



# Managing Impacts related to Climate Change

*May 20th 2014, Brussels*

*Cooperation of regions on innovation in forest management, use of wood  
and forest related services*

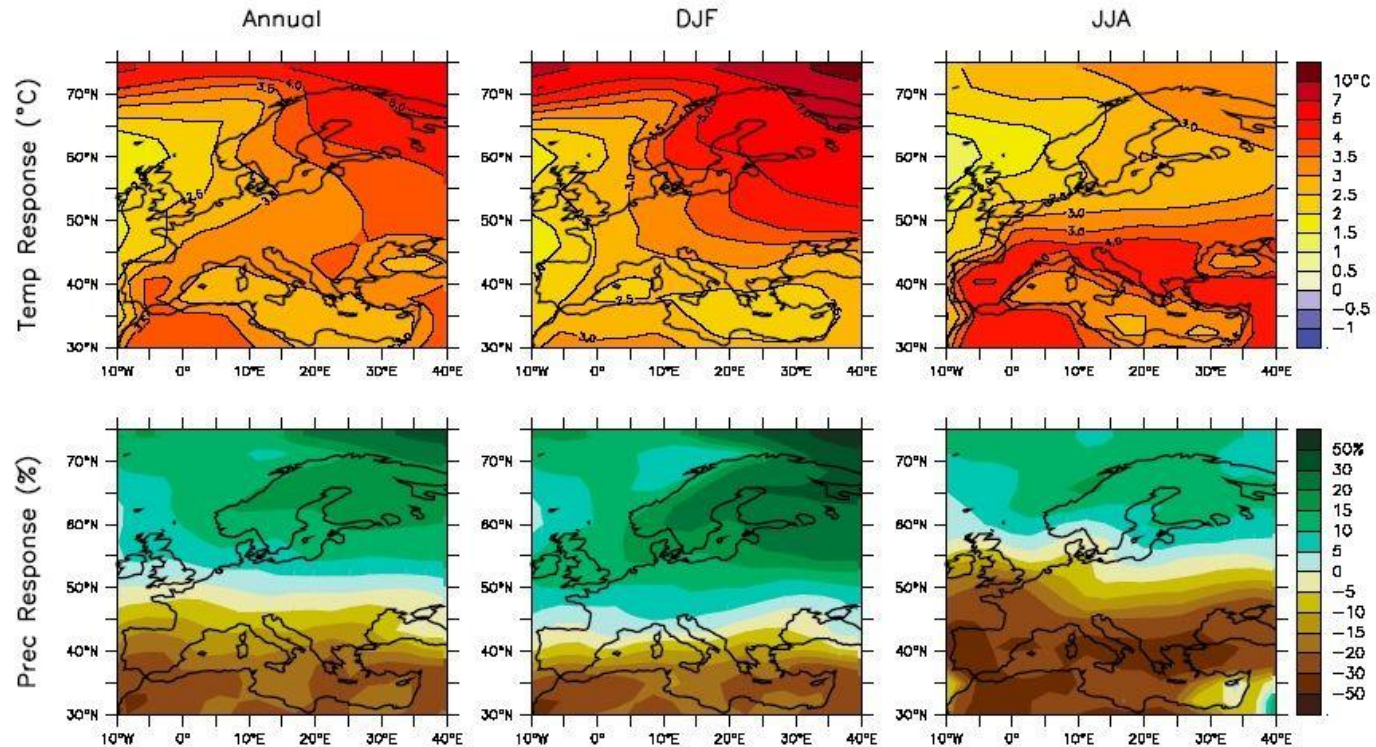
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**AFORCE**  
RMT Adaptation des forêts  
au changement climatique

# Climate change : the impacts ..

## New conditions for the growth of trees

- + 1,3°C during the last century
- ↘ precipitations in South regions et ↗ in North
- More numerous extreme events (floods, droughts, heat waves chaleur)



