Biodiversity Conservation Center

Leibniz Institute of Ecological Urban and Regional Development

МИНИСТЕРСТВО ПРИРОДНЫХ РЕСУРСОВ И ЭКОЛОГИИ РОССИЙСКОЙ ФЕДЕРАЦИИ

BfN Bundesamt für Naturschutz

International Conference on Natural Capital, Ecosystem Services and Biodiversity

Moscow, 19-20 November 2019

Ecosystem Services as a Driver for the Restoration and Wise Use of Peatlands

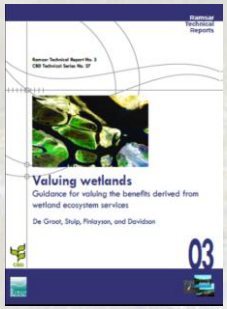
Tatiana Minayeva & Irina Kamennova

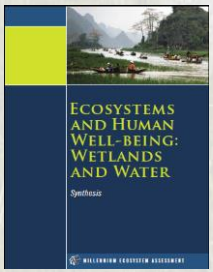
Care for Ecosystems

Институт лесоведения Российской академии наук

Wetlands International

Wetland ecosystem services





Regulating

- Erosion protection
- Climate regulation
- Biological control of pests and desease
- Hazard reduction
- Pollution control and detoxication
- Maintenance of hydrology

Provisional

- Food for humans
- Wetlands non-food products
- Genetic materials
- Biochemical products
- Fresh water
- Alternative livelihoods (derived from cultural and supporting services)

Supporting

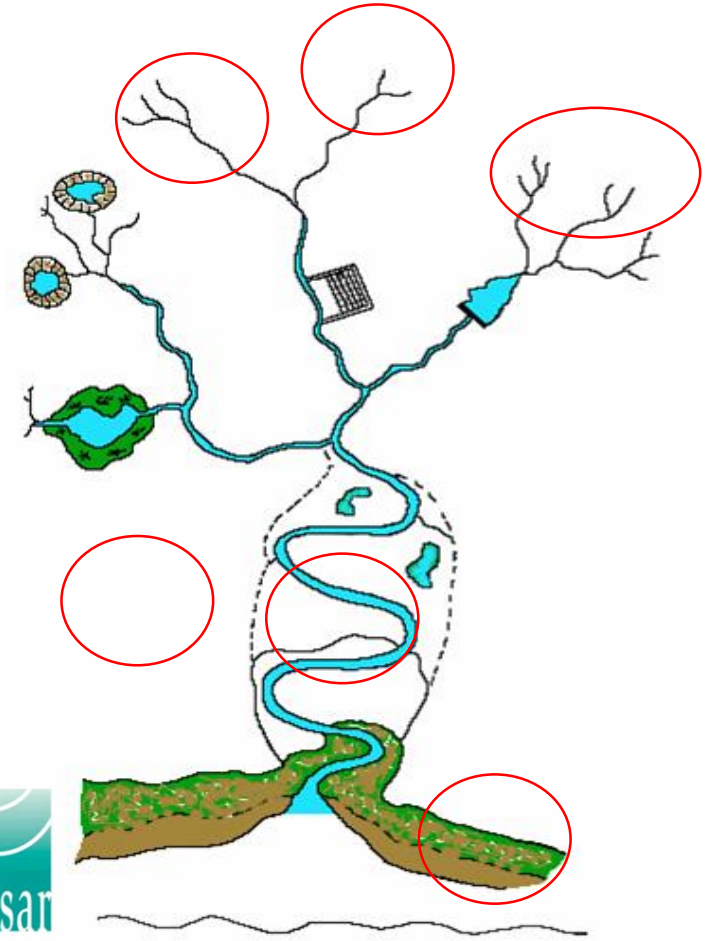
- Biodiversity
- Pollination
- Soil formation
- Nutrient cycling

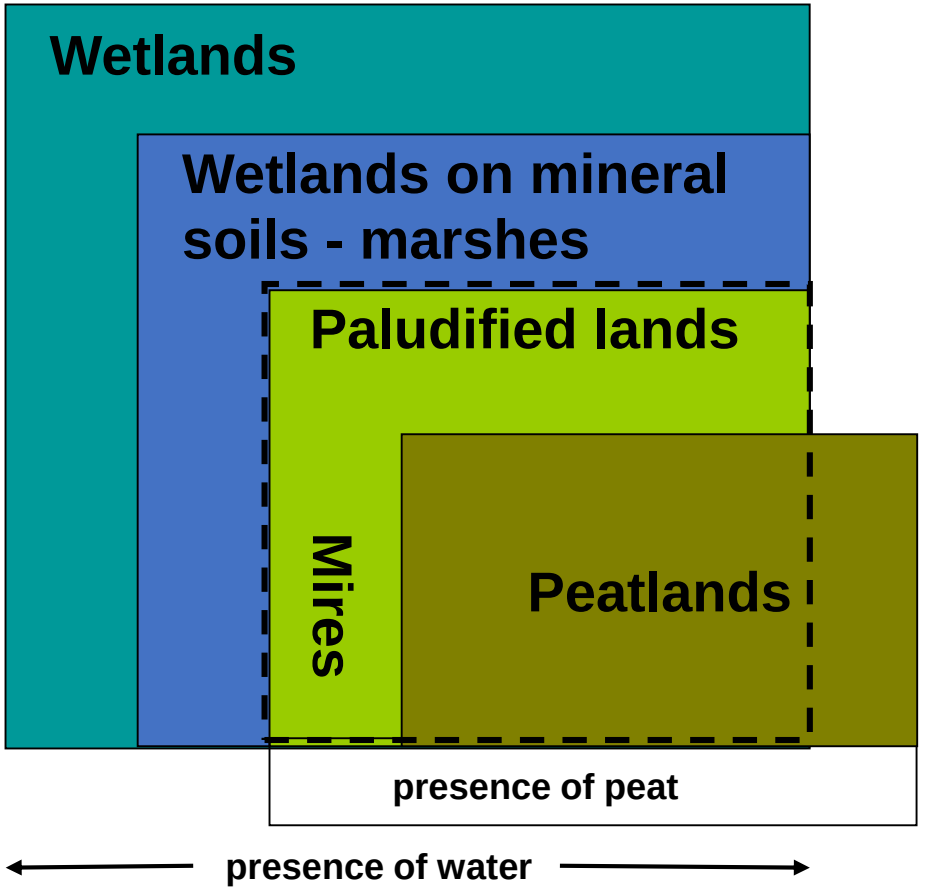
Cultural

- Recreation and tourism
- Spiritual and inspirational
- Scientific and educational

