

FOREXCLIM Project Meeting  
*Ljubljana, 25 April 2018*

# **Forest management in the face of Climate Change**

**The European state forests' perspective**

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# Changing climate

## Arctic

- Temperature rise much larger than global average
- Decrease in Arctic sea ice coverage
- Decrease in Greenland ice sheet
- Decrease in permafrost areas
- Increasing risk of biodiversity loss
- Intensified shipping and exploitation of oil and gas resources

## Coastal zones and regional seas

- Sea-level rise
- Increase in sea surface temperatures
- Increase in ocean acidity
- Northward expansion of fish and plankton species
- Changes in phytoplankton communities
- Increasing risk for fish stocks

## North-western Europe

- Increase in winter precipitation
- Increase in river flow
- Northward movement of species
- Decrease in energy demand for heating
- Increasing risk of river and coastal flooding

## Mediterranean region

- Temperature rise larger than European average
- Decrease in annual precipitation
- Decrease in annual river flow
- Increasing risk of biodiversity loss
- Increasing risk of desertification
- Increasing water demand for agriculture
- Decrease in crop yields
- Increasing risk of forest fire
- Increase in mortality from heat waves
- Expansion of habitats for southern disease vectors
- Decrease in hydropower potential
- Decrease in summer tourism and potential increase in other seasons

## Northern Europe

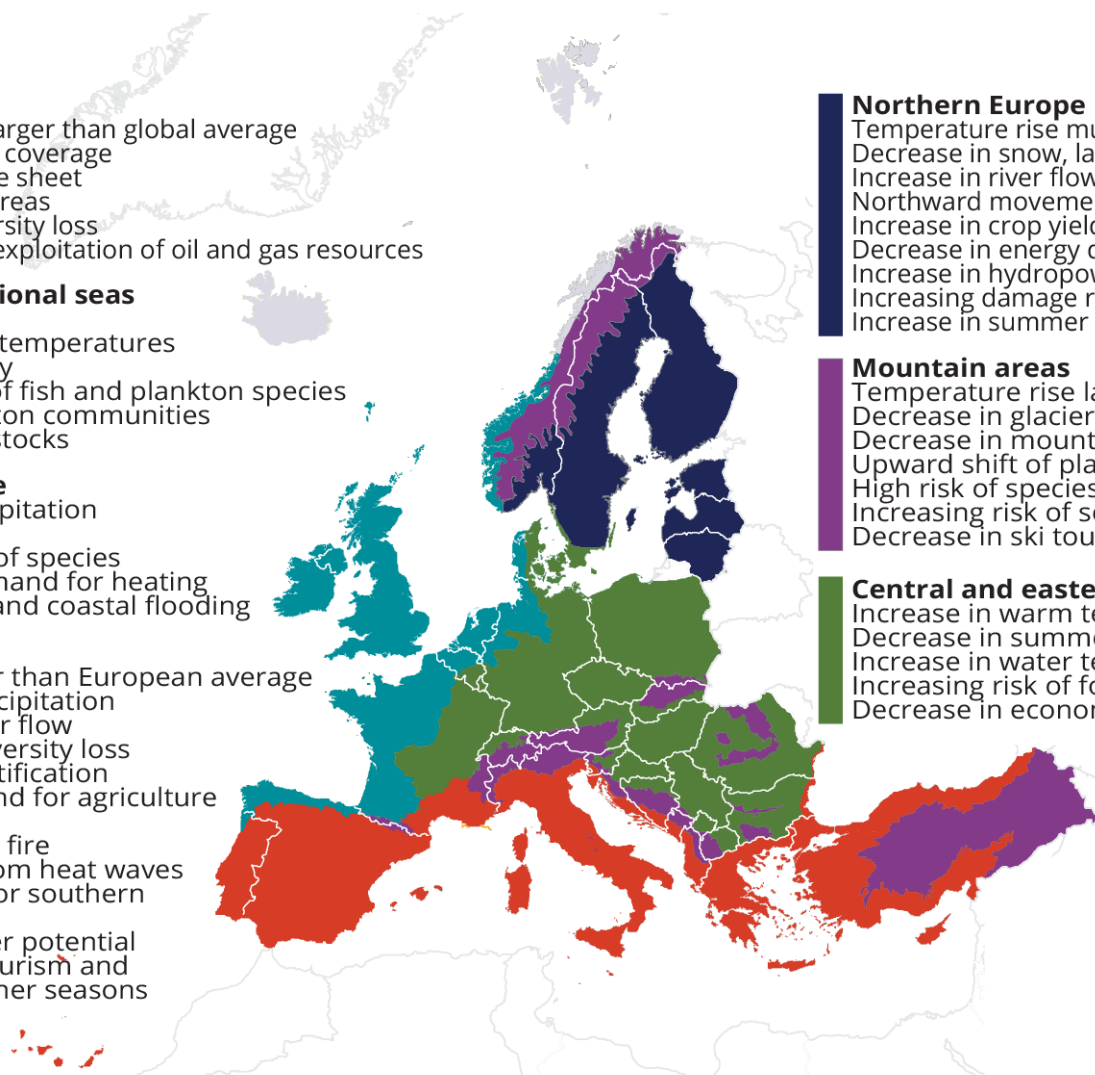
- Temperature rise much larger than global average
- Decrease in snow, lake and river ice cover
- Increase in river flows
- Northward movement of species
- Increase in crop yields
- Decrease in energy demand for heating
- Increase in hydropower potential
- Increasing damage risk from winter storms
- Increase in summer tourism