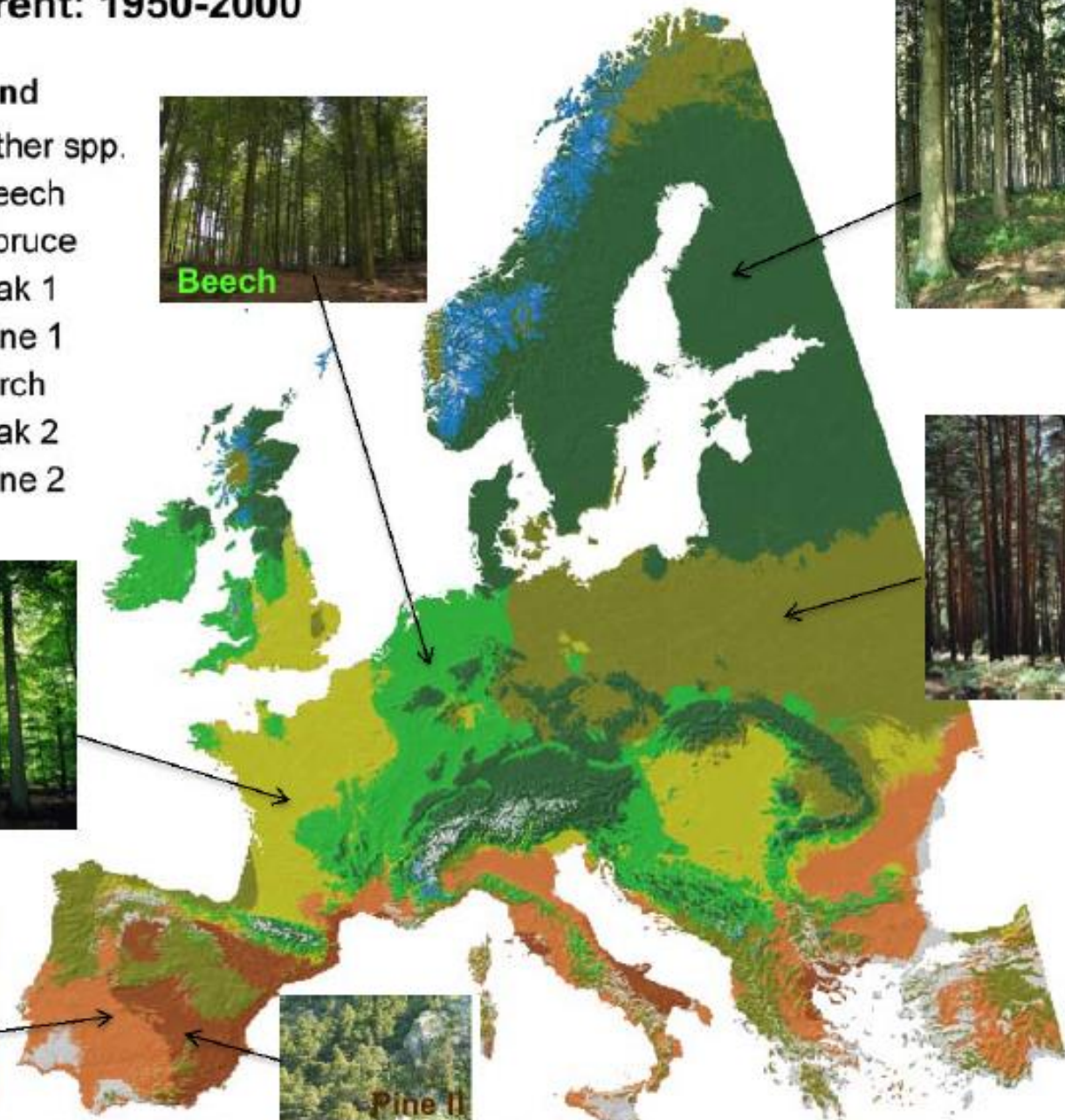
=> rapid shift to less favorable conditions for the growth of trees



