
Danube Stakeholders Forum



Pollution by organic substances and nutrients

Bratislava, June 29-30, 2009

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Technical Expert ICPDR

Four significant water management issues



Organic
Pollution



Nutrient
Pollution

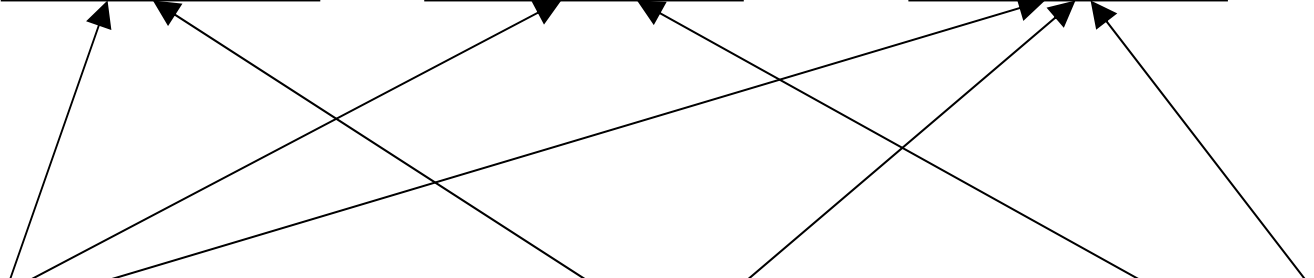
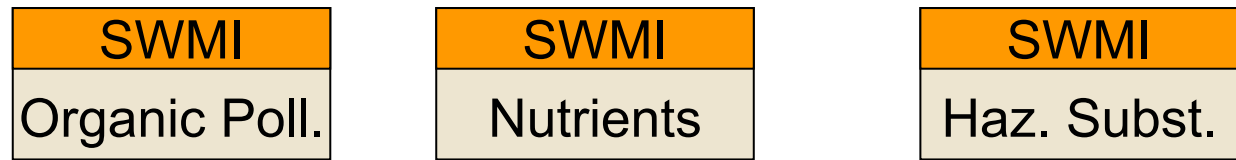


Hazardous
Substances Pollution



Hydromorphological
Alterations

Danube River Basin Analysis Report



DRBM Plan

Organic pollution & Nutrients

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Organic
Pollution



Nutrient
Pollution

Organic pollution

Main sources

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- urban wastewater
 - UWWTPs > 2,000 p.e.
- industrial wastewater (pulp and paper, chemical and food industry)

Organic Pollution

Danube Basin Vision

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Organic pollution

Key results



6224 agglomerations: >2000 p.e.

4969 aggl. (21 mil. p.e.): 2,000 -10,000 p.e.

1255 aggl. (73.6 mil. p.e.): >10,000 p.e.

Many agglomerations are without wastewater treatment or sewerage connection

> 2,600 aggl: no wastewater collection
(11% of the total generated load)

137 aggl. \geq 100,000 p.e. (43. mil.p.e.)
= 46% of the total load; out of 21 aggl. have no
wastewater treatment (21 % of the total
generated load)

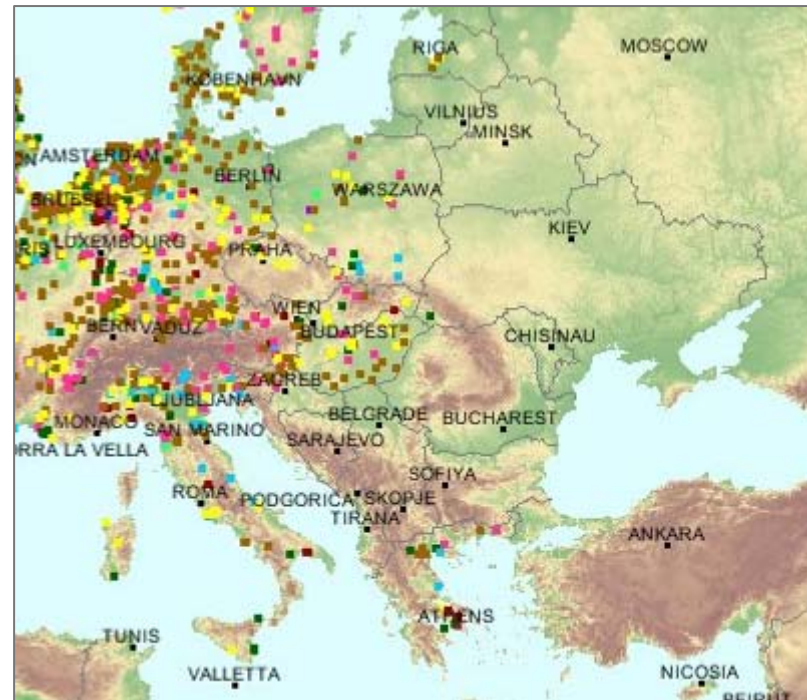
Status and assessment of industrial wastewater development



