International cooperation on the river Rhine

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The Rhine river basin

The Rhine = 3rd biggest European river

200,000 km²
Outline

• The Rhine: some characteristics
• The Netherlands as a downstream country
• Early cooperation in the Rhine basin
• Water pollution
• Difficulties and conflicts
• Flood protection
• Ecological restauration
• What makes cooperation work
Cooperation in the Rhine basin with:
-Switzerland
-Germany
-France
-Luxembourg
-Netherlands
Inhabitants
58 Mio.

Drinking water
for 20 million people

Main stream
1233 km

Navigable
825 km from Basel/
Rheinfelden – Rotterdam
Some hydrological characteristics of the Rhine

Mean discharge Lobith: 2.200 m3/s
  Minimum in January
  Lowest discharge: 620 m3/s (1947, November)

  Extreme flood 1926, January: 12.600 m3/s
  Flood 1995, January: ca 12.000 m3/s

Height difference Rotterdam-Basel: 260 m
The Netherlands as a downstream country
kaart 8
Landelijke overstromingsrisicokaart

primair waterkeringen
- categorie a
- categorie b
- categorie c
- grons hoge gronden

maximale waterdiepten
- 0,2 m onder de kusten nog rijken
- 0,2-0,5 m
- 0,5-0,8 m ingemaakte kusten nog rijken
- 0,8 m-2 m enkele ongewijzigde langzamelijk
- 2 m-5 m enkele langzamelijk
- > 5 m
- buitendijks gebied

Deze landelijke overstromingskaart is aanvankelijk gemaakt. In het kader van de implementatie van de EU ROP wordt hieraan nog gewerkt. Uiteindelijk 2013 wordt een definitieve, richtlijnconforme risicokaart opgemaakt.
International cooperation: Shipping on the River Rhine

1815: Congres of Vienna
   - Free shipping
   - Central committee for the River Rhine

1831 Act of Mainz

1868 Act of Mannheim

1963 Convention of Strassbourg
International cooperation on prevention of pollution
After World War 2: Pollution of the river leading to poor water quality
International Commission for the Protection of the Rhine (ICPR)

Switzerland, France, Germany, Luxemburg, Netherlands, European Community

Established 1950
Confirmed 1963
Rhine action programme 1987
ICPR: Reducing pollution at source

Good results in all countries

1972: 1st Rhine Ministers Conference
1976: Rhine Chemical Convention and Rhine Chlorides Convention

The influence of economic weaknesses and the lessons we can learn from this
Development of the communities of the Rhine and average oxygen content of the Rhine at Emmerich

Species number of invertebrates in connection with the oxygen content of the Rhine
Average removal rate UWWTP 1981-2008
Total P (mg/l)
1. Nov. 1986 (Schweizerhalle - CH) : Sandoz accident

Fire, 10-30 t pesticides with fire water into the Rhine → it caused the death of all aquatic life downstream

Life in the River Rhine is Destroyed

November 7th, 1986:

Submersed life before accident

Submersed life after accident

- Guarantee drinking water
- Reduce contamination

60 „Priority substances“: reduction by 50-70 % (1985-1995) e. g. cadmium, lead, mercury, dioxines...

- Construction of basins collecting fire extinction water
- Warning and alert systems
- Ecological rehabilitation

BASF Ludwigshafen
Warning and alert plan Rhine (WAP)

- R7 Rijkswaterstaat Arnhem
- R6 Regierungsbezirk Düsseldorf
- R5 Wasserschutzpolizei Koblenz
- R4 Wasserschutzpolizei Wiesbaden
- R3 Wasserschutzpolizei Mannheim
- R2 Préfecture du Bas-Rhin, Strasbourg
- R1 Amt für Umwelt und Energie, Stadt Basel
Not all the time easy success stories

**In general**
- From 1950 till the first results took long time
- The Sandoz fire was necessary to awaken awareness
- Still problems not solved or new problems coming up

**Some examples**
- Rhine salt
- Cooling water
Not only successes: the salt treaty
1976: *Convention for the Protection of the Rhine against Chloride Pollution*
- The salt from mining activities had to be stored at the French potassium mines.