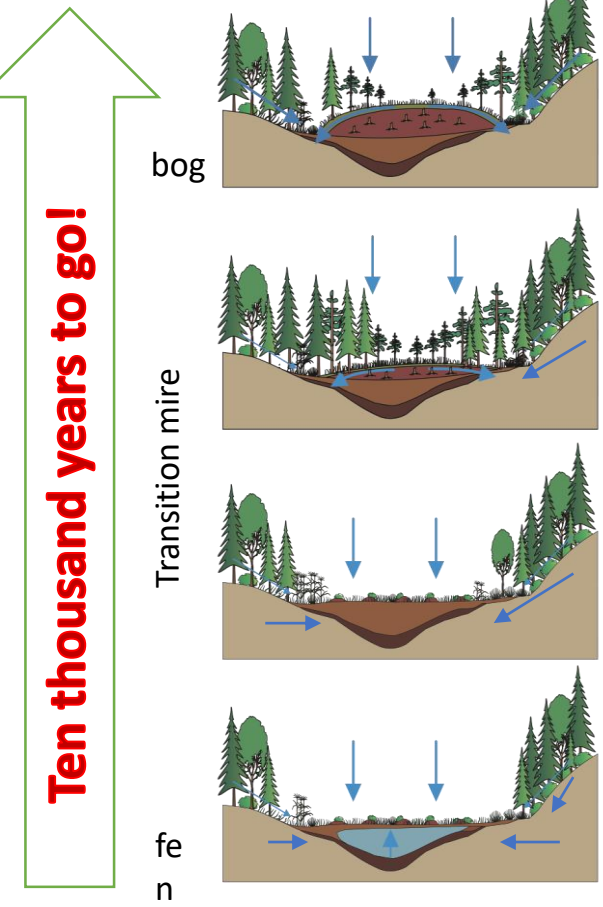
Ramsar

Wetlands and peatlands. Definitions.

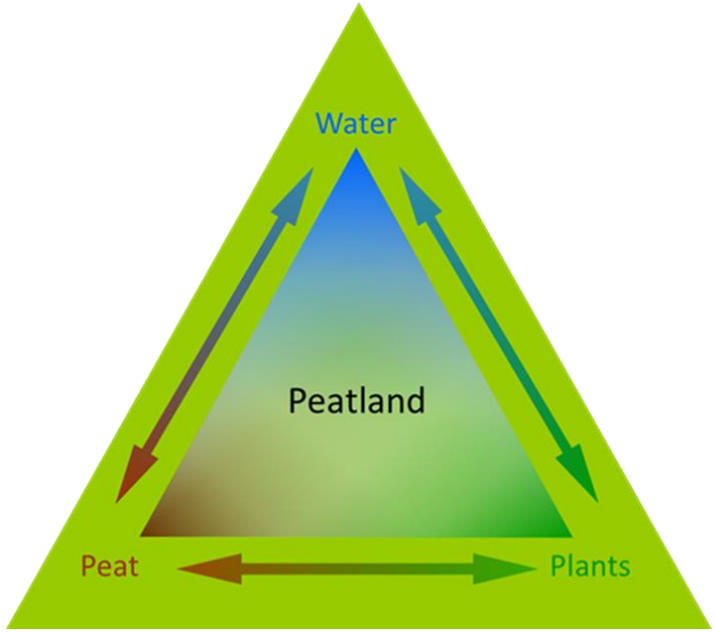




What are peatlands?



Terrestrial wetlands, accumulating biomass faster, than it decomposes, as long as they are wet – for example, thousands years



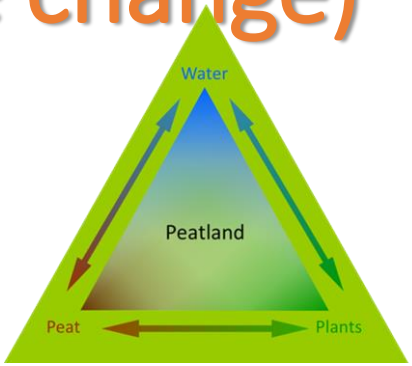
Peatlands ecosystem services (incentivised by relation to climate change)

Peat related ecosystem services:

