

# Adaptation to climate change & Forests

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# ***EU adaptation strategy***

## **1. Promote action by all member states**

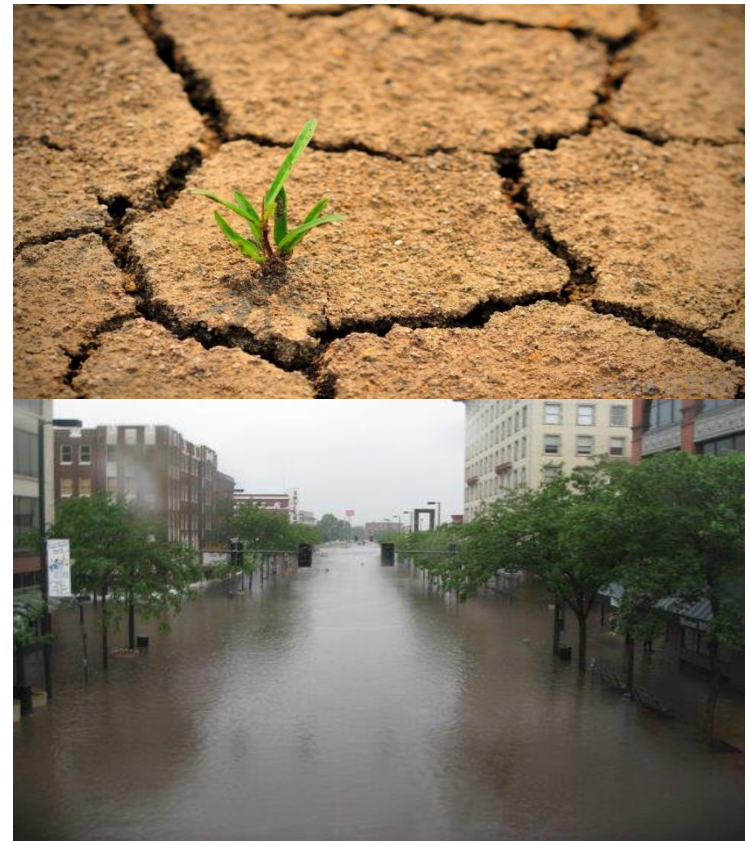
- ✓ Encourage all MS to adopt adaptation strategies
- ✓ Provide funding to help them build resilience
- ✓ Promoting adaptation action by local authorities via the Covenant of Mayors initiative

## **2. Make EU-level action 'climate-proof'**

- ✓ Further integrate climate adaptation needs into key vulnerable sectors eg agriculture, fisheries, energy, regional development
- ✓ Make infrastructure more resilient
- ✓ Promote insurance against disasters

## **3. Better inform decision-making**

- ✓ Address knowledge gaps through research
- ✓ Develop European climate adaptation platform as 'one-stop shop' for adaptation information in Europe: Climate-ADAPT



# National Adaptation Strategies

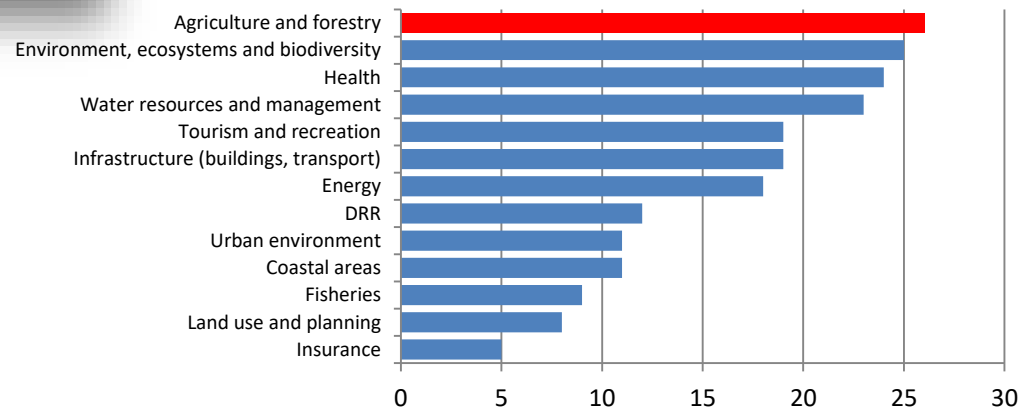


Source: EEA (2018)



## 1. Promoting action by Member States

### Climate-vulnerable sectors identified in the EU



## 2. *Mainstreaming adaptation across policies*

### ★ Agriculture

- Common Agriculture Policy (CAP)
- Measures to support climate adaptation – Choice of (water efficient) crops/varieties; natural water retention; insurance schemes that encourage prevention,...

