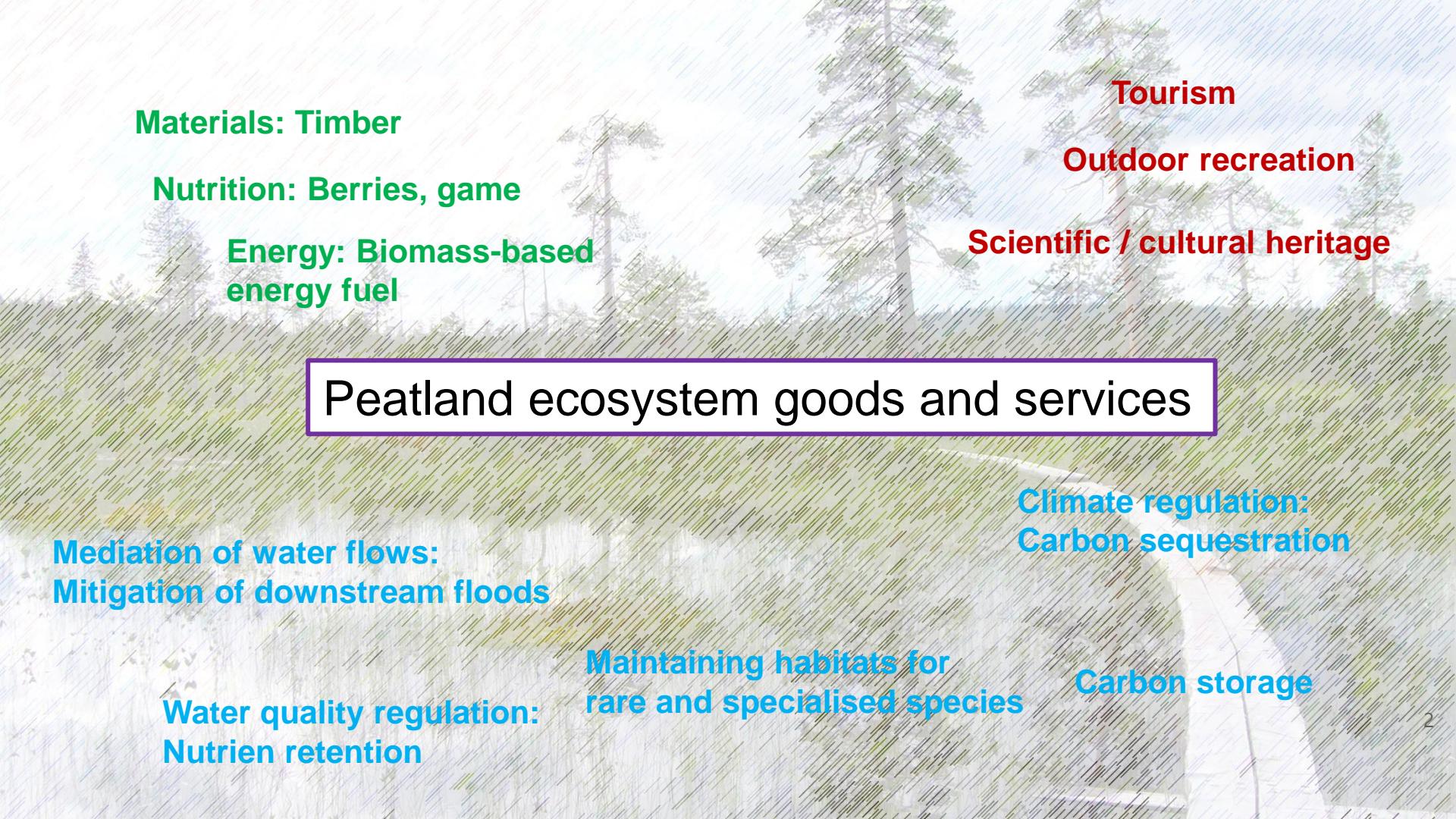


# **Restoring peatland ecosystem services – case study Finland**

Kaisu Aapala  
Finnish Environment Institute  
Developing new funding mechanisms  
for peatland restoration in Finland – workshop  
Tampere, 28.9.2018





