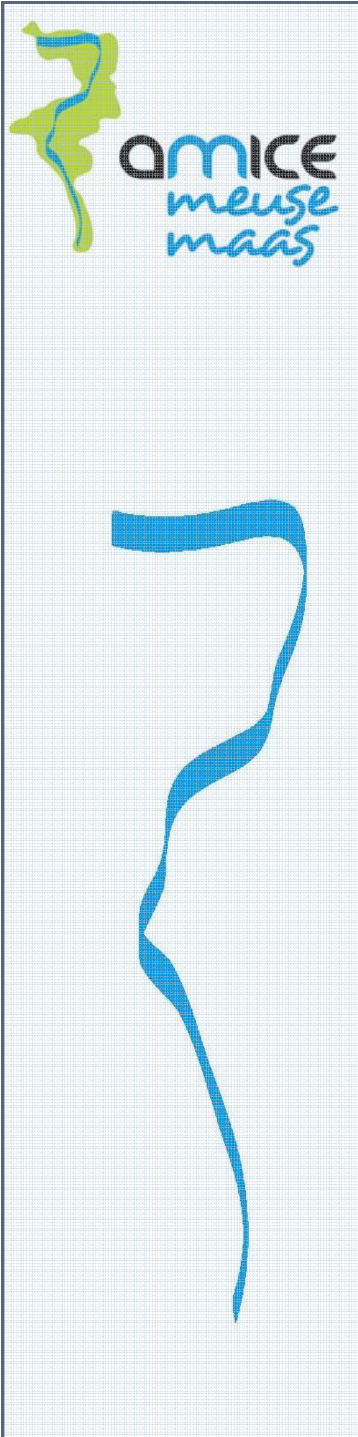


# Adaptation of the Meuse to the Impacts of Climate Evolutions



## Structure of the roadmap for climate-adaptation and presentation of starting document



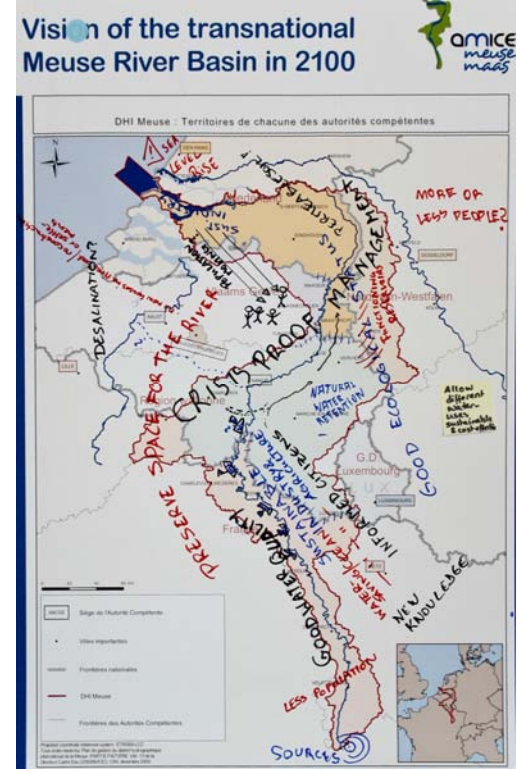
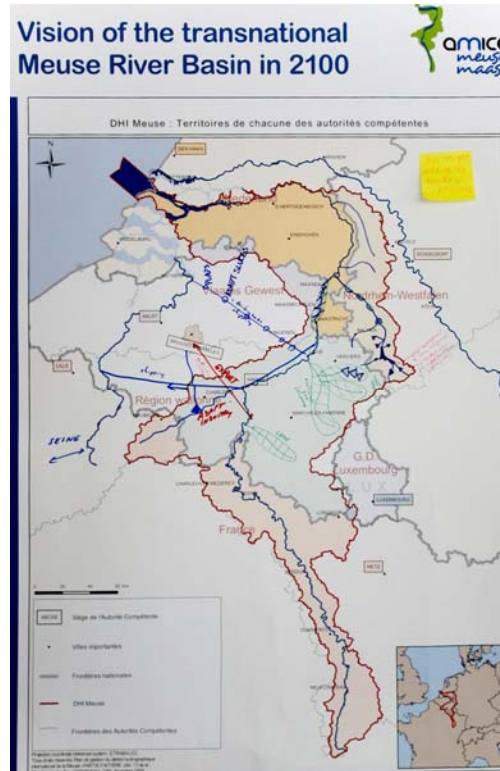
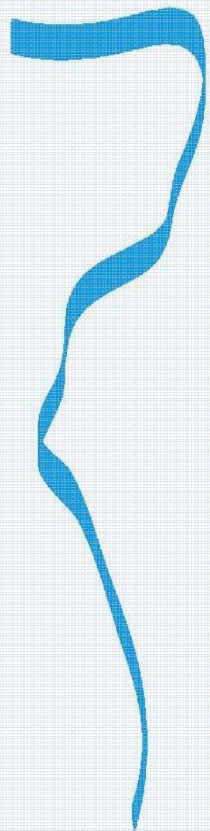


