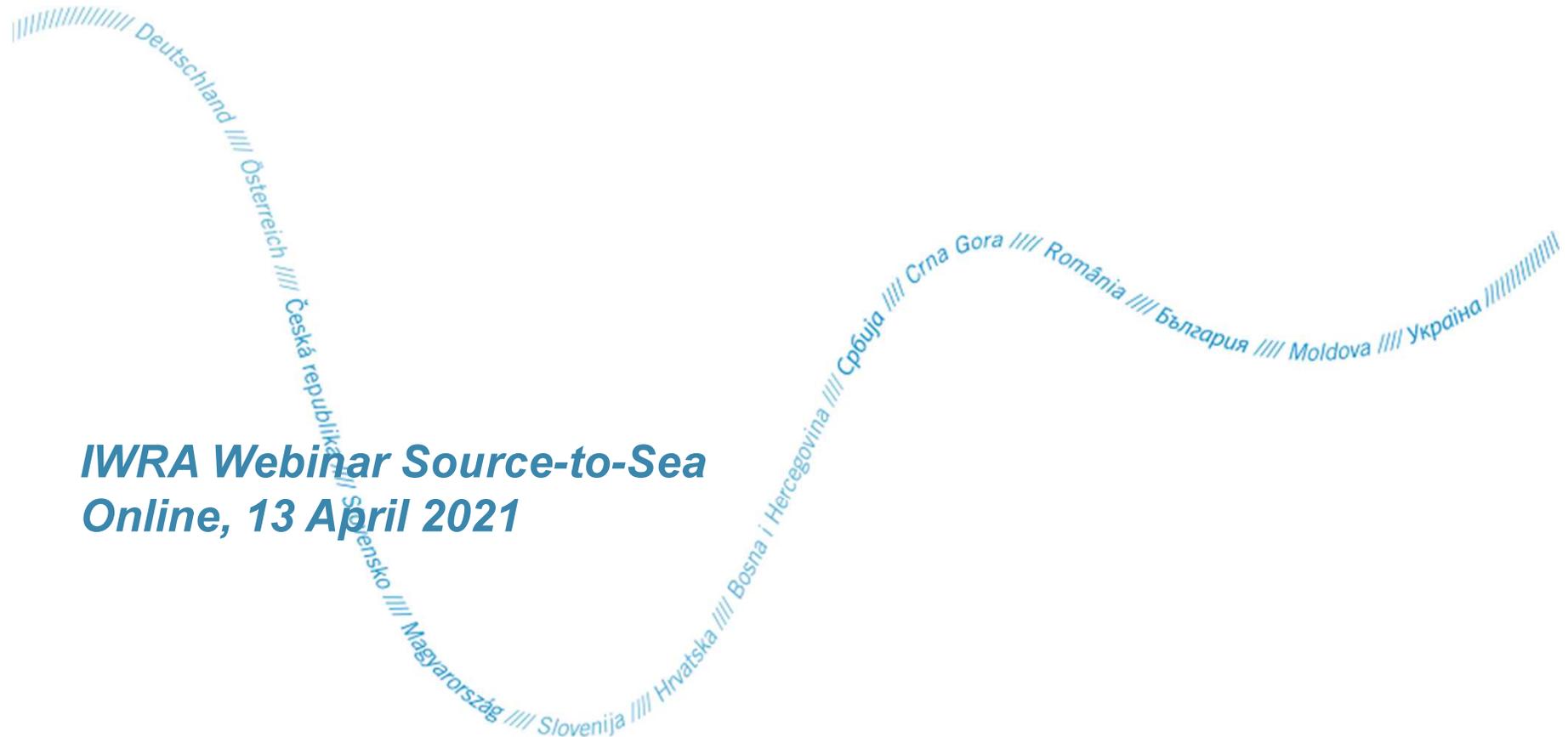


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# Nutrient Pollution Reduction – A Danube/Black Sea success story

