Ministry of natural resources and environmental protection of the Russian Federation

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Progress in integrated assessment modelling in the Russian Federation

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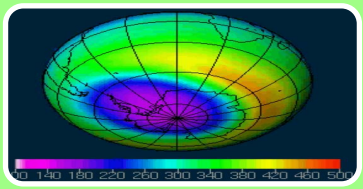
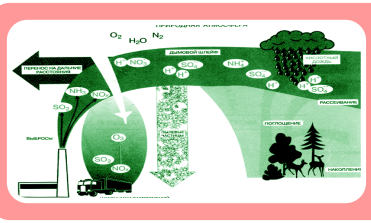
Main problems of atmospheric air protection:

Air Pollution



Ozone layer depletion

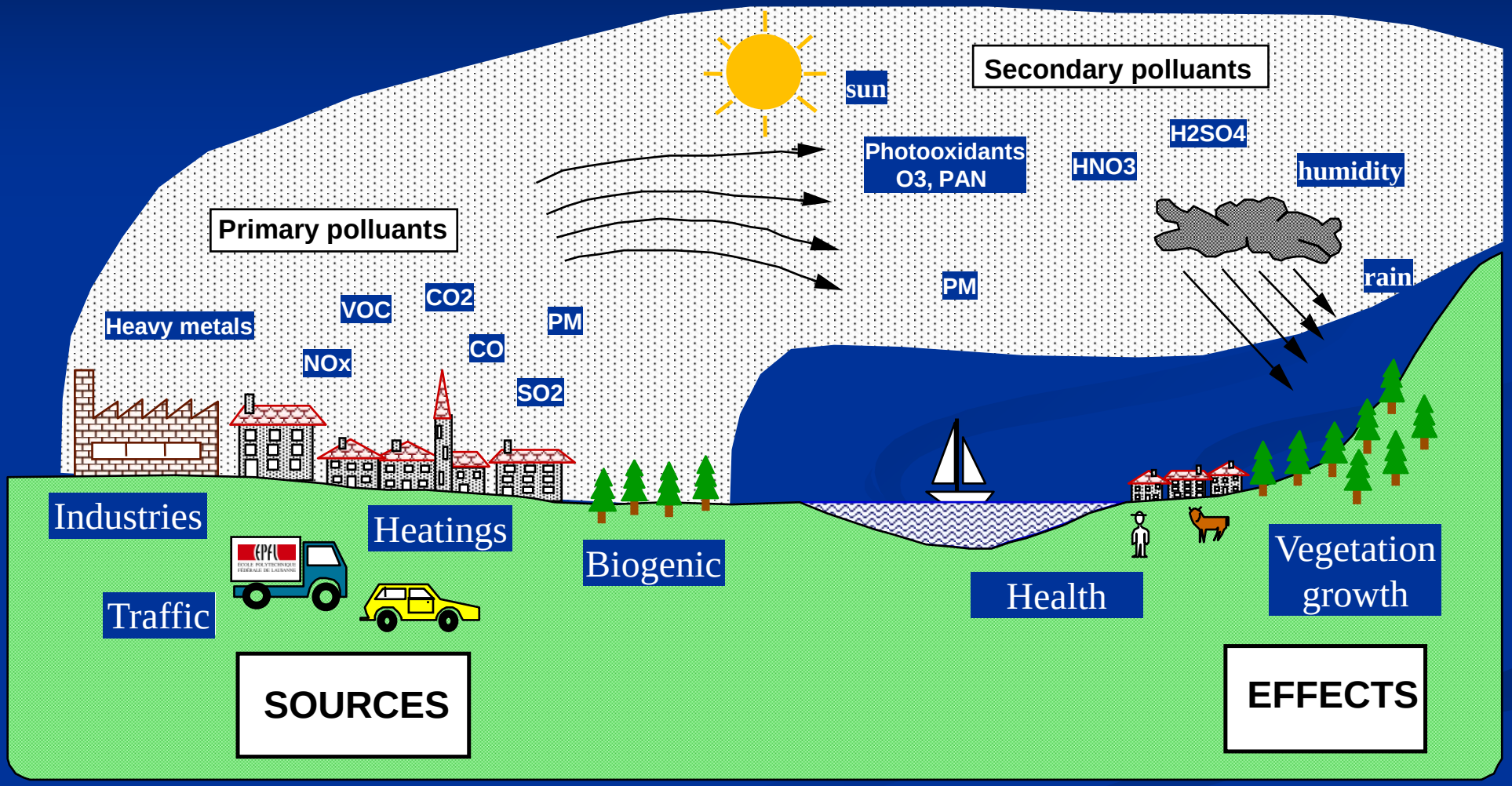
Climate change



Transboundary transport of air pollutant

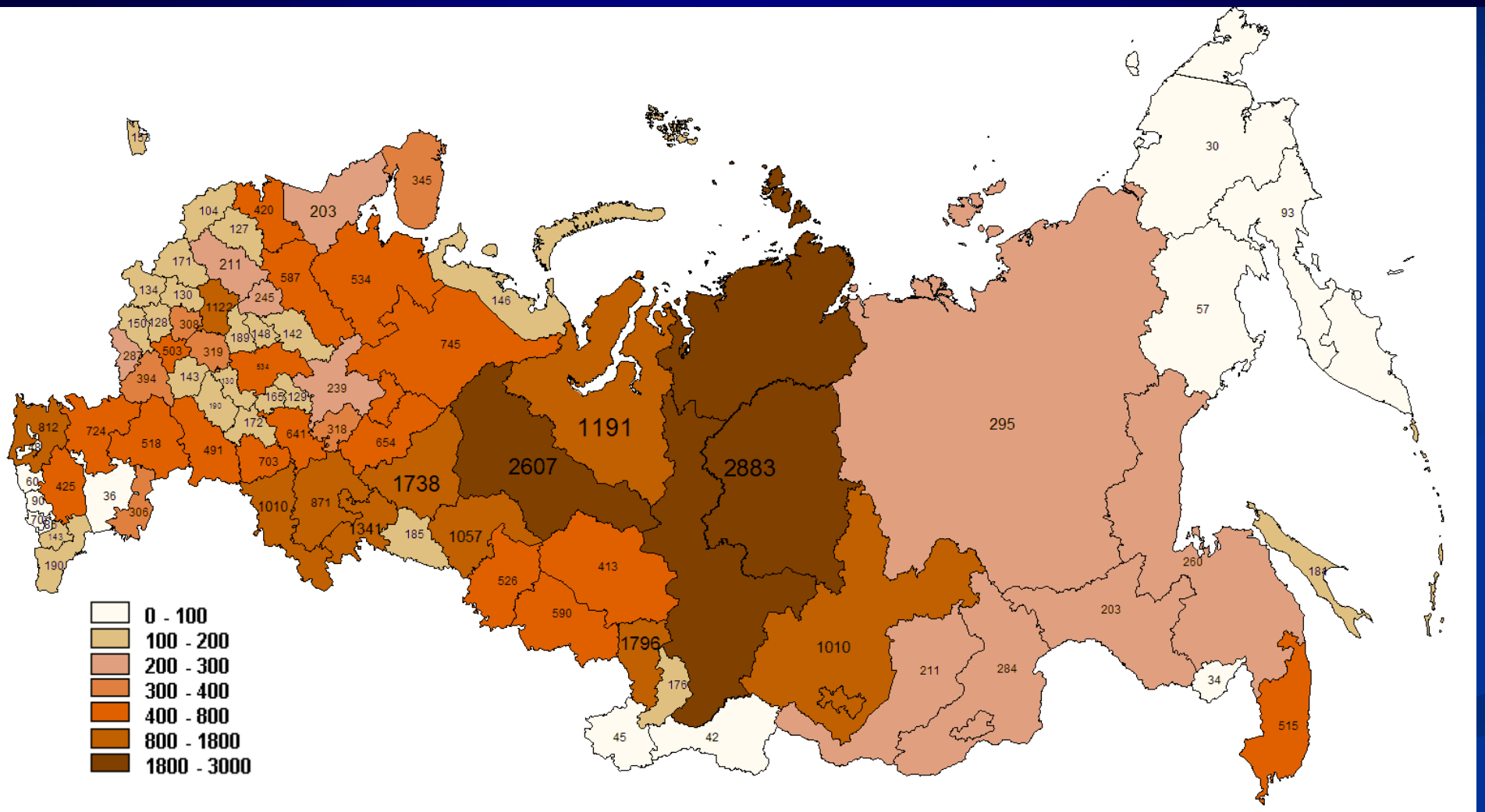
The scheme of pollutants distribution in atmosphere

EMISSIONS | **DISPERSION** (transport and turbulence) | **TRANSFORMATION** (chemistry) | **POLLUTANT DISTRIBUTION**

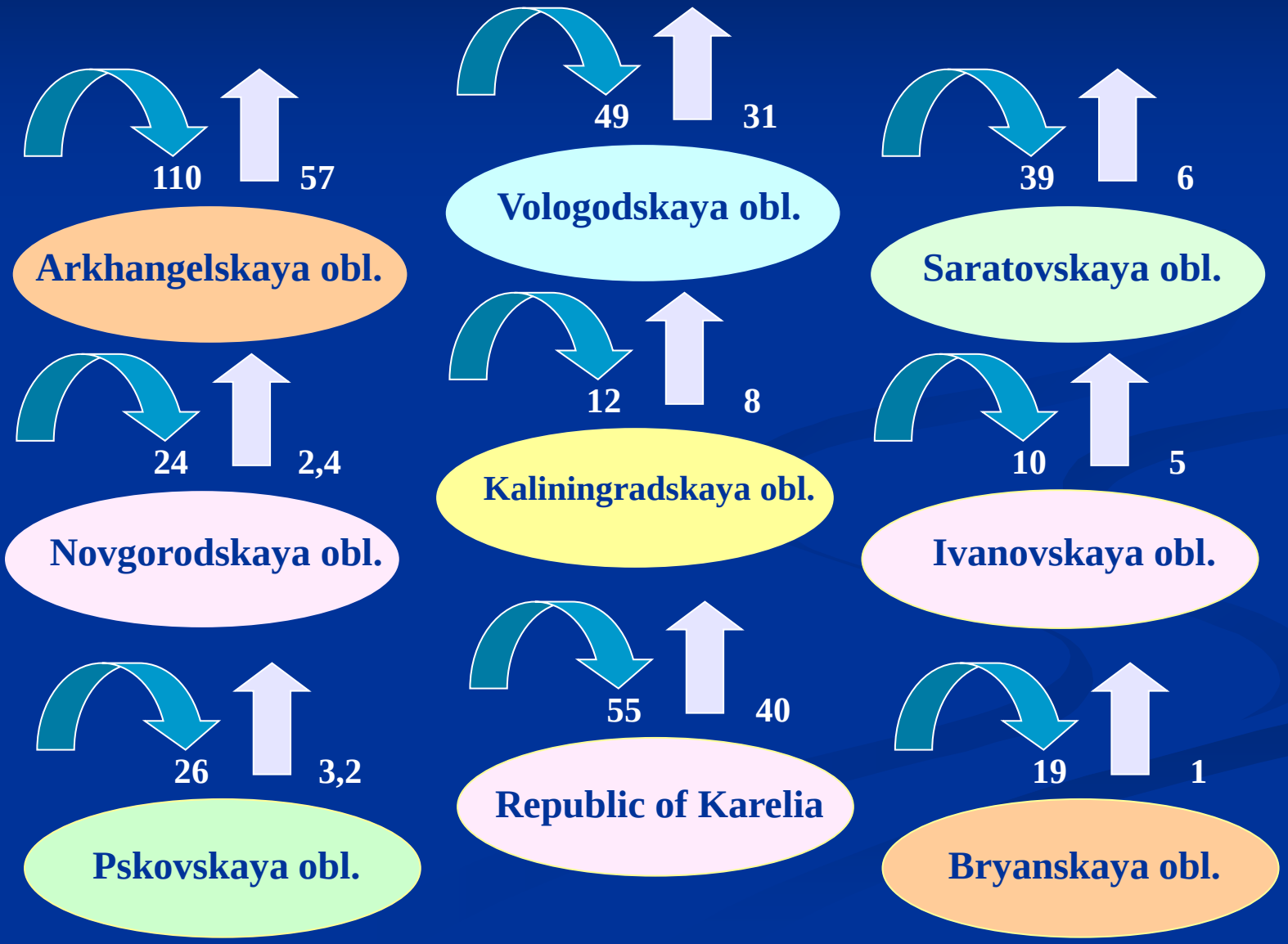


Pollutant emissions data in subjects of the Russian Federation in 2008

(th. t)