**Current: 1950-2000**

**Legend**

- Other spp.
- Beech
- Spruce
- Oak 1
- Pine 1
- Birch
- Oak 2
- Pine 2

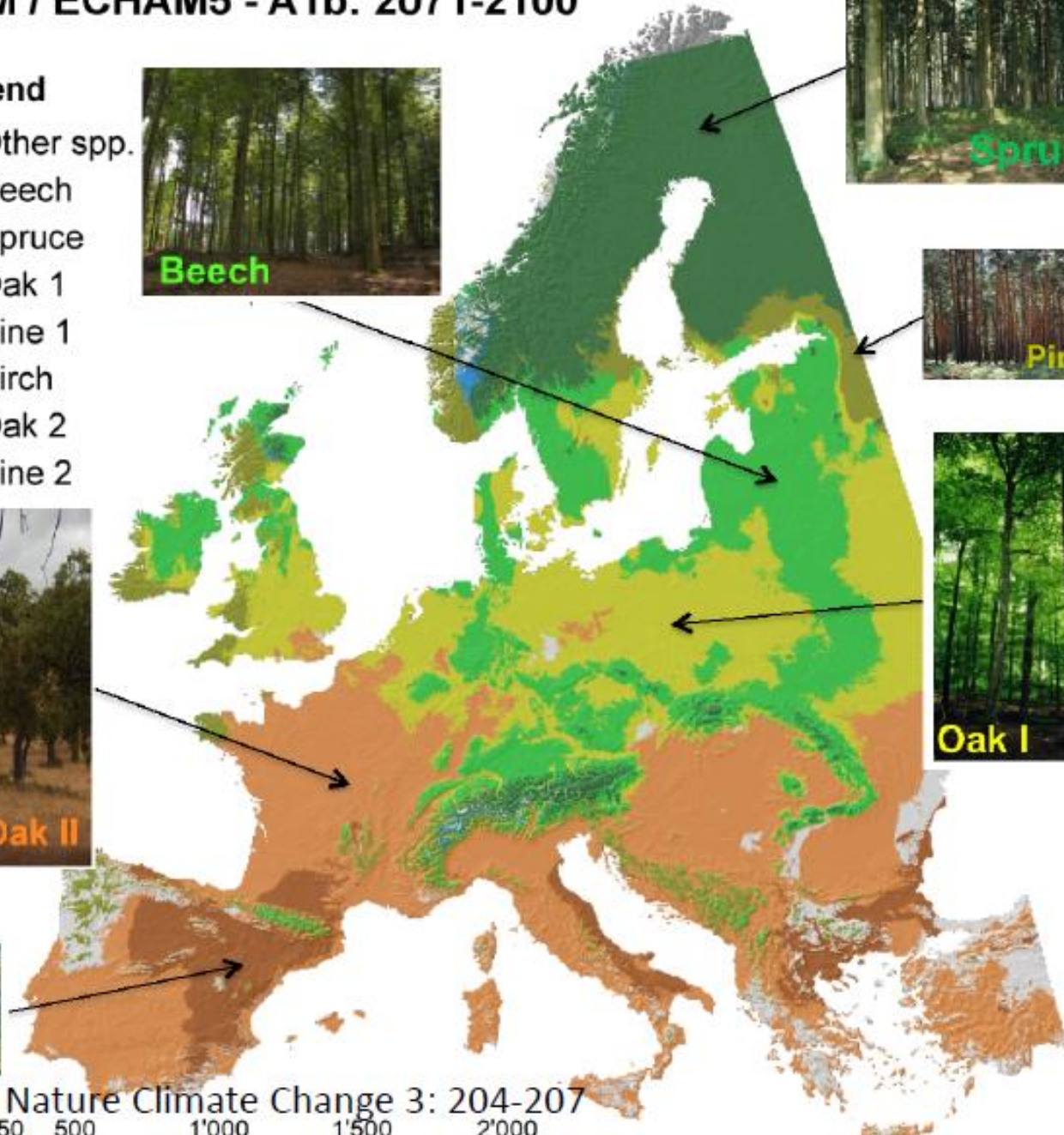




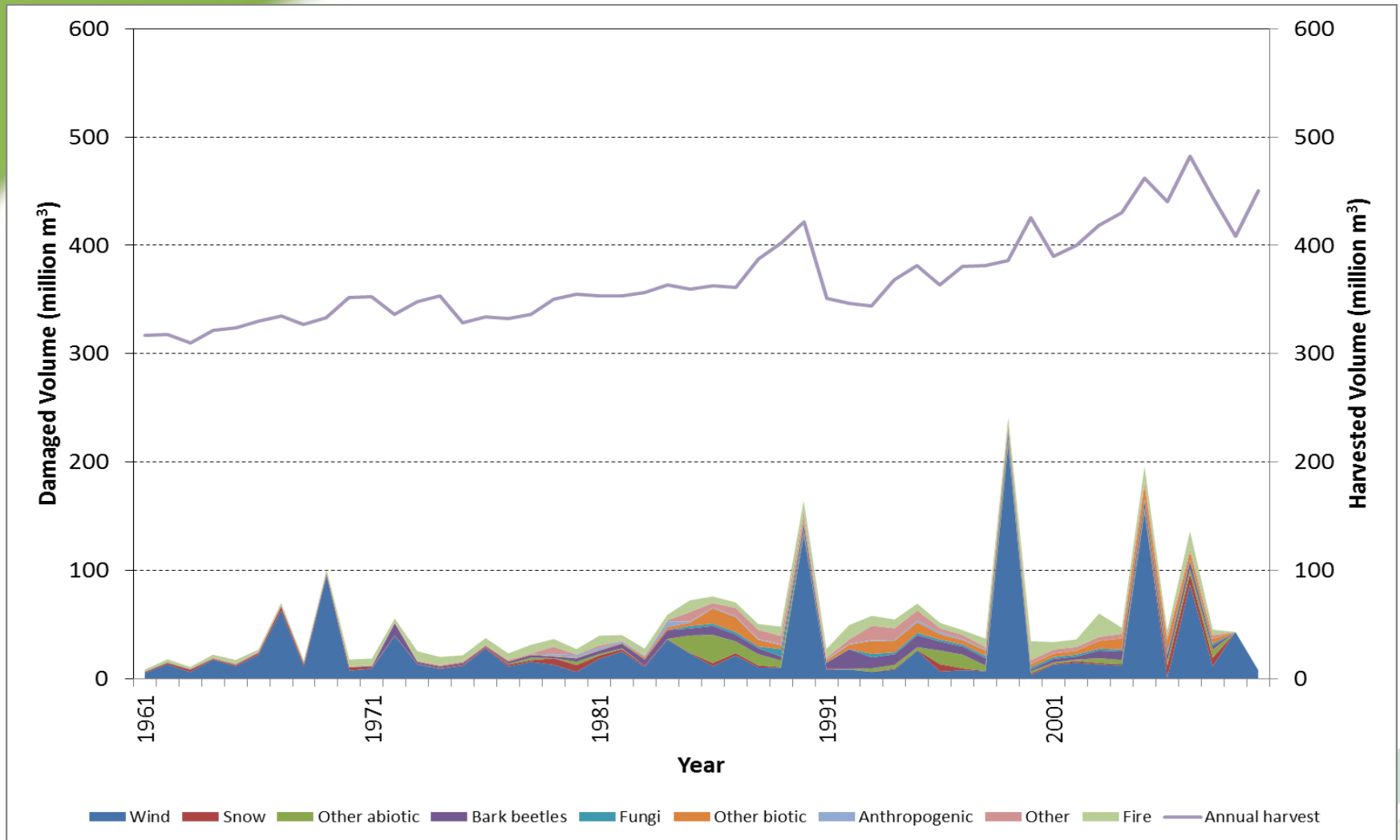
CLM / ECHAM5 - A1b: 2071-2100

### Legend

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- Beech
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- Oak 2
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# Damaged volume 1961-2010



# Impacts from Cost Echoes

- Length of the growing season has expanded throughout Europe with possible effects on frost and biotic damages
- Productivity is much dependent on variation of precipitation.
- In the North and in Mountain areas, productivity would increase
- In boreal zone, biotic and storm risks are expected
- Elsewhere : drought, biotic risks, invasive species and fires
- Migration to the North and upwards



# What stakes and questions ?

# What concrete actions ?

*A virtuous cycle ...*

*To acquire knowledge, to assimilate, to experiment*

*To support change: to argue, to test, to evaluate*

*To organize and to anticipate*

- Knowledge
- Forest management
- Transfer and innovation
- Public policies
- Prospective



# Stakes and questions

*A more precise, comprehensive and practical knowledge*

- **Are we able to identify the vulnerable populations? To link precisely dieback and climate change ?**
- **Does the forest owner know the strengths and weaknesses of his forests concerning climate change ?**

Forest owners' mobilisation requires a better awareness of issues and impacts : to decide, they must make a diagnosis, that implies to know more about the climate, the soil, the water reserve, the resilience of their species, etc..

