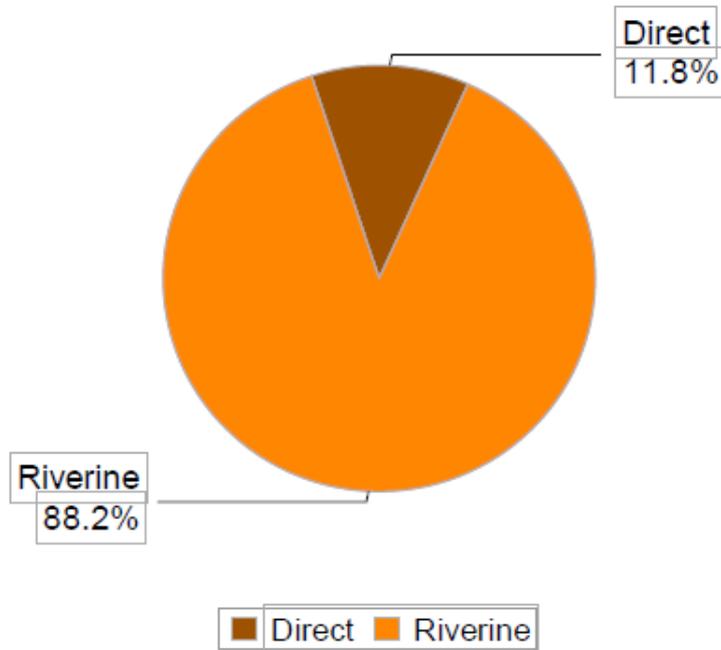


2014 (825,825 tonnes)

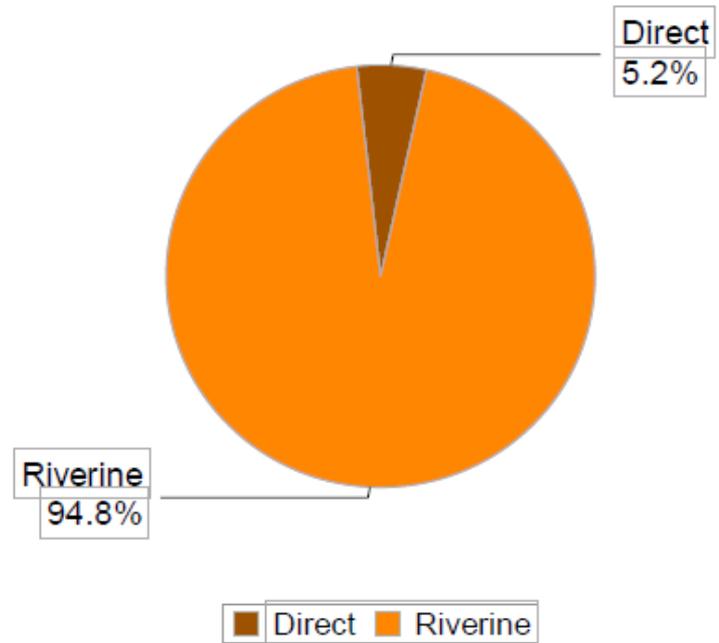


Major pathways of phosphorus to the BS

1995 (41,163 tonnes)