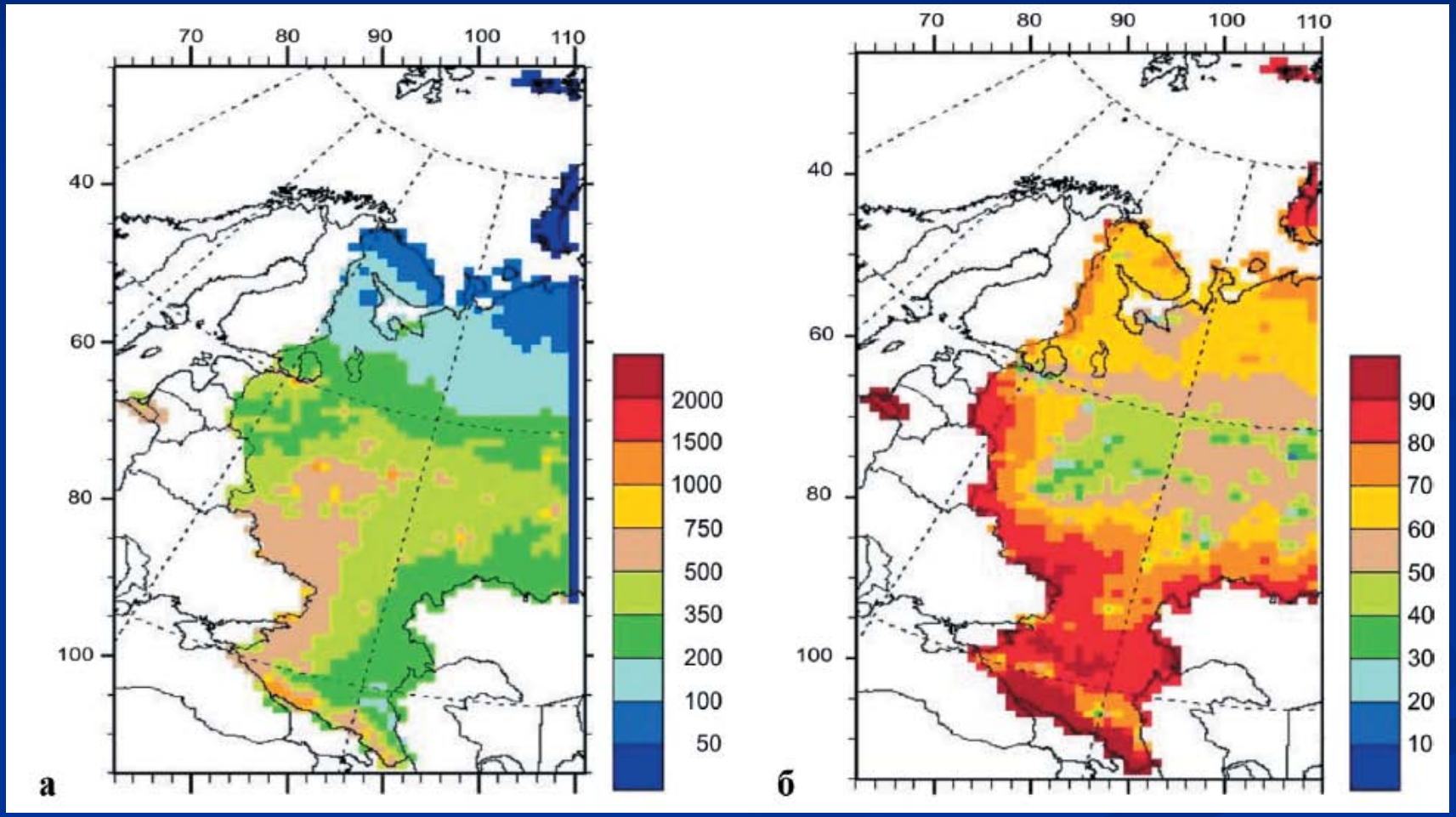


Comparison of total income of sulfur (S) in subjects of the Russian federation with emissions (th. t)



Density distribution of total losses of SOx on ETP (mg/m2) (a)

Share of transboundary losses of SOx in % of total losses (b)



2006

Convention on Long-range Transboundary Air Pollution

Signed by the USSR in Geneva in 1979

Ratified in the USSR in 1980

Federal law № 96 of 4 May 1996 г.
ON PROTECTION OF ATMOSPHERIC AIR

Article 20. Transboundary pollution of atmospheric air

With purpose of reducing transboundary air pollution caused by the sources of harmful contaminants situated on the territory of the Russian Federation, the Russian Federation provides activities on reduction of harmful (polluting) substances emissions into atmospheric air, and undertakes other actions in accordance with international obligations of the Russian Federation in area of atmospheric air protection.

Convention Protocols:

	date of signature
1. The Geneva Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP)	1984
2. The Helsinki Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 per cent	1985
3. The Sofia Protocol on Persistent Organic Pollutants (POPs)	1988
4. The Geneva Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes	1991
5. The Oslo Protocol on Further Reduction of Sulphur Emissions	1994
6. The Aarhus Protocol on Heavy Metals	1998
7. The Aarhus Protocol on Persistent Organic Pollutants (POPs)	1998
8. The 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone.	1999

Functions of the head federal executive agency responsible for the execution of obligations under the

- Convention on Long-RangeTransboundary Air Pollution

are performed by

the Ministry of Natural Resources and Environmental Protection of the Russian Federation

The Swedish-Finnish-Russian project «Development of the Co-operation under the Convention on Long Range Transboundary Air Pollution – CLRTAP» EP-07

Overall objective of the Project :

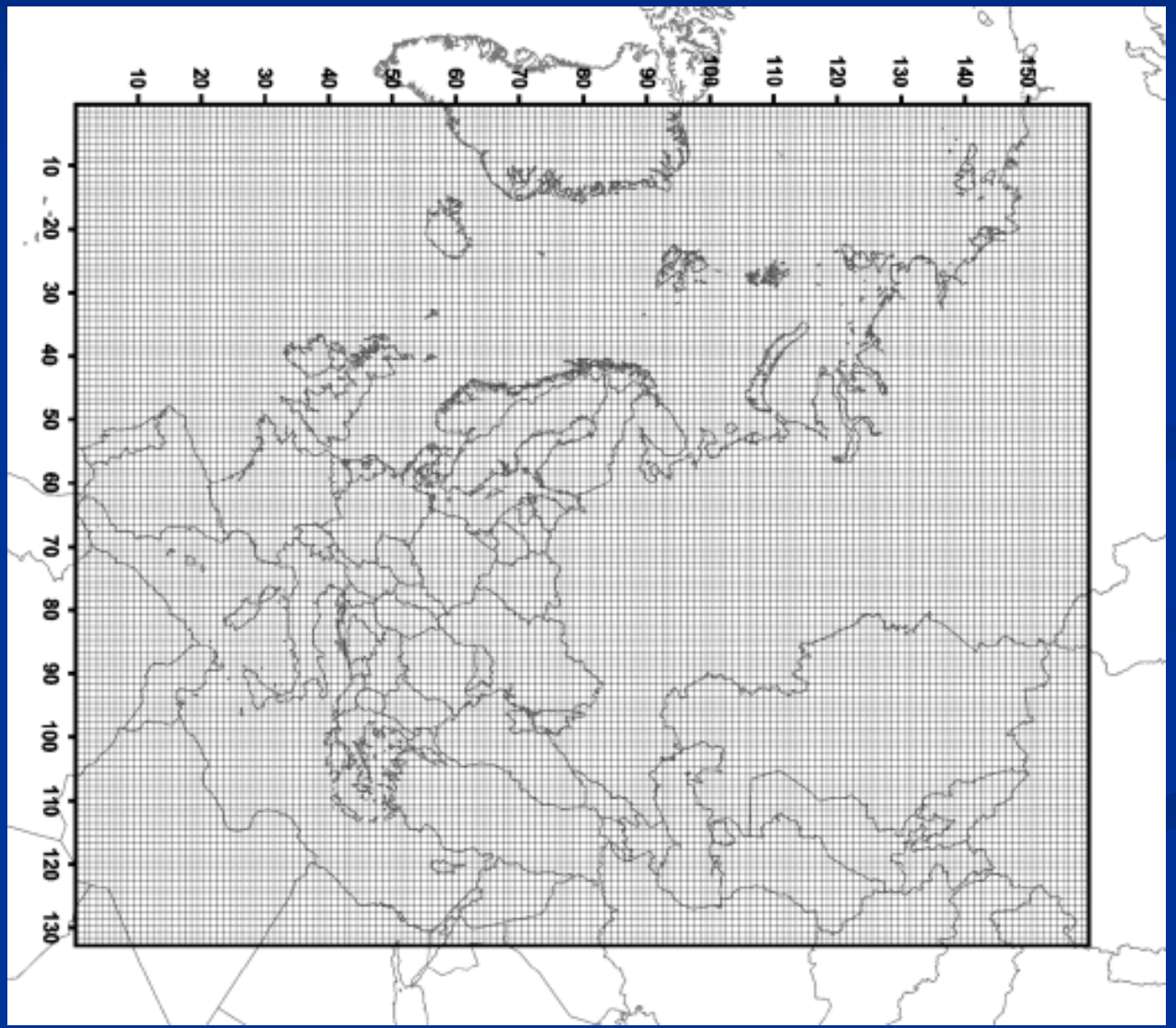
To increase the awareness level regarding the air pollution challenge and to strengthen the political profile of the activities carried out in Russia under the Convention.

Practical purposes of the project

1. To study the possibility of the GAINS Model application for the ecologico-economical optimization of business and other activities in the Russian Federation.
2. To develop the Russian GAINS Module

Extended grid of EMEP

spatial grid step = 50 km on the latitude 60º,
132x159 cells



Meeting of the State Council Presidium on 27 May 2010

The President of the Russian Federation D.A.Medvedev sets a task of radical reform of the system of state environmental management.

This will demand :

improvement of environmental legislation

implementation of advanced environmental standards at the enterprises within the framework of production modernization

realization of energy-saving program

development of new alternative energy sources

raising environmental awareness

Basic legislative environmental policy acts of the Russian Federation

- **Constitution of the Russian Federation**;
- Ecological doctrine of the Russian Federation (2002);
- Climate doctrine of the Russian Federation (2009);
- Concept of long-term socio-economic development of the Russian Federation for the period till 2020 (2008);
- National security strategy of the Russian Federation for the period till 2020 (2009);
- Energetic strategy of Russia for the period till 2030 (2009);
- Aquatic strategy of the Russian Federation for the period till 2020 (2009);
- Concept of transition to sustainable development of the Russian Federation (1996);
- Federal law on protection of environment;
- Federal law on protection of atmospheric air;
- other legal acts determining state strategy.

Fundamentals of environmental policy of the Russian Federation for the period till 2030

developed in accordance with paragraph 17 of the order of the Government of the Russian Federation of 12 June 2010 № VP-P9-3955, edited in conformity with the list of orders of the President of the Russian Federation of 6 June 2010 № Pr-1640 following the meeting of the State Council Presidium of 27 May 2010 on issue of «Improvements in a state regulatory system in area of environmental protection».

The document was prepared with participation of federal executive bodies, authorities of the subjects of the Russian Federation, scientific community organizations.