### ★ Forests

- EU Forest Strategy
- EU Biodiversity strategy

### ★ Water policies

- Water Framework Directive
- Floods directive
- Proposal for Water Reuse

### ★ Urban

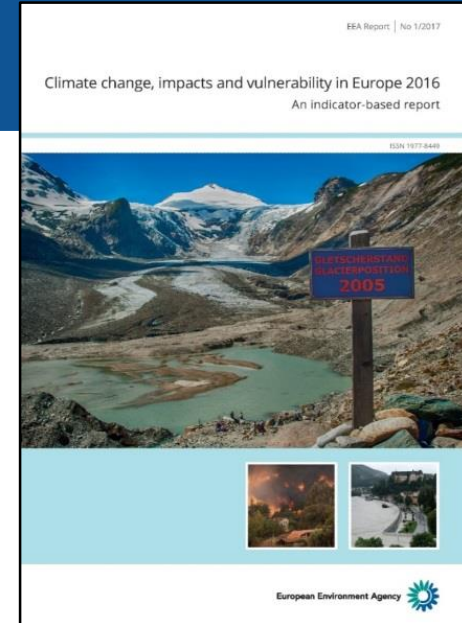
- Urban agenda for the EU
- Covenant of Mayors for Climate and Energy
- Climate resilient infrastructure
- Climate proofing of (major) projects:





### 3. Bridge the knowledge gap

- ✱ Horizon 2020
- ✱ EEA Climate change impact and vulnerability assessment
- ✱ JRC Modelling (PESETA – droughts, WS and floods)
- ✱ Climate ADAPT
- ✱ LIFE



<https://www.eea.europa.eu/publications/climate-change-impacts-and-vulnerability-2016>



**Climate ADAPT** | SHARING ADAPTATION INFORMATION ACROSS EUROPE

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## Forestry



The rapid rate of climate change may overcome the natural ability of forest ecosystems to adapt. It leads to increased risk of disturbances through storms, fire, pests and diseases with implications for forest growth and production. The economic viability of forests will be affected, mainly in southern areas of Europe, as well as the capacity of forests to provide environmental services, including changes in the carbon sink function. In 2013, the Commission adopted a new EU Forest Strategy, which responds to new challenges facing forests and the forestry sector.

Climate change is identified as one of its key priority areas. Actions to maintain and enhance forest resilience and adaptive capacity are among the measures identified to ensure sustainable forest management.

Strömsnäsbruk, Sweden  
Image credits: Linda Söndergaard on [Unsplash](#), 2017

**Policy framework**

The [EU Forest Strategy \(2013\)](#) responds to new challenges of sustainable forest management and the multifunctional role of forests as key aspects. It mentions the importance of actions to maintain and enhance forest resilience and adaptive capacity. It provides a basis for joint and Member States action to support and enhance sustainable forest management and the

<http://climate-adapt.eea.europa.eu/>



[https://ec.europa.eu/easme/sites/easme-site/files/life\\_cca-forest\\_agri-.pdf](https://ec.europa.eu/easme/sites/easme-site/files/life_cca-forest_agri-.pdf)

# Beyond the strategy

**The New York Times**  
*Climate Change Threatens the World's  
Food Supply, United Nations Warns*

**Le Monde**  
Un rapport spécial du GIEC : l'humanité  
épuise les terres  
Les experts de l'ONU avertissent sur la surexploitation des ressources, qui menace  
alimentaire, appauvrit la biodiversité et amplifie les émissions.  
Par Pierre Le Hir - Publié le 08 août 2019 à 10h00 - Mis à jour le 09 août 2019 à 16h21

**The  
Guardian**  
Climate crisis reducing land's ability to  
sustain humanity, says IPCC

UN report finds ecosystems never before under such threat and  
restoration is urgent

- How climate's impact on land threatens civilisation - and how to fix it



**EL PAÍS**

INFORME IPCC

**El planeta necesita un cambio del modelo alimentario  
para combatir la crisis climática**  
El IPCC, el grupo de expertos de la ONU, apunta a que solo el derroche de alimentos es responsable  
10% de todos los gases de efecto invernadero que produce el hombre



**93%**  
of Europeans

see **climate change** as a serious problem.