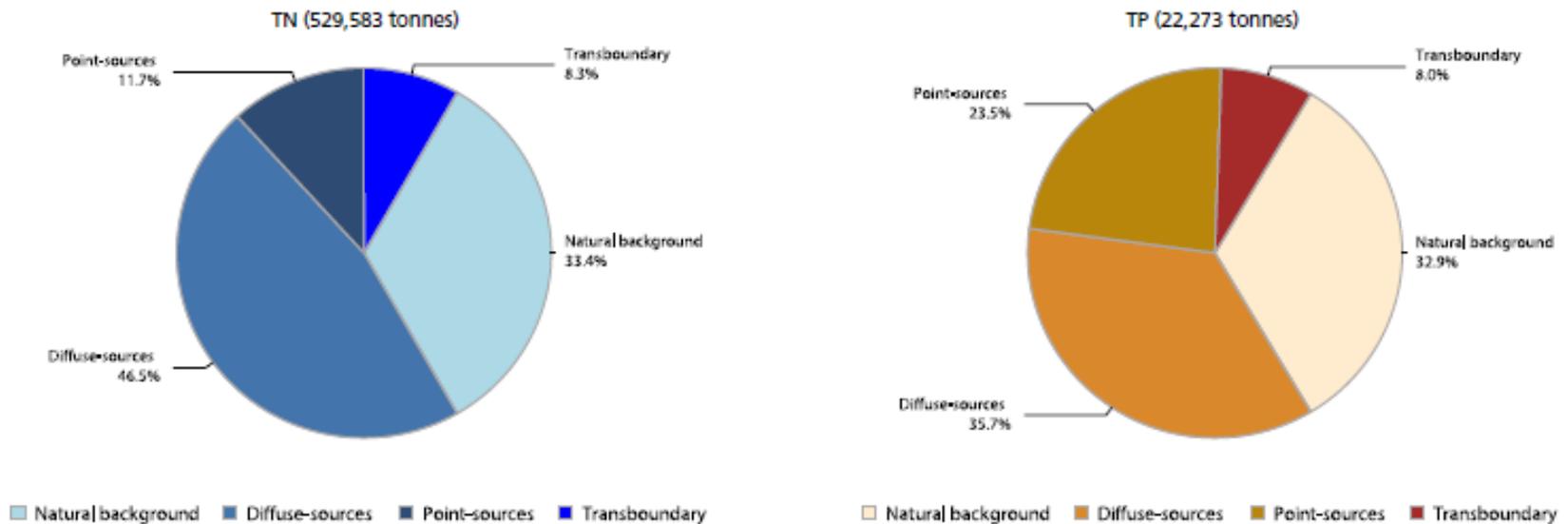


2014 (30,949 tonnes)



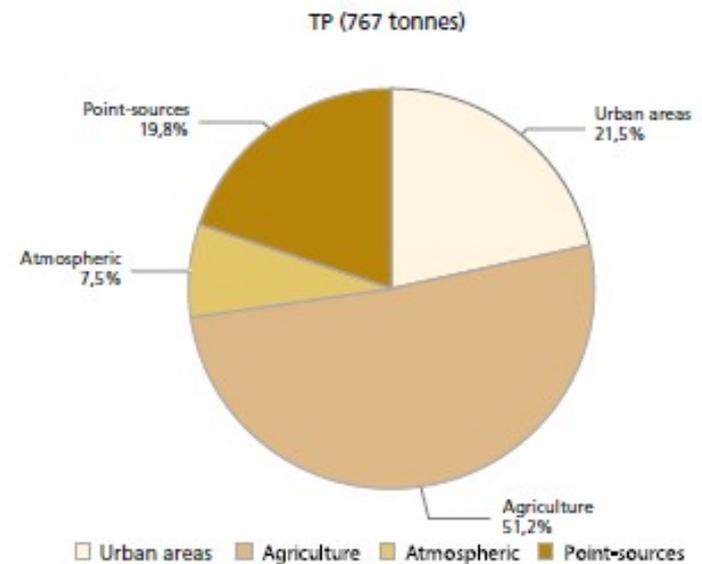
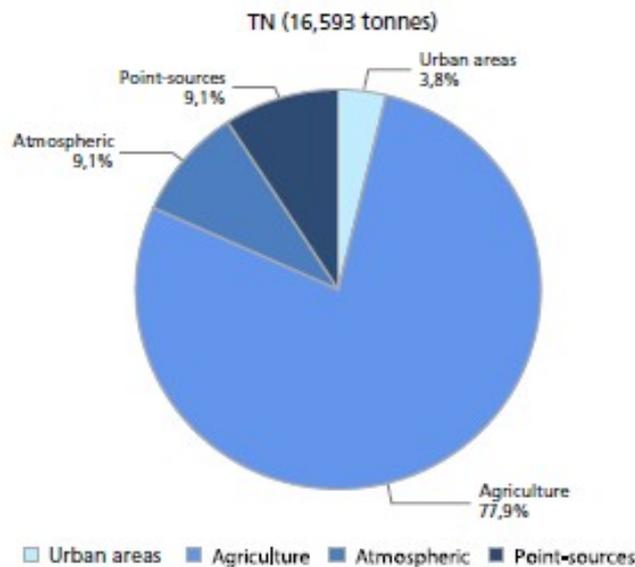
Contribution of various sources into riverine input of nutrients to the Baltic Sea