**Materials: Timber**

**Nutrition: Berries, game**

**Energy: Biomass-based  
energy fuel**

**Tourism**

**Outdoor recreation**

**Scientific / cultural heritage**

## Peatland ecosystem goods and services

**Mediation of water flows:  
Mitigation of downstream floods**

**Water quality regulation:  
Nutrient retention**

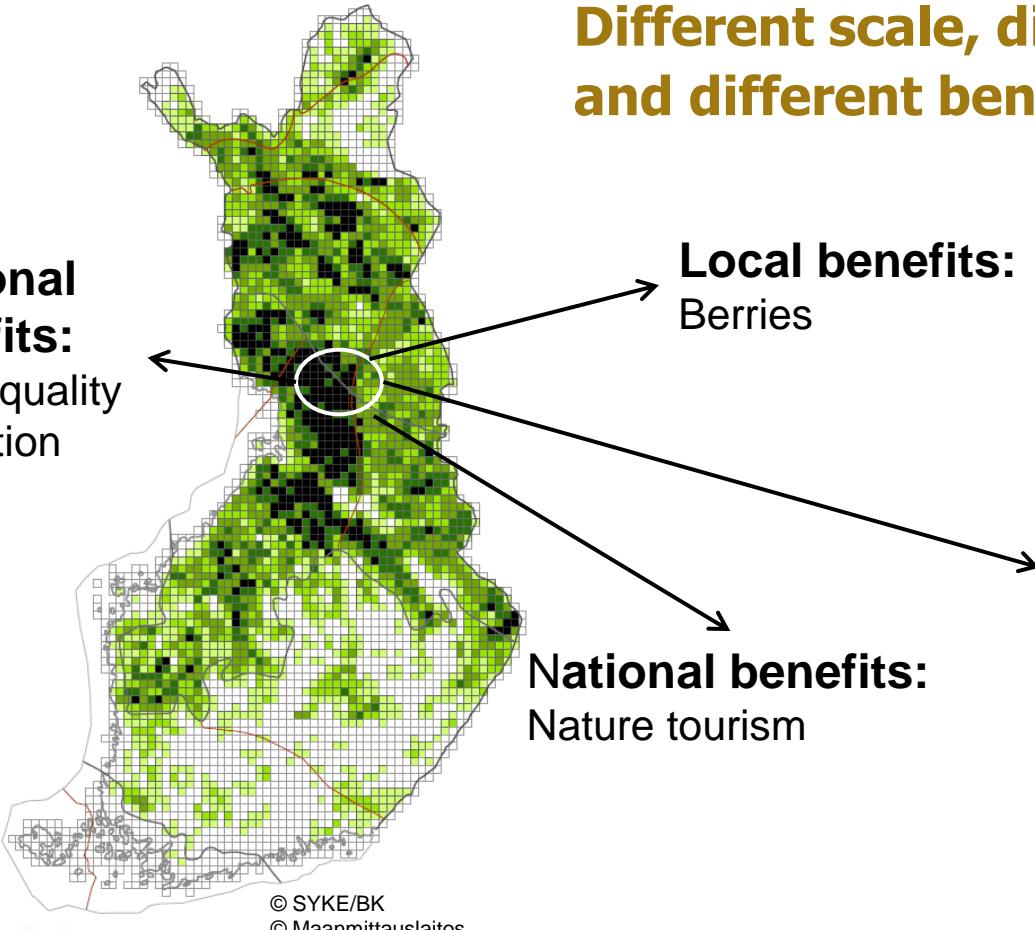
**Climate regulation:  
Carbon sequestration**

