The Rhine: Managing a European river

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IKSR
CIPR
ICBR

Internationale Kommission zum Schutz des Rheins

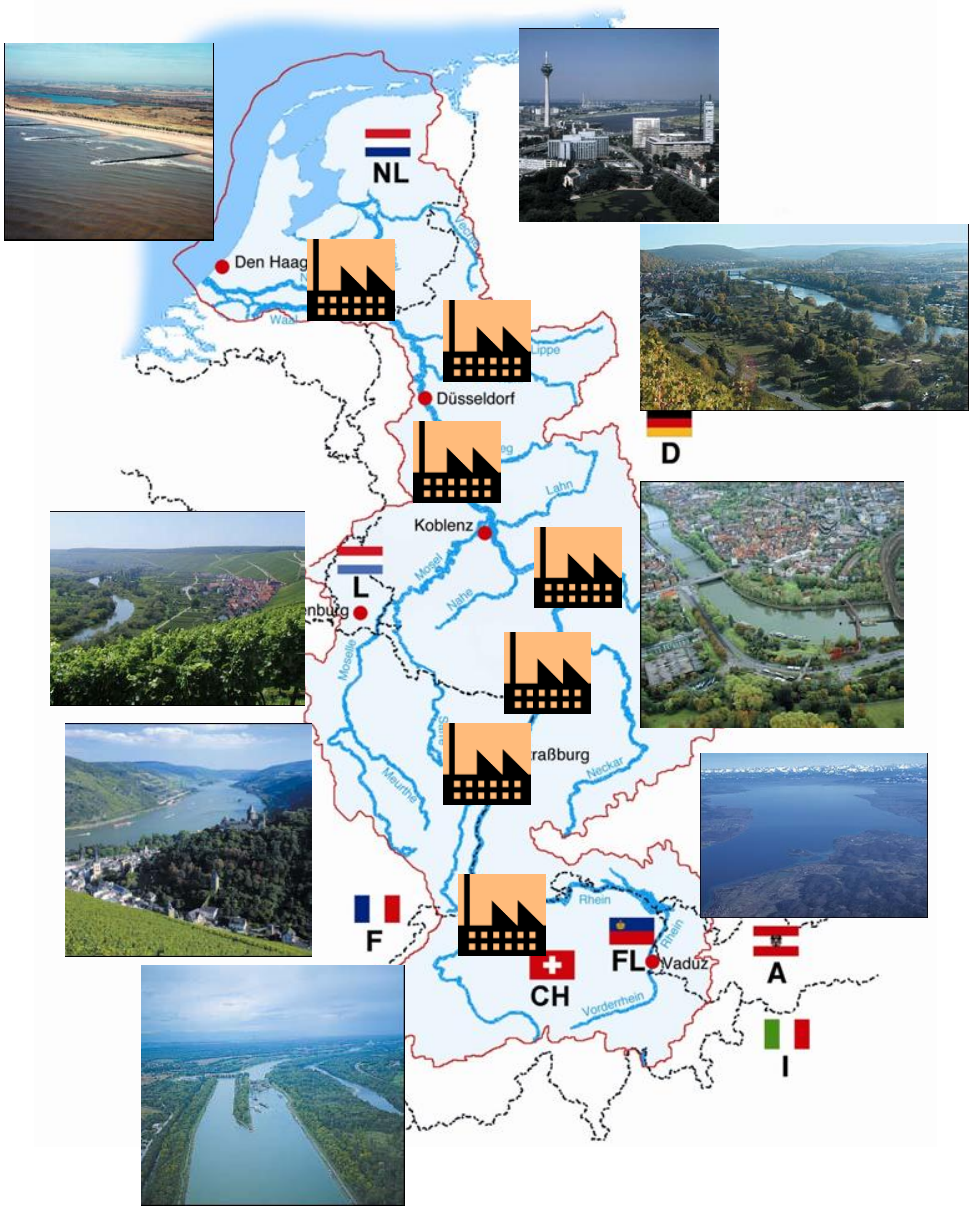
Commission Internationale pour la Protection du Rhin