## Mountain areas

- Temperature rise larger than European average
- Decrease in glacier extent and volume
- Decrease in mountain permafrost areas
- Upward shift of plant and animal species
- High risk of species extinction in Alpine regions
- Increasing risk of soil erosion
- Decrease in ski tourism

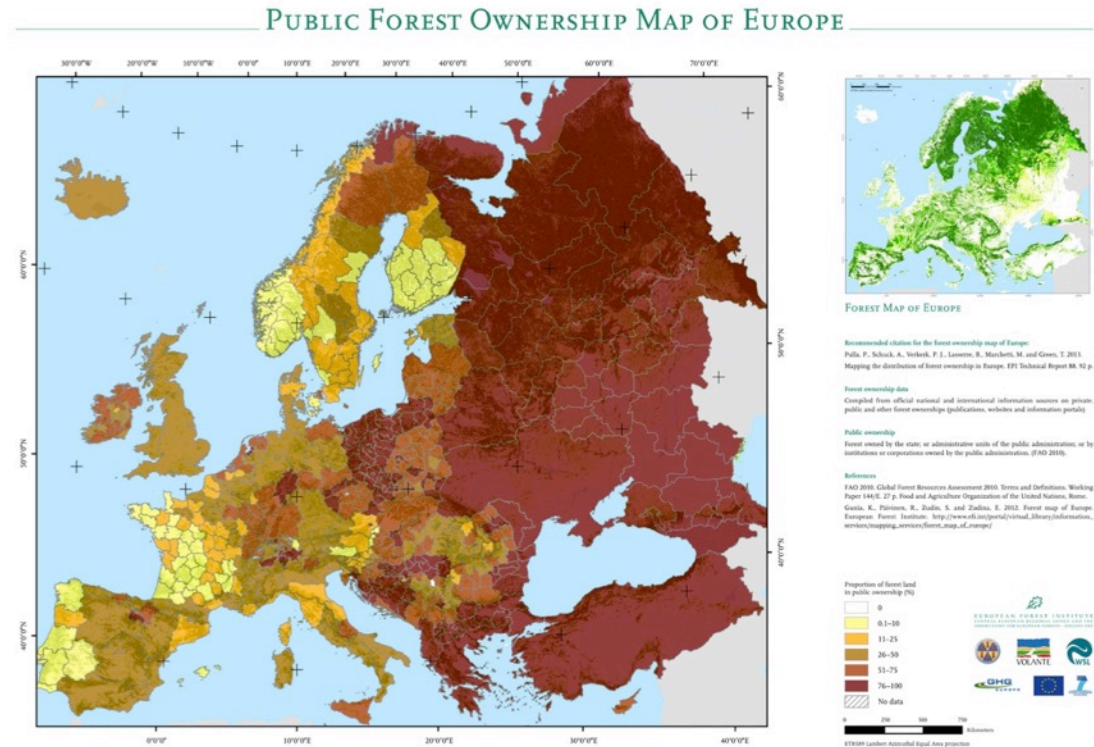
## Central and eastern Europe

- Increase in warm temperature extremes
- Decrease in summer precipitation
- Increase in water temperature
- Increasing risk of forest fire
- Decrease in economic value of forests



# EUSTAFOR is the European State Forest Association

- » Platform of European State Forest Management Organizations
  - Pan-European expertise from main Forest Management Organizations in MS
- » Advocating forestry in Brussels