Reporting: all DRB ~ EPER II

Results:

Emissions from industry still lower than those from agglomerations



Organic pollution

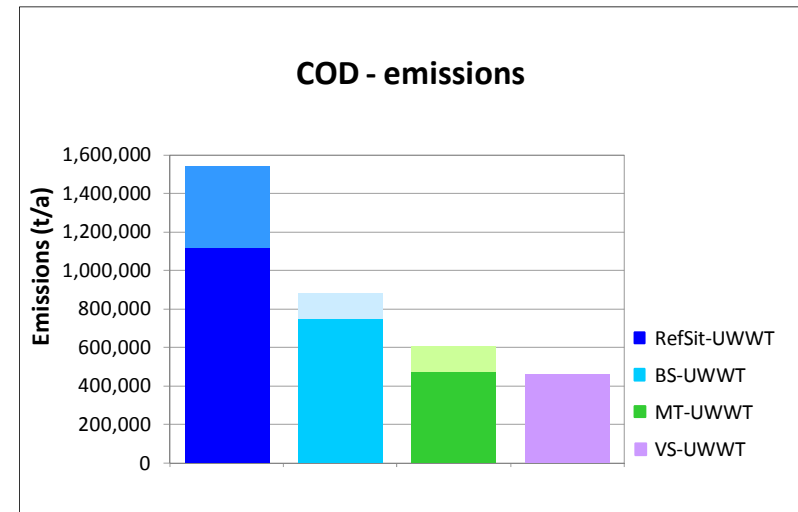
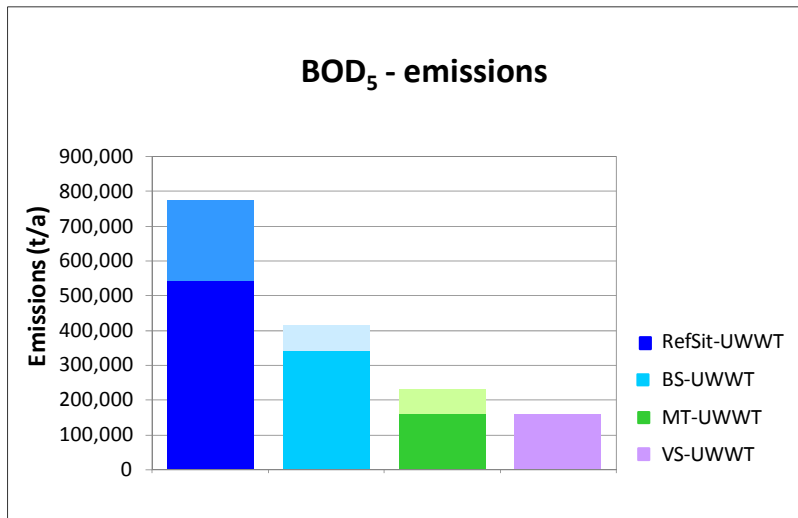
JP Scenario



- **Baseline Scenario – UWWT 2015**
 - Measures that are legally required for EU MS
 - Measures committed by Non EU MS (47 agglomerations)
- **Midterm Scenario**
 - BS-UWWT 2015 plus commitments for Non EU MS
- **Vision Scenario**
 - All agglomerations >10,000 PE are equipped with N and P removal, and all agglomerations >2,000 PE are equipped with secondary treatment

