Rhine: adaptation strategy and mainstreaming climate into river basin/flood risk management plans

Session 4: basin-wide adaptation

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Climate Change Adaptation Strategy

Rhine Ministers requested the ICPR:

2007:

to carry out a scenario study regarding the impact of climate change on flow regime of the Rhine

2013:

to develop a climate adaptation strategy for the Rhine catchment

2015:
The Climate change adaptation strategy of the Rhine basin was adopted by the parties
Approach

Identification of:

- **Direct effects** of CC on flow regime and water temperature
- **Indirect effect** thereof on
  - ecology
  - chemistry
- **Impact on** different uses

**Strategy for the IRBD Rhine for adapting to climate change**

**Note to the reader**
This is a "living document" which will develop along with the increased knowledge on the climate change and its effects.

**Contents**

- **Summary and future key activities**
  - Initial conditions
  - Possibilities to adapt to the expected effects of climate change in the international river basin district (IRBD) Rhine
  - Take into account future socio-economic developments and integrate all actors

1. **Introduction**
   - 1.1 Survey of ICPR publications on climate change
   - 1.2 Approach to drafting a strategy to adapt to climate change in the Rhine catchment

2. **Direct effects of climate change in the Rhine catchment**
   - 2.1 Impact on the discharge regime of the Rhine
     - General information
     - Development during the 20th century
     - Development during the 21st century
   - 2.2 Impact on the water temperatures of the Rhine

3. **Effects of the changes of water balance and water temperature on water quality and the ecosystem**
   - 3.1 Effects on water quality
     - Discharge related effects
     - Temperature related impacts
   - 3.2 Effects on the ecosystem

4. **Effects on the use of water bodies**

5. **Possible fields of action and measures for adapting to the expected effects of climate change**
   - 5.1 Basic principles for possible adaptation measures
   - 5.2 Possible measures with respect to water quantity
     - Flood risk management
     - Low flow management
   - 5.3 Possible measures with respect to water quality
   - 5.4 Possible measures concerning the ecosystem
   - 5.5 Possible measures concerning other fields

Annex 1: Choice of international and national publications on the adaptation to climate change
Annex 2: "Guidance values for sensitivity" for floods
( Orientation values for possible adaptation measures)
Annex 3 "Guidance values for sensitivity" low flow
- Compilation of knowledge, frame to act, not a list of precise measures
- Mitigation actions: existing activities pave the way to enhance the resilience of the river & floodplain ecosystems
- Possible consequences of CC reinforce the necessity to act and take measures
- Monitoring water quantity, quality and ecology: know about changes, new topics considering CC: link WFD-FD, low water and water temperature, effects on ecology, ...
- Exchange of best practice, actualization of knowledge and continuation of cooperation
Mainstreaming climate into management plans

(National) **implementation** of the CC adaptation measures through RBMP and FRMP (also 3d and 2d cycle) and the new working mandates and programs 2016-2021

Cc adaptation strategy based on national strategies and measures.
Links with the RBMP and the work of the Program of work 2016-2021 for the Working groups “Water quality” and “Ecology”

→ Different mentions and links in the two reports

Plan de gestion 2015 coordonné au niveau international du district hydrographique international Rhin

(partie A = partie faîtière)
Décembre 2015

Internationally Coordinated Floodrisk management plan for the international river basin district Rhine (part A):
Financing and implementation of measures

- No special budget allowed for this new tasks but special budget for the coordination of the implementation of WFD and FD

- Implementation and financing of the measures by the States but with reporting obligation to the ICPR

- To tackle the problem of CC we used as much as possible measures already taken by the ICPR or foreseen by the states
Realization of water level reduction measures

Maatregelen voor de retentie van hoogwater in de hoofdstrom van de Rijn

Stand van de uitvoering van de maatregelen
- Afgerond
- In uitvoering / in planning

WATEREN

RIVIEREN

KUST- EN OVERGANGSWATEREN

Toelichting bij de cijfers
Voor de waterstandverlagende maatregelen in de Rijndelta vanaf Lobith: verlaging van de waterstand in m
Voor de retentie maatregelen tussen Bazel en Lobith: volumes in miljoen m³

Opmerking: De Franse of Nederlandse naam van de maatregelen is te vinden in de bijgevoegde tabellen.

32 of 76 measures are finalized
Room for the river, Netherlands
(Nijmegen, room for the Waal)