GHG removal
carbon storage

soil protection and formation
hydrocarbons storage

Climate Change MITIGATION

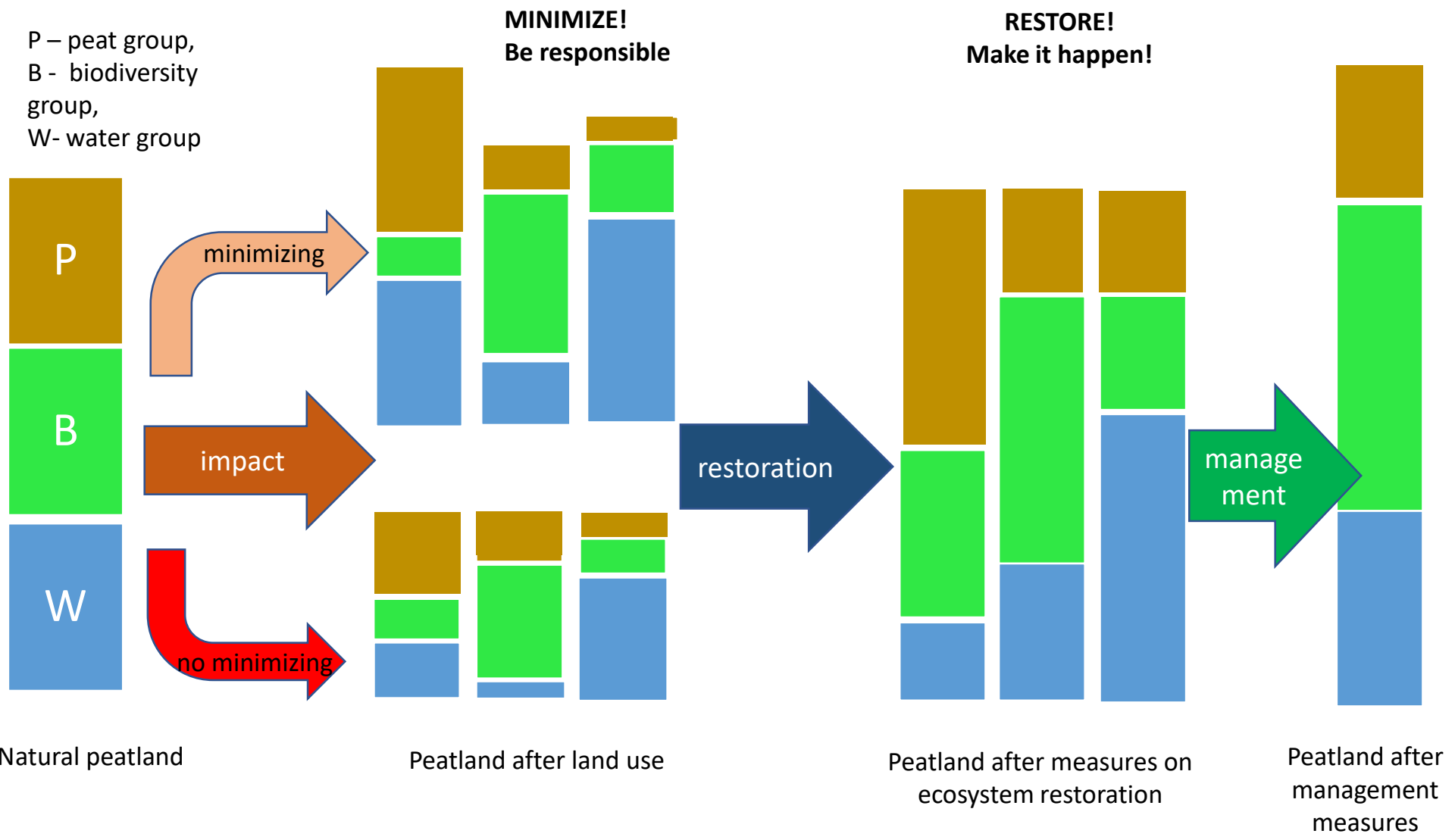


Biodiversity related ecosystem services:
productive pastures
productive habitats for native provisional species (plants and animals)
productive fish habitats,
shelter for rare species, maintenance migratory routes,
alternative livelihoods (tourism etc.)

Water related ecosystem services:
flood control
drought mitigation
permanent water supply
water cleaning
heatwave mitigation

Climate Change ADAPTATION

Land Use and Land Use Changes



Land use impacts: climate related implications

Land use case: crop production on peatlands (drained/wet)

Practices (hazards): clearing, ditching, fertiliser application,

Impacts: drainage, eutrophication, DOM water pollution

Losses: soil subsidence, emissions from peat burning, emissions from peat decomposition, CH_4 emissions due to eutrophication and DOM, biodiversity losses

losses

losses

Avoidance/offsetting

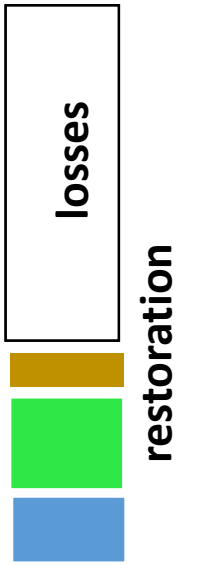
Land use impacts: climate related implications

Land use case: Peat extraction

Practices (hazards): initial clearing, drainage, peat extraction

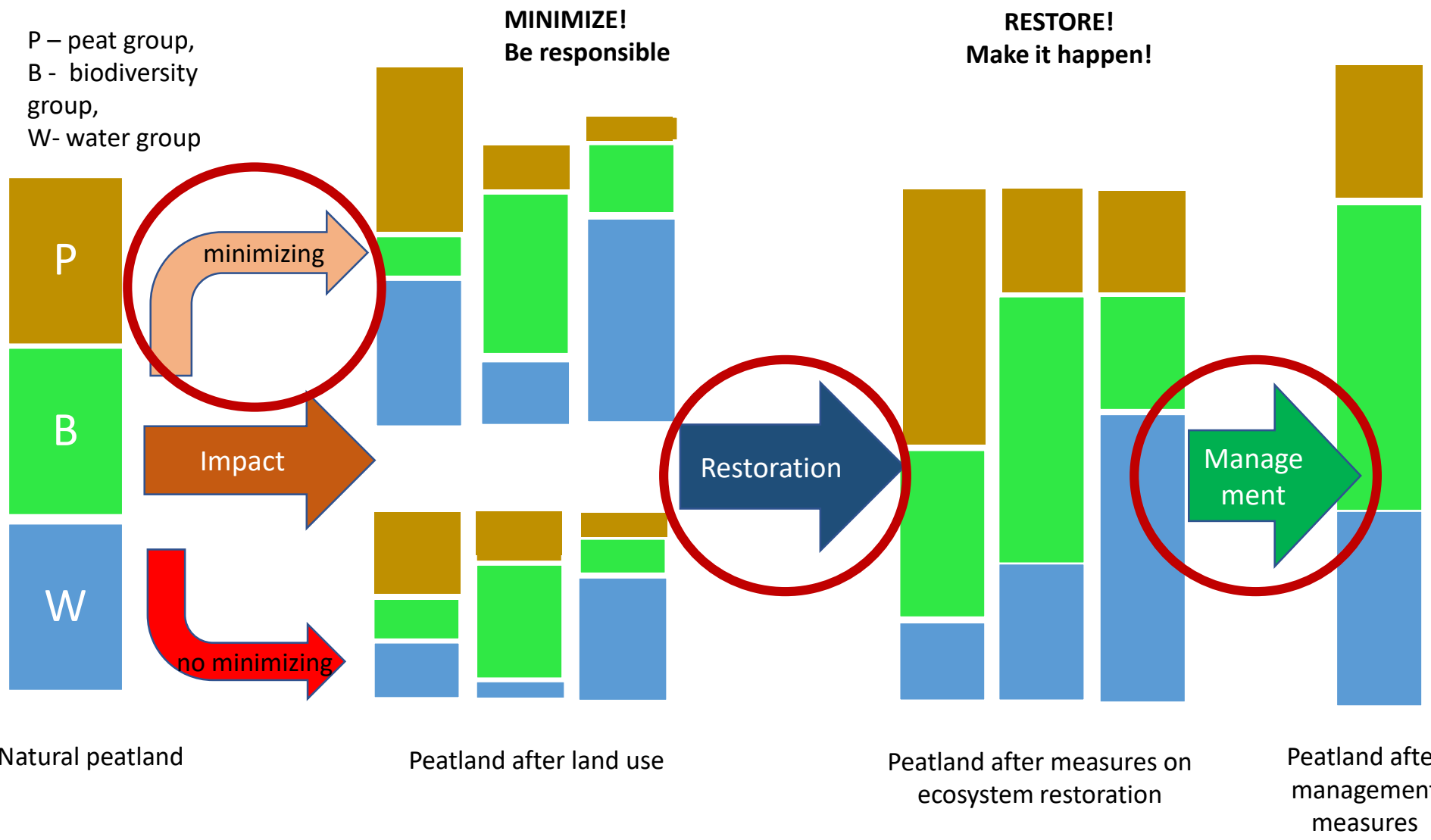
Impacts: severe change of hydrology, destroyed carbon storage and loss of vegetation cover, peat fires