**93%**  
of Europeans

have taken at least one **action**  
to tackle climate change.



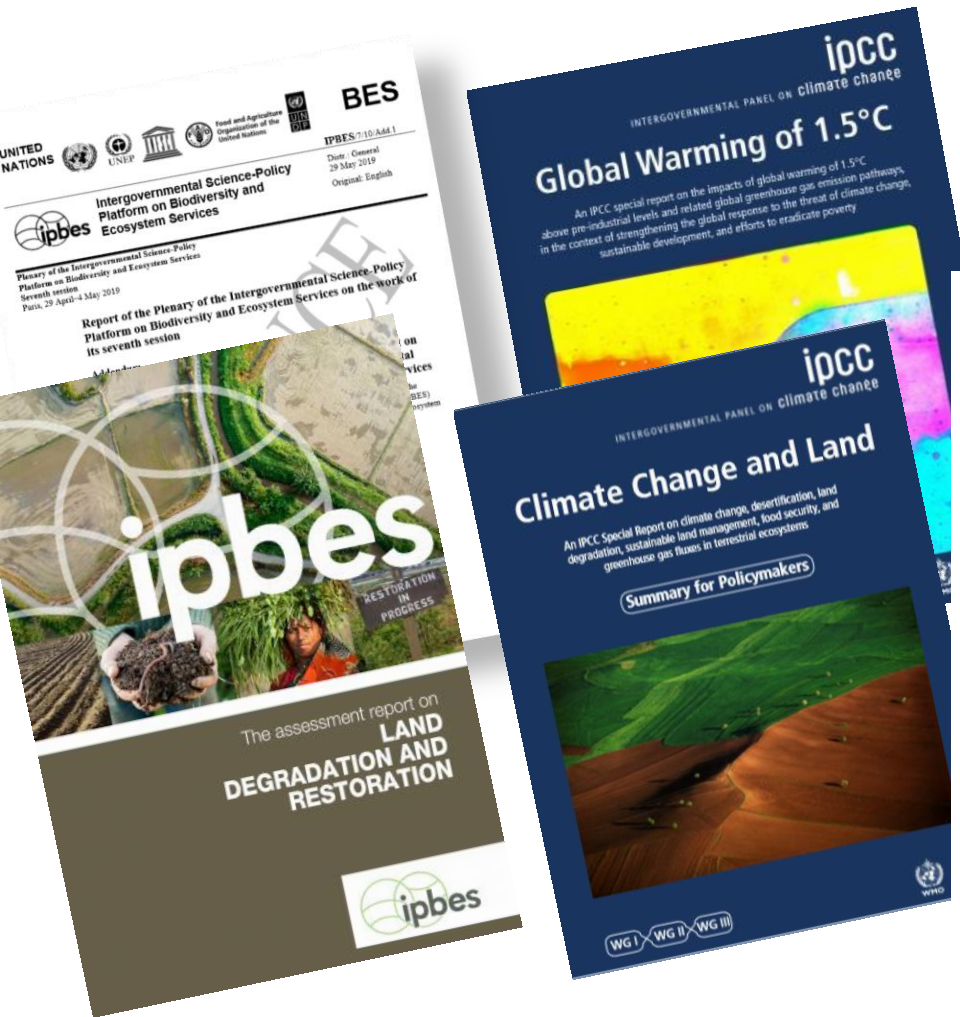
**92%**  
of Europeans

agree that greenhouse gas emissions should  
be reduced to a minimum in order to make the  
**EU economy climate neutral by 2050.**