Main purposes of environmental policy of the Russian Federation for the period till 2030

- creation of a safe environment favorable for human habitation, meeting basic biological and esthetic needs;
- development of environmental legislation of the Russian Federation;;
- prevention and minimization of adverse impact of economic and other activities on human beings and environment;
- preservation and restoration of environment, recovery of damaged ecosystems;
- conservation of biological diversity;
- elimination of accumulated environmental damage related to past economic activities;
- ensuring the balance between economic prosperity and environmental well-being of society;
- creation of qualitative social infrastructure with purpose of satisfying social needs of a man;
- creation of resource- and energy-effective economy providing the greatest economic effect with the least adverse environmental impact;
- Participation and consideration the views of the interested parties in taking important environmental decisions.

Ecological situation in Russia

Air emissions

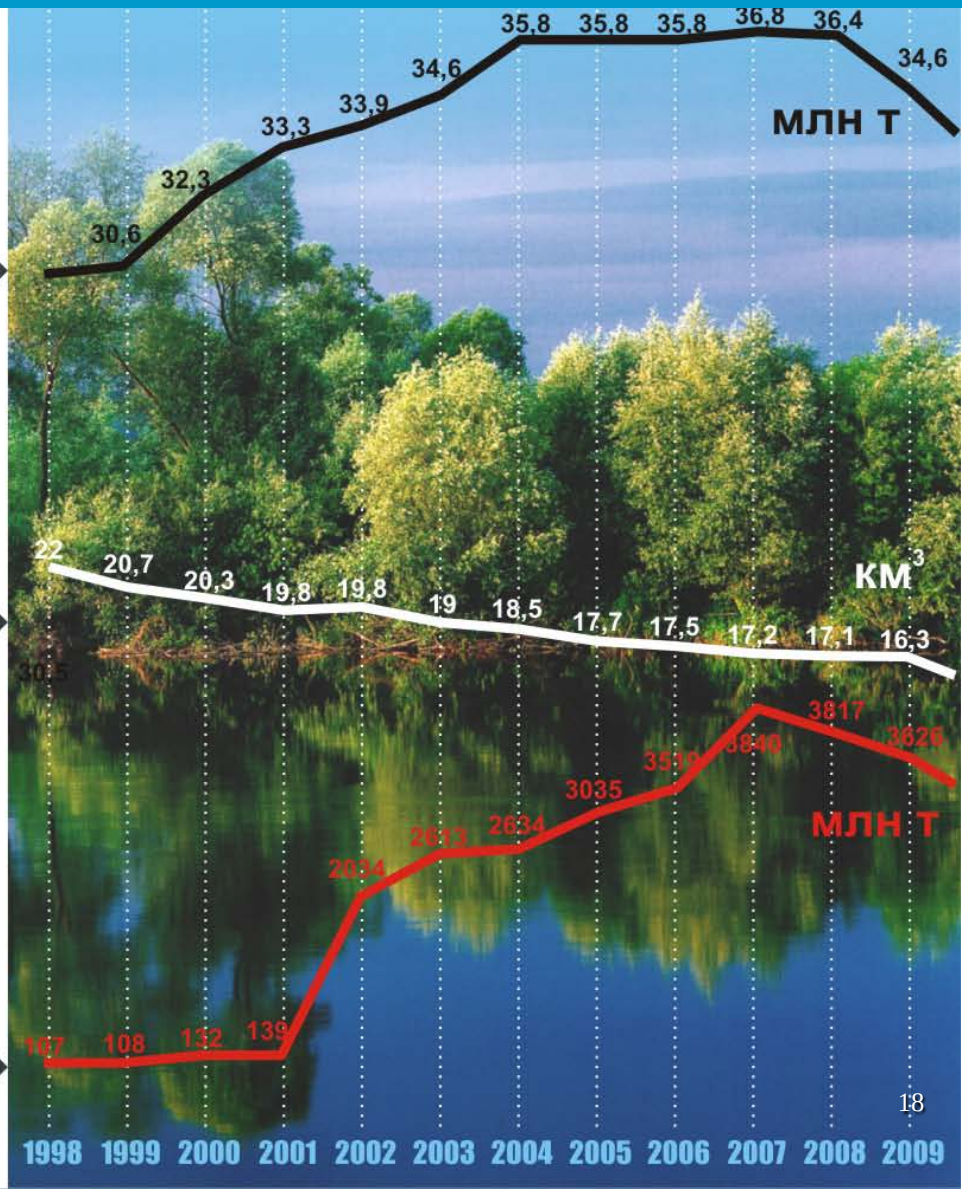
2009
34,6 млн т

Discharges into water

2009
3,4 куб. км

Waste formation

2009
3626 млн т



The existing emission rationing system

Permissible impact standards

- Based on calculating techniques for pollutant concentrations of enterprises" emissions and waste dumping in air and water
- Background contamination is considered

System of quality standards consists of:

- Sanitary and hygienic standards:
  2130 pollutants for atmospheric air
  1356 pollutants for reservoirs for household purposes
- Fisheries standards:
  1071 pollutants for reservoirs for fishery purposes

Disadvantages:

- The standards established for enterprises are significantly stricter than in the rest of the world
- The standards can not be observed with existing technologies
- The impossibility of instrumental estimating of the amount of pollutants

! Rigidity of standards is compensated with non-observance

! Creates unlimited possibilities for corruption

Division of enterprises into groups according to their environmental impact

Division of enterprises according to their environmental impact

Insignificant impact ~ 700 000 enterprises

declaration

No permission

Moderate impact ~ 290 000 enterprises

standards setting

Significant impact (environmentally dangerous objects) ~ 11 000

integrated permission

Environmentally dangerous objects (99% of adverse impact)

11445 enterprises

Air emissions

64 enterprises
50% emissions

Discharges into water

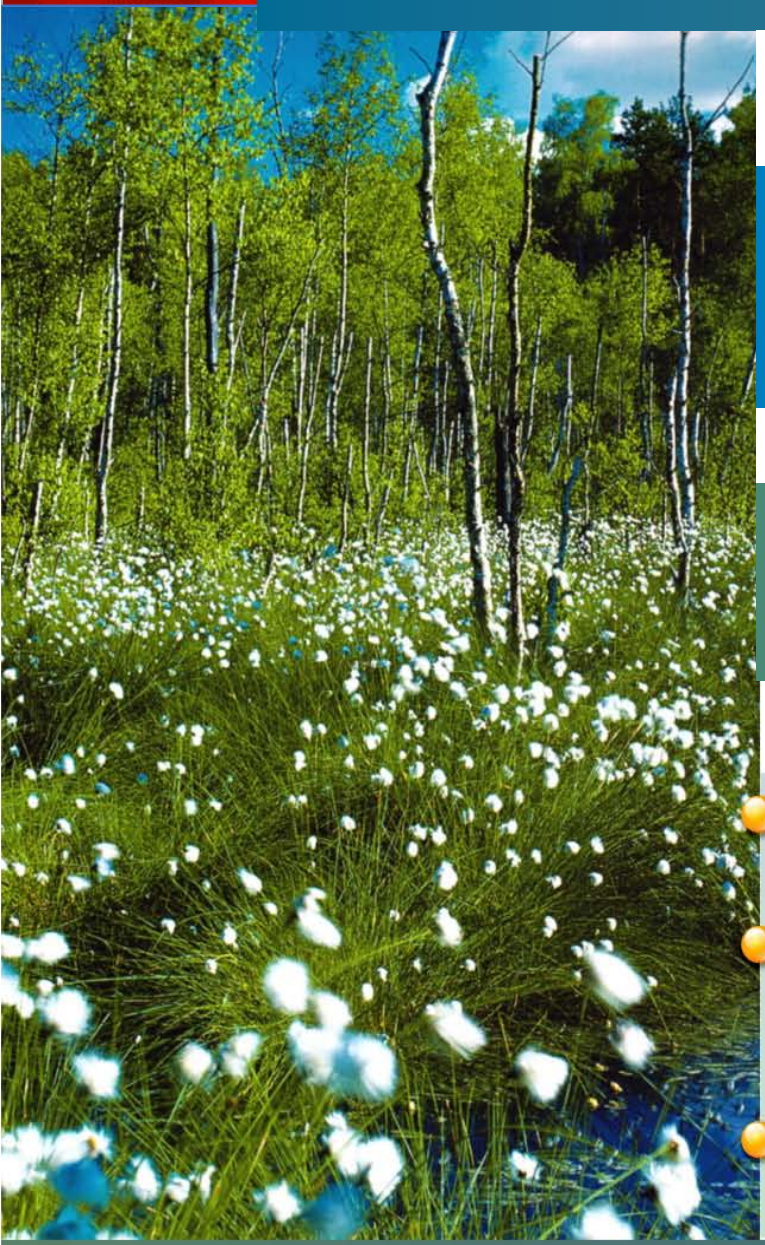
110 enterprises
50% emissions

Sectors with greatest environmental impact

Housing and utilities, chemicals, petrochemicals, pulp and paper production, energy, metallurgy

Rationing based on BAT

Transition to new BAT-based rationing system



TRANSITION TO NEW RATIONING SYSTEM WILL TAKE 10 YEARS

In the EU the transition to the BAT took 10 years, implementation costs of advanced technologies are 1-2% GDP.

CONCLUSION:

EFFECTIVE MOTIVATION AND PROMOTION METHODS ARE NEEDED

TRANSITION CONDITIONS:

- **Increased payments for adverse impact**
- **Economic encouragement of production modernization with aim of reducing burden on economy**
- **Provision of state support for branch modernization programs**

Implementation of economic encouragement measures for production modernization

methods of encouragement	measures proposed	way of implementation
Tax deductions	Property tax exemptions for BAT implementation	"On amending certain legislative acts of the Russian Federation" (improvements in rationing in area of environmental protection and implementation of economic encouragement measures for economic agents with aim of BAT implementation
Accelerated amortization	Provision of investment tax credits	
Subsidized rates	Reduction of tax cost base for equipment acquisition	
Other economic mechanisms	Fees reduction up to 70% by deducting environmental investments	Amendments to the Tax Code
	Payment rate reduction of 50% after transition to BAT	Amendments to the Budget Code

GAINS MODEL

is a tool for analyzing environmental impacts of different economic scenarios and for evaluating the effectiveness of different strategies for pollutants and greenhouse gases reduction

Model developer

International Institute for Applied Systems Analysis

IIASA

Russian GAINS module

–

an effective environmental decision-making tool

–

permits making rapid environmental impact assessment of economic decisions on state and regional levels

Inter alia:

- making rapid assessments of changes in pollutant emissions in a region
- making health and environment impact assessment in a region under study and in other regions of the Russian Federation
- cost-effectiveness evaluation of planned emission control measures
- and other..

GAINS training session in IIASA

February, 2009

Президент Российской Федерации

Указ Президента РФ от 23 июня 2010 г. N 780
"Вопросы Федеральной службы по экологическому, технологическому и атомному надзору"

Обзор документа

Федеральная служба по экологическому, технологическому и атомному надзору (Ростехнадзор) передана из ведения Минприроды России под непосредственное руководство Правительства РФ. При этом Служба наделена функциями по выработке и реализации государственной политики и нормативно-правовому регулированию в сфере технологического и атомного надзора.

Полномочия Ростехнадзора по ограничению негативного техногенного воздействия в области обращения с отходами, а также в сфере государственной экологической экспертизы возложены на Росприроднадзор.

Указ вступает в силу со дня его подписания.