Internationale Commissie ter Bescherming van de Rijn

International Commission for the Protection of the Rhine

River Rhine: a European river

Rhine basin facts



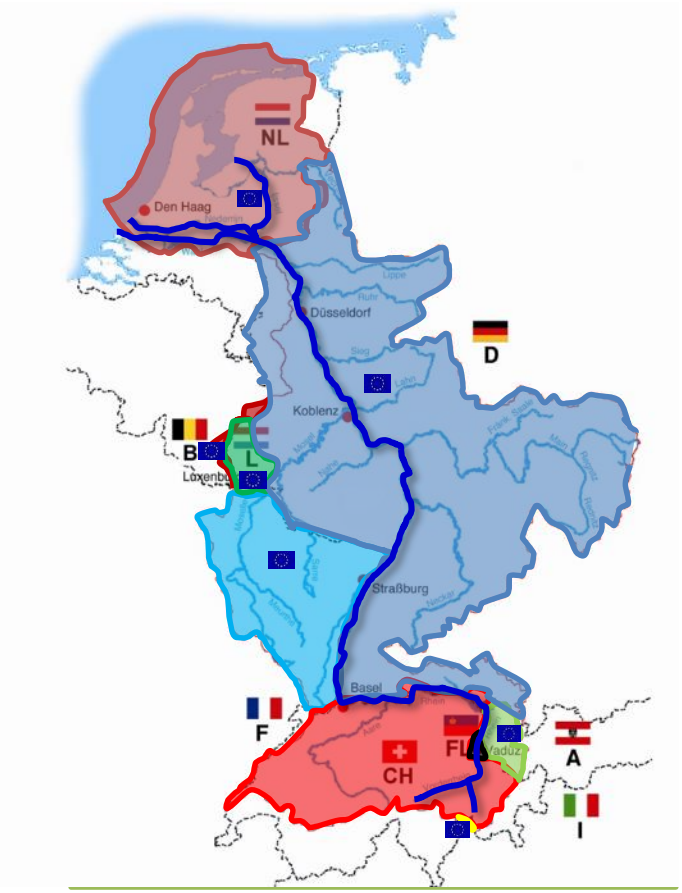
Main stream
Length: 1233 km

60 million inhabitants in 9 countries

Drinking water supply for 30 million people

Europe's most important navigation route (825 km)

ICPR (founded in 1950)