Losses: flood resilience, water storage/discharge capacity, carbon storage, GHG emissions in course of entire extraction time (25 years) and fires



losses

Ecosystem services and land use



Political framework for climate smart land use

National Determined Contributions for non-Annex 1 countries

Mitigation:

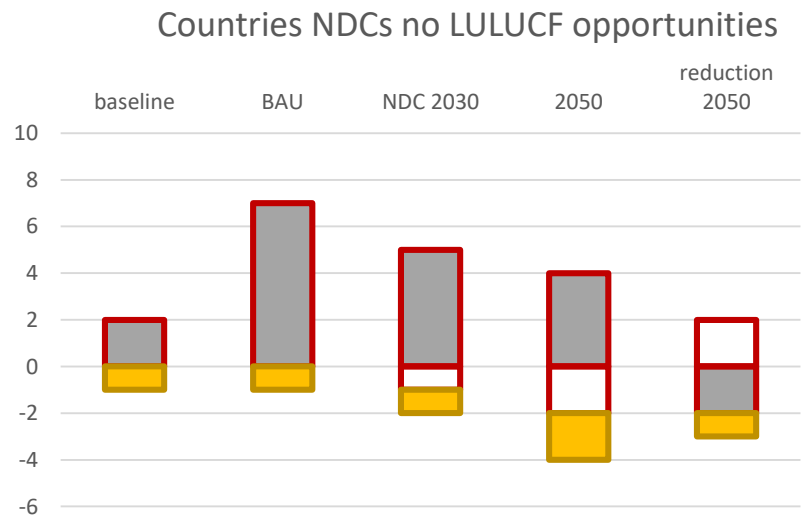
reduction: afforestation; wetlands restoration

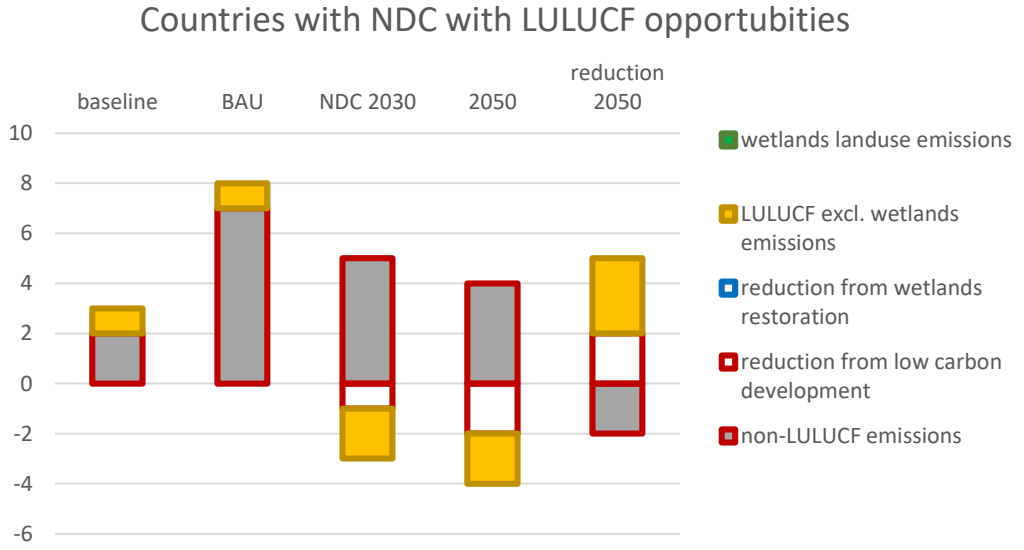
removals:

carbon stock protection

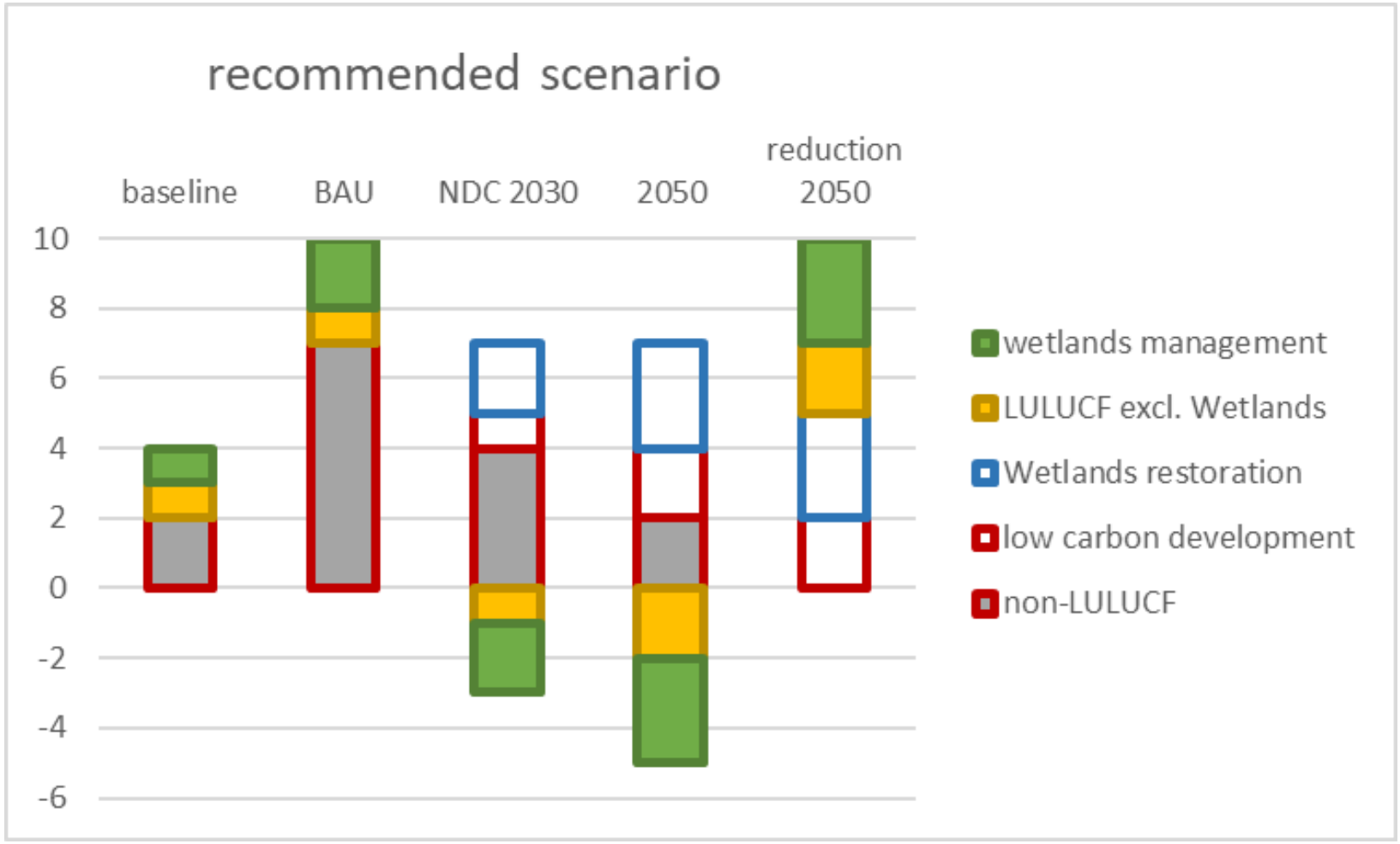
Adaptation:

Enhancing and maintaining wetlands/peatlands ecosystem services





NDC as political framework for peatland ecosystem services restoration



Political framework for restoration of peatland ecosystem services:

- Include realistic baseline data for the LULUCF sector in to NDC (2020)
- Include wetlands-based emissions considering PEATLANDS while applying IPCC Wetlands Supplement 2013 for reporting on Wetlands
- include significant LULUCF/wetlands/peatlands related reductions, based on peatland management and restoration activities
- Increase capacity for the Monitoring, Reporting and Verification (MRV) of wetlands/peatlands related activity
- Include corporate business responsibilities for peatland actions in NDC
- Use opportunity of UN Ecosystem Restoration Decade (2021-2030)

Restoring peatlands in Russia for fire prevention and climate change mitigation - PeatRus

– a story of success or a successful story?

Objectives:

- reducing peat fires,
- mitigating climate change by reducing GHG emissions,
- maintaining biodiversity
- enhancing ecosystem services availability to local stakeholders

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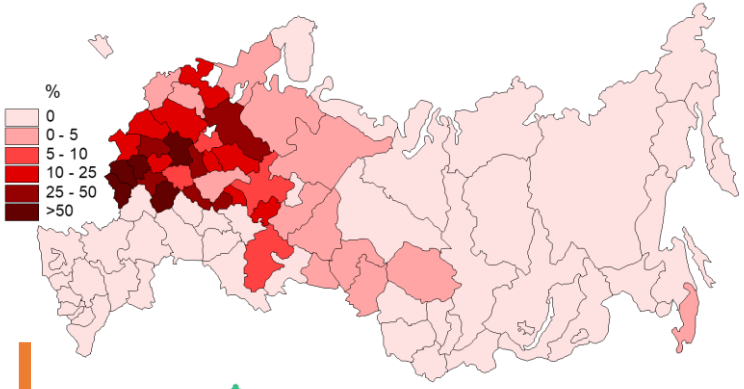
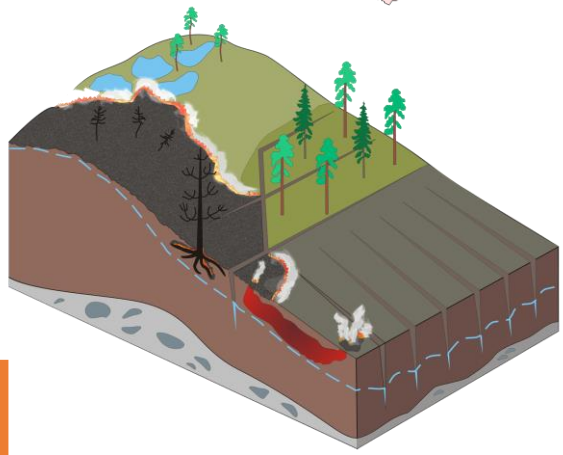
PeatRus in facts

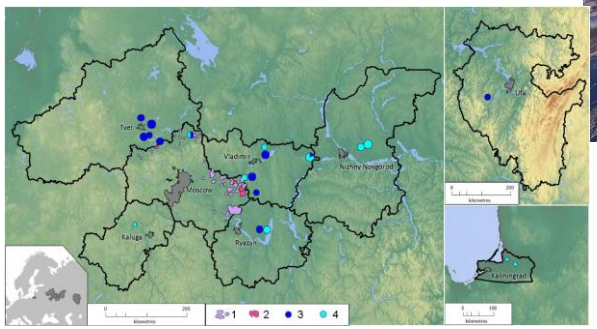


Emission reduction up to 242,000 tCO2eq per annum



2011 – 2019

- **100 000 hectares fire reduction,**
- **22 000 ha from them by ecosystem restoration**