# Balancing forestry values with Sustainable Forest Management

## Economic Value

- Largest single wood supplier in MSs
- Boosting economic prosperity and jobs
- Leading in moving Europe towards a bio-based green economy
- Reliable partners for industry, research and innovation

## Environmental Value

- Forerunners in ecologically sound silvicultural methods
- Home for biodiversity
- Regulate climate, nutrient and water cycles, soil protection
- Protect against diseases, flooding, erosion and fire hazards

## Social Value

- Ecosystem services and other non-material benefits
- Clean air and water supplies, recreation, scenic and cultural heritage
- Protect infrastructure



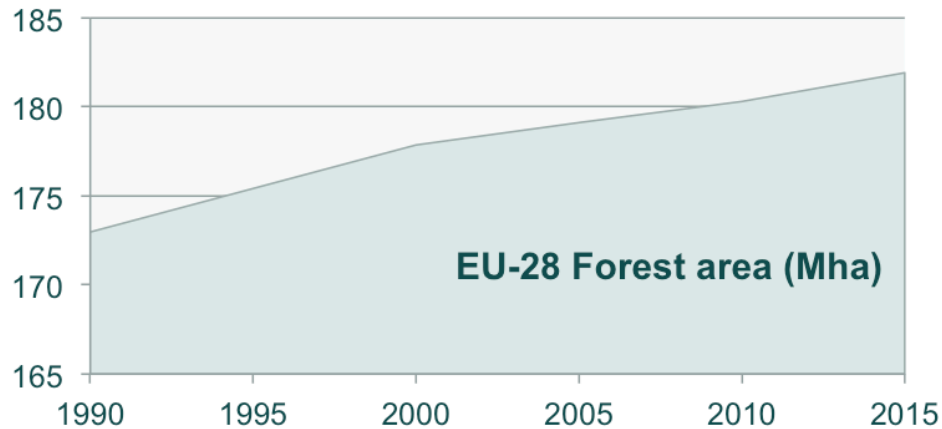
# Adaptation within Sustainable Forest Management

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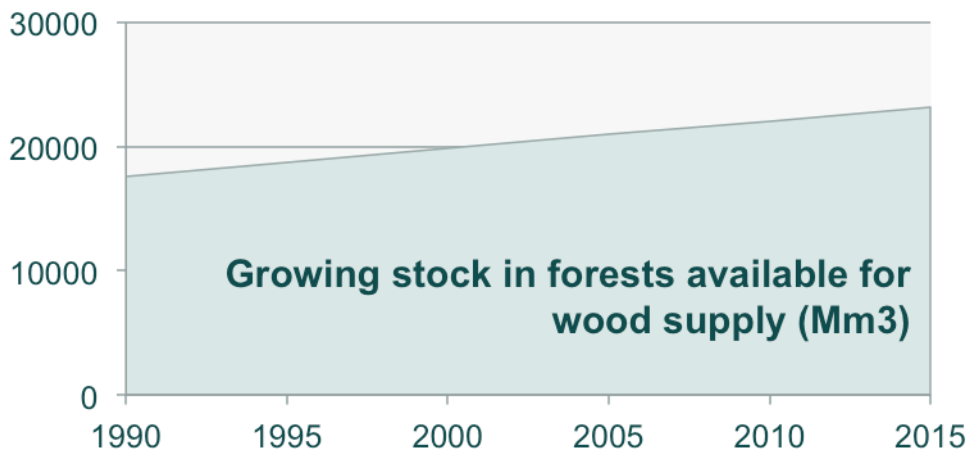
- » Adaptive forest management is priority in state forests
- » Wide diversity, but overriding focus is on (active) SFM
  - Silvicultural measures such as
    - planting of mixed stands,
    - selective thinnings,
    - decrease of rotation age,
    - multi-layer stands
    - ...
  - Enhancing genetic resource management
  - Increasing risks preventions
- » Main challenge: uncertainties



# European forests



- » EU forests are a growing resource
  - 185 million hectares
  - Felling / Increment = 65%
- » First signs of sink saturation\*
  - Need to manage forests