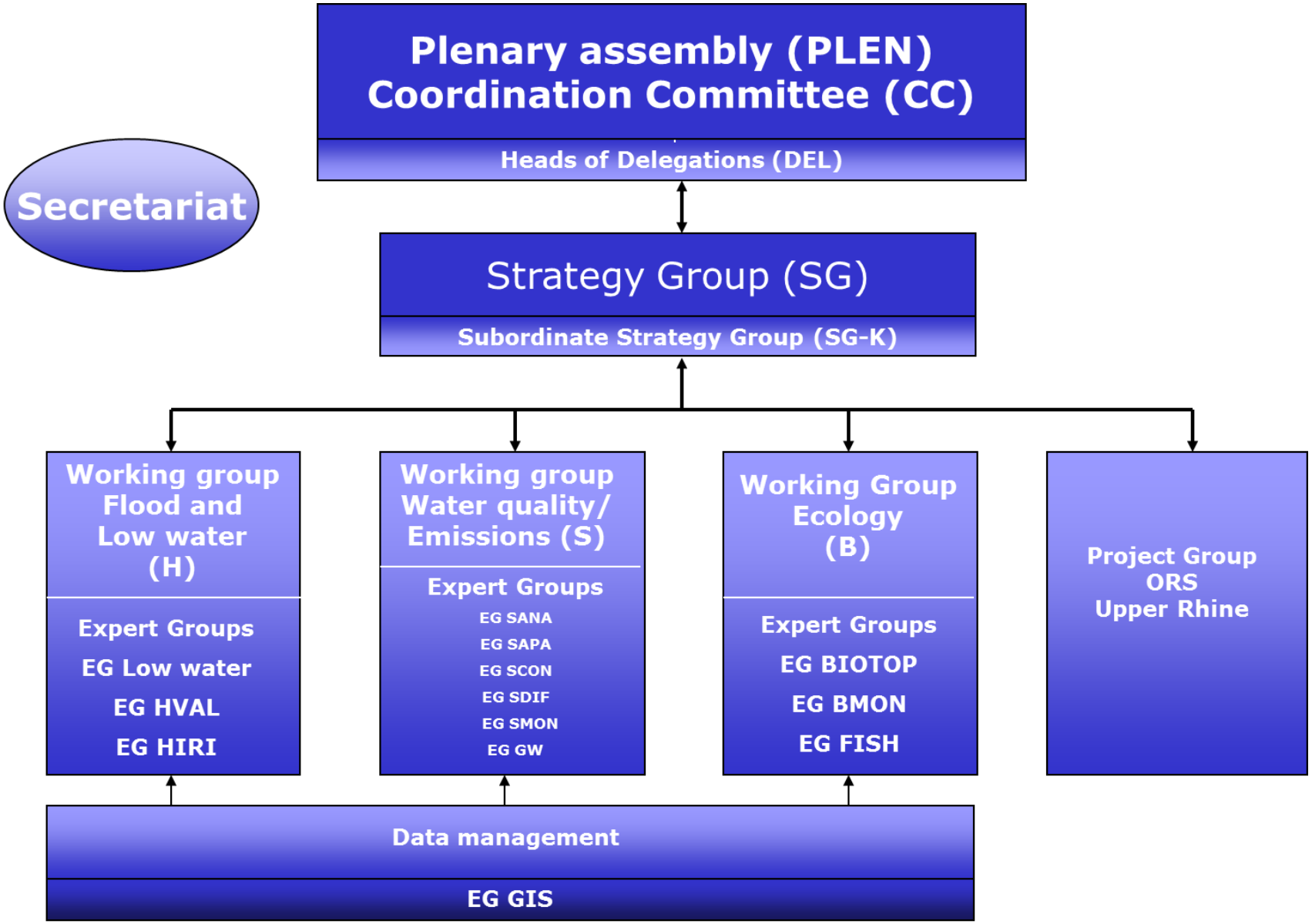


The Netherlands
Germany
France
Luxembourg
Belgium/Wallonia
Switzerland
Austria
Liechtenstein
Italy
European Union

(Members of the ICPR are underlined)

- **Since 1995 Stakeholder involvement, IGOs and NGOs with observer status**

ICPR: How are we organized?



ICPR: How does cooperation work?

- **Intergovernmental organization**
- **Cooperation based on legally binding conventions**
- **Delegations**
  - political mandate
  - technical know how
  - provide common budget

  (1.2 Mio €/a for secretariat only)

- **Decision making by consensus. Measures as recommendations to countries, no sanctions**
- **Obligation to report on implementation of measures**
- **Legal framework: EU Directives (WFD and FD) and national legislation**
- **Small neutral secretariat with technical & scientific knowledge, 3 working languages & English**

ICPR: Landmarks

First Phase 1950 – 1970/80: Monitoring network (CH -> NL), building trust and mutual understanding; convincing society; wastewater treatment plants

- **1986 Accident at Sandoz (CH)**
- **1987 Rhine Action Program + „Salmon 2000“**
- **1993 + 1995 „Century floods“ on the Rhine**
- **1998 Action Plan on Floods**
- **2000 - Program Rhine 2020**
- **2000 - EU Water Framework Directive**
- **2007 - EU Floods Directive**

The turning point 1986: Fire at Sandoz, Basel (CH)

„Rhine action program“ (1987-2000)