President of the Russian Federation D.Medvedev

Head of the Federal Service for Ecological, Technological and Nuclear Supervision (Rostechnadzor)

Nikolai Kutyin

Федеральная служба по экологическому, технологическому и атомному надзору

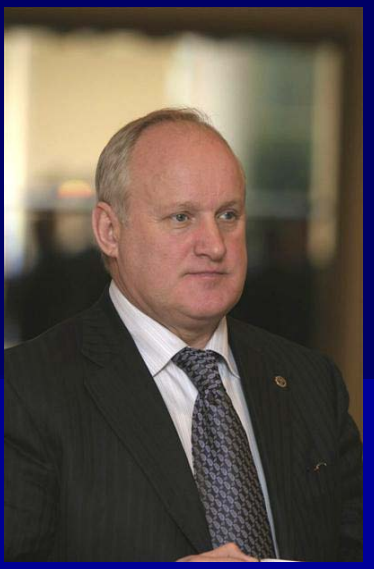
Федеральная служба по надзору в сфере природопользования

П Р И К А З

от 29 сентября 2010 года № 975/282

О взаимодействии Федеральной службы по экологическому, технологическому и атомному надзору и Федеральной службы по надзору в сфере природопользования и их территориальных органов по реализации постановления Правительства Российской Федерации от 13 сентября 2010 г. № 717

В целях реализации Указа Президента Российской Федерации от 23 июня 2010 г. № 780 «Вопросы Федеральной службы по экологическому, технологическому и атомному надзору», постановления Правительства Российской Федерации от 13 сентября 2010 г. № 717 «О внесении изменений в некоторые постановления Правительства Российской Федерации по вопросам полномочий Министерства природных ресурсов и экологии Российской Федерации, Федеральной службы по надзору в сфере природопользования, Федеральной службы по экологическому, технологическому и атомному надзору», а также организации работы, связанной с передачей функций администратора доходов и финансирования по реализации данных функций Федеральной службой по экологическому, технологическому и атомному надзору (далее – Ростехнадзор) Федеральной службе по надзору в сфере природопользования (далее – Росприроднадзор) п р и к а з ы в а е м:



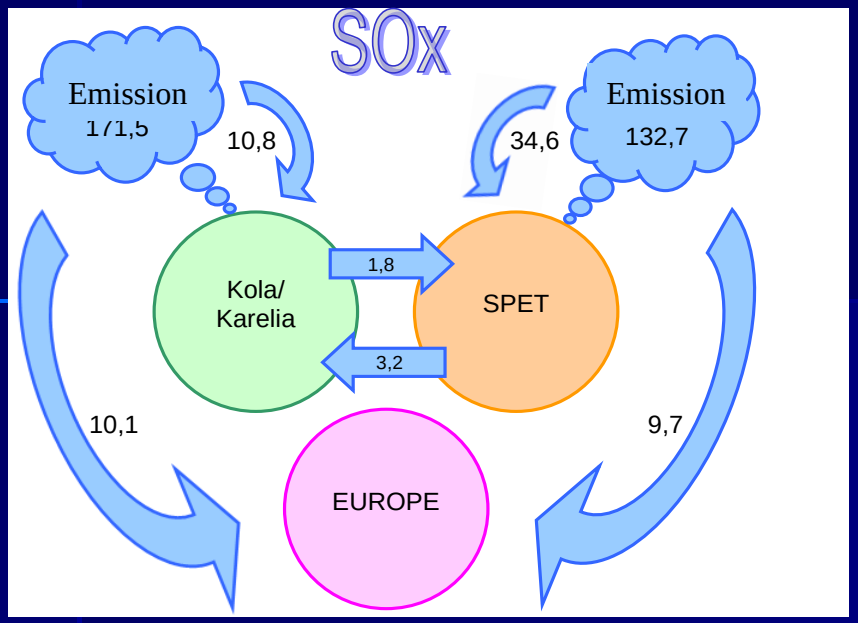
Head of the Federal Service for the Oversight of Natural Resources (Rosprirodnadzor)

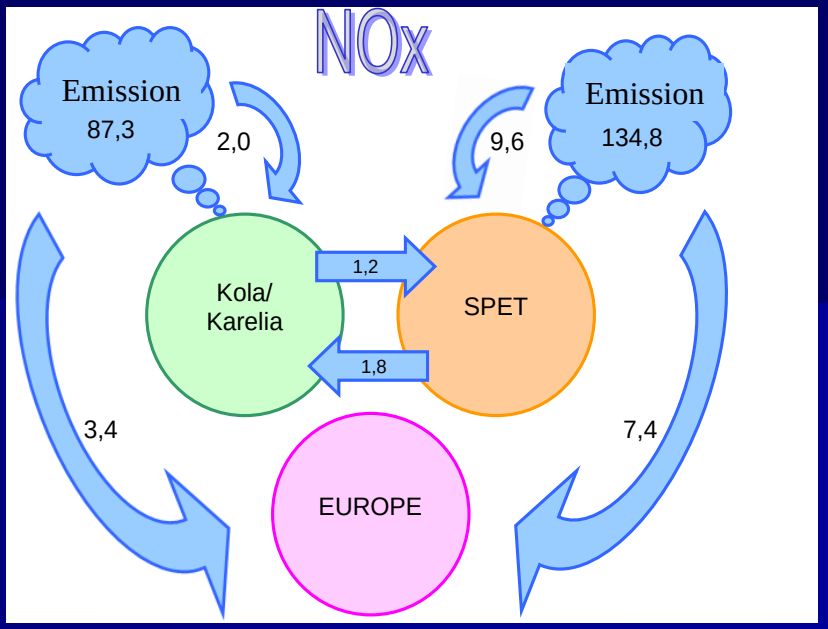
Vladimir Kirillov

Region
Russia, St. Petersburg

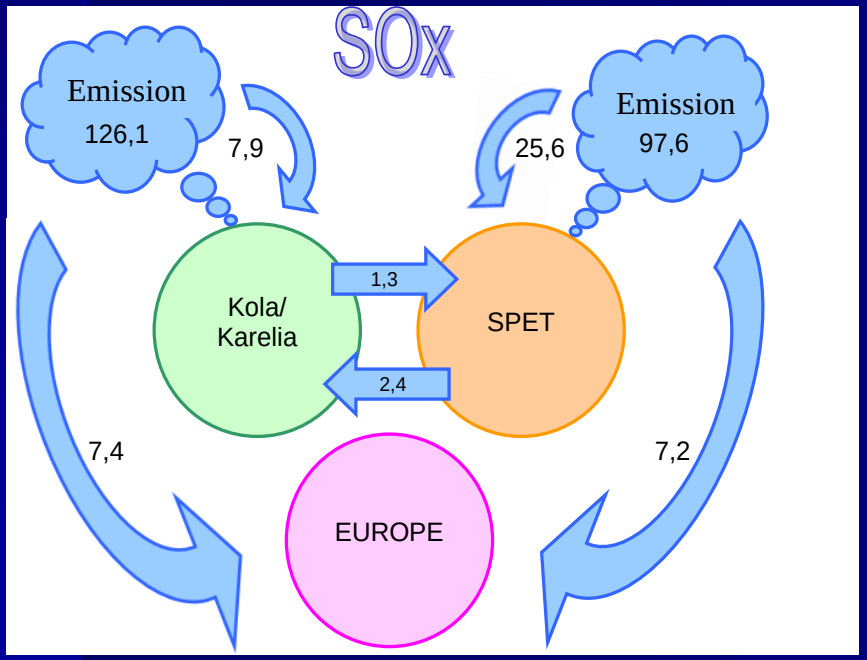
Region
Russia, Kola and Karelia

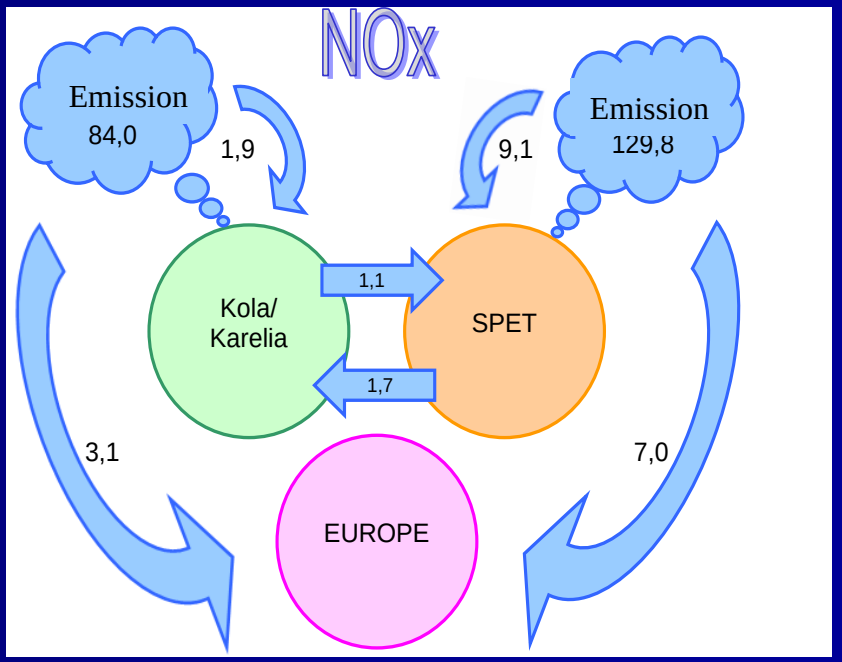
Without implementation of control strategies