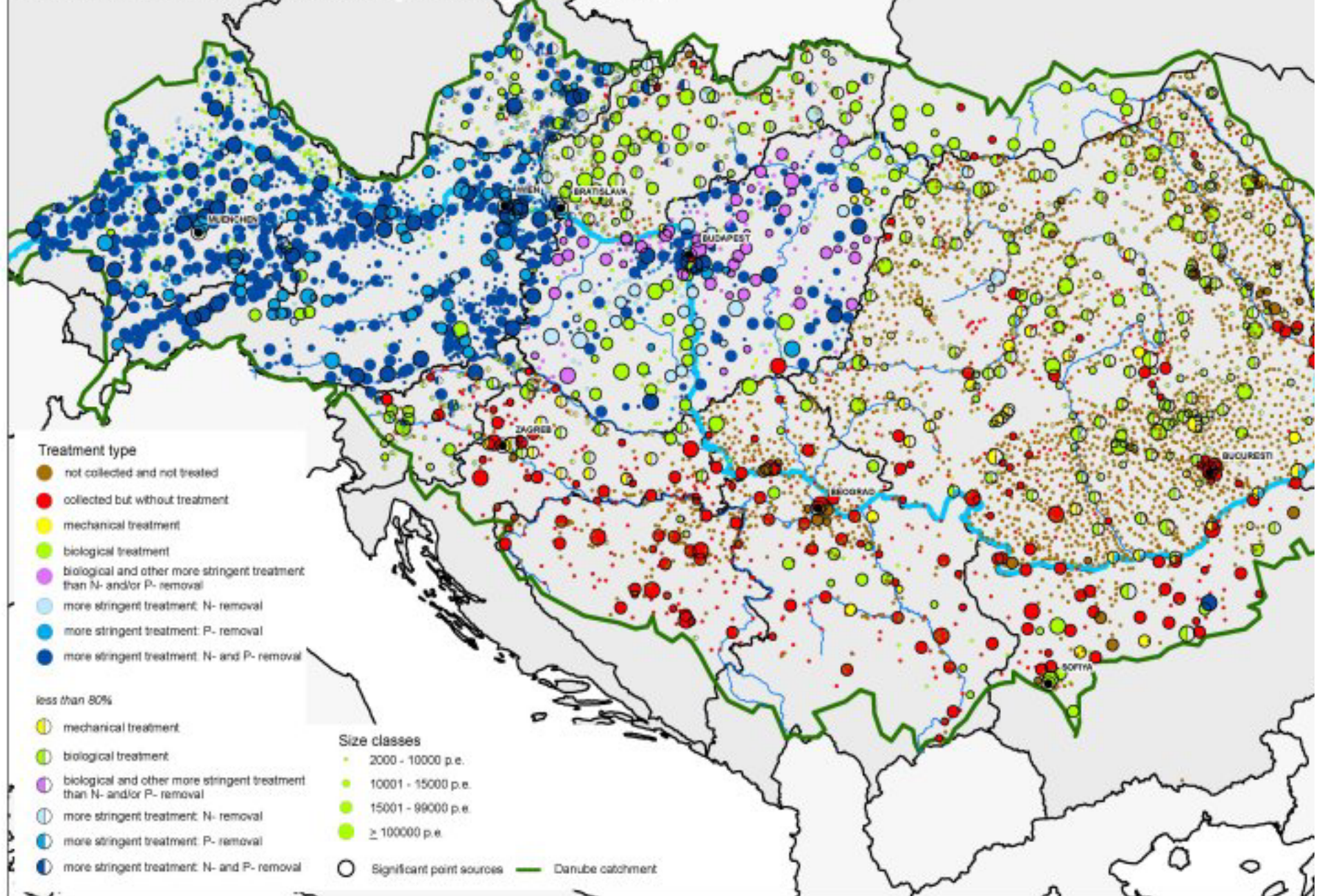
Organic pollution

expected emissions reduction



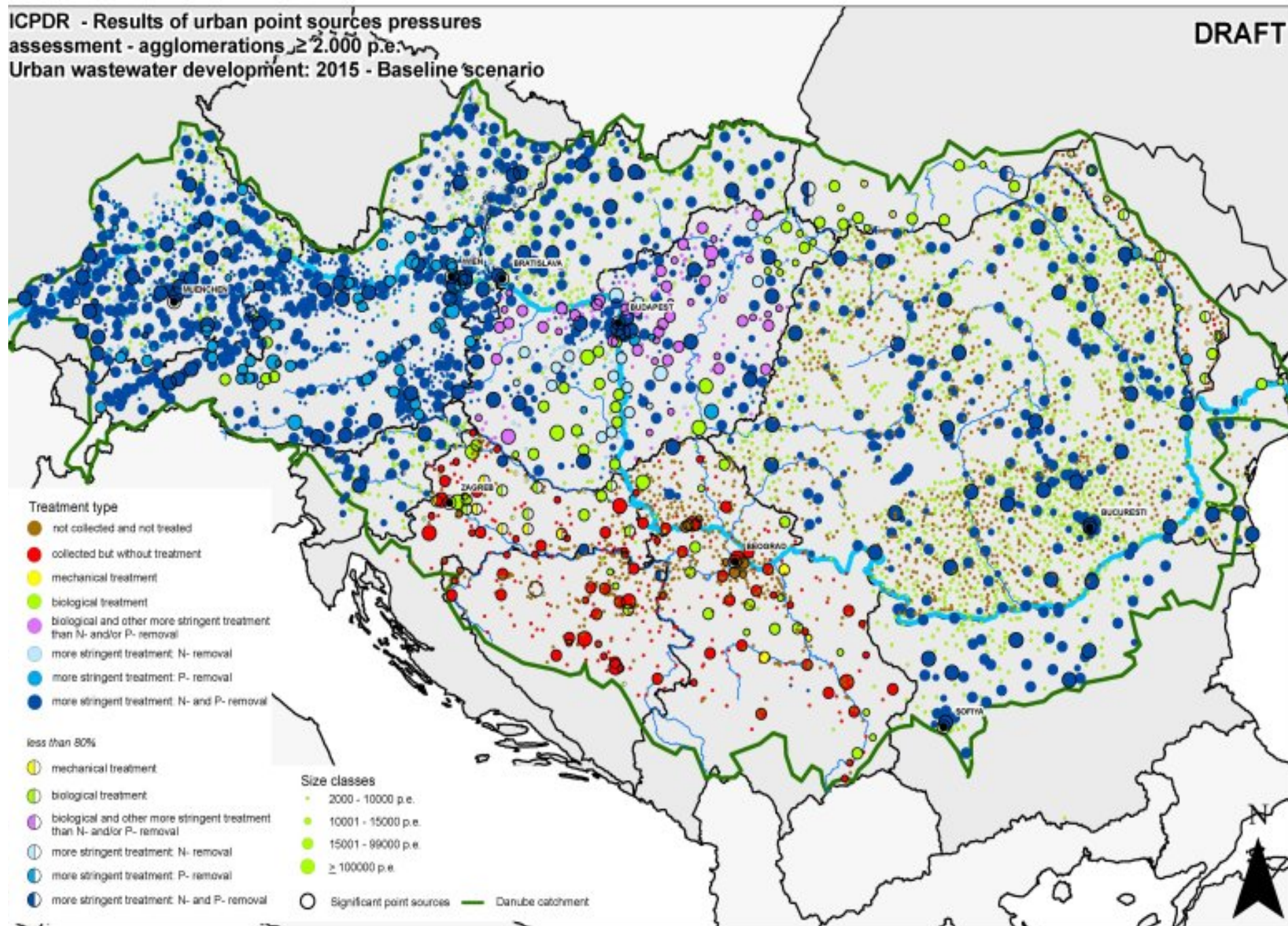
- BOD₅ and COD emissions
 - Reference situation
 - Baseline Scenario-UWWT 2015
 - Midterm Scenario-UWWT
 - Vision Scenario-UWWT