„Salmon 2000“

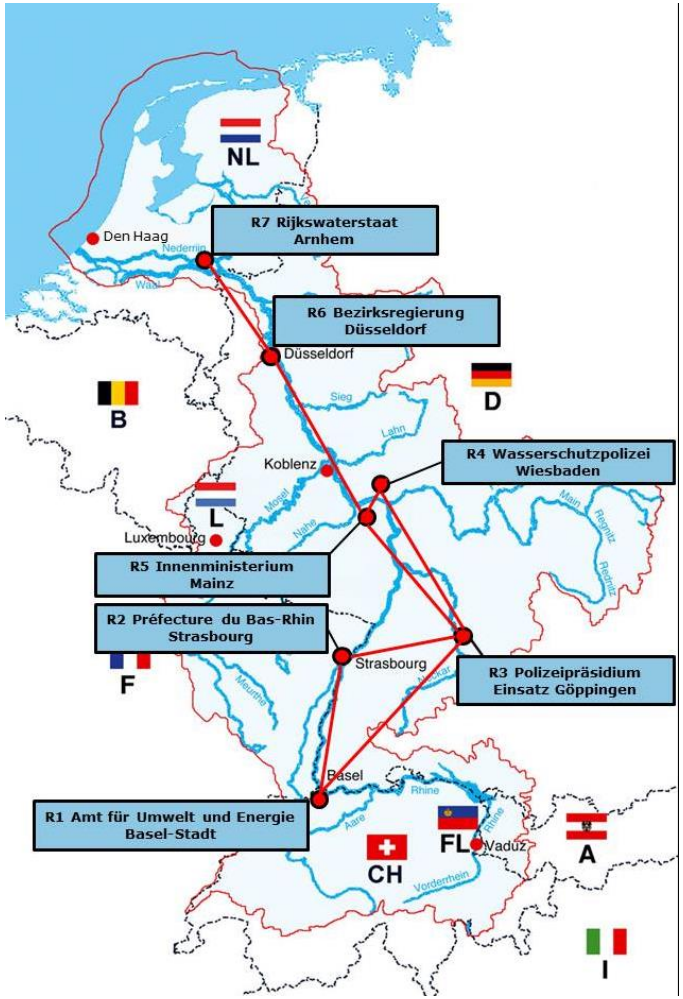
Rhine Action Program - Goals

- Guarantee drinking water production
- Reduce direct inputs of toxic substances by 50% - 70% (1985 - 1995)
- Reduce accidental spills for example by constructing collecting basins for fire extinction water
- Improve warning and alert systems
- Improve ecosystem: Reintroduce vanished fauna species (salmon)

European Provisions, e.g.

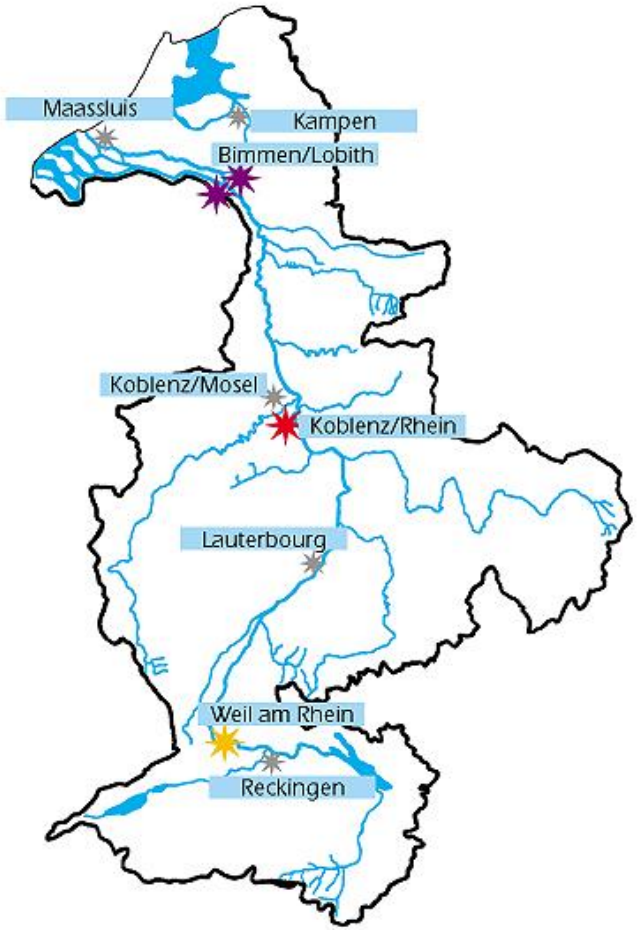
- European Urban Wastewater Directive (91/271/EEC)
- European Nitrates Directive (91/676/EEC)
- Not valid for Switzerland