Riverine load in 2014 to BALTIC SEA



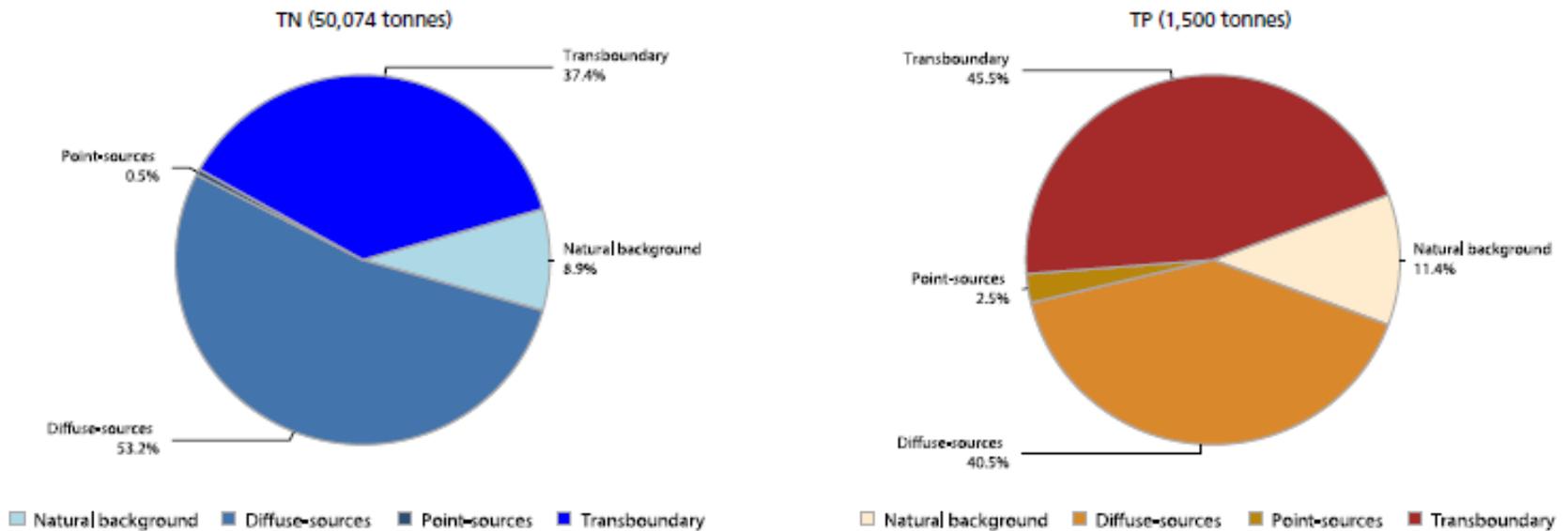
Contribution of various sources into riverine input of nutrients to the Baltic Sea

Riverine load in 2014 from GERMANY



Contribution of various sources into riverine input of nutrients to the Baltic Sea