*Many years of discussions followed*

In 1991, a protocol to this “Salt Treaty” was signed.
- Additional storage measures whenever the chloride level at the German–Dutch border exceeded 200 mg Cl-/l,
- Special measures in the Wieringermeerpolder in the Netherlands, where saline seepage water was no longer to be discharged into Lake Ijssel.

- The cost of the measures had to be paid by **Germany** (30 percent), **France** (30 percent), **Switzerland** (6 percent) and the **Netherlands** (34 percent).
Not only successes: cooling water
Using the cool capacity of the river Rhine

- From the early ’70-ties till 1998 talks and negotiations on a heat treaty
  **Without succes**
- The different opinions of the delegations could not be brought together
- Even the EU-commisioner tried to achieve this

- In the mean time declarations from the Rhine ministers
- In 1998 the situation looked more or less stable and the status quo was accepted. Inventory of the status quo was made.

2010: attention for climate change with renewed water temperature as an item

**Conclusion:** no treaty but nevertheless effect on the behaviour of the member states
Cooperation on flood prevention
Extreme high water in 1993 and 1995
Reaction:
-Major rivers Deltaplan
-Room for the River Programme
Landscape change in the Upper Rhine

1838

1872

1980

2027?
Room for the River 1 principles

- Retention areas
- Green river/bypass
- Dike relocation
Room for the River 2 principles

- Deepening summer bed
- Groin improvement
- Rising dikes (if no other option exists)
- Lowering of floodplains
- Remove hydraulic obstacles
Double aim of Room for the River

1. Safety
2. Spatial quality
Room for the River program project area
The Government has adopted the following starting points

– Discharge of 16,000 m$^3$ at Lobith
– 39 measures
– Investment of € 2.2 billion
– Work complete in 2015
– Design and implementation by local authorities
Rhine 2020: Program on the sustainable development of the Rhine

Flood prevention and protection
- 10% reduction of damage risks and 25% reduction by 2020
- Increase flood awareness
- Improve flood warning systems

Measures
- Increase water retention by reactivating inundation areas
- Maintain and strengthening of dikes
- Drafting maps with the risks of inundation (for spatial planning)
Emergency flood storage areas (EFSA)
International cooperation on Rhine Ecology: 2020 and

The Water Framework Directive
Salmon 2000 - ...an impossible target?

Reintroduction of the vanished Atlantic salmon (†1958) into the Rhine
Salmon life cycle
Programme Rhine 2020: Salmon 2020

Until 2009:
5,000 salmons have returned to the Rhine

2020: A population of 7,000 – 21,000 salmon will migrate into the Rhine each year
A successful return

Water: clean enough

Mating upstream in rivers (D & F)

Restoration of continuity

Restocking with small salmons

Optimisation of habitats

Example Saynbach: No weirs, good habitat => Natural reproduction of salmon
Former distribution - 1900

Masterplan "Migratory Fish"
International cooperation

• What makes it work?
Exchange of information

1. \( \omega \)
2. 3
3. \( m \)
4. \( \varepsilon \)
What makes the ICPR effective?

Rules of cooperation

✓ De-centralised organisation
✓ National Delegations
  ✓ political mandate
  ✓ technical know how
  ✓ funds
✓ Consensus
✓ Decisions are recommendations
✓ Obligation to report about implementing measures
✓ Political trust, no sanctions
✓ Neutral secretariat

• Rhine Convention
• Rules of procedure and financial regulations

Plenary assembly Luxembourg
What makes the ICPR effective?

Budget of the ICPR

**Regular budget**
- Regular budget (1,200,000 €/yr)

12.0%: Switzerland
85.5%: France (32.5%)
  - Germany (32.5%)
  - Netherlands (32.5%)
  - Luxembourg (2.5%)
2.5%: EC

**WFD (special budget)**
- 32% each: France, Germany, Netherlands
- 1.5% each: Austria, Luxembourg
- 0.5% each: Belgium/Wallonia, Liechtenstein
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