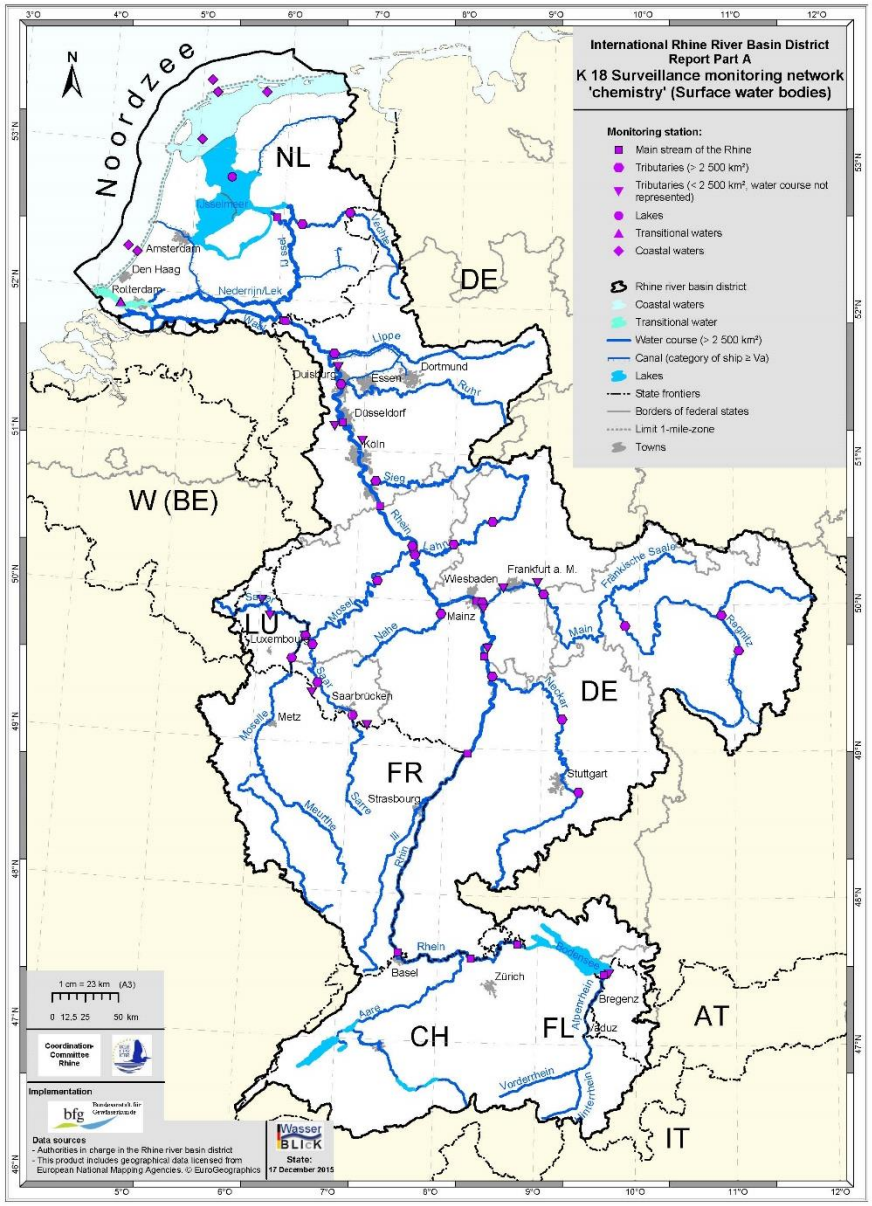
Warning and alert plan



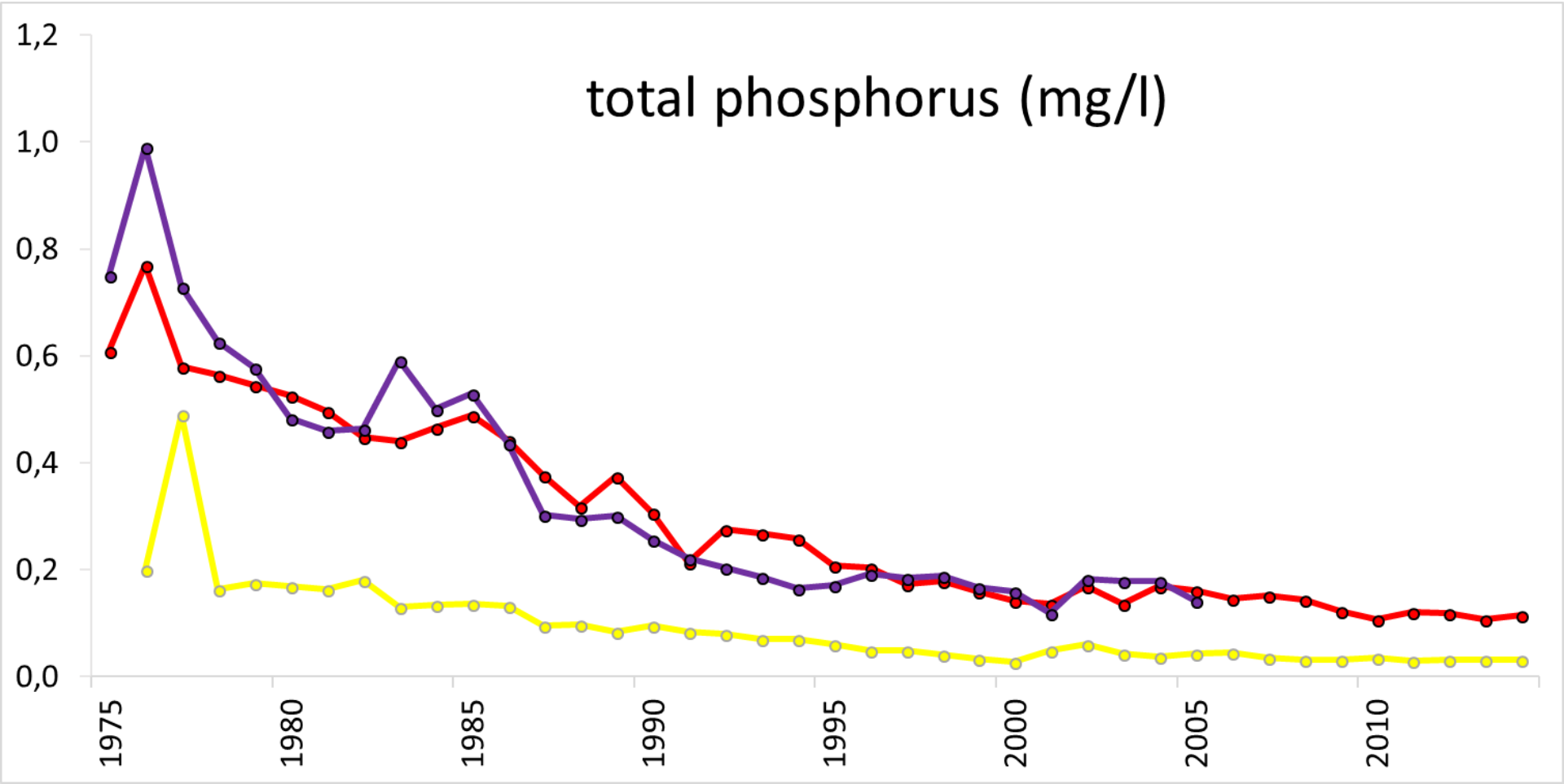
Tanker accident (MV Waldhof)
13th January 2011
No navigation for 5 weeks