**=> This implies providing them with relevant and precise information to assess the situation, understand and support their management decisions**





# Stakes and questions

## *An adapted forest management*

- **Many species will no longer be “in site”. Do we know what to do ? What species to choose ? (better suited to .. what ? More resistant? With more plasticity?)**
- **Do we know what new silvicultural techniques we have to develop ?**
  - manage water in the stands
  - ensure the renewal
  - bringing new species
  - manage decaying stands
  - face the fires, extreme events, pests and invasive species

**=> This implies to provide relevant information and tools to accompany changing practices and context (lanscape, habitats, ecological balances ...)**



# Stakes and questions

## *A strengthened and innovative transfer process*

- **Can the interface between research and development, and the global transfer process be improved ?**
    - Dispersion and ignorance of the existing actions, experiences and practices (*often overlooked or reproduced without knowing that this has already been done...*)
    - Research is well organized and networked at EU level, but the development bodies are not, or much less; in addition, those have no or few international publications ...
    - To change practices rapidly enough needs some active and innovative approaches
- => to organize and promote relevant actions, to set priorities, to disseminate practical results and good practices, to develop innovative approaches among private forest owners and managers**



# Stakes and questions

## *Adapted and consistent public policies*

- **Can (must) the public policies be better adapted ?**
    - Wood production and utilization, ecosystem services and biodiversity, adaptation and mitigation, are often considered separately by stacked policy regulations ... **this is both a true puzzle, and a main concern for PFOs**
    - To face climate change impacts will have a cost : how much ? what framework for necessary incentives, who pay ?
    - Loss of species is a true risk for biodiversity, as well as introduction of new species - that will probably disrupt existing balances and habitats
    - Situation of crises will increase. .. how to manage it ?
- => Necessity to have an adapted and consistent policy framework helping to maintain the multifunctionality of the forest management and supporting PFOs in that objective**



# Stakes and questions

*More prospective ...*

- **Do we anticipate the CC consequences on the downstream industries of the sector ? On public acceptability ?**
  - Changes in productivity announced
  - In some areas, trade-offs to make between survival and production. (even obligatory changes towards other objectives / services ?)  
Therefore, risk of reduced resource and modification of species available ...
  - Trend in the coming years to prefer shorter cycles and therefore sell small diameters
  - Risk of sawtooth availability for the resource, because of possible waves of decay
- ⇒ **Necessity to know more about what new species should have to be cultivated (properties, growth ..) ?**





# Actions

- 8 suggestions : actions or group of actions, enabling to provide relevant responses to those pending questions ...
- ... with some examples we know in France and in some partners countries (to be completed)
- 4 groups only will be discussed during the round tables on this challenge n°1 this afternoon, with this suggested roadmap :
  - **what most relevant sub-action ? (importance, urgency, potentiality for European cooperation, degree of maturity ..)**
  - **with what means ? (type an level of corresponding concrete projects)**



## Following up the impacts

- To reinforce the forest component of the Long term European ecological research network,
- To coordinate better national research agendas, further efforts from JRC
- To coordinate climate change observatories for monitoring the long term impacts
- To produce maps of production and soil water balance
- To produce common indicators to follow the evolution of impacts

### Examples

#### *In France :*

**Regional observatories Nord Pas de Calais, Midi-Pyrénées, Ecogeodyn ...**

#### *In other countries :*

**Finnish Forest Research Institute and Forestry Centres recently published a web-based information service concerning bark beetle distribution ...**



# Action n°2

## Diagnosis of forests

- To develop decision support and training tools and services
  - => *simple descriptive information of the environment ( soil, water balance, climate ...) => European platform ?*
  - => *more developed tools to integrate these data into a diagnosis analysis : countervailing and aggravating factors, risk measurement, diagnostic of vulnerability and/or decay ..*
  - => *how to deal with uncertainty ?*