Data source: eurostat



# Climate Change

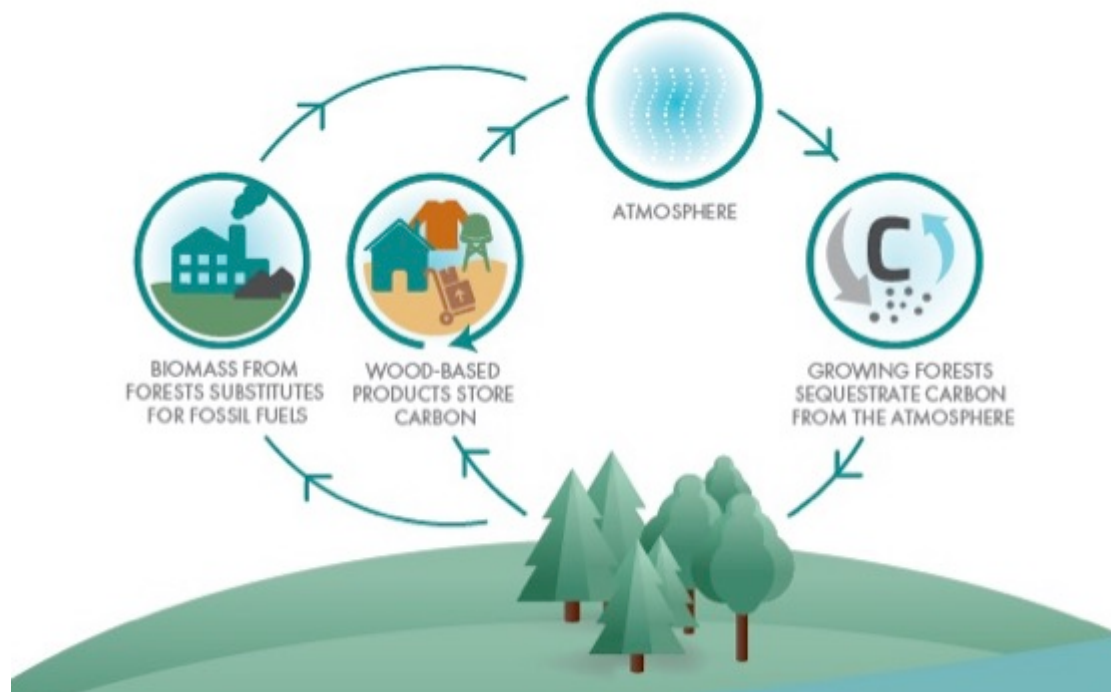
- » “Effective and progressive response to the urgent threat of climate change”
- » Global temperature rise this century “well below” 2 °C above pre-industrial levels (+ efforts for 1.5 °C).
- » “Achieve a balance between anthropogenic emissions by sources and **removals by sinks** of greenhouse gases in the second half of this century”

Paris Agreement (2016)





# Forest-based Bioeconomy for mitigating Climate Change



- » Forests: GHG **sink**
- » HWPs: carbon **storage**
- » Wood: **material** and **energy substitution**





# Adaptive forest management in state forests

- » EUSTAFOR members are strongly engaged in adaptive forest management
  - National strategies
  - Own guidelines including mitigation & adaptation considerations



LesyČR - Bruntál Forest

large-scale clear cuts change into opened forest stands

dying spruce (change in needles colour and defoliation)

vital larch (fresh green colour)



# Extreme weather events



draughts



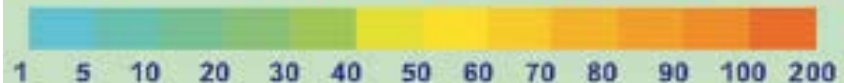
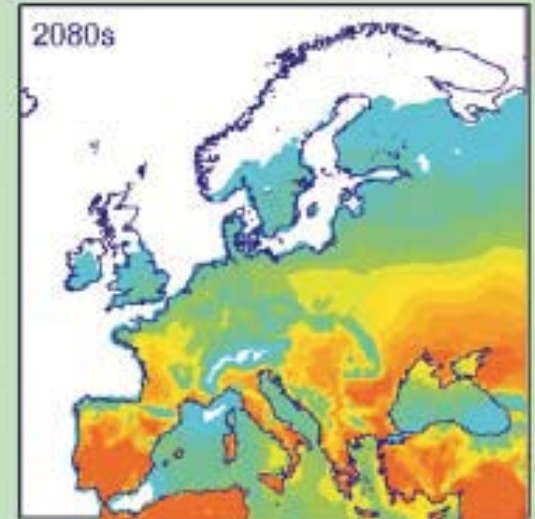
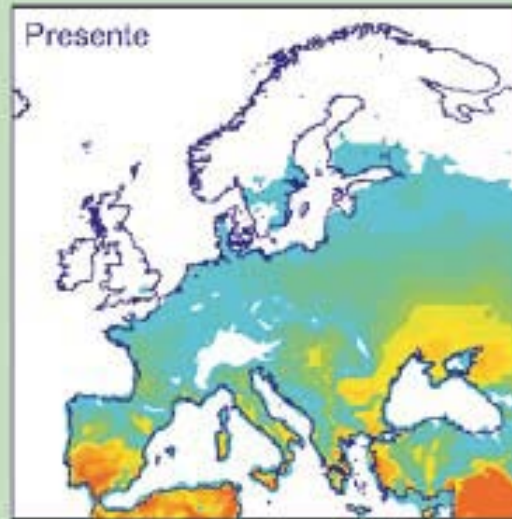
storms