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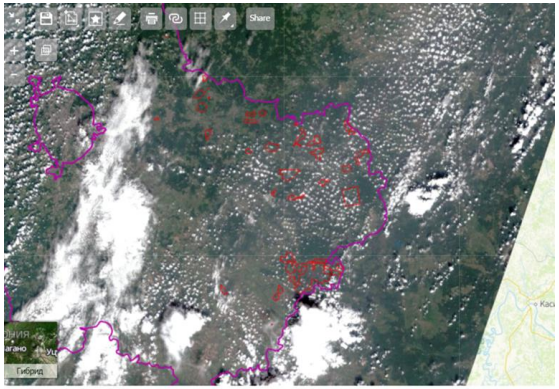
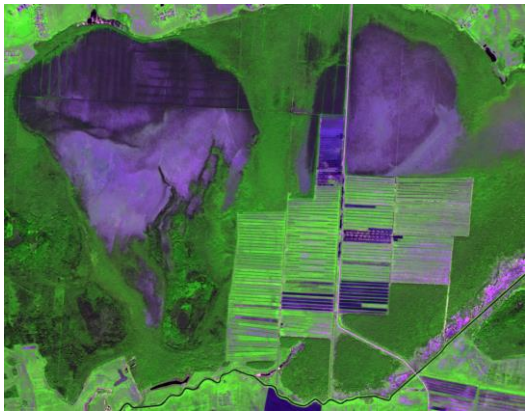
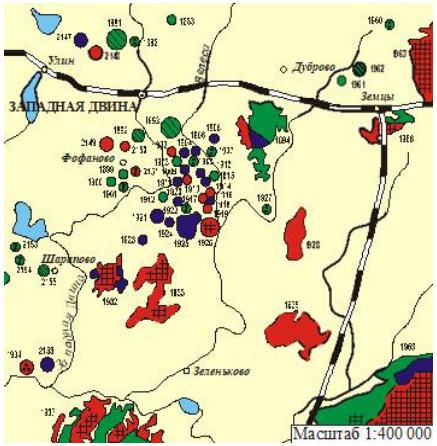
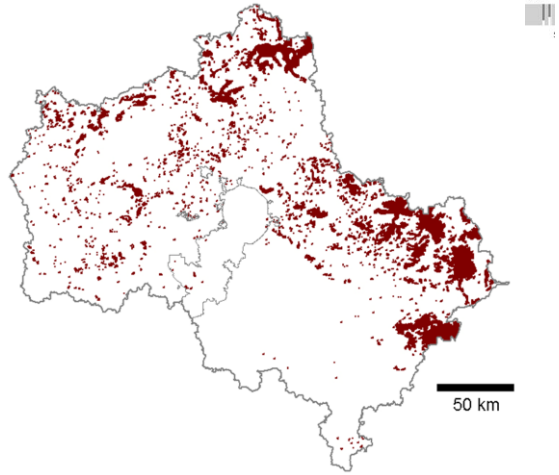
Designation of sites

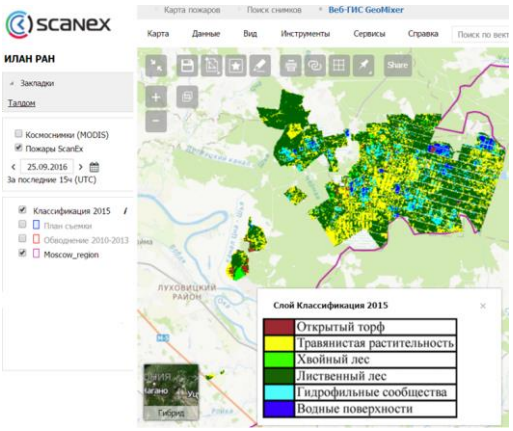
inventory → DSS → prioritisation











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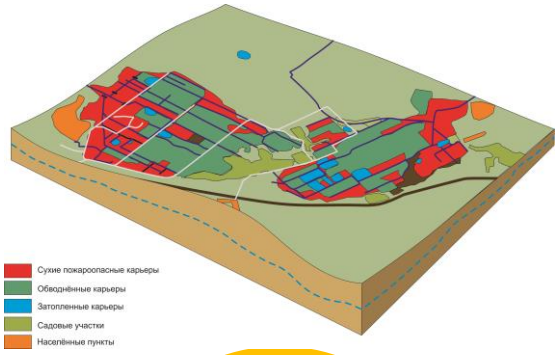
Project plan



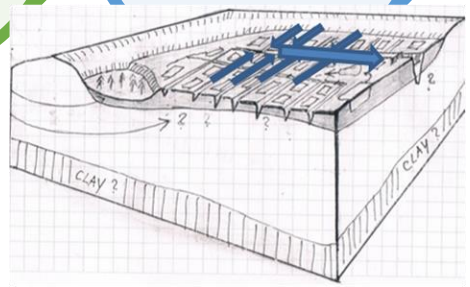
Baseline study

Restoration concept

Design

Implementation

Monitoring
Assessment
Feedback



Peatland restoration methodology is based on a multi-stage approach. At every stage, peatland restoration is based on up-to-date information on ecosystem status, social-economic situation, and legal aspects of project implementation

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Monitoring/Reporting/Verification

Land/vegetation classes

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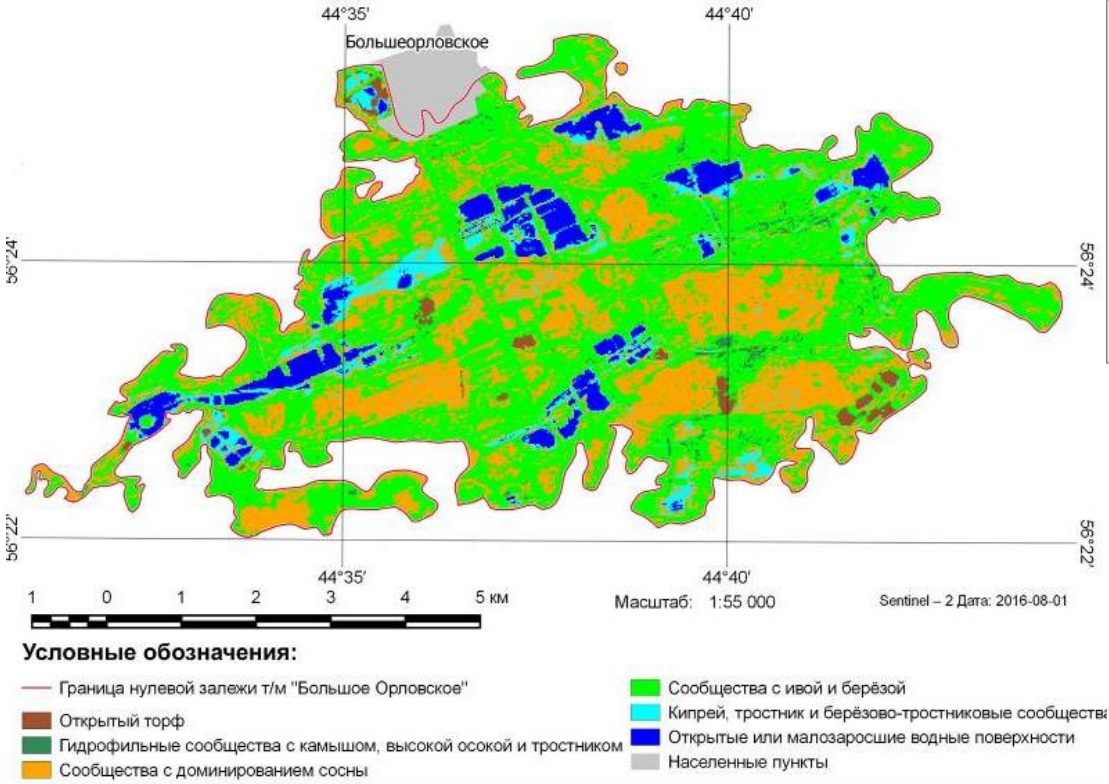
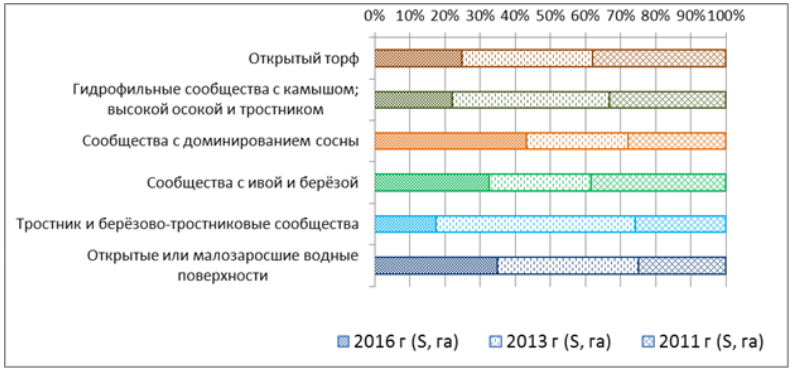
Spatial analysis of land use classes