### Examples

*In France :*

**Aforce tools : Biljou, Bioclimsol, Archi, IBP**

*In other countries :*

**Germany, Austria, Motive tool box**



# Action n° 3

## Towards new species

- Modeling the evolution of the envelope of exotic and native species  
*Defining favorable/unfavorable climate zones ; setting up the relations with the soil data to determine opportunities for introduction*
- Implementation of behavioral tests at large-scale
- Assisted migration : a campaign to create test zones ?
- What's about the species supply, how to anticipate ?

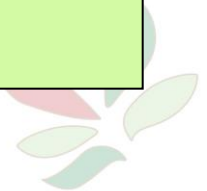
### Examples

*In France :*

**Reinforce**

*In other countries:*

**??**





# Action n°4

## Towards

# new silvicultural techniques

- Experimentation for adaptive forestry
- Management documents for
  - *management stands dying*
  - *Stand renewal*
  - *Manage stands up and silviculture including more efficient water*

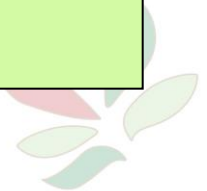
### Examples

*In France :*

**Reinforce: experimental sites ???**

*In the other countries :*

**Forclimadapt ?**



## Transfer and innovation

- A development network at EU level to ensure synergy between the extension and advisory services :
  - to share best practices, and common language
  - to disseminate the information on R & D projects
  - to structure the relationship and dialogue with the European research networks (as an homologue network of practitioners)
  - to prioritize, initiate projects, organize actions
  - to be a support platform for local operational groups on that topic

### Examples

*In France: Network Aforce ...*

*In other countries : Training programm in Switzerland*

# Action n°6

## Public policies for adaptation

- To elaborate prevention plans and plans for crisis management in response to extreme events (storms, droughts, fires, pests ..)
- To estimate the cost of the management choices and losses
- To define and implement a policy of conservation of genetic resources

### Examples

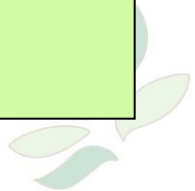
*In France :*

**Guideline of crisis management; updating regional orientation policies**

*In other countries:*

**in Finland the whole forest legislation has been renewed, which also should enable better adaptation to climate change**

**Mediterranean countries ??**



# Action 7

## Anticipating the changes in the whole sector

- To develop prospective analyzes around the interaction forest- industry evolution - involving the timber industry
- To develop studies on the quality of wood (new species), on the influence of the climate change on quality of wood ...

### Examples

*In France : Prospective AFCLIM in France ..*

*In other countries ??*



# Action n° 8

## Ensuring the acceptability of the actions

- To implement a prospective study on « standard » stands, to define in each case the choices of possible adaptation
- Through participative approaches, to better know and test:
  - what guide the forest owners and managers' choices
  - what guide the acceptability of different options
  - what are the will/ability to adopt the changes

### Examples :

*in France :*

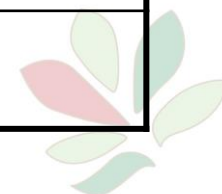
**to be developed**

*In other countries*

**Interesting initiative in Canada**

# Table of actions

|  | Know | Man | Tran | Pol | Prosp |
|--|------|-----|------|-----|-------|
| A1 - Following up the climate change impacts | ★    |     | ★    |     |       |
| A2 - Diagnosis of forests                    | ★    | ★   | ★    |     |       |
| A3 – New species                             | ★    |     | ★    |     | ★     |
| A4 – New silvicultural techniques            |      | ★   | ★    | ★   |       |
| A5 – Transfer and innovation                 | ★    | ★   | ★    | ★   |       |
| A6 – Adapted public policies                 | ★    |     |      | ★   |       |
| A7 – Anticipating changes                    | ★    |     |      |     | ★     |
| A8 – Ensuring the acceptability of actions   | ★    | ★   | ★    | ★   |       |





**And now please ...  
don't snooze, choose ! !**

**Many thanks for your attention**