**Maintaining habitats for  
rare and specialised species**

**Carbon storage**

# Scale is important - Different scale, different benefits and different beneficiaries

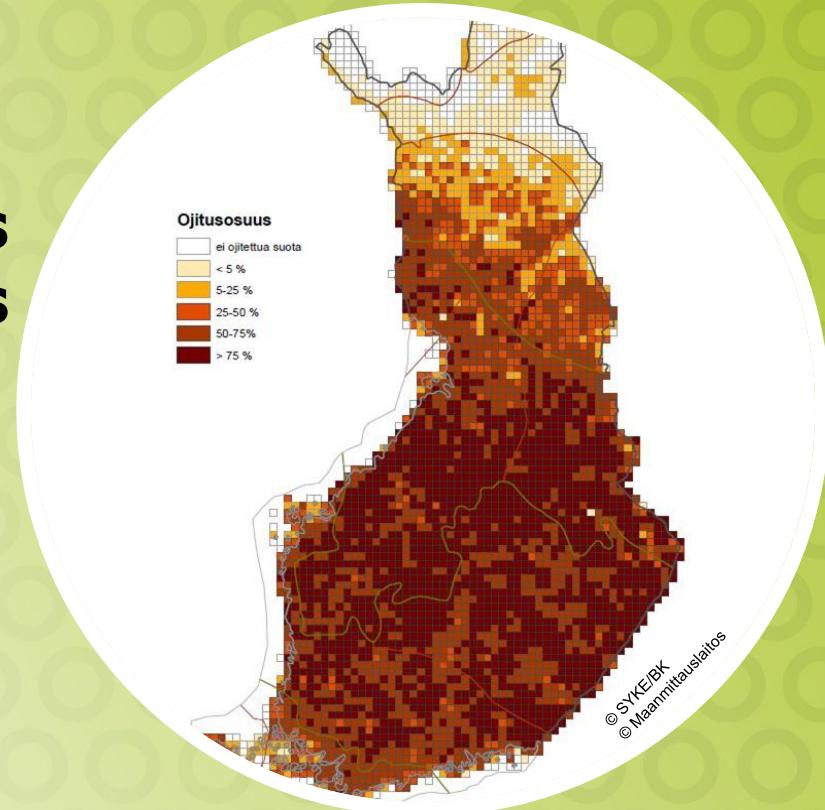
**Regional  
benefits:**  
Water quality  
regulation



# **Valuing peatland ES - "flow" of services from ecosystems to beneficiaries**

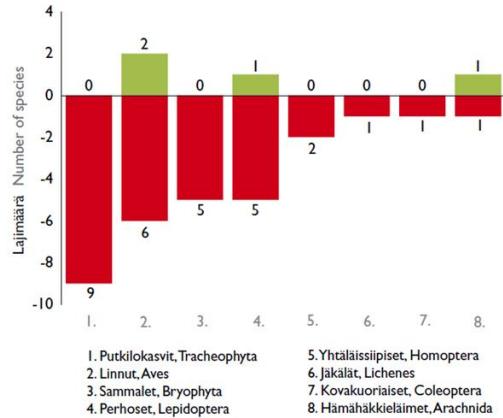
- Stakeholders benefit from, and therefore also value, ES at different scales
- Different services can co-exist and multiple values of mires and peatlands can be maintained - synergies
- Trade-offs between different services
- Quantifying exact benefits is difficult – but possible
- ES are difficult to monetize – but possible

**Drainage for forestry is  
one of the main drivers  
for the decline in  
biodiversity and  
ecosystem services in  
Finnish peatlands**



# Decline in biodiversity and ecosystem services

- Species and habitats have become threatened
  - Over 200 Red Listed mire species (Rassi et al 2010)
  - Over 70 % of mire habitats on the Red List (Kaakinen et al 2008)
- Conservation status of all mire habitats (Habitats Directive) is unfavourable
- While timber production has substantially increased, other ES have declined



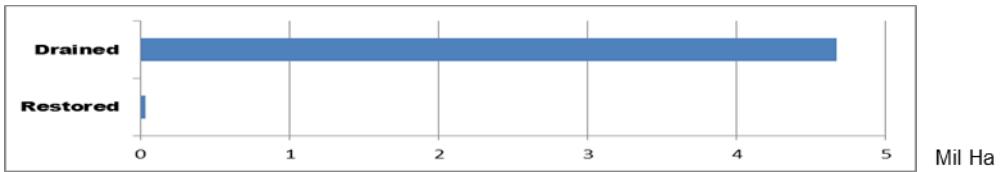
**Restoration is a good  
tool to improve both  
biodiversity and  
ecosystem services**



# Policy drivers for peatland restoration

- **Global**
  - CBD – Target 15:By 2020 ... restoration of at least 15 % of degraded ecosystems
  - Climate change mitigation policies – complicated but possible
  - Ramsar resolution (2015) - Peatlands, climate change and wise use
    - “to minimize the degradation, as well as promote restoration, and improve management practices of those peatlands and other wetland types that are significant carbon stores, or have the ability to sequester carbon”
- **EU biodiversity strategy –... 15 % restoration by 2020**
- **National**
  - Biodiversity strategy –... 15 % restoration by 2020
  - Government paper on sustainable use and conservation of peatlands (2012)
  - Action Plan for the Adaptation to Climate Change of the Environmental Administration 2022 – To promote activities that save and restore peatland carbon stores, and look for possibilities to find new financing instruments (global carbon markets, voluntary markets) for peatland restoration

