Document title	Policy message on progress towards nutrient reduction targets
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Reference	

Background

A possibility to use the reallocation of extra reduction between neighboring sub-basins of the Baltic Sea to fulfill national input reduction targets was agreed in the Ministerial Declaration 2013. The methodology for the reallocation was elaborated by RedCore DG and approved for trial use in PLC-6 project by HOD 49-2016. However, the principles to use the methodology have not yet been agreed by the Contracting Parties. More specifically, no agreement could be reached on principle 8, which prevents the application of the methodology for the PLC-6 results (assessment of CART). Principle 8 states that based on the precautionary approach extra reductions cannot be used to purposely increase inputs to a sub-basin.

Based on the outcome of PRESSURE 7-2017, PLC-6 Project group prepared two policy messages on Progress towards national targets for input of nutrients achieved by 2014, one with and another without the reallocation of extra reduction. The document was submitted to HOD 53-2017.

HOD 53-2017 discussed the principles of the reallocation of extra reduction to evaluate the progress towards national reduction targets and took note of the position of Germany that principle 8 is fundamental to the use of extra reductions, while Denmark informed they could not accept principle 8 as it should be up to the Contracting Parties how to meet the commitments.

HOD 53-2017 took note of the suggestion by Germany regarding a compromise version for the text of principle 8 and invited Germany and Denmark to consider and agree on principle 8 in the format of intersessional consultations and continue discussion at HELCOM 39-2018 with an intention to come to an agreement on the use of the extra reduction for the assessment.

The Meeting discussed the two options for policy messages on assessment of progress towards national nutrient input targets taking into account the considerations on the reallocation of extra reduction and decided to continue discussion on the policy messages at HELCOM 39-2018 with an intention to agree on the assessment results.

This document contains two policy messages on Progress towards national targets for input of nutrients achieved by 2014, with and without the reallocation of extra reduction. It also contains principles to be used for the reallocation of extra reductions and the results of the reallocation of extra reductions computed for the PLC-6 assessment (**Attachment**).

Action requested

Germany and Denmark are invited to inform about the results of intersessional consultations aiming at reaching an agreement on principle 8 of the principles to be used for the reallocation of extra reductions.

The Meeting is invited to decide on the use of the reallocation of extra reduction for the current assessment.

The Meeting is also invited to approve one of the policy messages and agree to publish it on the HELCOM website.

Progress towards national targets for input of nutrients achieved by 2014

How much is left to reach the HELCOM nutrient input targets set for a clean Baltic Sea?

These are the key results of the assessment of progress towards the national targets for nitrogen input adopted by the 2013 Copenhagen HELCOM Ministerial Declaration. ***The evaluation does not take into account reallocation of achieved extra reduction.***

National targets for nitrogen and phosphorus inputs have been expressed as nutrient input ceilings for each country by sub-basin.[1]

Reductions still needed

Table 1. Total Nitrogen. Evaluation of input ceilings fulfillment
Based on statistically estimated inputs *(scroll down for full legend).*

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	↓	↓	↓			↓	↓

[1] *Poland accepts the Polish Country Allocated Reduction Targets as indicative due to the ongoing national consultations. Ref. Ministerial Declaration 2013, page 6, footnote 2.*

Table 2. Total Phosphorus. Evaluation of input ceilings fulfillment
Based on statistically estimated inputs.

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				↓			↓

Colour legend

Reduction still left to the target* is
less than 10%
between 10 and 30%
between 30% and 50%
50% or more

Within statistical certainty, the fulfillment of CART cannot be justified
CART is with 95 % statistical certainty fulfilled; inputs ceiling not exceeded
Classification is not relevant

only airborne inputs to the sub-basin
only transboundary waterborne inputs to the sub-basin

Arrows: statistically significant changes of nutrient inputs since the reference period, taking into account 95% confidence interval for both latest inputs and reference values.

↓ significant decrease
↑ significant increase

* Yellow, orange and red shades: input ceiling is exceeded with 95 % statistical certainty. The legend illustrates the percentage which reduction left to the target constitutes in the corresponding input ceiling value.