# Roadmap structure

1. Description of Meuse river basin system
2. Vision of desired situation in 2100
3. List of challenges
4. List of measures and actions
5. Criteria
6. Assessment of measures based on criteria
7. List of identified steps, including a timeline

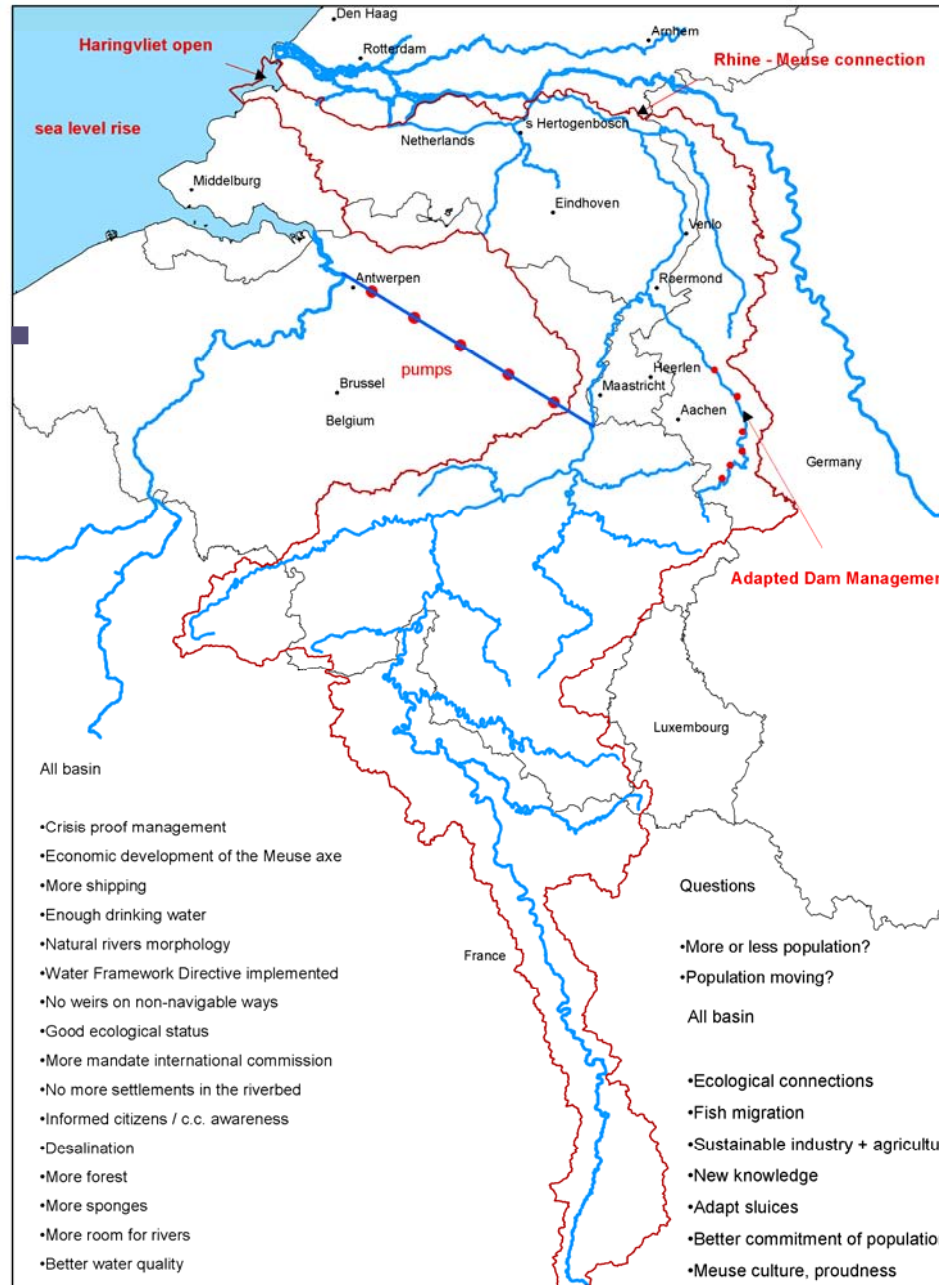


# Visioning



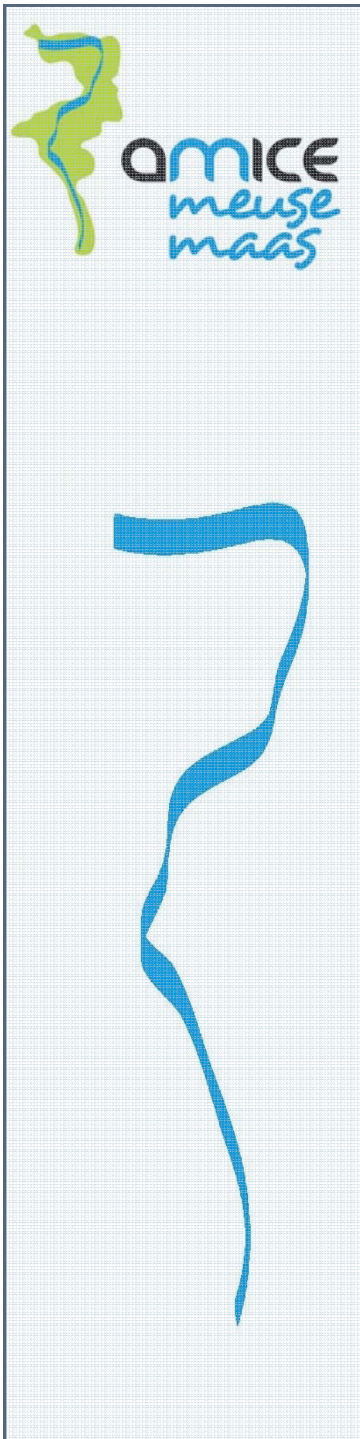