Идентифицируемый класс	2016 г (S, га)	2013 г (S, га)	2011 г (S, га)
Открытый торф	59	89	90
Гидрофильные сообщества с камышом; высокой осокой и тростником	39	80	59
Сообщества с доминированием сосны	1422	954	917
Сообщества с ивой и берёзой	2356	2097	2766
Кипрей; тростник и берёзово-тростниковые сообщества	275	889	402
Открытые или малозаросшие водные поверхности	286	329	203
Земли населенных пунктов	31	31	31
Общий итог	4455	4468	4468

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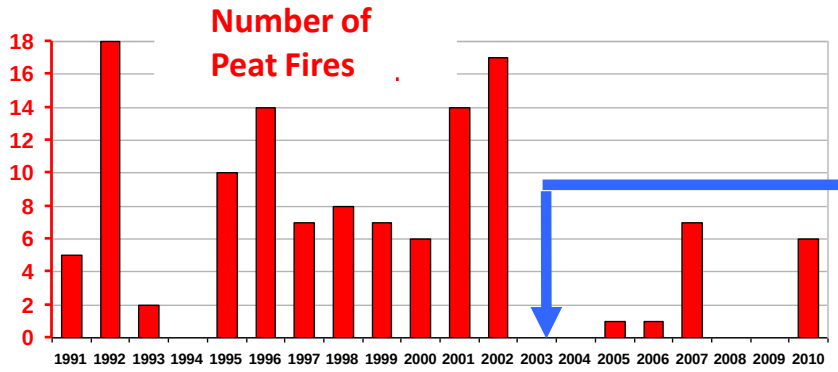
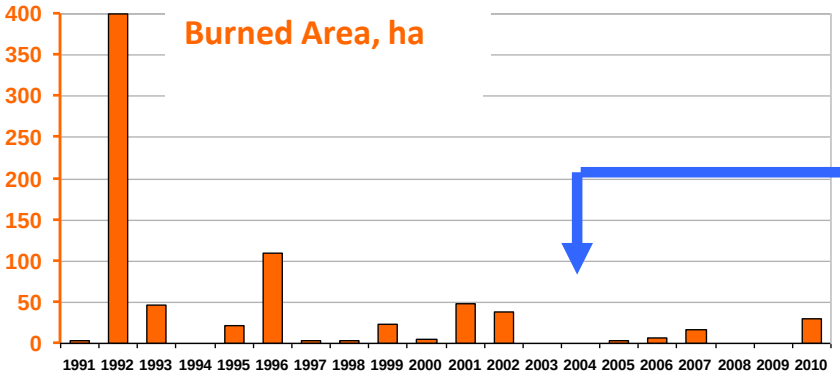
Target 1: Reduce Peat Fires



During 2003 – 2010 over 2000 ha from 7500 ha of abandoned milled extracted peatlands were rewetted



Peat fires in Meschera National Park in 1991-2010

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Target 2: Climate change mitigation by reduction of GHG emissions

The objective:

- To raise water level and inundate remaining peat layer
- To prevent water losses from the mire massif

What had been done and achieved

- Closed ditches + In special cases - level surface
- 4.5 t CO_2eq. per ha-year; Total: ~ 300,000 t CO_2eq per year

How we assessed

- Land/vegetation classes = emission factors: IPCC and Tier 2
- Calculations of carbon loss during peat fires

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Target 3: Maintaining biodiversity

Obligatory helofits

What we planned to do

- To launch natural succession towards establishing natural communities

What had been done and achieved

- Re-wetting
- No special activities for biodiversity maintenance
- Reduction of disturbed classes area, reduction of invasive species, increase of presence peatland related species, forming of mosaic

How we assessed

- Coverage of peatland related vegetation classes
- The percentage of peatland related species (plants, birds, invertebrates)

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Target 4. Enhancing availability of ecosystem services to all stakeholders

What we planned to do:

To bring back ecosystem services lost due peatland transformation

To raise awareness of stakeholders on ecosystem services provided

To enhance livelihoods of local communities by restoration of peatland related natural functions and ecosystem services

How we assessed

- more than 500 local residents interviewed,
- growing stakeholder number engaged in project development,
- positive project evaluation by all interested parties and sustainable thinking development

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your sustainability consultant