**ICPDR** IKSD



**IWRA Webinar Source-to-Sea  
Online, 13 April 2021**

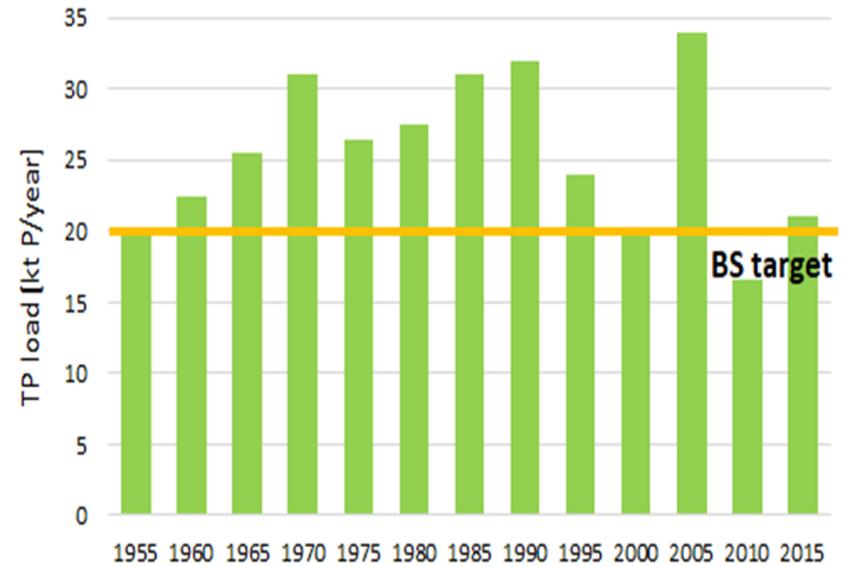
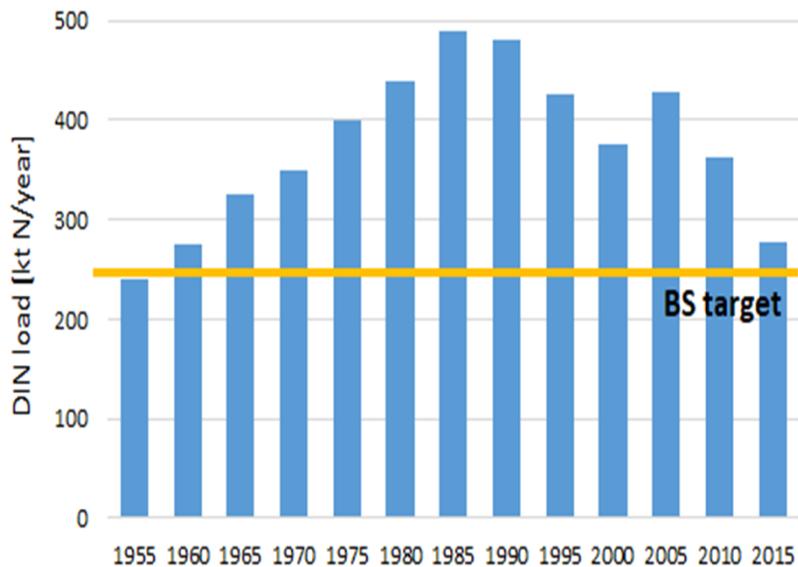
**Ivan Zavadsky  
ICPDR Executive Secretary**