# ...A joint vision...

A vision of the transnational Meuse River Basin in 2100



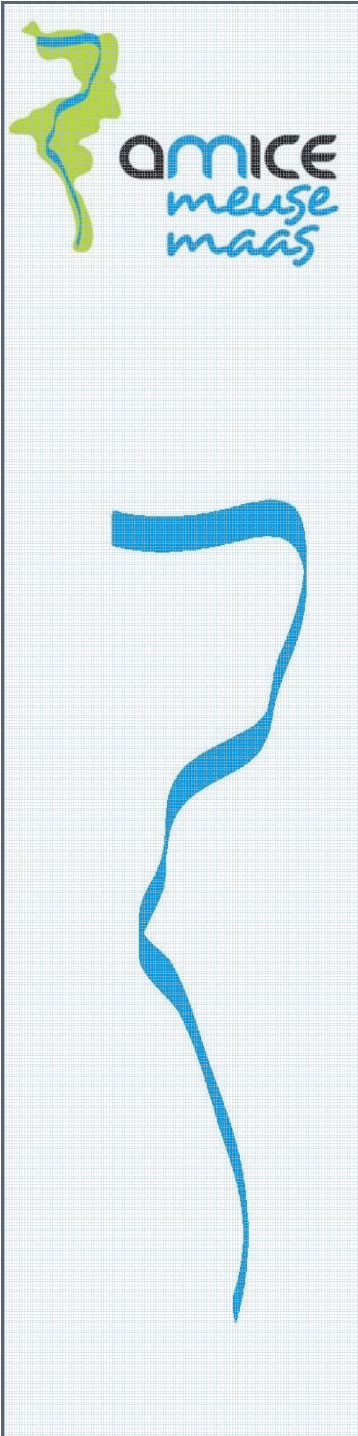
- Basin-wide**
- Crisis proof management
  - Natural river morphology
  - No more settlements in river bed

- Basin-wide**
- sustainable industry & agriculture
  - New knowledge
  - Adapt sluices
  - Better commitment