European  
Commission

# IPBES & IPCC

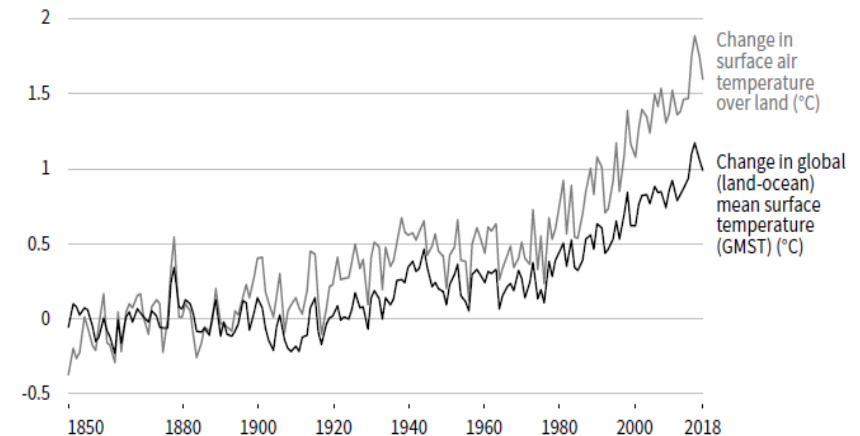


## Land use and observed climate change

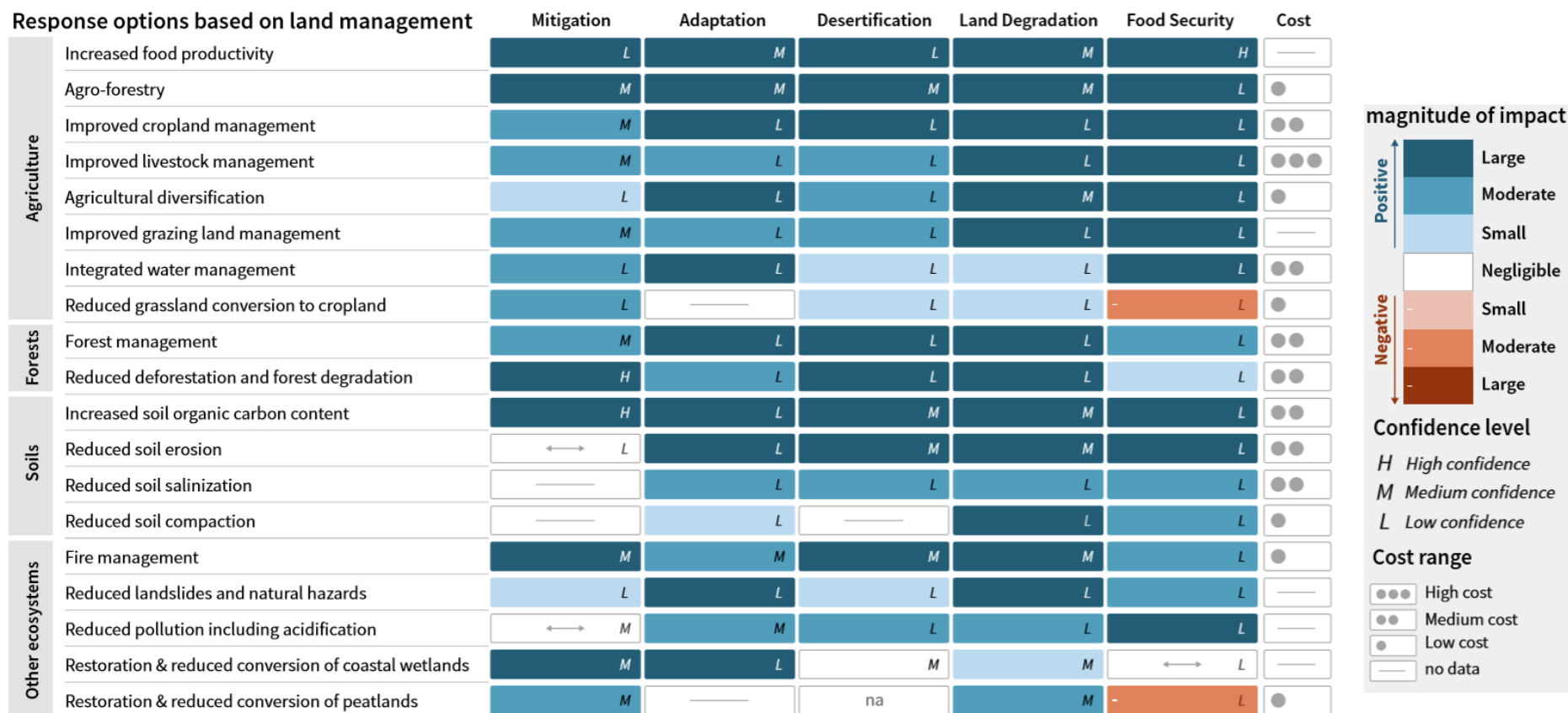
### A. Observed temperature change relative to 1850-1900