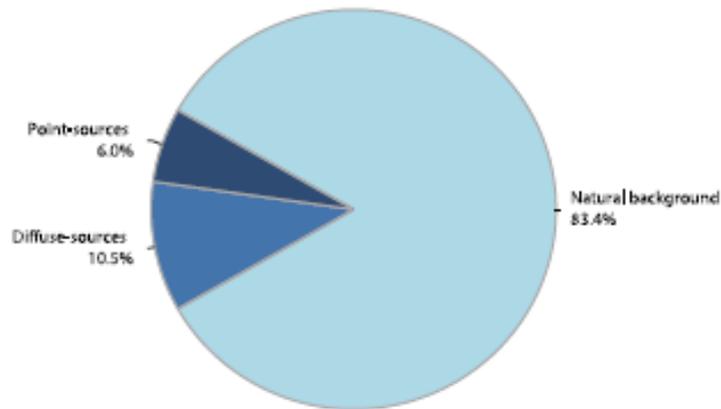
Riverine load in 2014 from LATVIA



Contribution of various sources into riverine input of nutrients to the Baltic Sea

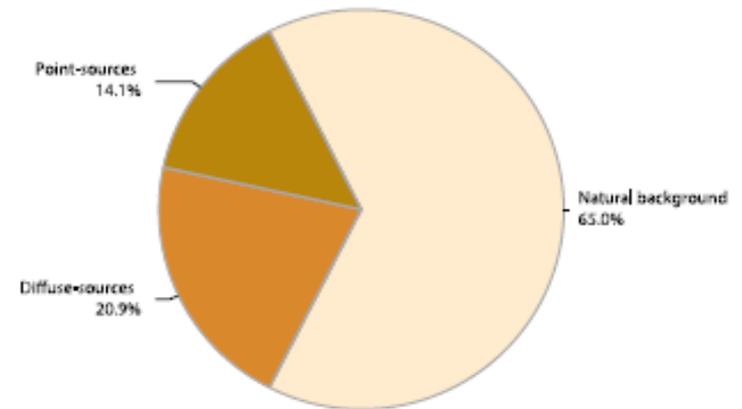
Riverine load in 2014 from RUSSIA

TN (61,103 tonnes)