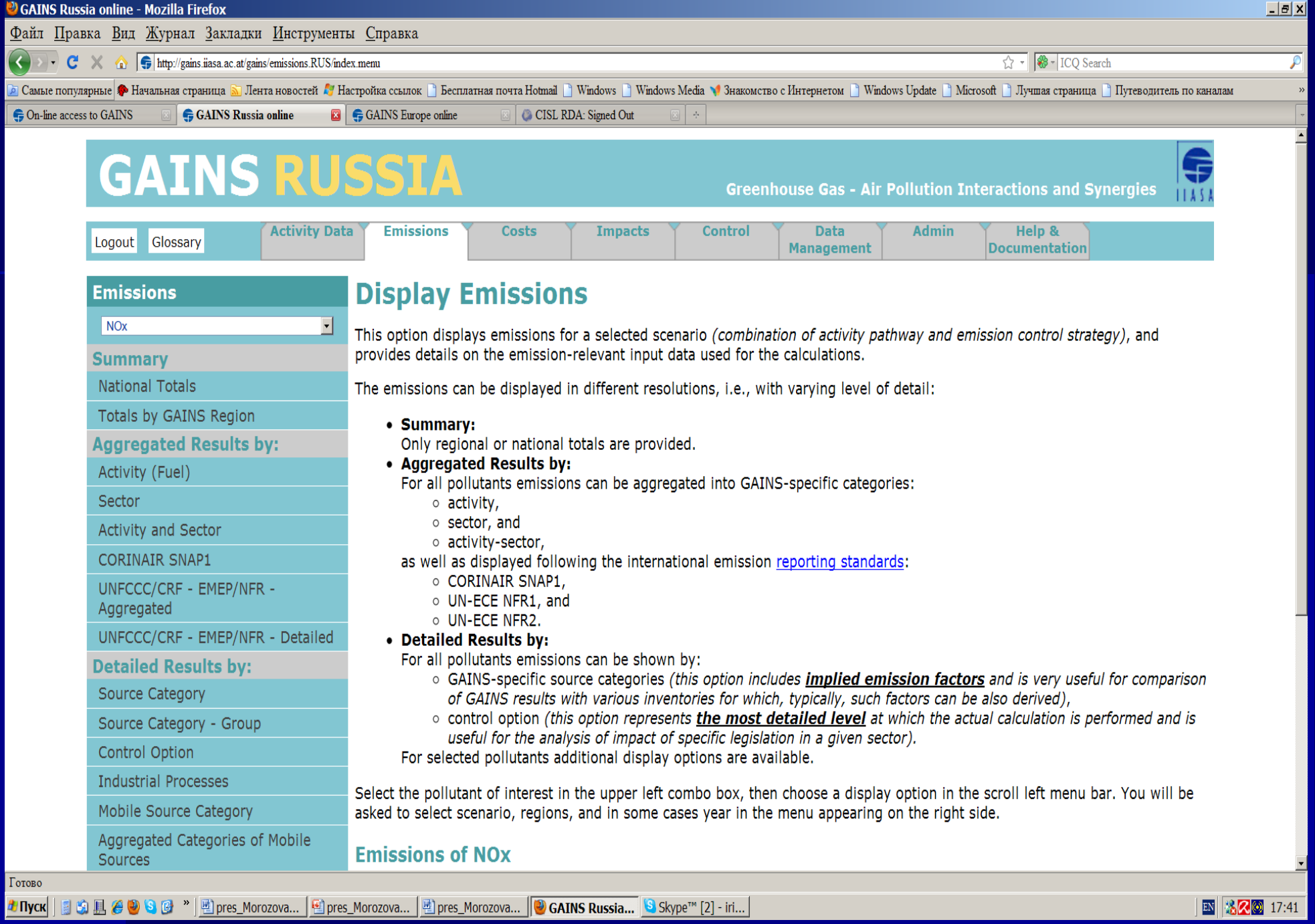




With implementation of IIASA control strategies






GAINS Russia online - Mozilla Firefox
Файл Правка Вид Журнал Закладки Инструменты Справка
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ICQ Search
Самые популярные Начальная страница Лента новостей Настройка ссылок Бесплатная почта Hotmail Windows Windows Media Знакомство с Интернетом Windows Update Microsoft Лучшая страница Путеводитель по каналам
On-line access to GAINS
GAINS Russia online
GAINS Europe online
CISL RDA: Signed Out
GAINS RUSSIA
Greenhouse Gas - Air Pollution Interactions and Synergies
IIASA
Logout
Glossary
Activity Data
Emissions
Costs
Impacts
Control
Data Management
Admin
Help & Documentation
Emissions
NOx
Summary
National Totals
Totals by GAINS Region
Aggregated Results by:
Activity (Fuel)
Sector
Activity and Sector
CORINAIR SNAP1
UNFCCC/CRF - EMEP/NFR - Aggregated
UNFCCC/CRF - EMEP/NFR - Detailed
Detailed Results by:
Source Category
Source Category - Group
Control Option
Industrial Processes
Mobile Source Category
Aggregated Categories of Mobile Sources
Display Emissions
This option displays emissions for a selected scenario (combination of activity pathway and emission control strategy), and provides details on the emission-relevant input data used for the calculations.
The emissions can be displayed in different resolutions, i.e., with varying level of detail:
Summary:
Only regional or national totals are provided.
Aggregated Results by:
For all pollutants emissions can be aggregated into GAINS-specific categories:
activity,
sector, and
activity-sector,
as well as displayed following the international emission reporting standards:
CORINAIR SNAP1,
UN-ECE NFR1, and
UN-ECE NFR2.
Detailed Results by:
For all pollutants emissions can be shown by:
GAINS-specific source categories (this option includes implied emission factors and is very useful for comparison of GAINS results with various inventories for which, typically, such factors can be also derived),
control option (this option represents the most detailed level at which the actual calculation is performed and is useful for the analysis of impact of specific legislation in a given sector).
For selected pollutants additional display options are available.
Select the pollutant of interest in the upper left combo box, then choose a display option in the scroll left menu bar. You will be asked to select scenario, regions, and in some cases year in the menu appearing on the right side.
Emissions of NOx
Готово
Пуск
pres_Morozova...
pres_Morozova...
pres_Morozova...
GAINS Russia...
Skype™ [2] - iri...
EN
17:41

HP ProLiant ML150 Generation 5 (G5) Server

(470064-718)

2008 country-to-country blame matrices for oxidised sulphur deposition, t

	KARE	LENI	MURM	VOLO	ARKH	KALI	EE	PL	DE	FI	BY	KZ	SE	UA	TR	PSKO	NOVG	NO	Rest part of EMEP
KARE	8870	1657	2711	821	1846	39	1763	2592	551	1400	654	361	237	2600	229	43	23	73	14589
LENI	594	6269	496	632	508	31	4196	1910	450	536	653	183	95	2207	148	72	43	29	11874
MURM	1237	208	17375	210	1481	12	369	1127	373	789	197	189	232	907	74	10	5	77	7093
VOLO	433	863	542	6941	1038	27	706	2035	381	312	563	1168	76	4198	648	43	31	27	23496
ARKH	2407	1243	3713	2423	17137	55	1495	3832	737	1194	796	1694	262	5645	996	53	29	99	34303
KALI	8	13	21	4	4	447	36	2329	325	32	66	8	23	409	16	2	0	7	2620
EE	99	217	168	50	62	38	2662	2228	527	378	355	45	100	1496	49	35	4	27	9434
PL	120	149	257	59	86	560	521	190332	16137	339	1469	122	294	14955	590	23	4	117	73637
DE	101	97	146	40	37	82	247	18136	105850	194	465	77	202	2550	110	12	3	151	119303
FI	4002	1228	5004	405	1016	97	2957	6204	1725	10406	1030	261	1226	4722	209	66	20	286	31015
BY	221	268	381	147	195	192	541	19093	2032	365	9986	497	122	26810	1894	91	9	37	33141
KZ	43	56	77	109	123	10	123	1615	300	60	254	37174	15	11102	4290	7	2	6	42170
SE	813	398	1776	227	490	103	923	7327	5729	2261	524	155	4520	2608	60	26	8	1093	65225
UA	248	247	496	240	313	124	463	34482	3443	388	3240	2960	122	248255	17683	40	8	40	156900
TR	31	45	56	63	79	14	41	2243	535	41	248	1356	18	9872	343876	7	2	9	228988
PSKO	148	393	214	104	116	38	1694	1987	380	218	1507	120	61	2750	186	474	13	21	8113
NOVG	248	1001	293	346	284	26	681	1338	339	210	670	160	48	1995	158	104	167	15	8244
NO	331	102	4635	68	244	34	177	2416	2696	479	151	63	472	788	22	7	2	2085	45159

The objectives of the Guidebook

- to introduce the GAINS methodology to Russian users
- to provide the practical clearly evident guidance on use of individual modules of the GAINS model

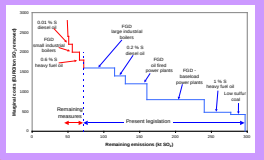
The Guidebook is designed for

- the dedicated Russian governmental environmental protection agencies
- institutions and organizations carrying out activities in the field of air protection
- scientific-research and educational institutions
- other institutions and organizations …

The Guidebook is used for:

assessment of economics and environmental decision-making

evaluation of costs

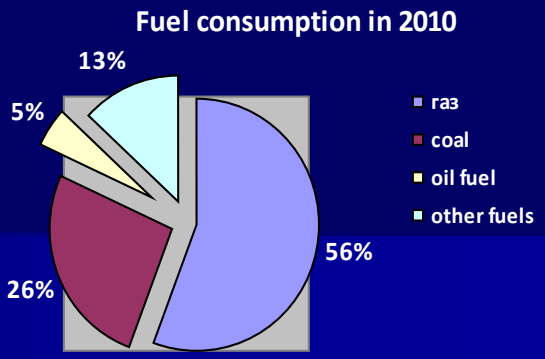


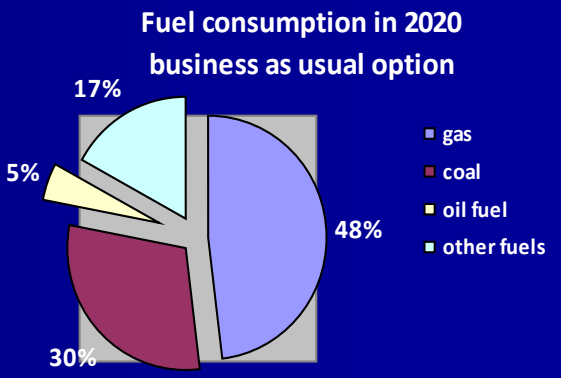
optimization of emission level reductions

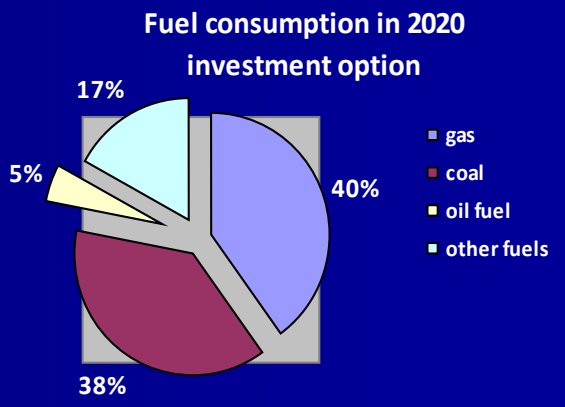
development of decisions on accession to international agreements

Energy development options on the European territory of Russia till 2020

	2010 baseline	2020	
		business as usual	investment
Electricity production, billion kW/h	773	1086	1200
Energy resources consumption by the power plants, million toe	175	258	293







In 2020 in comparison with 2010 coal consumption will increase

in business as usual option twice,

in investment option nearly three times.

Calculation scenarios

- without application of emission reduction measures (control strategies),
- with the control strategies developed by the experts of the IIASA within the revision of the Gothenburg Protocol and
- with the control strategies of the optimization scenario developed for Sweden (CIAM1/2010 National BL (COB)).

Emissions
according to the 1-st scenario

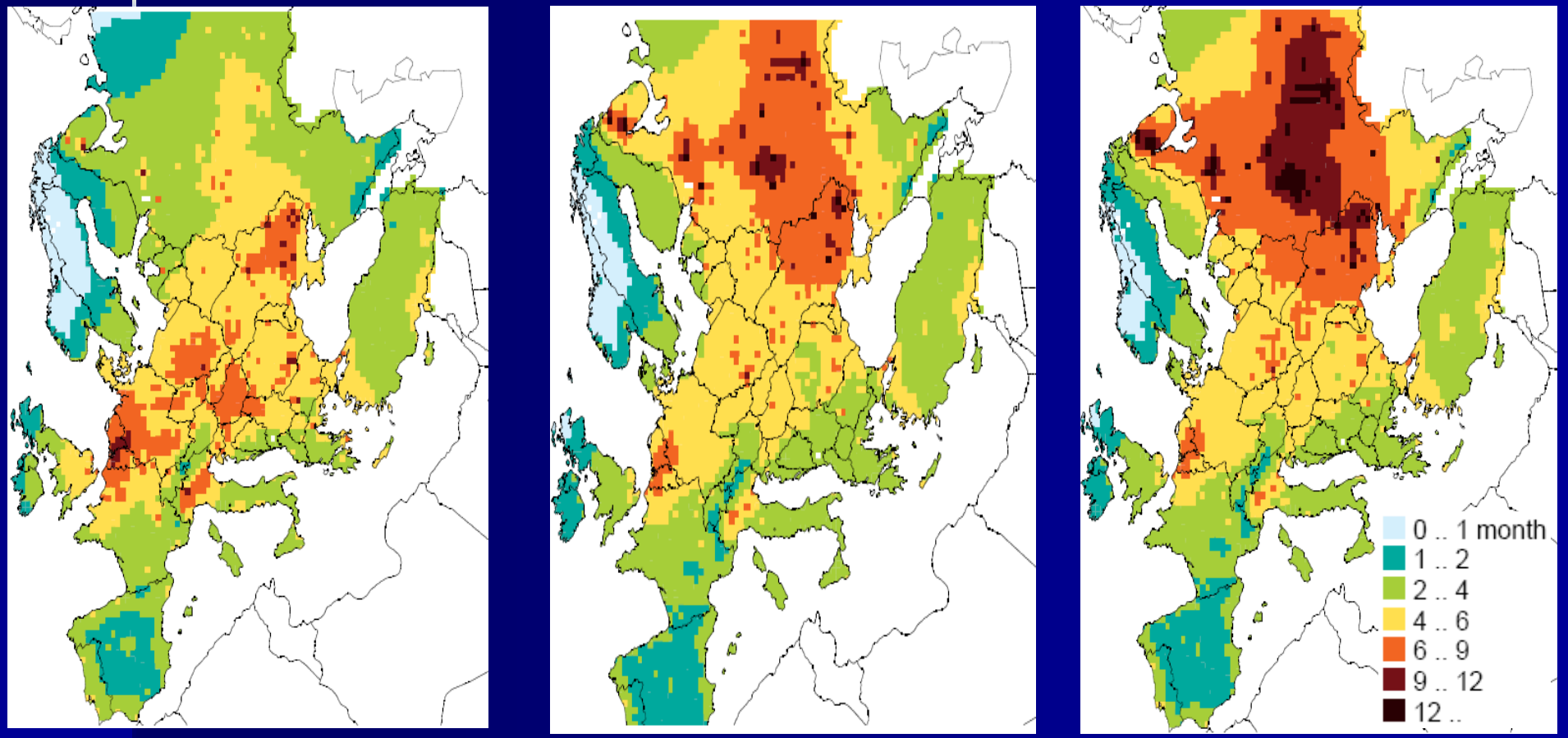
Pollutant	2010	2020	
		"Business as usual"	Investment
SOx, SO_2 th. tonnes /year			
TOTAL	**3499,6**	**8203,7**	**11249,7**
by fuel type			
coal	3212,4	5217,2	7844,2
fuel oil	268,5	471,4	508,3
gas	18,7	17,5	22,8
other fuel	0,0	2492,6	2874,5
NOx, NO_2 th. tonnes /year			
TOTAL	**1304,0**	**1780,8**	**2269,4**
by fuel type			
coal	578,7	858,0	1301,7
fuel oil	64,9	104,0	113,2
gas	660,5	702,4	718,7
other fuel	0,0	116,4	135,8
PM, th. tonnes			
TOTAL	**5,5**	**9,4**	**10,1**
by fuel type			
coal	0,0	0,0	**0,0**
fuel oil	5,0	8,8	9,5
gas	0,4	0,5	0,5
other fuel	0,0	0,0	0,0
GG, mio t CO_2eq./year			
TOTAL	**459,2**	**689,3**	**854,5**
by fuel type			
coal	182,4	296,2	445,3
fuel oil	25,0	43,8	47,3
gas	251,9	301,0	306,3
other fuel	0,0	48,3	55,7