Since the pre-industrial period (1850-1900) the observed mean land surface air temperature has risen considerably more than the global mean surface (land and ocean) temperature (GMST).

CHANGE in TEMPERATURE rel. to 1850-1900 (°C)



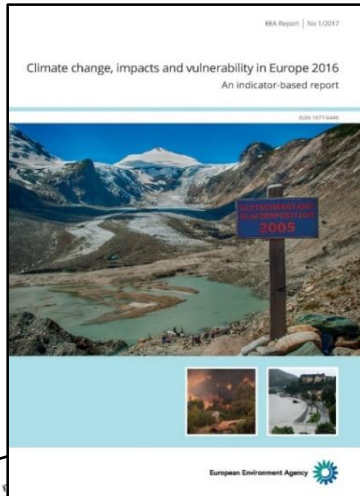
# IPCC Climate Change and Land Report (2019)



**Figure SPM.3 Potential global contribution of response options to mitigation, adaptation, combating desertification and land degradation, and enhancing food security.**



# Impacts of climate change in Europe



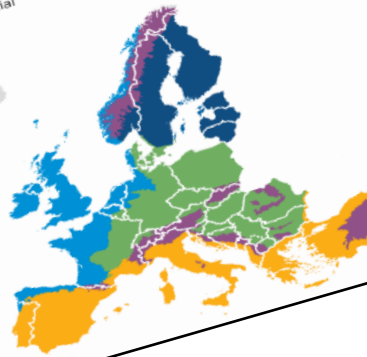
**Arctic region**  
Temperature rise larger than global average  
Decrease in Arctic sea ice  
Decrease in permafrost areas  
Decrease in biodiversity loss  
Increasing risk of opportunities for the exploitation of natural resources and for sea transportation  
Risks to the livelihoods of indigenous peoples

**Coastal zones and regional seas**  
Sea level rise  
Increase in sea surface temperatures  
Increase in ocean acidity  
Northward migration of marine species  
Risks and some opportunities for fisheries  
Changes in phytoplankton communities  
Increasing number of marine dead zones  
Increasing risk of water-borne diseases

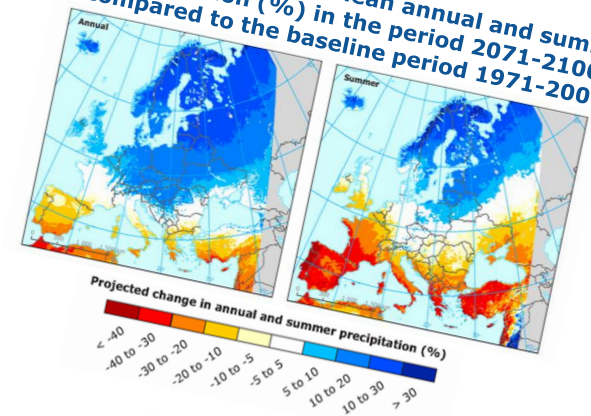
**Mediterranean region**  
Large increase in heat extremes  
Decrease in precipitation and river flow  
Increasing risk of droughts  
Increasing risk of biodiversity loss  
Increasing risk of forest fires  
Increased competition between different water users  
Increased demand for agriculture  
Increase in crop yields  
Decrease in livestock production  
Decrease in risks for heat waves  
Increase in mortality for southern disease vectors  
Expansion of habitats for energy production  
Increasing potential for energy cooling  
Decreasing potential for energy production  
Increase in summer tourism and potential increase in other seasons  
Decrease in multiple climatic hazards  
Decrease in multiple sectors negatively affected  
High vulnerability to spillover effects of climate change from outside Europe