ICPDR - Results of urban point sources pressures assessment - agglomerations ≥ 2.000 p.e.
 Urban wastewater: current situation (reference year, 2005/2006)



ICPDR - Results of urban point sources pressures assessment - agglomerations ≥ 2.000 p.e.
 Urban wastewater development: 2015 - Baseline scenario

DRAFT



Need of innovative financing instruments



1. There is a need and opportunity for long-term investment in water infrastructure in the DRB.
2. Main problem: How to mobilize the necessary funds?
3. Distribution of funding sources in the last decade:
 - 65-70%: domestic public sector
 - 5%: domestic private sector
 - 30% equally distributed between international donors and private companies

Way forward

- ⇒ ICPDR Donors Conference 2010

- ⇒ Sustainable development in the Danube River Basin requires the "enabling environment", that permits and attracts viable long term investment and continuous and enhanced international cooperation.

- ⇒ Success will depend on thorough implementation of actions and commitments of the countries and on effective and coordinated contribution of the international community.

Organic pollution

Key conclusions



- Significant reduction of organic pollution through measures planned to be implemented by 2015
- Still, the achievement of the WFD environmental objectives on the basin wide scale 2015 not ensured
- Considerable efforts needed for next RBM cycles
- In the long-run, the technical implementation of the UWWTD requirements as well as the IPPC Directive by EU MS and an equal level of measures in Non EU MS **would be sufficient** to solve the problem of organic pollution.