Loss of statistical life expectancy as a result of $PM_{2.5}$ impact, *months*

2010 baseline

2020 "business as usual"

2020 investment

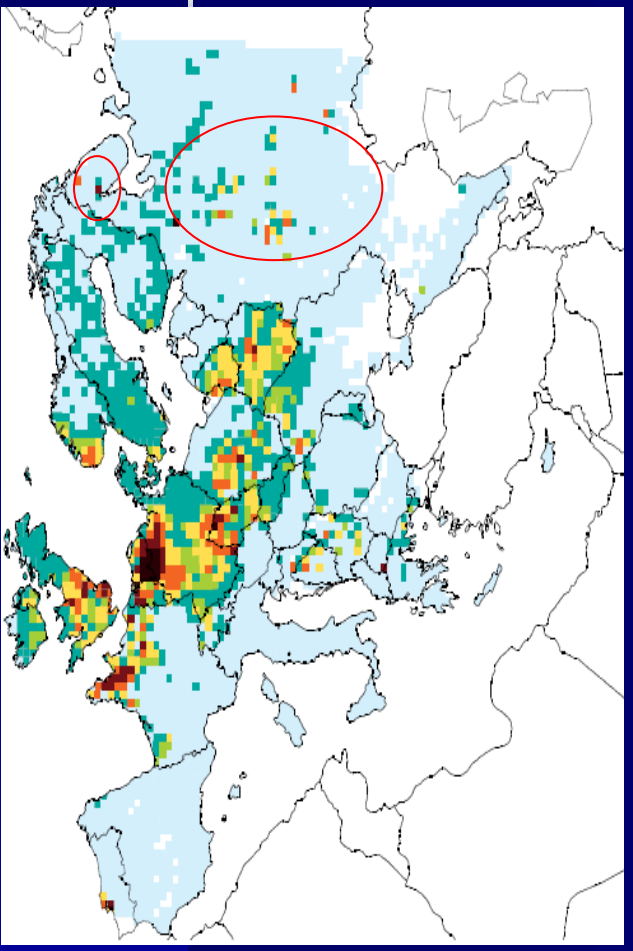


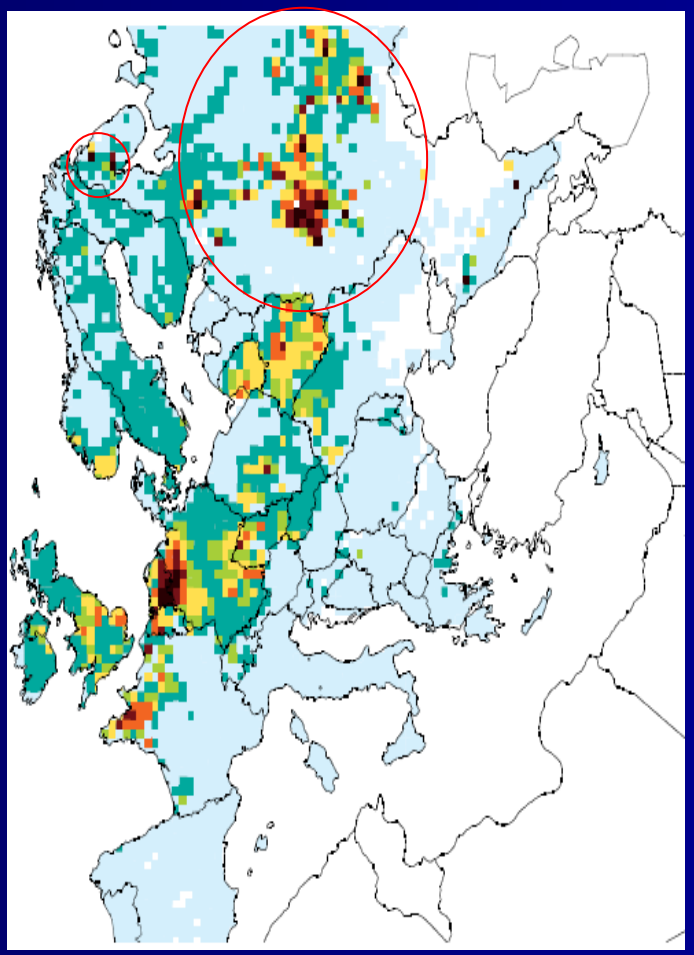
Critical loads exceedances for acidity

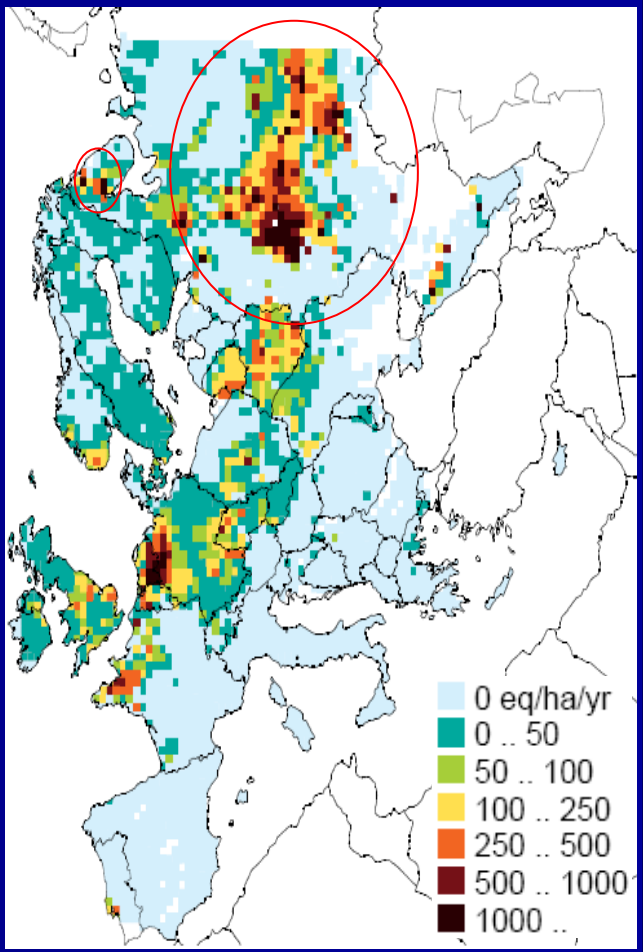
2010
baseline

2020
“business as usual”