**Mountain regions**  
Temperature rise larger than average  
Decrease in glacier extent and volume  
Upward shift of plant and animal species  
High risk of species extinctions  
Increasing risk of forest pests  
Increasing risk from rock falls and landslides  
Changes in hydropower potential  
Decrease in ski tourism

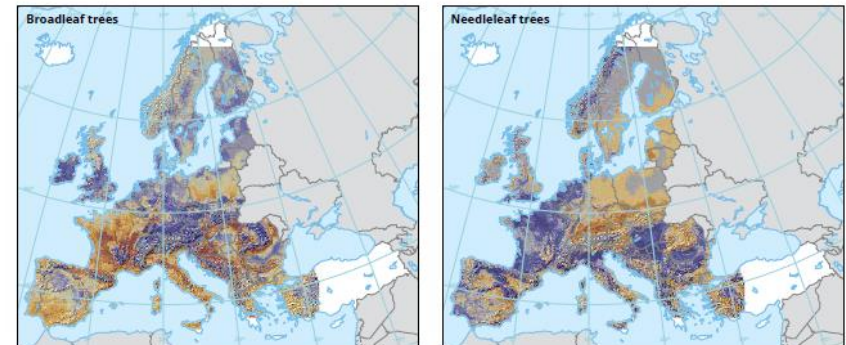
**Continental region**  
Increase in heat extremes  
Increase in summer precipitation  
Decrease in risk of river floods  
Increasing risk of forest fires  
Decrease in economic value of forests  
Increase in energy demand for cooling



Projected changes in mean annual and summer precipitation (%) in the period 2071-2100 compared to the baseline period 1971-2000



Map 4.17 Projected change in climatic suitability for broadleaf and needleleaf trees



Projected changes in broadleaf (left) and needleleaf (right) tree composition from species habitat suitability changes

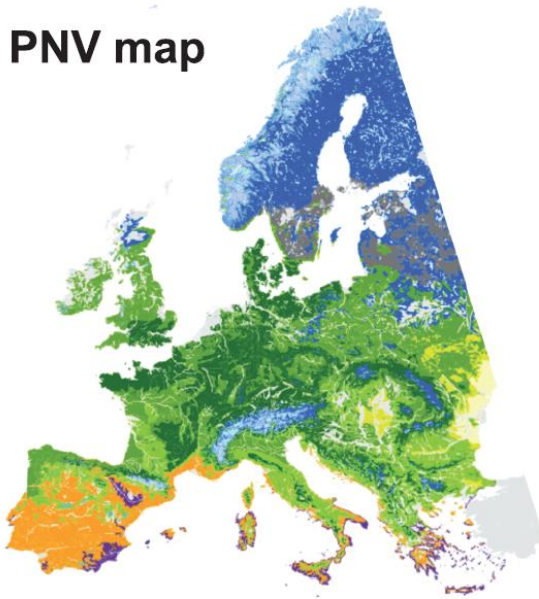


**Note:** The two maps indicate to what degree broadleaf (left) and needleleaf (right) tree species are expected to increase (blue) or decrease (brown) in numbers by 2100. The results represent ensemble species distribution modelling simulations, using climate projections from six RCMs under the A1B scenario.

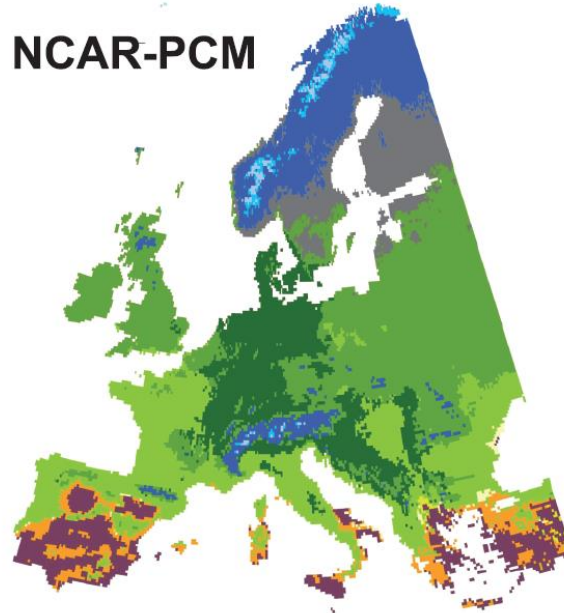
**Source:** Adapted from Lindner et al., 2014.