“Other countries” includes sources for atmospheric nitrogen deposition as the 20 EU countries not being HELCOM Contracting Parties, countries outside EU including Belarus, Ukraine, North Sea shipping etc.

MAI is the maximum allowable inputs, according to the 2013 HELCOM Ministerial Declaration.

For reviewing the input data used to evaluate fulfillment of CART and the amount of remaining reductions, please see the data page.

Key messages

Based on estimation of normalized inputs of nitrogen and phosphorus from 1995 to 2014 (Tables 1 and 2) the following conclusion can be made with high statistical certainty:

Progress towards nitrogen input targets

Fulfillment of input ceilings:

- Denmark is the only country that have fulfilled nitrogen ceilings to all HELCOM sub-basins.
- Finland and Sweden met their nitrogen ceilings to all HELCOM basins except to the Baltic Proper and the Gulf of Finland where missing reduction is less than 10% of the input ceilings for these countries.
- Russia exceeded their ceilings to all sub-basins.
- Total nitrogen inputs to Bothnian Sea, Bothnian Bay, Danish Straits and Kattegat were below the MAIs for these sub-basins. The countries which did not fulfilled their ceilings for these sub-basins have only minor airborne inputs.
- Atmospheric nitrogen inputs from Baltic Sea shipping and Non-HELCOM countries exceeded their target values to all sub-basins.

Changes of inputs:

- The assessment indicates statistically significant reduction of nitrogen inputs into all sub-basins since the reference period (1997-2003) except the Gulf of Finland and Gulf of Riga where changes are not statistically significant.
- Denmark, Germany and Poland reduced their total nitrogen inputs to all HELCOM sub-basins.
- Estonia, Finland, Latvia, Lithuania and Sweden reduced their total nitrogen inputs to several sub-basins and had no statistical changes of inputs to the remaining ones.
- Russia and Ukraine increased inputs to the Baltic Proper.
- Non-HELCOM countries demonstrate reduction of airborne total nitrogen inputs to all HELCOM sub-basins.

Progress towards phosphorus input targets

Fulfillment of input ceilings:

- There was not a single country fulfilling input ceiling for phosphorus to all HELCOM sub-basins.
- All HELCOM countries and non-HELCOM countries with waterborne inputs exceeded input ceilings for the Baltic Proper.
- Two of three countries, which contribute to the input to the Gulf of Finland, also exceeded their ceilings. Fulfilment of the input ceiling by Russia cannot be judged unambiguously due to uncertainty caused by variability of the assessment data. This also holds true for the Russian P inputs to Gulf of Riga.
- Latvia, Poland, Czech Republic and Ukraine exceeded their ceilings to the sub-basins to which they have inputs.
- All countries fulfilled national ceilings for total phosphorus inputs to Danish Straits and Kattegat.

Changes of inputs:

- High uncertainty due to large variability of the data prevents identification of statistically significant changes of phosphorus input since the reference period (1997-2003) for more than 50% of the sub-basins. Most of the sub-basins do not demonstrate any significant changes.
- Russia and Ukraine increased inputs to the Baltic Proper.
- Lithuania was the only country that reduced total phosphorus inputs to all sub-basins to which it contributes.

Revision of time series.

The whole time series (1995-2014) of nitrogen and phosphorus input have been reviewed since the last assessment (2015). It resulted in an overall increase of estimated inputs to the Baltic Sea and to some sub-basins in the reference period. One of the consequences is that the commitment to reach good environmental status of the Baltic Sea requires a larger reduction than the CART agreed on in MD 2013.

Progress towards national targets for input of nutrients achieved by 2014

How much is left to reach the HELCOM nutrient input targets set for a clean Baltic Sea?