■ Natural background ■ Diffuse-sources ■ Point-sources

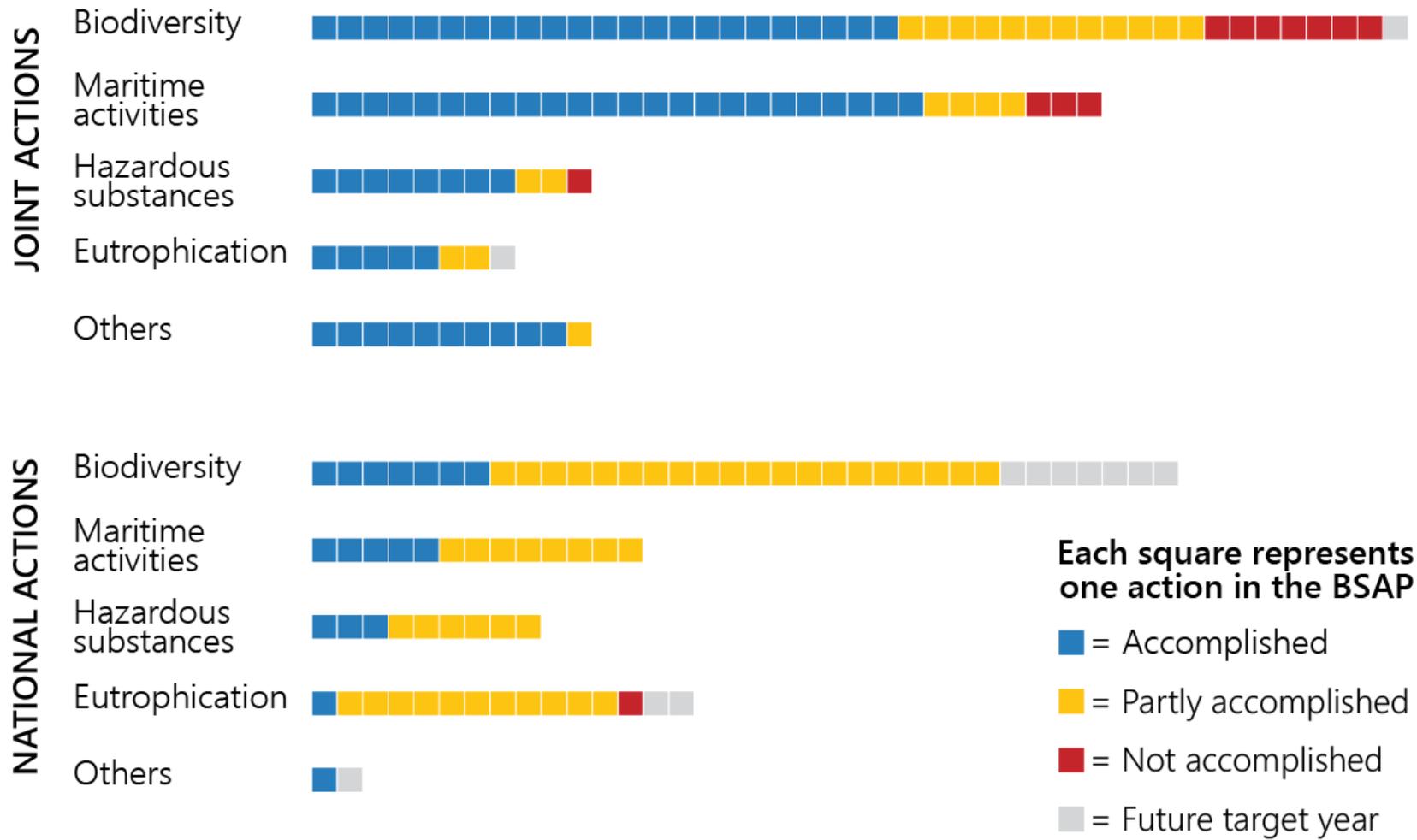
TP (3,317 tonnes)



■ Natural background ■ Diffuse-sources ■ Point-sources

Implementation of the **Baltic Sea**

Action Plan



HELCOM

DEAR COLLEAGUES, THE COFFEE BREAK IS CANCELLED!
WE NEED TO DISCUSS HOW TO REACH OUR COMMON
GOAL OF A HEALTHY BALTIC SEA.



Seppo Heinonen 2018/seppo.net

BRUSSELS
MINISTERIAL
MEETING 2018
HELCOM

Ministerial Declaration 2018 about eutrophication and BSAP update.