# Projecting changes in European vegetation zones

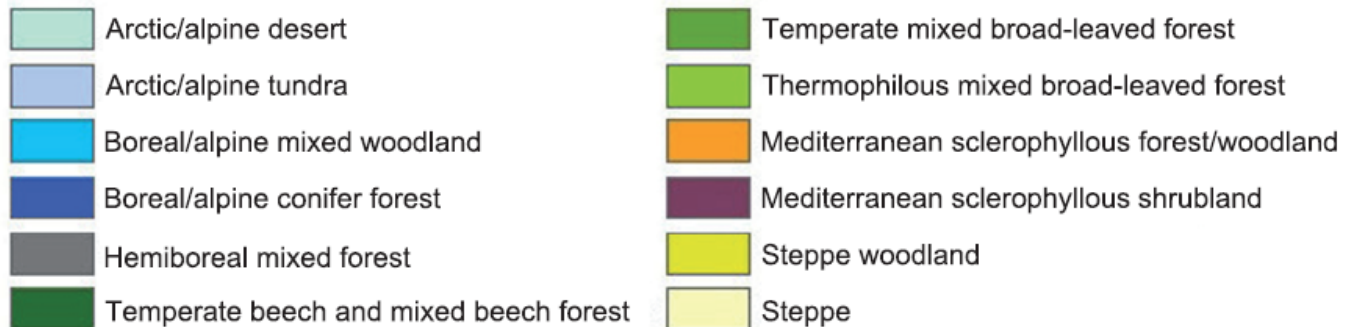
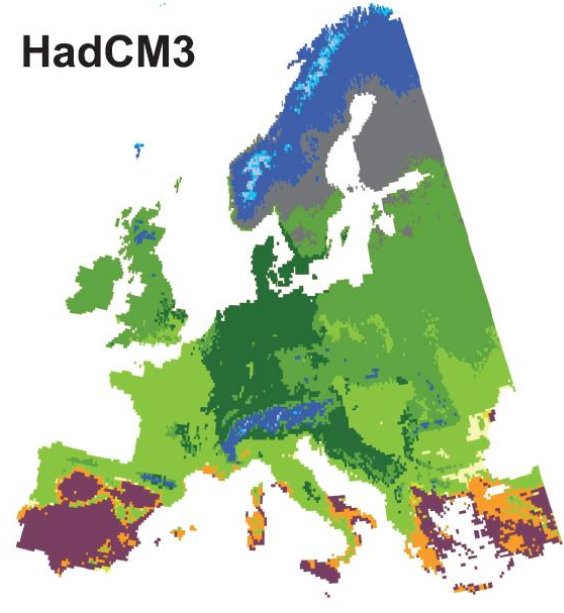
PNV map



NCAR-PCM



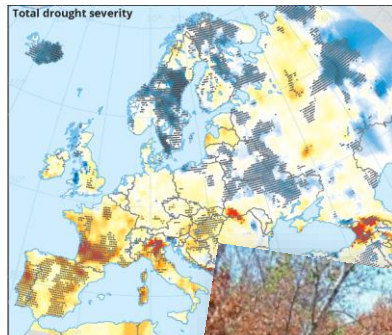
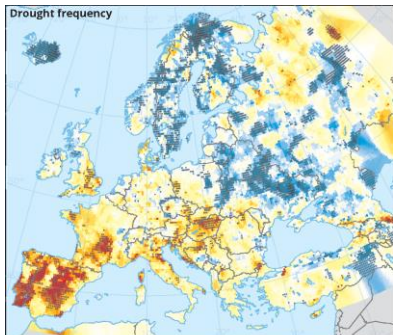
HadCM3







European  
Commission



Observed trends in frequency and severity of meteorological droughts

Drought frequency  
(events/decade)



Outside coverage  
Significance of trends

0 500 1 000 1 500 km

Total drought  
(score/decade)