These are the key results of the assessment of progress towards the national targets for nitrogen input adopted by the 2013 Copenhagen HELCOM Ministerial Declaration. ***The evaluation takes into account reallocation of achieved extra reduction.***

National targets for nitrogen and phosphorus inputs have been expressed as nutrient input ceilings for each country by sub-basin.[2]

Reductions still needed

Table 1. Total Nitrogen. Evaluation of input ceilings fulfillment
Based on statistically estimated inputs *(scroll down for full legend).*

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	↓	↓	↓			↓	↓

[2] *Poland accepts the Polish Country Allocated Reduction Targets as indicative due to the ongoing national consultations. Ref. Ministerial Declaration 2013, page 6, footnote 2.*

Table 2. Total Phosphorus. Evaluation of input ceilings fulfillment
Based on statistically estimated inputs.

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				↓			↓

Colour legend

Reduction still left to the target* is
less than 10%
between 10 and 30%
between 30% and 50%
50% or more

Within statistical certainty, the fulfillment of CART cannot be justified
CART is with 95 % statistical certainty fulfilled; inputs ceiling not exceeded
Classification is not relevant
Sub-basins where extra reduction was reallocated to

only airborne inputs to the sub-basin
only transboundary waterborne inputs to the sub-basin

Arrows: statistically significant changes of nutrient inputs since the reference period, taking into account 95% confidence interval for both latest inputs and reference values.

↓ significant decrease
↑ significant increase

* Yellow, orange and red shades: input ceiling is exceeded with 95 % statistical certainty. The legend illustrates the percentage which reduction left to the target constitutes in the corresponding input ceiling value.

“Other countries” includes sources for atmospheric nitrogen deposition as the 20 EU countries not being HELCOM Contracting Parties, countries outside EU including Belarus, Ukraine, North Sea shipping etc.

MAI is the maximum allowable inputs, according to the 2013 HELCOM Ministerial Declaration.

For reviewing the input data used to evaluate fulfillment of CART and the amount of remaining reductions, please see the data page.

Key messages

Based on estimation of normalized inputs of nitrogen and phosphorus from 1995 to 2014 (Tables 1 and 2) the following conclusion can be made with high statistical certainty:

Progress towards nitrogen input targets

Fulfillment of input ceilings:

- Denmark is the only country that have fulfilled nitrogen ceilings to all HELCOM sub-basins.
- Finland, Germany and Sweden met their nitrogen ceilings to all HELCOM basins except to the Baltic Proper and the Gulf of Finland where remaining reduction for Finland and Sweden is less than 10% of the input ceilings for these countries.
- Russia exceeded their ceilings to all sub-basins.
- Total nitrogen inputs to Bothnian Sea, Bothnian Bay, Danish Straits and Kattegat were below the MAIs for these sub-basins. The countries which did not fulfilled their ceilings for these sub-basins have only minor airborne inputs.
- Atmospheric nitrogen inputs from Baltic Sea shipping and Non-HELCOM countries exceeded their target values to all sub-basins.

Changes of inputs:

- The assessment indicates statistically significant reduction of nitrogen inputs into all sub-basins since the reference period (1997-2003) except the Gulf of Finland and Gulf of Riga where changes are not statistically significant.
- Denmark, Germany and Poland have reduced their total nitrogen inputs to all HELCOM sub-basins.
- Estonia, Finland, Latvia, Lithuania and Sweden reduced their total nitrogen inputs to several sub-basins and had no statistical changes of inputs to the remaining ones.
- Russia and Ukraine increased inputs to the Baltic Proper.
- Non-HELCOM countries demonstrate reduction of airborne total nitrogen inputs to all HELCOM sub-basins.

Reallocation of extra reduction.

- Reallocation of extra reduction of nitrogen inputs achieved in neighbouring sub-basins was applied to evaluate fulfilment of national targets of Estonia, Finland, Germany Latvia and Sweden for Baltic Proper and Germany for Kattegat. Taking extra reduction into account Estonia and Latvia met input ceilings for Baltic Proper and Germany for Kattegat.