# Lot of potential for restoration

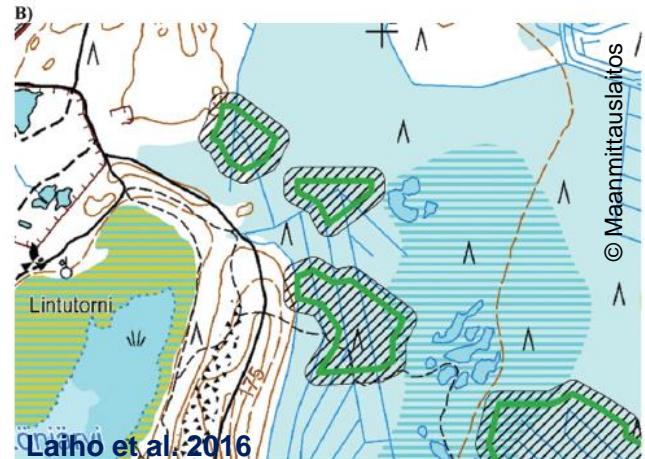
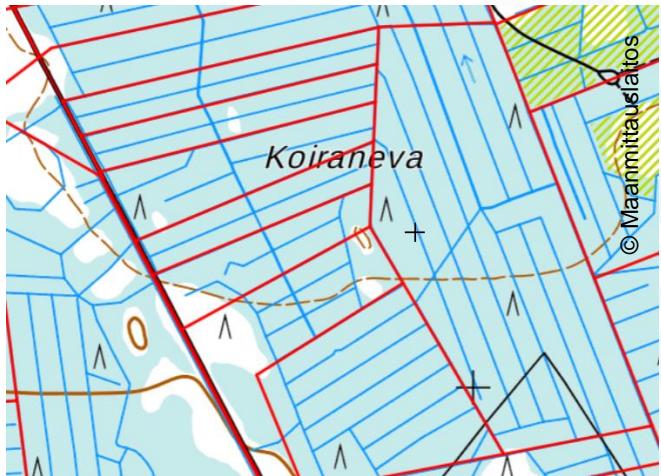


- In protected areas – at least 15 000 ha of drained peatlands still in need of restoration (Kotiaho et al 2015)
  - New protected areas have been established since → more restoration needed
- A lot of potential outside protected areas, e.g.
  - Estimated to be 0,5 – 1 mil ha of unprofitable drained peatlands (Laiho et al. 2016)

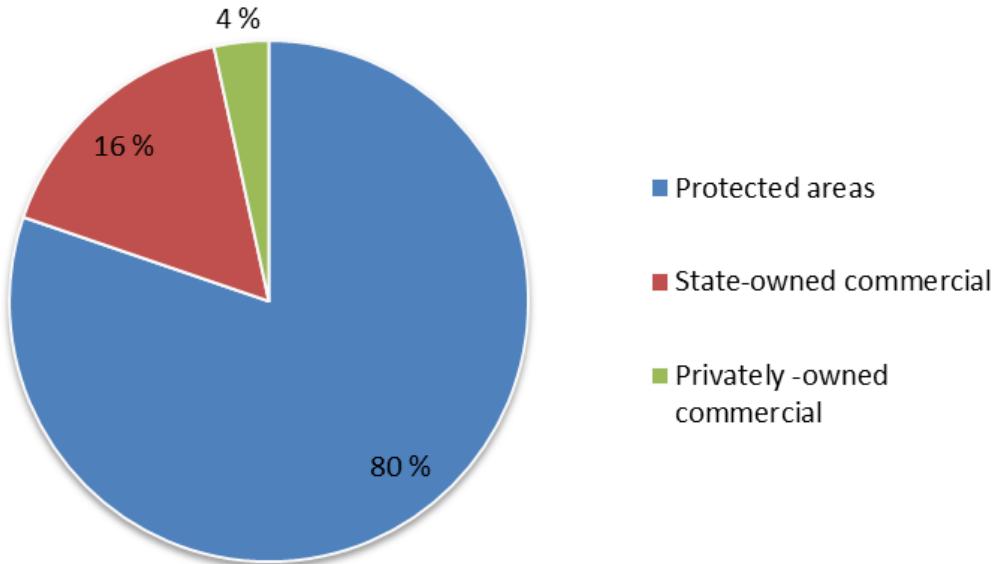
# Some of the challenges

Who owns the drained peatlands?