# Droughts

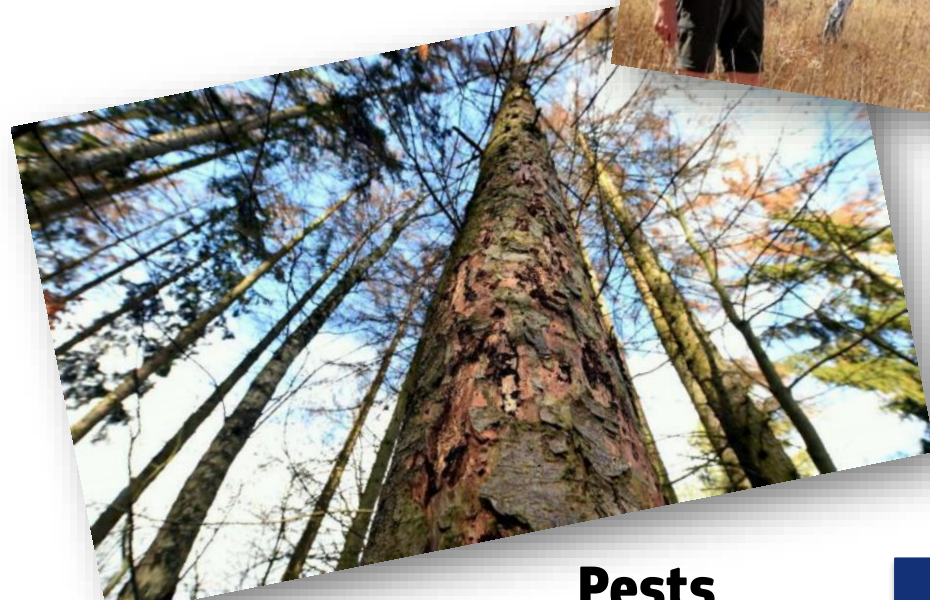


# Fires

# Storms



# Pests



## *Evaluation - Main findings*

✓ relevant ✓ effective ✓ efficient ✓ coherent ✓ EU added value

Also, new developments since 2013:

- ✱ More extreme events (e.g. heatwaves, droughts, storms, wildfires 2x, floods 4x compared to 1980) – likelihood increased by climate change
- ✱ Higher future damage estimates (e.g. 10-fold increase for critical infrastructure by the end of the century)
- ✱ International context: Paris Agreement's provisions on adaptation



## More work needed to:

- \* implement and monitor national strategies
- \* bridge newly emerging knowledge gaps
- \* address territorial and social differences in vulnerability to climate change
- \* Better integrate the International dimension of adaptation
- \* Integration of CCA and DRR
- \* EU maritime and fisheries policy and coastal areas in general
- \* Sustainable finance
- \* Ecosystem based adaptation
- \* Local adaptation strategies and actions
- \* Social vulnerability to climate related events
- \* Health and adaptation
- \* Interlinkages to mitigation

## Where to now...?

### Adaptation – the concept

**Adaptation means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause, or taking advantage of opportunities that may arise.**

***“Either we delay and pay, or we plan and prosper.”  
Christiana Figueres, former chair UNFCCC***

## Some questions

**What is the situation? How is climate change affecting forests in your constituencies?**

**(How) is adaptation integrated in planning and management?**

**Are climate scenarios used for forest management planning?**

**What options are there for response, prevention, adaptation and resilience?**

**What are the main knowledge gaps to adapt forests effectively to climate change?**

## **Where to now...?**

**Knowledge generation and dissemination**

**Monitoring developments to inform policy-making**

**Targeted funding**

**Insurance against disasters**

**Systematic risk management strategies**

**Supporting assisted migration & provision of  
reproductive material**



Thank you  
for your attention



**Directorate-General for Climate Action ("DG CLIMA"):**  
[ec.europa.eu/clima](http://ec.europa.eu/clima)

**EU Strategy on Adaptation to Climate Change:**  
[ec.europa.eu/clima/policies/adaptation/index\\_en.htm](http://ec.europa.eu/clima/policies/adaptation/index_en.htm)

**European Climate Adaptation Platform:**  
[climate-adapt.eea.europa.eu](http://climate-adapt.eea.europa.eu)

**Covenant of Mayors for Climate & Energy:**  
[www.eumayors.eu](http://www.eumayors.eu)