Progress towards phosphorus input targets

Fulfillment of input ceilings:

- There was not a single country fulfilling input ceilings for phosphorus to all HELCOM sub-basins.
- Estonia is the only country which fulfilled waterborne input ceiling for the Baltic Proper.
- Two of three countries, which contribute to the input to the Gulf of Finland, also exceeded their ceilings. Fulfilment of the input ceiling by Russia cannot be judged unambiguously due to uncertainty caused by variability of the assessment data. This also holds true for the Russian P inputs to Gulf of Riga.
- Latvia, Poland, Czech Republic and Ukraine exceeded their ceilings to all sub-basins to which they have inputs.
- All countries fulfilled national ceilings for total phosphorus inputs to Danish Straits and Kattegat.

Changes of inputs:

- High uncertainty due to large variability of the data prevents identification of statistically significant changes of phosphorus input since the reference period (1997-2003) for more than 50% of the sub-basins. Most of the sub-basins do not demonstrate any significant changes.
- Russia and Ukraine increased inputs to the Baltic Proper.
- Lithuania was the only country that reduced total phosphorus inputs to all sub-basins to which it contributes.

Reallocation of extra reduction.

- Reallocation of extra reduction of phosphorus inputs achieved in neighbouring sub-basins was applied to evaluate fulfilment of national targets of Estonia, Germany, Lithuania and Sweden for the Baltic Proper, Finland for the Bothnian Sea and Sweden for the Bothnian Bay. Taking extra reduction into account, Estonia met input ceilings for the Baltic Proper.

Revision of the series.

The whole time series (1995-2014) of nitrogen and phosphorus input have been reviewed since the last assessment (2015). It resulted in an overall increase of estimated inputs to the Baltic Sea and to some sub-basins in the reference period. One of the consequences is that the commitment to reach good environmental status of the Baltic Sea requires a larger reduction than the CART agreed on in MD 2013.

Attachment

Principles and calculations of reallocation of extra reductions to basins with missing reductions for the assessment of CART

The following presents principles to be used for the reallocation of extra reductions and the results of the reallocation of extra reductions computed for the PLC-6 assessment. HOD 51-2016 endorsed the use of the methodology for accounting extra reduction as a trial calculation in the PLC-6 assessment (c.f. document 6-2).

The principles are:

1. **Accounting should be based on countries individually**

This implies that countries can plan and implement measures across basins at their own discretion as long as it results in conforming to CART after accounting of extra reduction is performed.

2. **Countries could claim accounting for missing reductions even if MAI is exceeded due to inputs from other countries**

No country should need to wait for any other country before claiming themselves fulfilment of CART.

3. **Any relocation of measures should lead to at least the same environmental improvement as if CART were implemented**

This is imperative for the GES to be achieved eventually. Inevitably, using extra reductions will lead to less inputs than MAI as seen as a total for the Baltic Sea, but its distribution need to be such that GES will be achieved everywhere.

4. **The effect of extra reductions on neighboring basins with missing reductions should be estimated given that these are minor deviations from MAI**

The Baltic Sea is a strongly perturbed system and hence, functioning quite different today compared to how it will function when measures been implemented and status approach GES. The whole calculation of MAI is taking this into account and when deviations to MAI are to be analysed, it should be done assuming that we are close to GES.

5. **Accounting for extra reductions in connection with CART follow-up assessments are to be performed in a uniform way supervised by RedCore DG**

Accounting for extra reductions should be included in the regular CART assessment using a common and harmonized methodology. RedCore DG is the forum that supervises development of methodology and, after appropriate approval, implementation of this in the assessment.

6. **The Archipelago Sea phosphorus input reductions should be accounted in the Finnish CART for Gulf of Finland (cf. BSAP 2007)**

Already in BSAP 2007, Finland pointed out that models failed to separate the Archipelago Sea from Bothnian Sea and that this should be taken into account at a later stage. Also in the 2013 revision of the nutrient reduction scheme, model limitations failed to address separate MAI calculations for the Archipelago Sea. However, within the context of accounting for extra reduction can be an opportunity to take into account separately the nutrient inputs to Archipelago Sea from the remaining Bothnian Sea inputs.