2020
investment





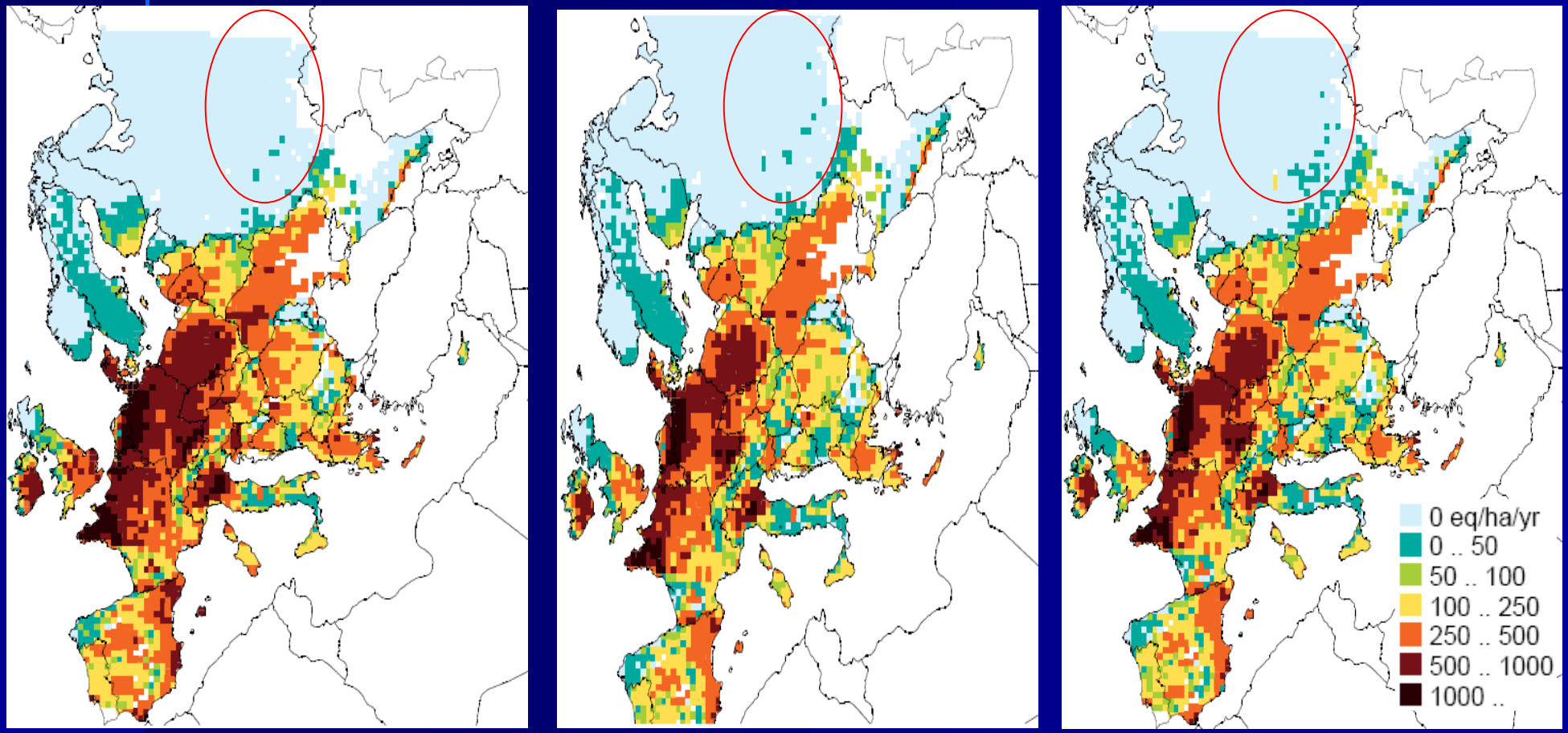


Critical loads exceedances for nutrient nitrogen

2010
baseline

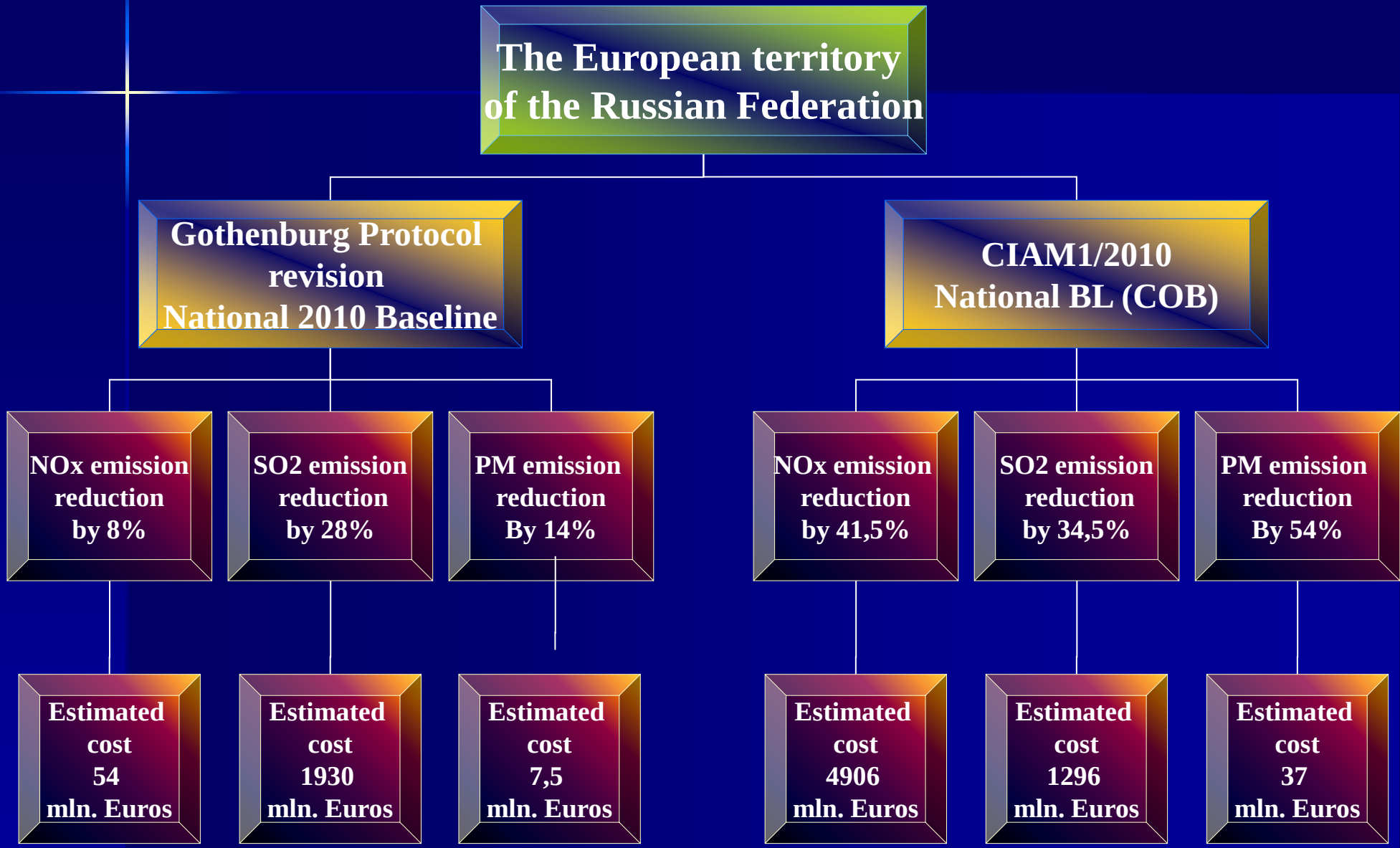
2020
"business as usual"

2020
investment



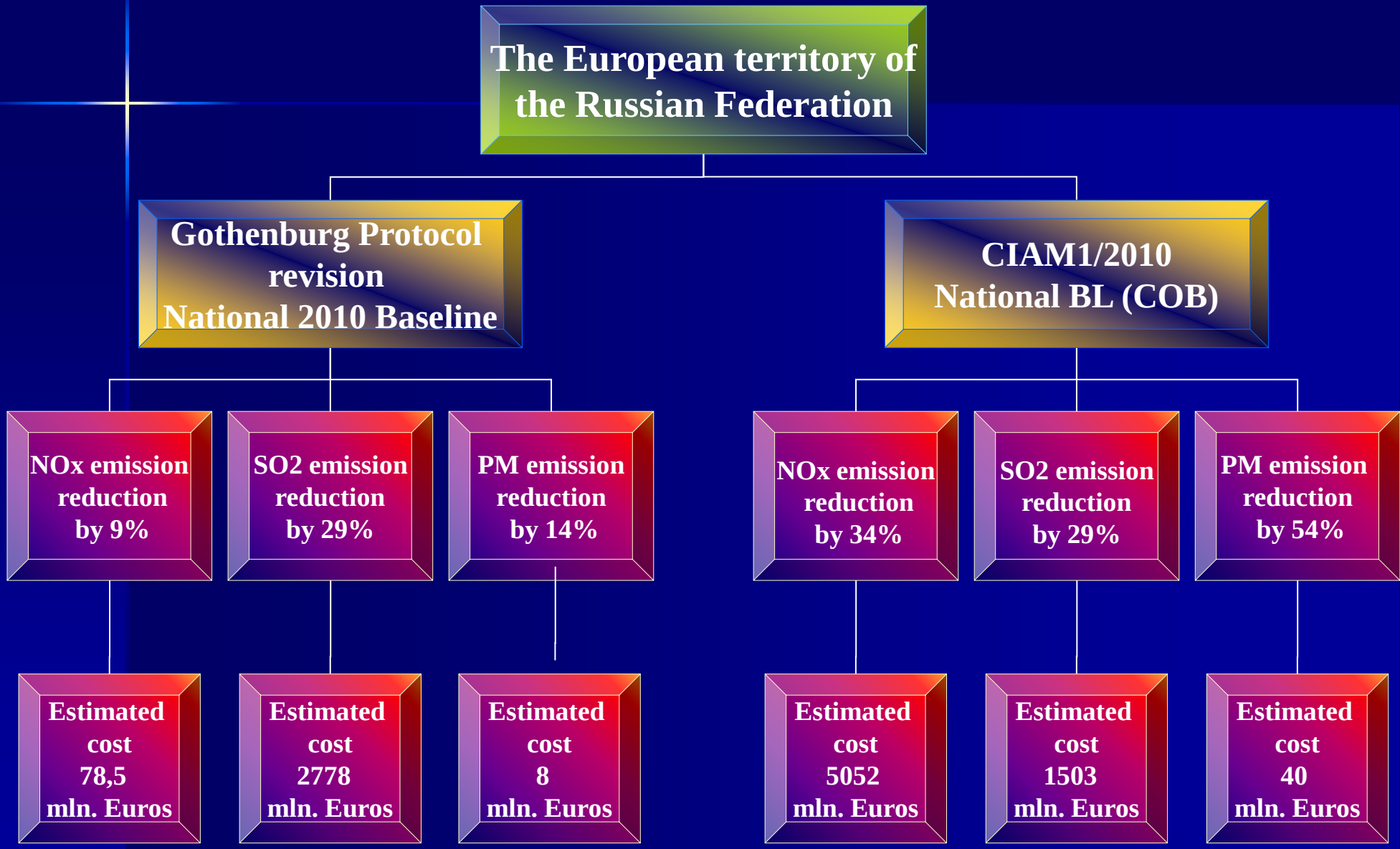
Analysis of the control strategies implementation effects

2020, “business as usual” option



Analysis of the control strategies implementation effects

2020, investment option



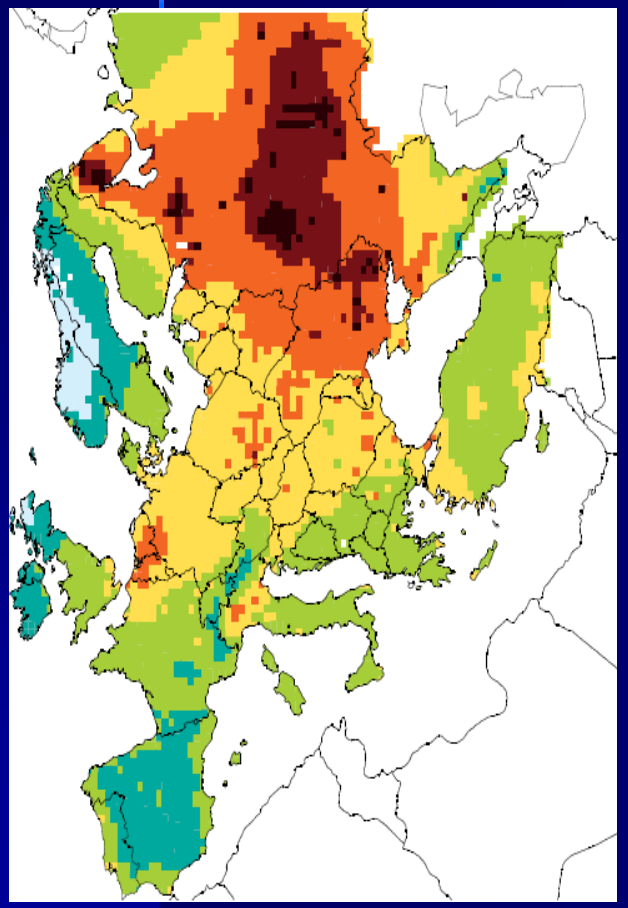
Loss in statistical life expectancy attributable to $PM_{2.5}$, *months*

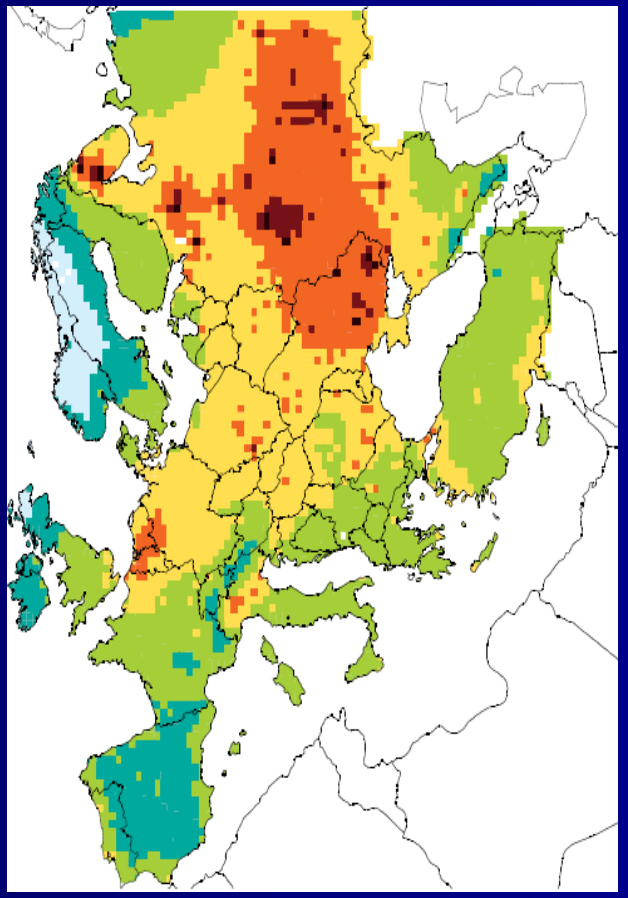
2020, investment option

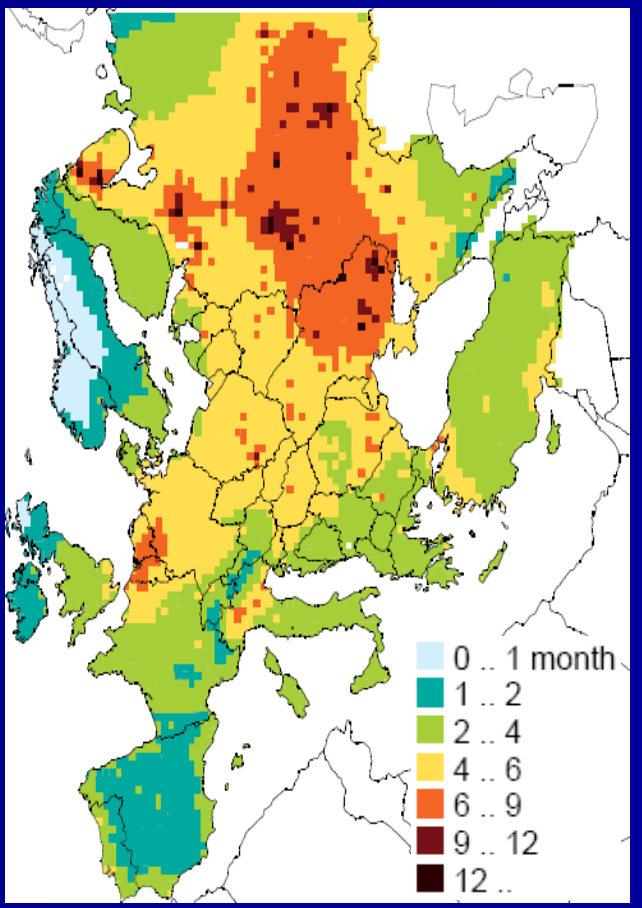
Without CS

Gothenburg Protocol revision
National 2010 Baseline

CIAM1/2010
National BL (COB)