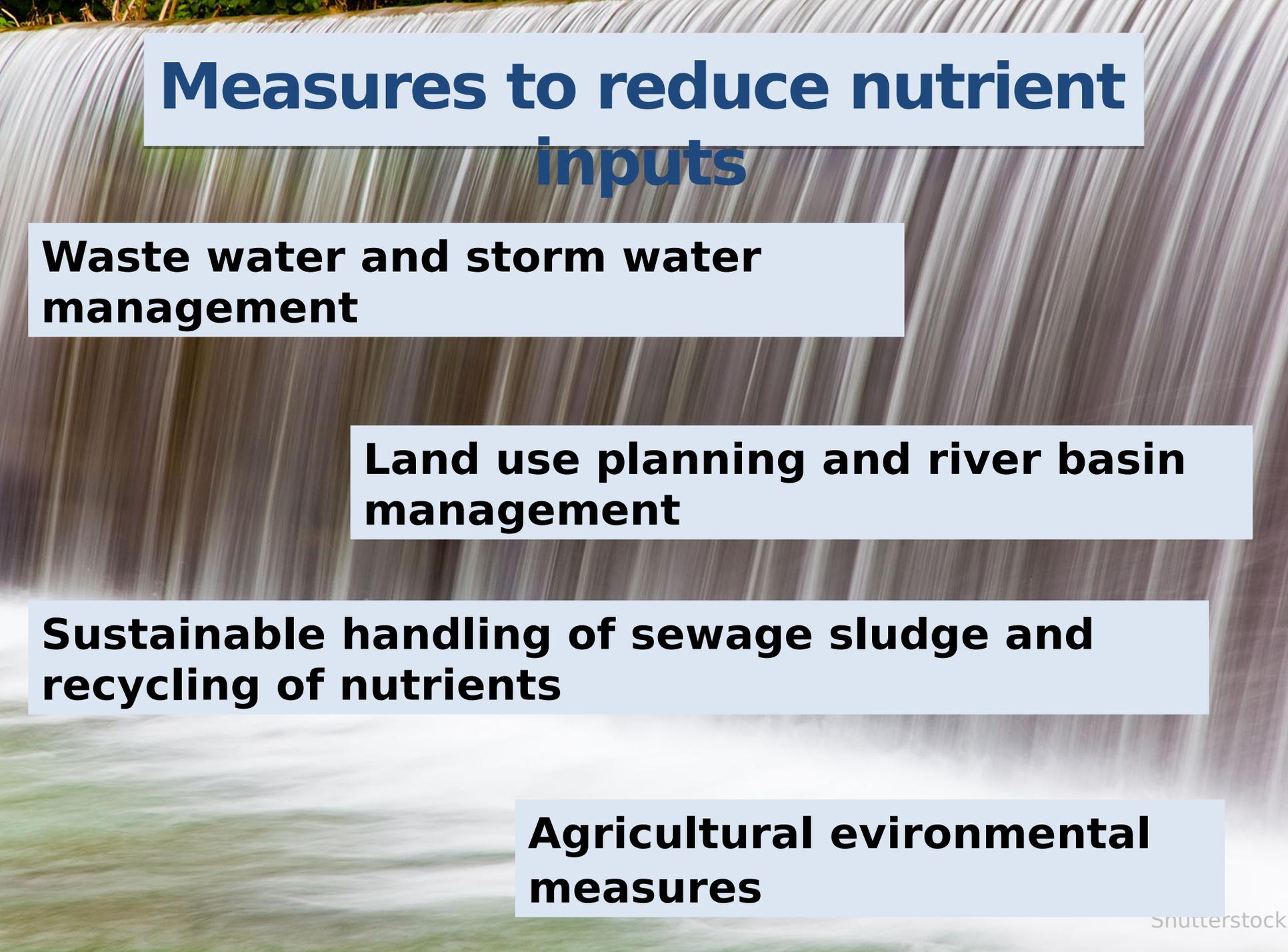
WE DECIDE to update the BSAP by 2021 at the latest...

ALSO DECIDE that the updated BSAP will, in addition to existing commitments to be fulfilled by 2021, address new issues, on the basis of the commitments made in this Ministerial Declaration;

WE DECIDE to engage, as a priority, in further enhanced cooperation with the **agricultural sector** in the Baltic Sea area;

to engage with **the relevant river basin authorities** to better align national and international nutrient reduction requirements of the BSAP with those of coastal waters;

WE COMMIT to elaborating by 2020 a Baltic Sea Regional **Nutrient Recycling Strategy** that aims for reduced nutrient inputs to and eutrophication of the Baltic Sea;

A background image of a waterfall with water cascading down rocks, creating a blurred, dynamic effect. The water is white and frothy as it falls, and the surrounding area is green with some foliage visible at the top.

Measures to reduce nutrient inputs

Waste water and storm water management

Land use planning and river basin management

Sustainable handling of sewage sludge and recycling of nutrients

Agricultural environmental measures

An aerial photograph of a sandy beach. The top half of the image shows the ocean with blue-green waves breaking onto the shore. The bottom half shows the golden sand. The text 'THANK YOU' is written in the sand, and the URL 'www.helcom.fi' is printed in the center.

www.helcom.fi

THANK YOU

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