7. **In the context of extra reduction accounting, reductions of phosphorus to Baltic Proper could be accounted as input reduction in Gulf of Finland**

In the calculations of MAI, the most limiting targets affecting the distribution of MAI for phosphorus were the winter nutrient concentrations in the Baltic Proper. Strictly following the principle of "maximum" inputs, led to a situation where this gave an optimal solution resulting in removal of virtually all phosphorus inputs to the Baltic Proper and barely any reductions to Gulf of Finland. This solution clearly violated the principle of cost-efficiency so additional calculations based on cost functions for phosphorus input reductions were performed to distribute reductions between Baltic Proper and Gulf of Finland in a cost-efficient way. The obtained MAI results in conforming to phosphorus target in Baltic Proper, but in Gulf of Finland the resulting phosphorus concentrations will be significantly less than target. In line with this, it could be argued for states having phosphorus inputs both to Baltic Proper and Gulf of Finland, that *extra reductions* to Baltic Proper could be deducted from missing reductions in Gulf of Finland with 100% efficiency. However, one should keep in mind that the MAI for nitrogen to Gulf of Finland was determined from applying the HEAT approach, balancing nitrogen and phosphorus concentrations, so if MAI for phosphorus to Gulf of Finland is not achieved fully additional reductions on nitrogen inputs might be necessary.

8. **Following the precautionary principle, extra reduction accounting cannot be used to purposely increase inputs to a basin**

Although accounting of extra reductions is based current scientific knowledge and modelling, it comes with significant uncertainty and will sooner or later be subject of improvement. Therefore, it would be a risk for the environment to increase inputs to basins based on this methodology. In addition, a prerequisite for the calculations here is an environment close to GES and additional inputs today may cause significant deterioration of the present eutrophied state.

The reallocation of extra reduction is based on the following equivalent reduction tables.

Table 1: Equivalent reductions on nitrogen. The table should be read so that each row provides the necessary input reduction to the basins to the left to provide the equivalent environmental effect in the basins in the top row, e.g. 1.3 ton reduction to GR gives the same effect in the BP as 1 ton reduction directly to BP. NB! That the factors are valid on single basin pairs under condition that all other basins fulfil MAI.

	KT	DS	BP	BS	BB	GR	GF
KT	1	7.29	–	–	–	–	–
DS	1.70	1	4.61	–	–	–	–
BP	–	–	1	–	–	–	–
BS	–	–	–	1	7.79	–	–
BB	–	–	–	1.06	1	–	–
GR	–	–	1.29	–	–	1	–
GF	–	–	4.00	–	–	–	1

Table 2: Equivalent reductions on phosphorus. The table should be read so that each row provides the necessary input reduction to the basins to the left to provide the equivalent environmental effect in the basins in the top row, e.g. 1.5 ton reduction to BS gives the same effect in the BP as 1 ton reduction directly to BP. NB! That the factors are valid on single basin pairs under condition that all other basins fulfil MAI.

	KT	DS	BP	BS	BB	GR	GF
KT	1	4.03	–	–	–	–	–
DS	0.84	1	3.18	–	–	–	–
BP	2.39	2.79	1	3.42	8.53	–	3.93
BS	3.81	4.64	1.50	1	2.57	–	6.00
BB	–	–	8.89	8.35	1	–	–
GR	3.79	4.40	1.53	4.95	–	1	6.55
GF	3.51	4.04	1.25	4.18	–	–	1

Calculation of the reallocation of extra reduction within the PLC-6 assessment:

Germany

Nitrogen

Germany have extra reduction to DS that can be used to compensate fully for missing reduction in KAT and about 10% of the missing reduction to BAP. There is no significant feedback between BAP and KAT for small changes, therefore the extra reduction to DS can be used for both BAP and KAT.

Germany TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction	38	214			42	3064	
Missing reduction			6866	177			775

Germany TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction			6866	177			775
Used extra reduction			698				1804
Missing reduction after extra reduction			6168	177			0

Phosphorus

Germany have extra reduction to DS that can be used to compensate for a portion of the missing reduction to BAP.

Germany TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction						24	
Missing reduction			163				

Germany TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction			163				
Used extra reduction			8				
Missing reduction after extra reduction			155				

Denmark

Nitrogen

Denmark fulfil nitrogen reduction requirements to all basins.