Nutrients

Pressures assessment



MONERIS – a model for point source and diffuse source emissions calculations



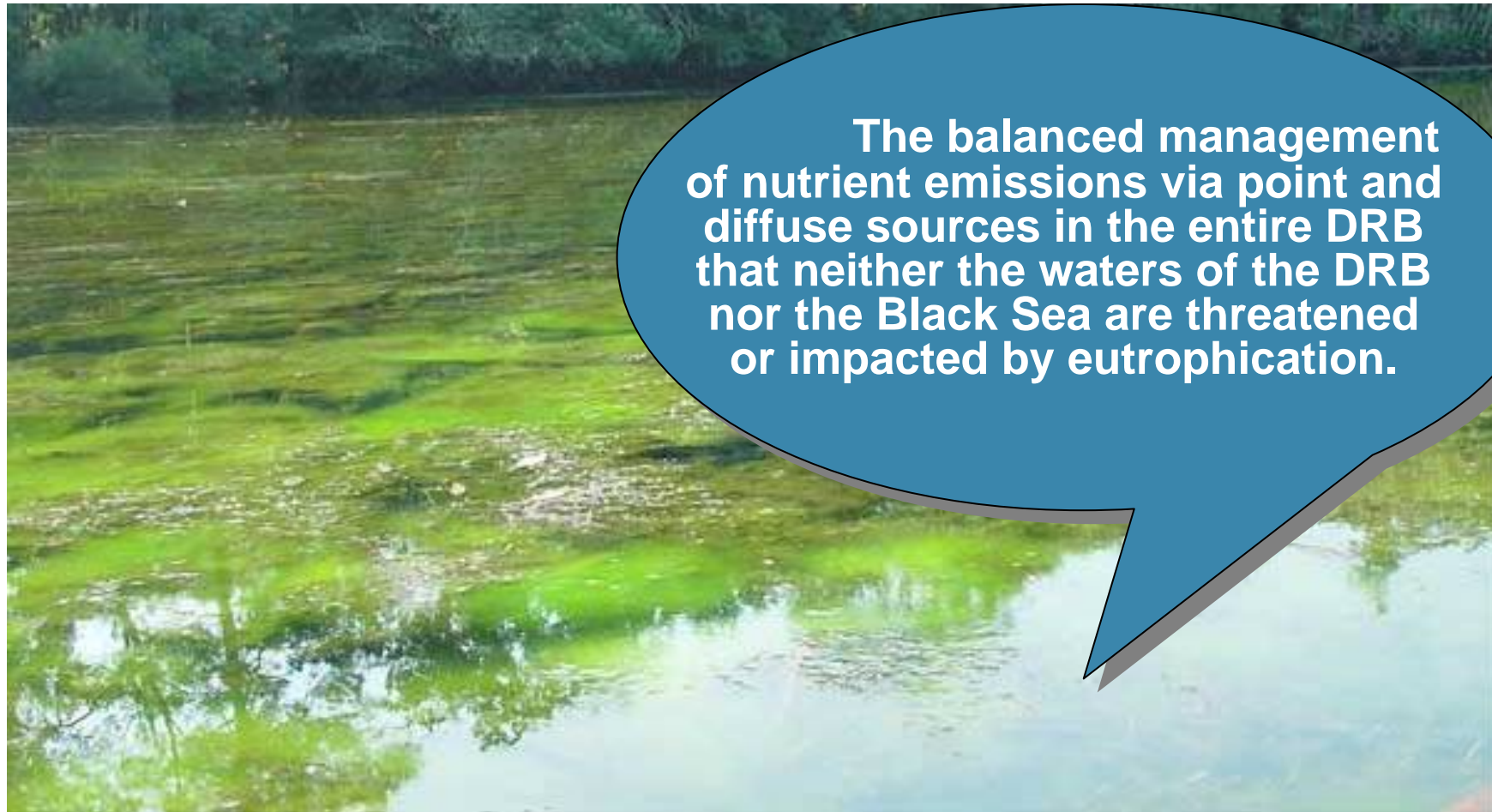
Nutrient Pollution

Danube Basin Vision

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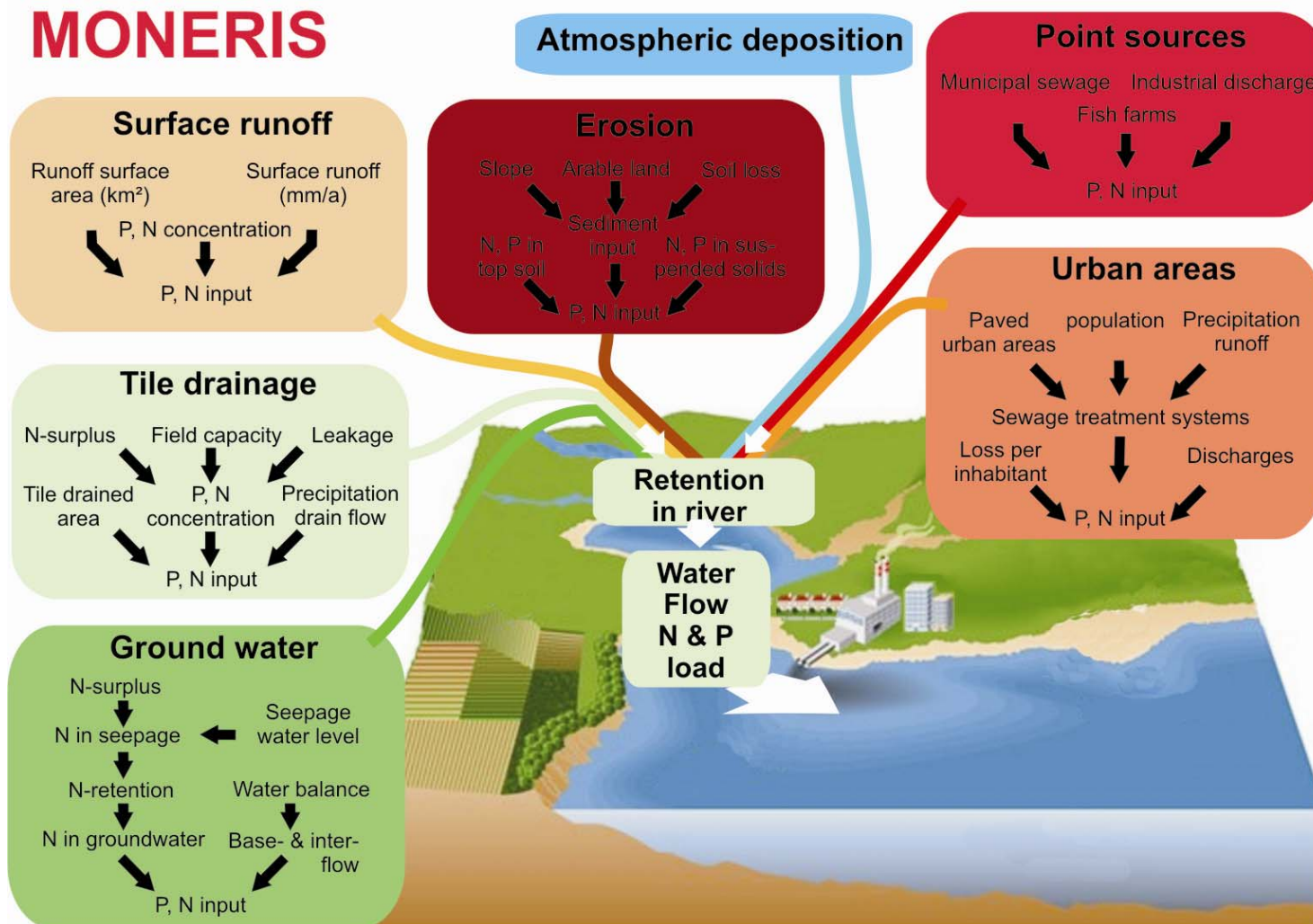
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Programme of Measures