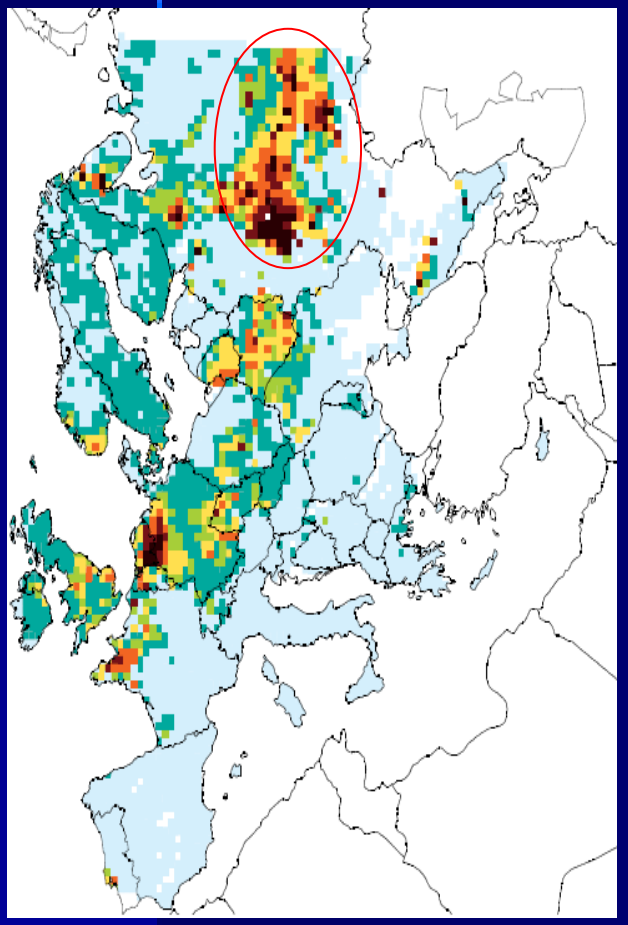
Exceedance of acidity critical loads

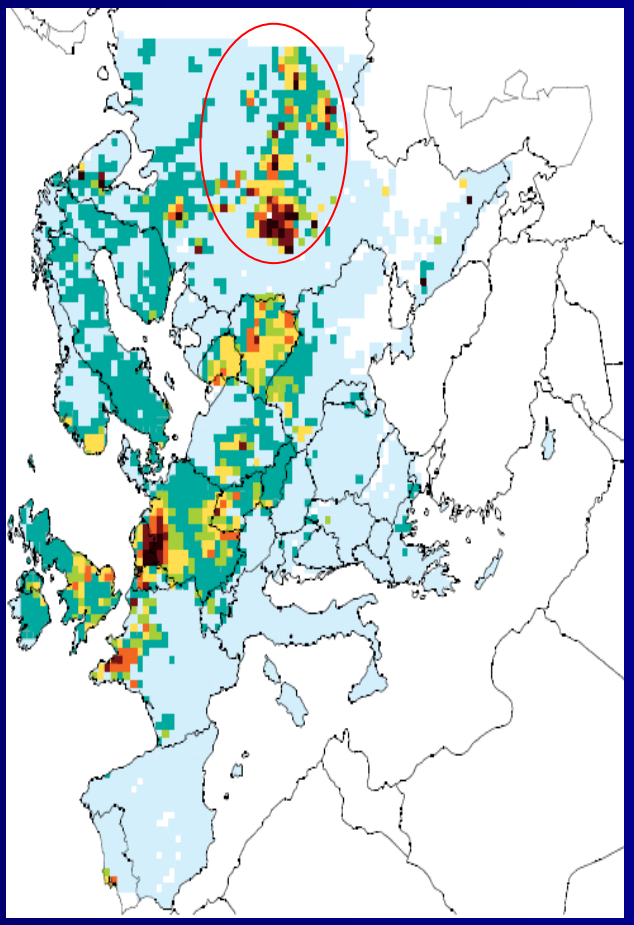
2020, investment option

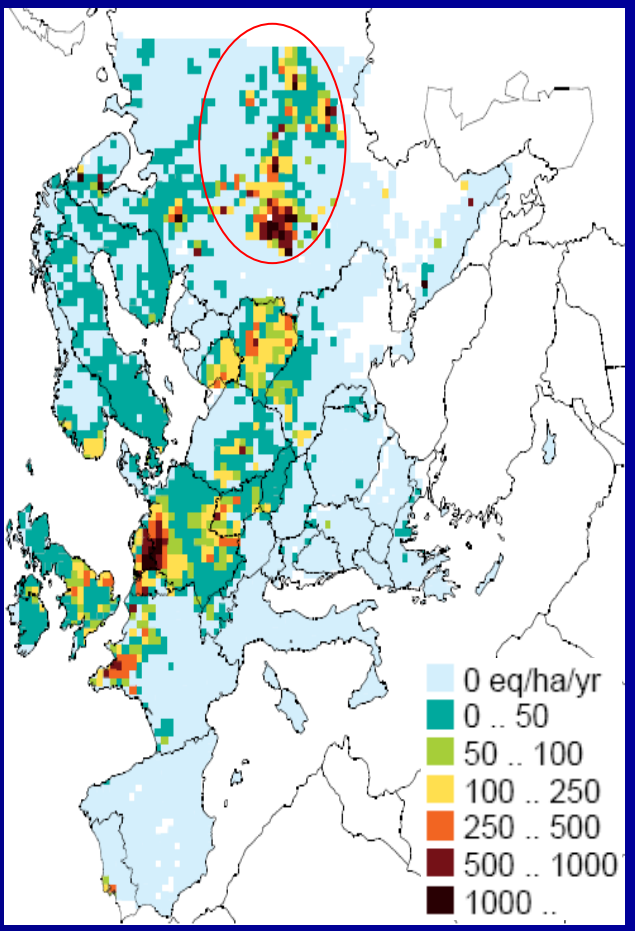
Without CS

Gothenburg Protocol revision
National 2010 Baseline

CIAM1/2010
National BL (COB)







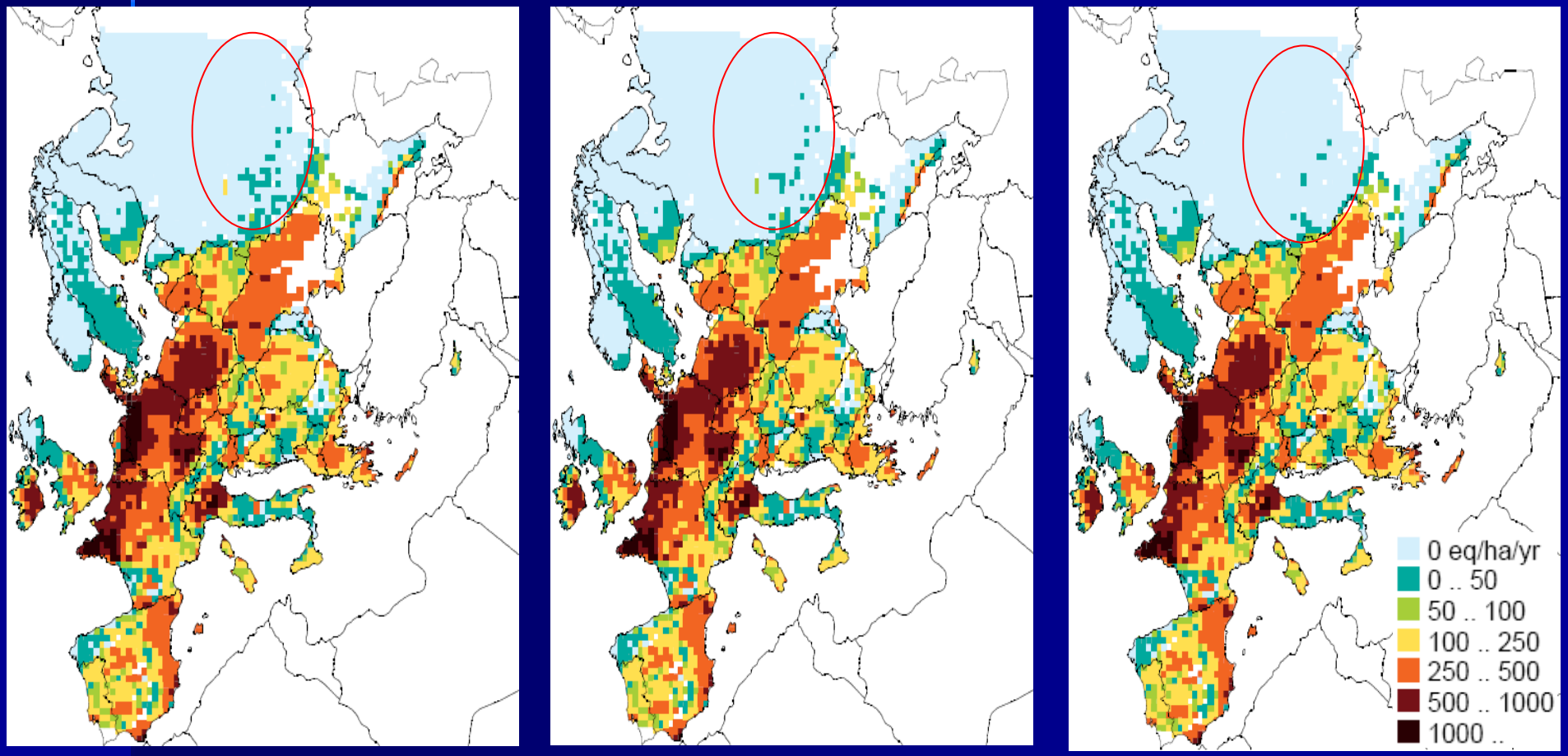
Exceedance of nutrient nitrogen critical loads

2020, investment option

Without CS

Gothenburg Protocol revision
National 2010 Baseline

CIAM1/2010
National BL (COB)



Activity plan for the 3 Step of the Project

- collection and verification of the input information for modeling for the regions of the Russian Federation ;
- refinement of the cost and regional coefficients put in the GAINS model, with participation of experts of the relevant agencies;
- establishing dependency coefficients “emissions-losses” by the grid cells for particular administrative units of the Russian Federation using the EMEP model calculations. Input of such dependencies to the GAINS model for calculating losses from particular regions of Russia to assess the interaction “region-to-region” and the impact on ecosystems (in terms of exceedance of CL) and on human health;
- carrying out experimental calculations with the GAINS model for solving environmental problems of the RF and preparation of decisions on accession to the Protocols of the Convention.

Thank You for Attention…

☺

Спасибо за внимание