# Challenges

Challenge cluster	Challenge
Land-use	<ul style="list-style-type: none"> <li>• Spatial planning</li> <li>• Better land use planning ./ floods</li> <li>• Damage caused by floods</li> <li>• Multifunctional zones (agricult. Supply &amp; water retention)</li> <li>• Lack of land, e.g. (for reservoirs, etc)</li> <li>• Change agriculture (EU)</li> <li>• Room for H2O -&gt; restore watersystem (river-valley – groundwater)</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• Public awareness (water use, water problem, C.C.) more efficient on long term</li> <li>• Awareness &amp; change of life</li> <li>• Climate Sceptic</li> <li>• Willing to change (behavior..) and take actions</li> <li>• Sociology, basin culture</li> <li>• Promote Meuse Basin as example</li> <li>• Lack of money</li> </ul>
Water Quality	<ul style="list-style-type: none"> <li>• Regional differences, it depends on river/ river stretch</li> <li>• Not for all substances there are standards (e.g, emerging substances, pharmaceuticals, etc)</li> <li>• Not all standards are met</li> <li>• Adaptation of agricultural practices</li> </ul>
Improve knowledge	<ul style="list-style-type: none"> <li>• More water efficient processes for industry</li> <li>• Missing knowledge: lots of open questions:               <ul style="list-style-type: none"> <li>○ Impact of substances</li> <li>○ Prediction of future trends</li> <li>○ Impacts of measures on hydromorphology</li> <li>○ Cost-effectiveness</li> <li>○ Economic analysis of water services</li> <li>○ Relationship between:                   <ul style="list-style-type: none"> <li>▪ Agriculture and infiltration</li> <li>▪ Agriculture and erosion</li> </ul> </li> </ul> </li> </ul>
Adaptation of existing directives	<p>Agriculture and suspension/ sediments</p> <ul style="list-style-type: none"> <li>• Incorporation of climate adaptation into directives, also on the level of the measurements (degree of urgency is debatable. It is urgent to get started because the incorporation into legislation takes a lot of time)               <ul style="list-style-type: none"> <li>○ Water framework directive</li> <li>○ Flood directive ( FD has already provisions on climate change)</li> </ul> </li> </ul>
Integrated uses of water	<ul style="list-style-type: none"> <li>• How to combine:</li> </ul>



# Challenge-clusters

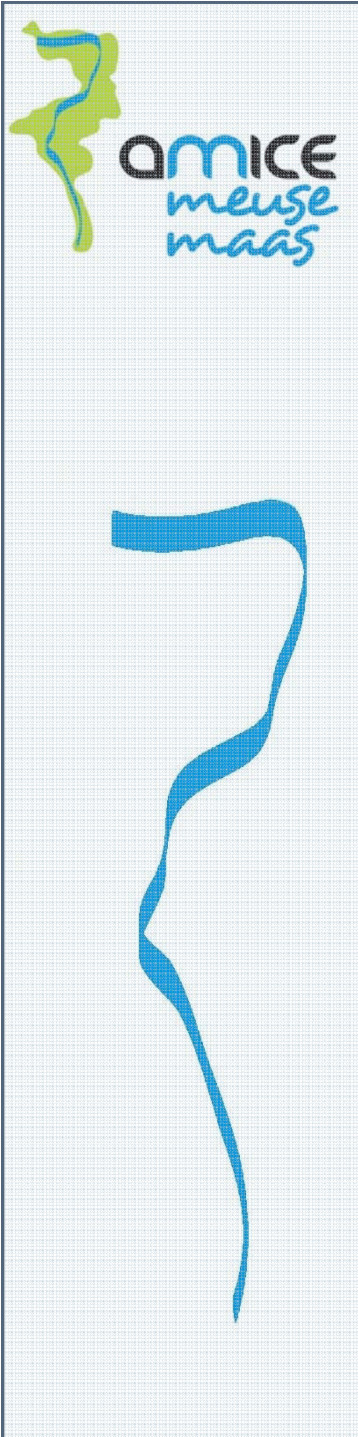
- Land-use
- Awareness
- Water Quality
- Improve knowledge
- Adaptation of existing directives
- Integrated uses of water
- Water shortage
- Coordination
- Other challenges



# Challenge-clusters

## e.g. Land-use

- Spatial planning
- Better land use planning / floods
- Damage caused by floods
- Multifunctional zones (agricult. Supply & water retention)
- Lack of land, e.g. (for reservoirs, etc)
- Change agriculture (EU)
- Room for H<sub>2</sub>O -> restore watersystem (river-valley-groundwater)



# Measures and actions

- Compilation of a list of measures
- Elaboration of measures into actions with special attention to:
  - location,
  - quantity,
  - time frame,
  - responsible agency,
  - supporting agencies,
  - budget