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 Internationale Kommission zum Schutz der Donau



MONERIS Scenarios Approach



Development and agreement on the assumptions

Transfer of the assumptions to input parameters into the MONERIS model

Detailed calculation of scenarios

Interpretation and communication of results

Scenarios development (1)



Baseline Scenario – Agriculture 2015

moderate agricultural development (as expected from present knowledge)

Two more scenarios calculated assume strong intensification in middle and lower Danube:

Agricultural Scenario-Nutrients 1 – 2015

N surplus of Danube countries as EU 15 in the year 2000 (i.e. 57 kg/ha/a). No change in atmospheric deposition.

Agricultural Scenario-Nutrients 2 - 2015

N balance will be same for CZ, BA, HR, SK, RS, BG, HU, RO and UA as for DE, AT and SI. No change in atmospheric deposition. N surplus in the remaining countries stays unchanged.

Scenarios development (2)



Urban wastewater treatment scenarios (as explained earlier)

Phosphate Ban Scenario-Nutrients (PBan-Nut)
(Resolution, ICPDR Ordinary Meeting Dec 2008)

Baseline Scenario-Nutrients (BS-Nut-2015)

Overall scenario combining the agreed most likely developments in different sectors:

- urban wastewater (as explained earlier)
- agriculture
- atmospheric deposition

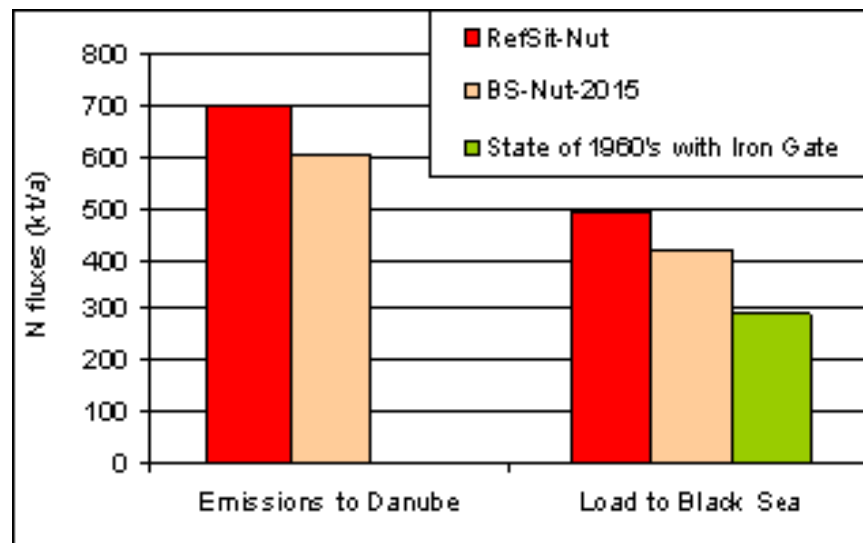
Nutrient pollution

Scenarios results

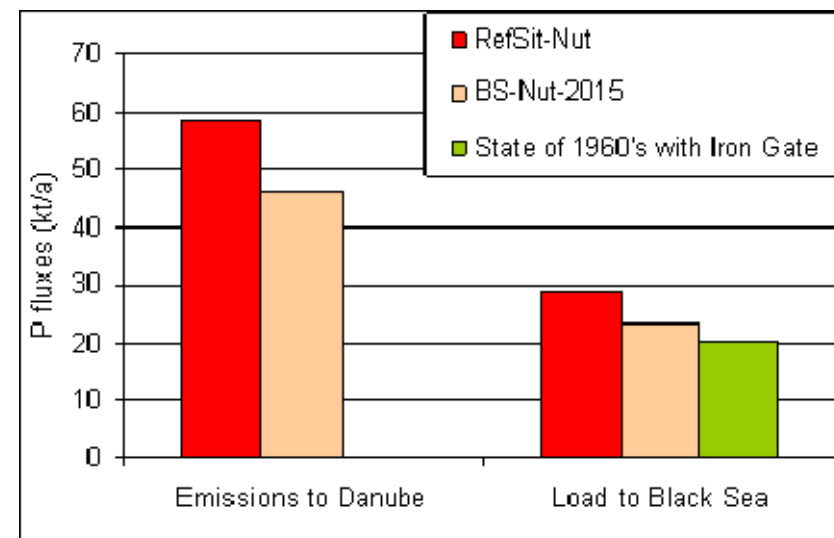
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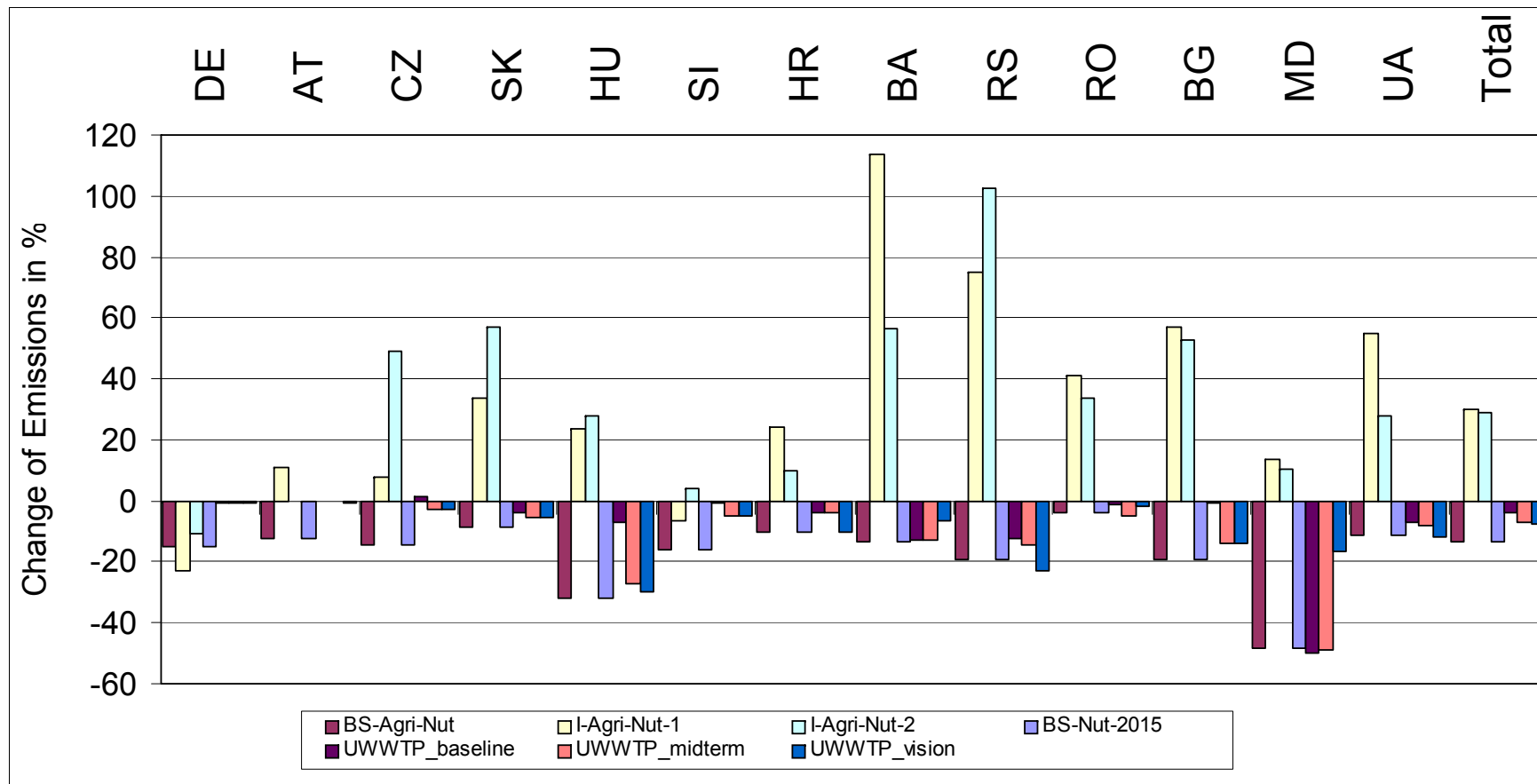
Nitrogen