# Welcome to the Danube – the Most International River Basin in the World!

**ICPDR** IKSD

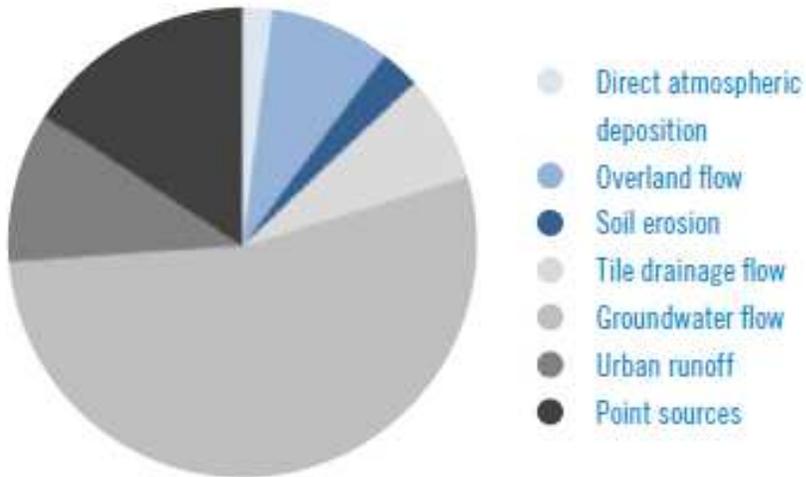


# Nutrient (DIN and TP) loads into the Black Sea 1955-2015

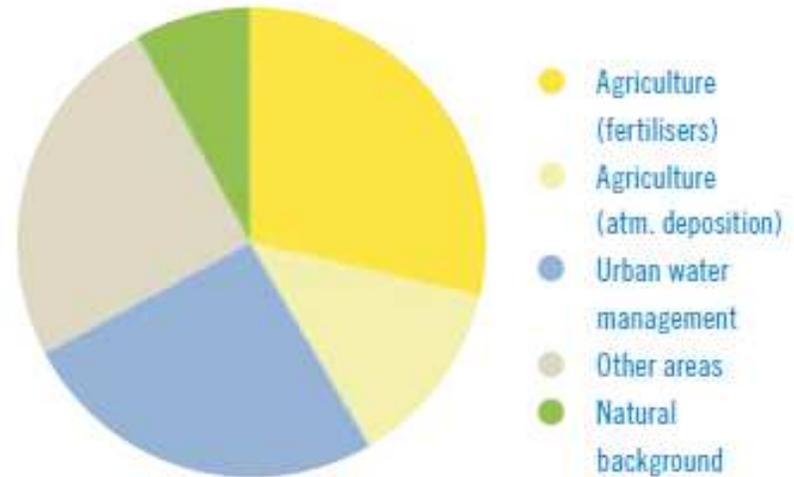


*bars represent 5-year averages around the indicated years,  
yellow lines indicate Black Sea target loads*

# Overall TN Emissions in the Basin for the Period 2009-2012



*Fig. 1: pathways*



*Fig. 2: sources*

# Overall TP Emissions in the Basin ICPDR IKSD for the Period 2009-2012

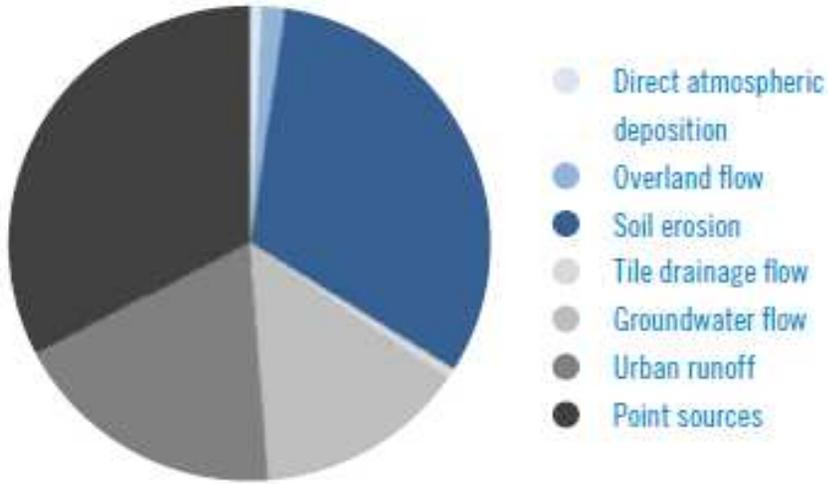


Fig. 1: pathways

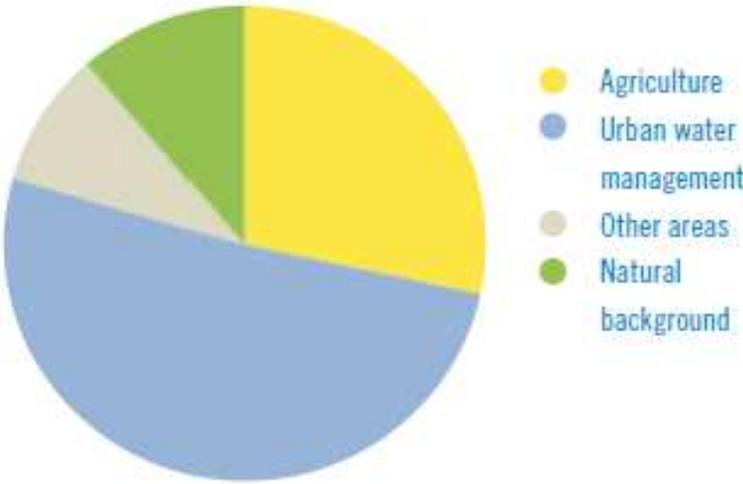


Fig. 2: sources

# MONERIS Results - TN

ICPDR IKSD



Long-term average (2009-2012) area-specific TN emissions from point and diffuse sources into surface waters at sub-catchment scale in kg per hectare and per year