Denmark TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction	57	252	433	51	99	6148	3126
Missing reduction							

Phosphorus

Denmark have an extra reduction of 1 ton/yr that in principle can be used for compensating a part of the missing reduction to BAP, but in practice the change is insignificant since the extra reduction is so small.

Denmark TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction						1	119
Missing reduction			47				

Estonia

Nitrogen

Estonia has extra reduction to GUR that can be used to compensate for the missing reduction to BAP.

Estonia TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction					899		
Missing reduction	11	31	194	835		0	2

Estonia TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction	11	31	194	835			2
Used extra reduction			699				
Missing reduction after extra reduction	11	31	0	835			2

Phosphorus

Estonia has extra reduction to GUR that can be used to compensate for the missing reduction to BAP.

Estonia TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction					19		
Missing reduction			12	132			

Estonia TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction			12	132			
Used extra reduction			12				
Missing reduction after extra reduction			0	132			

Finland

Nitrogen

Finland can use the extra reduction to GUR to compensate for a portion of the missing reduction to BAP.

Finland TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction	329	585			43	17	13
Missing reduction			123	1600			

Finland TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction			123	1600			
Used extra reduction			37				
Missing reduction after extra reduction			86	1600			

Phosphorus

Finland has extra reduction to BOB that can compensate a portion of the missing reduction to BOS.

Finland TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction	137						
Missing reduction		56		351			

Finland TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction		56		351			
Used extra reduction		16					
Missing reduction after extra reduction		40		351			

Lithuania

Nitrogen

Lithuania has no extra reduction that can be used to compensate any of the missing reductions.

Lithuania TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction	2	34					
Missing reduction			15693	64	2740	1	12

Phosphorus

Lithuania has extra reduction to GUR that can be used to compensate a portion of the missing reduction to BAP.

Lithuania TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction					82		
Missing reduction			427				

Lithuania TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction			427				
Used extra reduction			53				
Missing reduction after extra reduction			374				

Latvia

Nitrogen

Latvia has extra reductions to GUR that can be used to compensate for the missing reduction to BAP. (NB! Due to new data for border loads in Daugava, input ceilings for nitrogen to GUR from LV, BY and RU may need to be adjusted).

Latvia TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction					7218		
Missing reduction	6	19	5299	71		1	5

Latvia TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction	6	19	5299	71		1	5
Used extra reduction			5609				
Missing reduction after extra reduction	6	19	0	71		1	5

Phosphorus

Latvia has no extra reduction.

Latvia TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction							
Missing reduction			266		578		

Poland

Nitrogen

Poland has no extra reduction that can be used to compensate for missing reduction in other basins.

Poland TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction	8	87					
Missing reduction			26990	268	81	16	187

Phosphorus

Poland has only input to BAP.

Poland TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction							
Missing reduction			6701				

Russia

Nitrogen

Russia has no extra reduction.

Russia TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction							
Missing reduction	134	274	5669	16570	1997	20	55

Phosphorus

Russia has no extra reduction.

Russia TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction							
Missing reduction			531	757	9		

Sweden

Nitrogen

Sweden has extra reduction to DS and GUR that can be used to compensate for some of the missing reduction to BAP.

Sweden TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction	3322	4738			32	944	6755
Missing reduction			1833	33			

Sweden TN	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction			1833	33			
Used extra reduction			230				
Missing reduction after extra reduction			1603	33			

Phosphorus

Sweden have extra reduction to BOS and DS that can be used to compensate for some of the missing reduction to BAP. In addition, the extra reduction to BOS can be used to compensate for some of the missing reduction to BOB, but here one need to take into account the missing reduction in BAP as well (see Pressure 5, Doc 8-3).

Sweden TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Extra reduction		252				19	23
Missing reduction	173		416				

Sweden TP	BOB	BOS	BAP	GUF	GUR	DS	KAT
Missing reduction	173		416				
Used extra reduction	78		174				
Missing reduction after extra reduction	95		242				