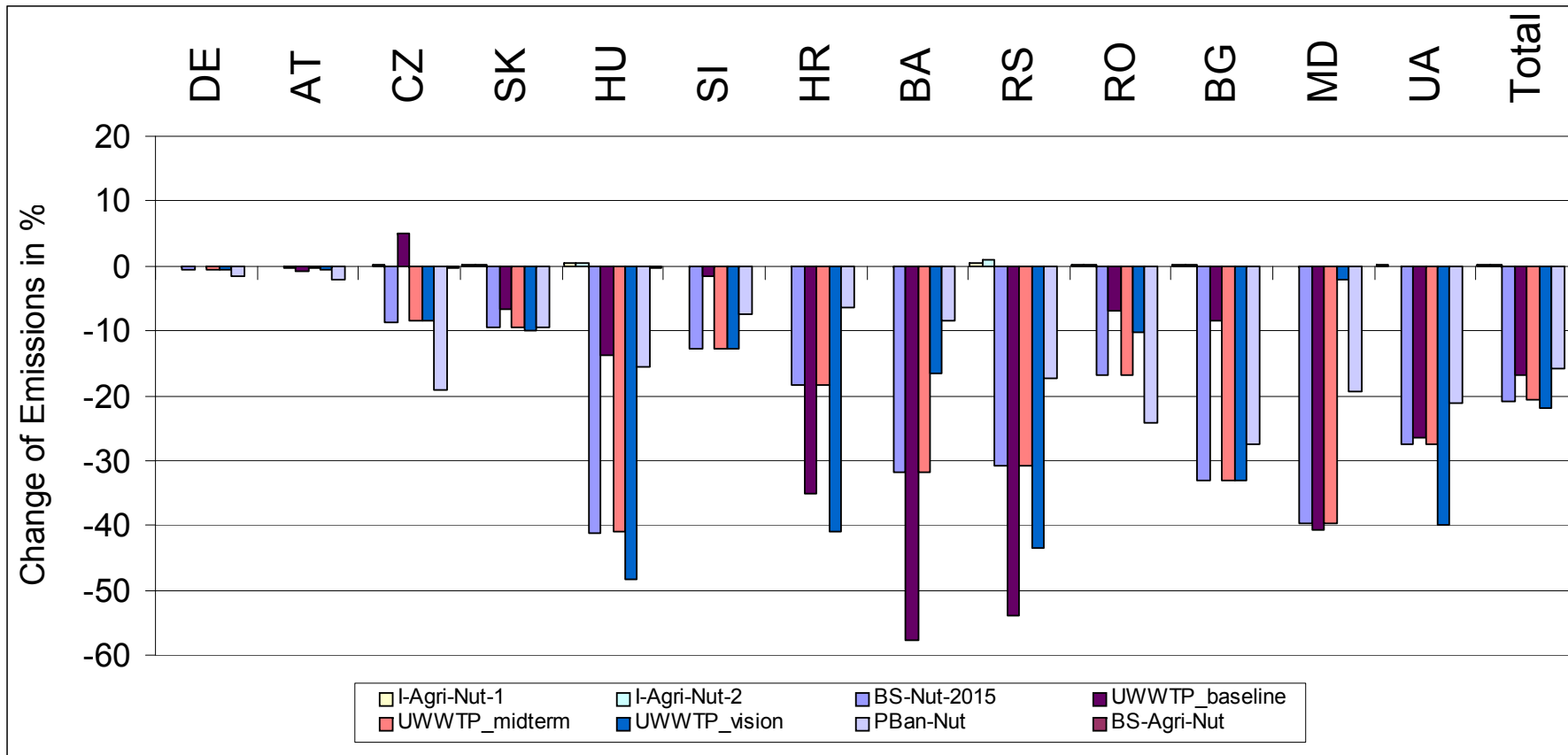
Phosphorous



Scenarios results (N)



Scenarios results (P)



Nutrient pollution

P – free detergents

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Challenge: introduction of P-free laundry and dishwasher detergents: a fast and efficient measure to reduce nutrients, crucial measure for the Black Sea!

- Follow up on the results of meetings in December 08 - Action Plan under development
- EC encourages action to limit phosphates
- AISE: Commitment to reduce phosphates in detergents
- Danube priority countries: efforts to achieve the introduction of phosphate-free detergents

Nutrient pollution

Key results



- **N emissions** to surface waters in 2015: 12% lower
- Load to the Black Sea: Below present state but still far above (40%) of the 1960's
- EU WFD objectives not ensured by 2015
- **P emissions** to surface waters in 2015: 25 % lower
- Load to the Black Sea: below present state but still above (15%) of the 1960's
- Management objective will not be achieved by 2015 and this is most likely also the case for the WFD environmental objectives
- Introduction of limitations on P in detergents is seen as a cost effective and necessary measure

Thank you!



Further info: www.icpdr.org