# MONERIS Results - TP

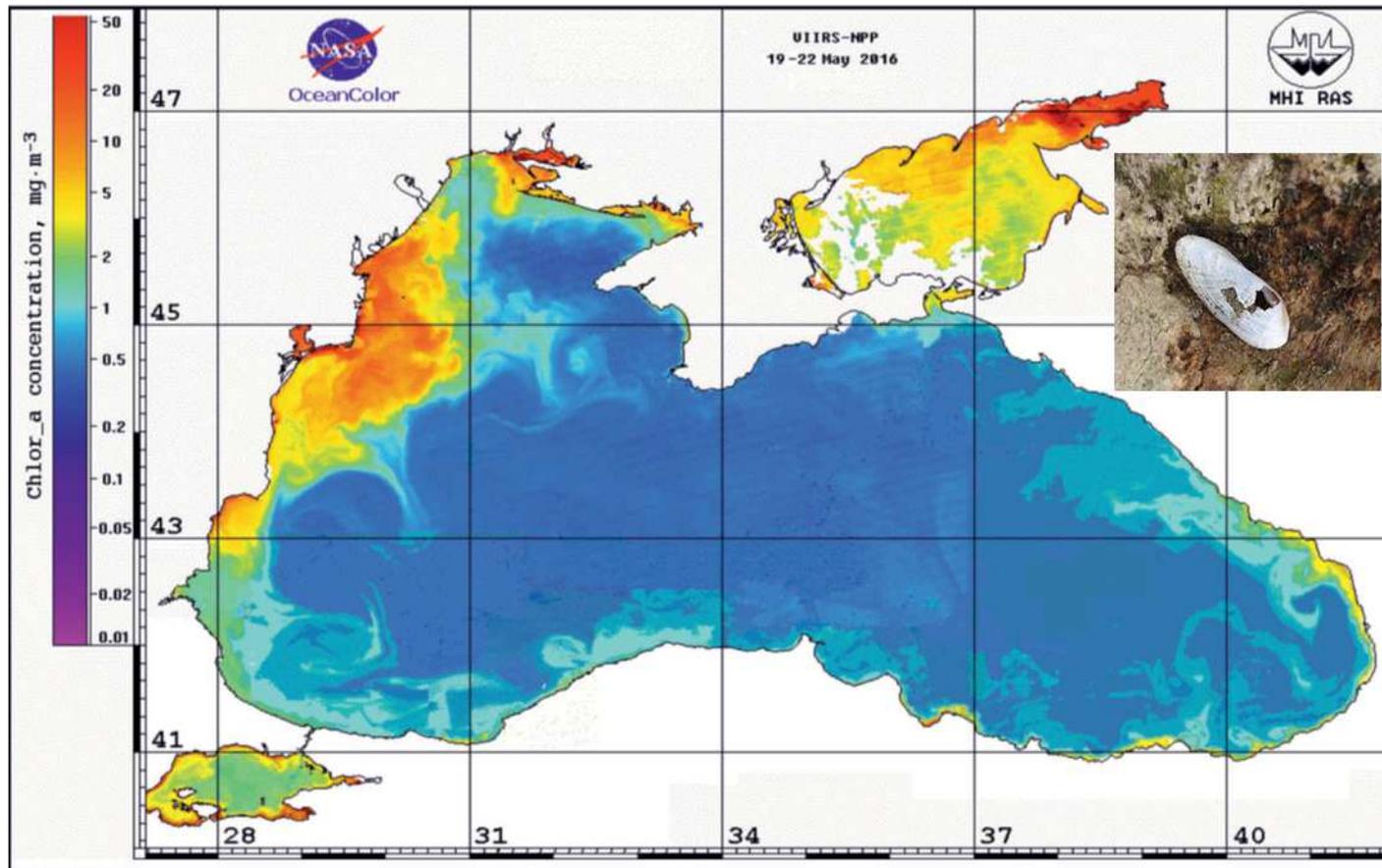
ICPDR IKSD



Long-term average (2009-2012) area-specific TP emissions from point and diffuse sources into surface waters at sub-catchment scale in kg per hectare and per year

# Nutrient Pollution Reduction – the Black Sea Success Story

ICPDR IKSD



Satellite image of the *chlorophyll-a* concentration in the Black Sea averaged over 19-22 of May 2016 in mg/m<sup>3</sup> and photo of the Mollusc “Angel Wings”

## Conclusions (1/2)

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- Nutrient pollution is one of the significant water management issues identified for the Danube River Basin (DRB);
- In the past, over-enrichment of nutrients led to severe ecological problems in groundwaters, rivers and lakes, including on the Northwest (NW) shelf of the Black Sea;
- The NW Black Sea ecosystem was gradually able to recover in response to the decline of nutrient loads from the Danube;
- The nutrient pressure within the Basin and the Black Sea NW shelf still exists and remains higher than the environmental objectives. We must remain vigilant as the pressures may become stronger again.

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## Conclusions (2/2)

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- Implementation of measures should therefore continue, mainly in the wastewater sector and agriculture;
- Capacity should be further ensured and strengthened to improve financing, operational and technological aspects of wastewater infrastructure;
- Significant efforts are needed to decouple nutrient pollution from agricultural development.