dieback/pests



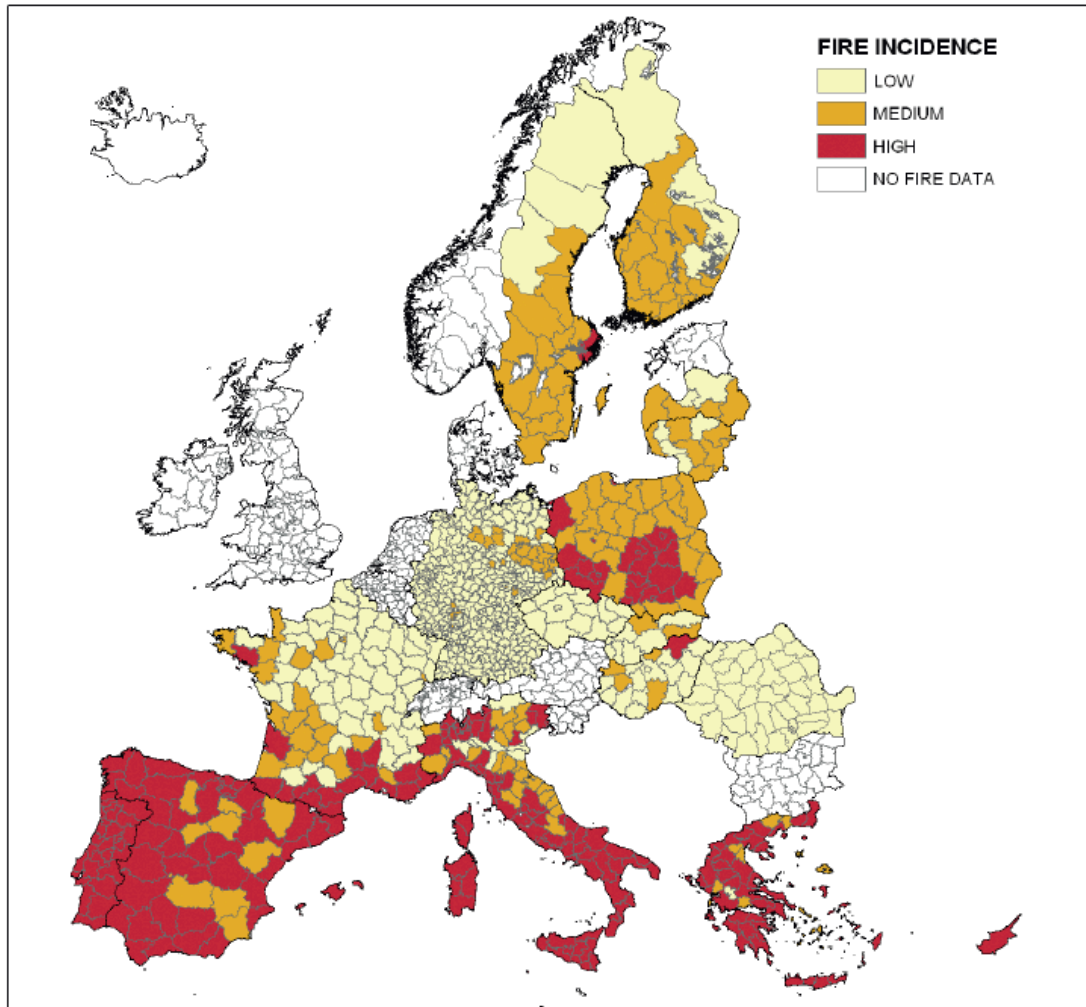
Snow damage



Number of days yearly with temperature  $>30^{\circ}\text{C}$  in 2005 and in 2080 (in one of the future scenarios)