- Private, state-owned, forestry companies, others - but how much each?
- Fragmented ownership – several owners at one site
- Spatially fragmented unprofitable drained areas
  - How to get ecologically sustainable "units" to restore



# We know how to do it - over 30 000 ha restored so far



Source: Similä, Nyman, Ruokanen 26.1.2018

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# We are accumulating data on the recovery of bd and es - research and systematic monitoring "since day one"

## Evidence so far

- Recovery of **plant communities** starts usually immediately, but there can be significant heterogeneity (e.g. Haapalehto et al 2010, 2017; Laine et al 2011; Maanavilja et al 2014)
- Short term monitoring show positive effects on mire specialist species in several species groups, such as **mire butterflies** (Noreika et al 2016), **mire ants** (Punttila et al 2016), **dragonflies and damselflies** (Elo et al 2015), **carabid beetles, spiders, crane flies and moths** (Noreika et al 2015)
- Effects on water and climate regulation

# Options and costs of meeting the Aichi 15 % target – national prioritization

(Kotiaho et al 2015; 2016)

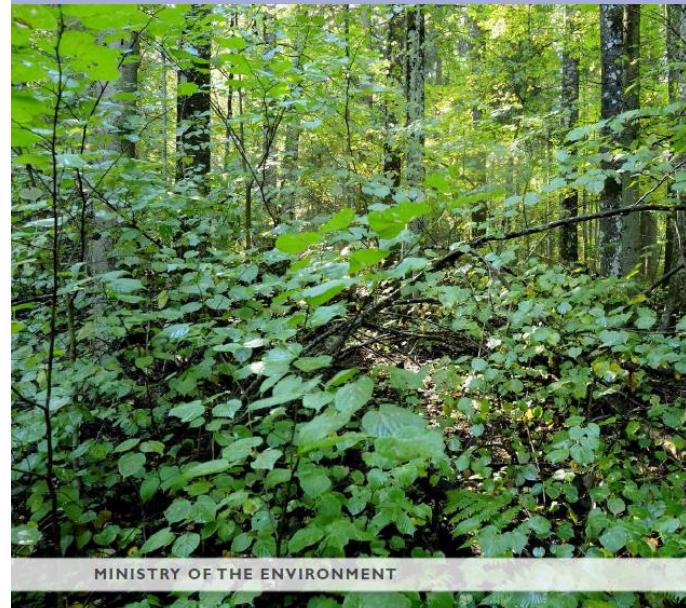
- Prioritizing restoration measures within and between ecosystem types
- Balanced and cost-effective restoration measure portfolios within each ecosystem type
- Effects on biodiversity and key ecosystem services
- Peatland ecosystem services assessed included:
  - Carbon storage, water flow regulation, water quality regulation, game, fiber and energy, medicine and cosmetics, cultural services, historical archive, supporting services

REPORTS OF THE MINISTRY OF THE ENVIRONMENT 15en | 2016

## Framework for assessing and reversing ecosystem degradation

Report of the Finnish restoration prioritization working group on the options and costs of meeting the Aichi biodiversity target of restoring at least 15 percent of degraded ecosystems in Finland

Janne S. Kotiaho, Saija Kuusela, Eini Nieminen, Jussi Päivinen and Atte Moilanen



MINISTRY OF THE ENVIRONMENT

# Tools for prioritization are available

- Spatial prioritization – e.g. Zonation
- LifePeatlandUse – re-use of low-productive drained peatlands that have been left aside from active forestry
  - Tools to evaluate the cost-efficiency of different re-use options (restoration is one of the options) - balancing between biodiversity, environment and economy

# Current financing instruments

- In protected areas
  - EU LIFE programme – very important but only for N2000 areas
  - Currently no financing for restoration in protected areas outside N2000 network
- Outside protected areas
  - Privately owned peatlands – some government money for restoring peatlands
  - State-peatlands - hunting licence money to restore game habitats
  - Voluntary work
  - Biodiversity / carbon offsets – emerging

# **What we need is a National Action Plan for Peatland Restoration**

- Clear overall picture of the needs, possibilities and benefits
- Engage all stakeholders
- Communication
- Alternative sources of funding
  - Such as market-based compensation or
  - Voluntary payments for ecosystem services

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