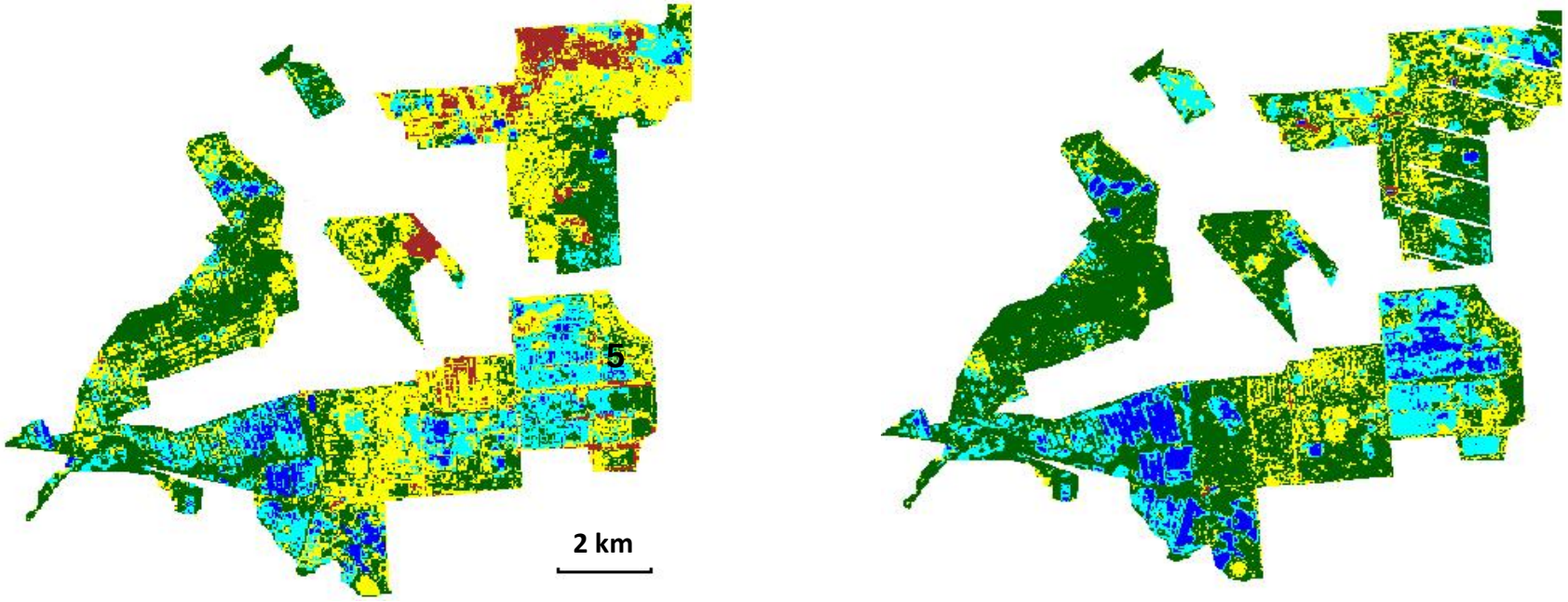
Questions for phase 3 (2020-2023):

- **Are ecosystem services enhanced?**
- **Is monitisation possible?**
- **Is ecosystem restoration economically effective (cost-benefit analysis)?**

Examples of land/vegetation changes after rewetting during 2010-2015 years

(2011 image already include effect of 2010 rewetting)

2011_07_24 **2015_08_24**



Fire-hazardous land/vegetation classes: brown – bare peat, yellow – dry grass communities;
Not fire-hazardous land/vegetation classes: blue – open water, blue-green – hydrophilic vegetation;
Medium fire-hazardous land/vegetation classes: different green – forested and sparsely treed.

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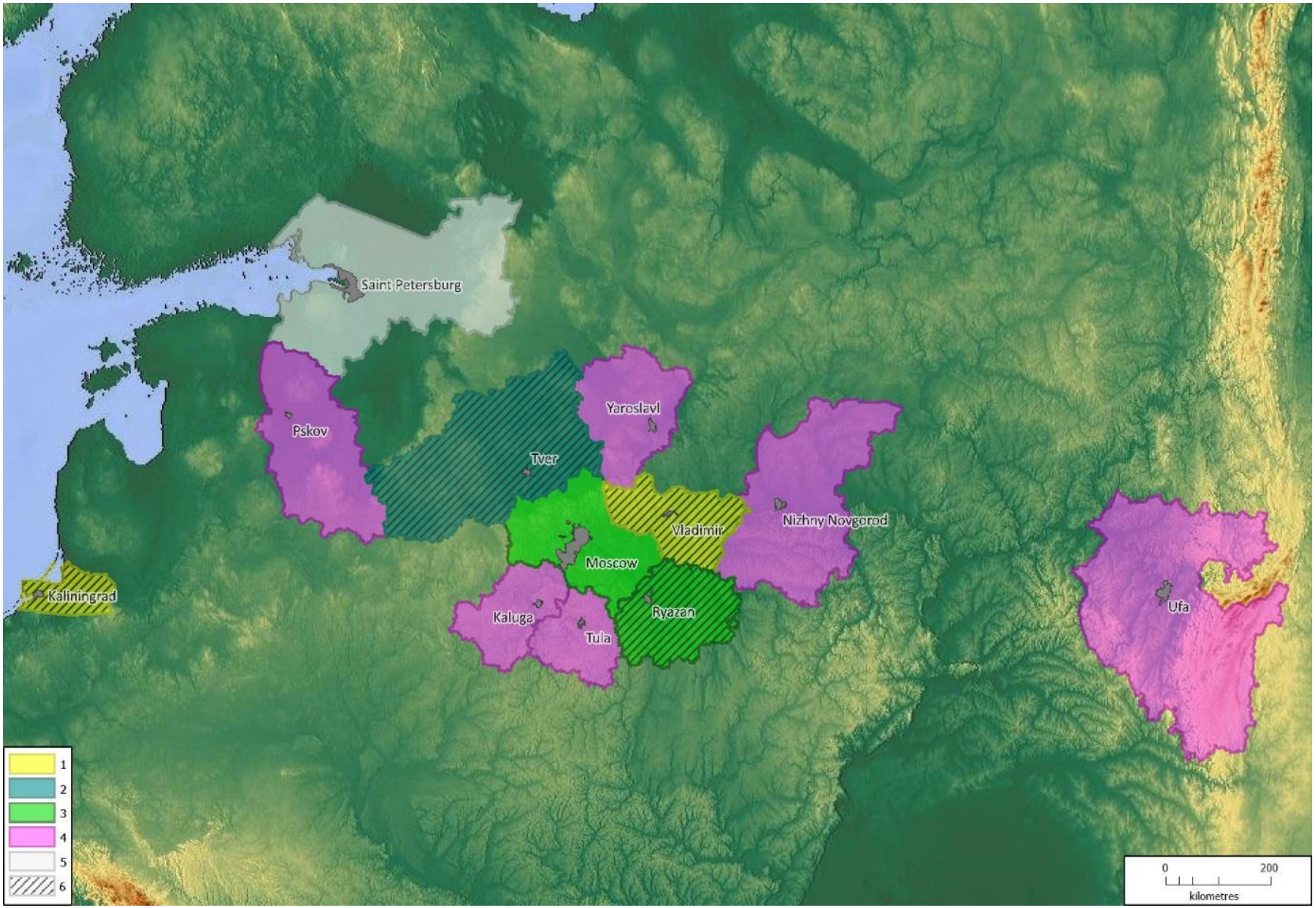
For your information our regions for 2020-2023




MOOR
MUSS
NASS!
Mires should be wet!
For mire, for land, for the climate, for ever
Moor muss nass!
Fürs Moor, fürs Land, fürs Klima, für immer!