# Forest fires incidence



Source: San-Miguel-Ayanz and Camia., 2009, Forest Fires at a glance, facts, figures and trends, in EFI Discussion Paper No 15, 2009



# Impacts (example)

- » One death, two people badly injured, 1 000 people evacuated, 70 buildings destroyed
- » Total fire area 13 800 hectares – huge biodiversity loss – more than 50% of the standing trees died
- » Massive efforts to limit the fire through fire safe corridors, water bombing from fire fighting aircraft, etc.
- » Fire fighting for more than two weeks at a cost of 0,5 million euros/day
- » Active fire fighting two weeks involving 2300 people
- » 120 forest owners severely affected, total cost over 100 million euros



## Forest fire of 2014 Västmanland, Sweden



# Economic viability

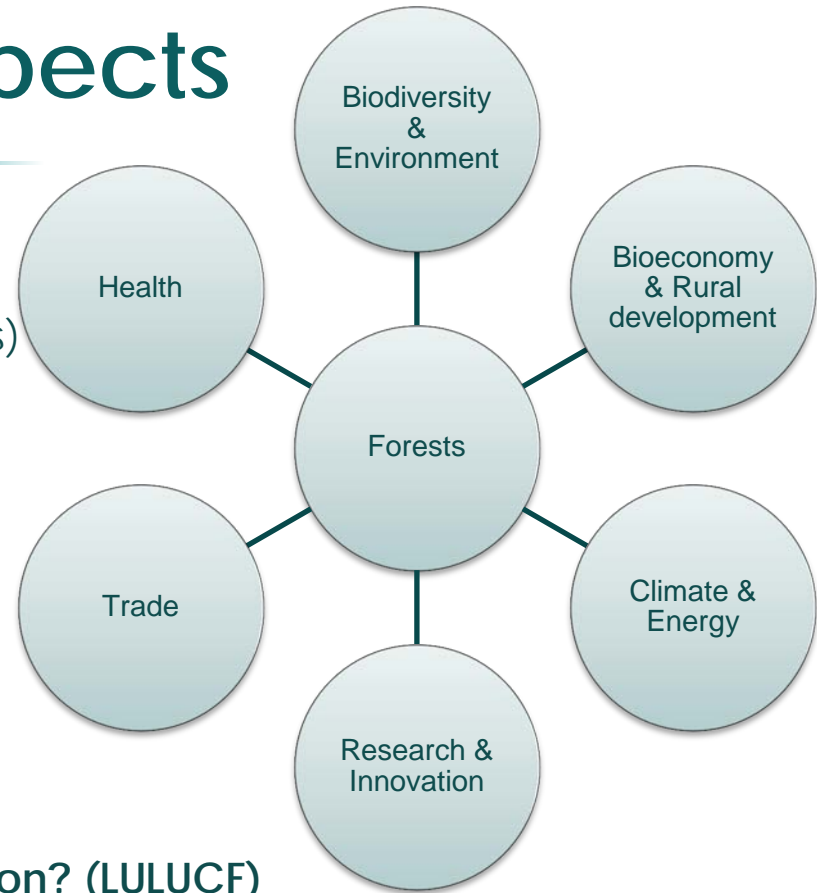
- » Adaptive forest management measures
- » Natural disasters
  - Losses + restoration costs (storms, forest fires, pests)
  - Important market distortions (storms)



LesyČR – Water stream management



# Policy aspects



- » International set-up
  - Sustainable Development Goals (SDGs)
  - Paris Agreement
  - Convention on Biological Diversity
  - ...
- » Forest-related EU policies
  - **Which measures to promote? (CAP)**
  - **How to better account for climate action? (LULUCF)**
  - ...
- » National legislation
- » Internal guidelines





# Training & Knowledge exchange

- » EUSTAFOR
  - Workshops
  - Working Groups



EUSTAFOR – WG Bioeconomy workshop



ONF – Workshop on forest fires





# Awareness & Communication

- » Understanding & explaining the complexity of forestry
- » Understanding societal perceptions & needs



Polish Forest Winter School  
2018



French media campaign



# Conclusions

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- » Adaptive forest management is priority in state forests
- » Uncertainties
  - Effectiveness/risk (time & space)
  - Trade-offs and economic viability
  - Policy framework (coherence)

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