Water quality monitoring

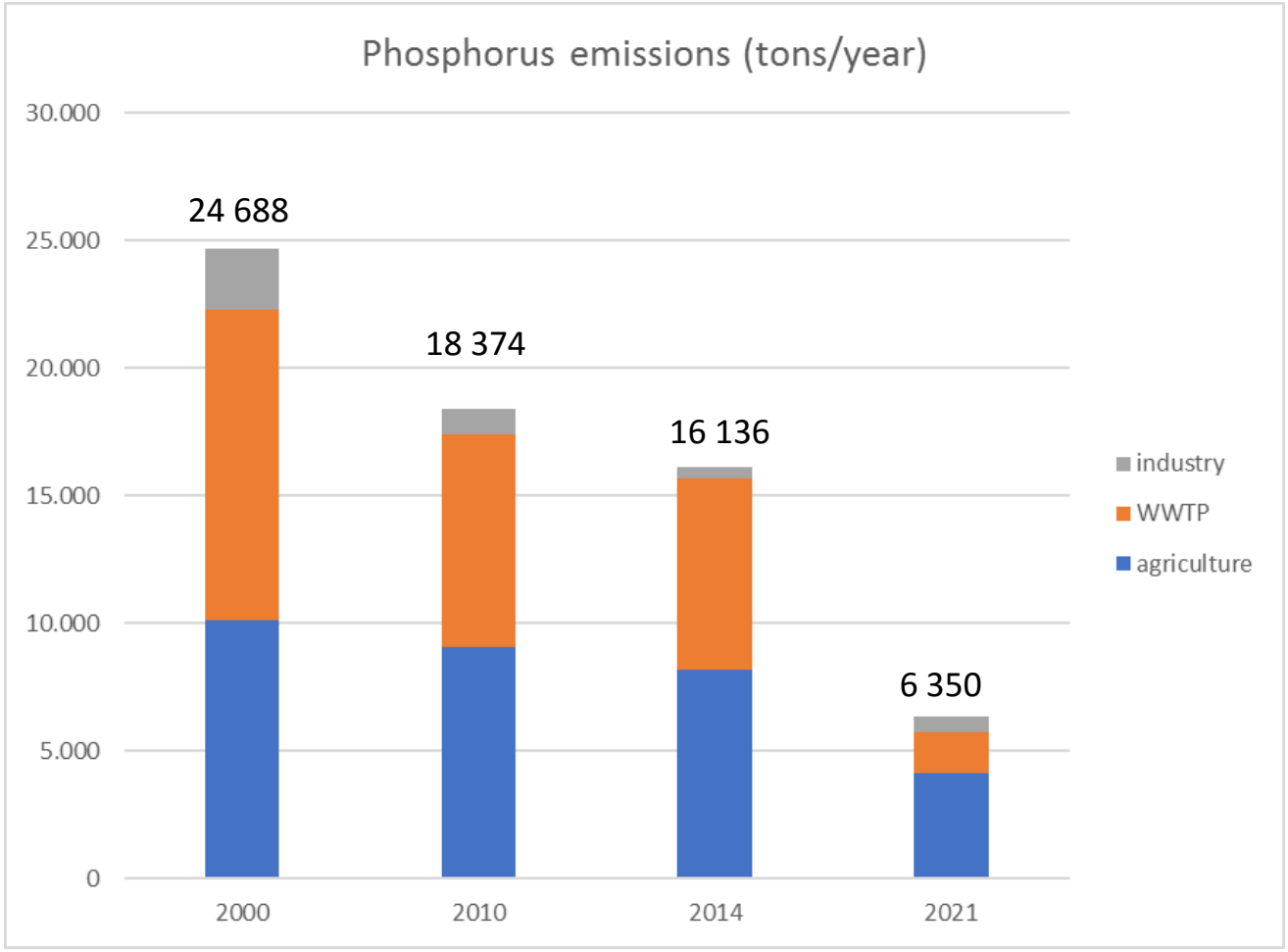




Water quality improvement

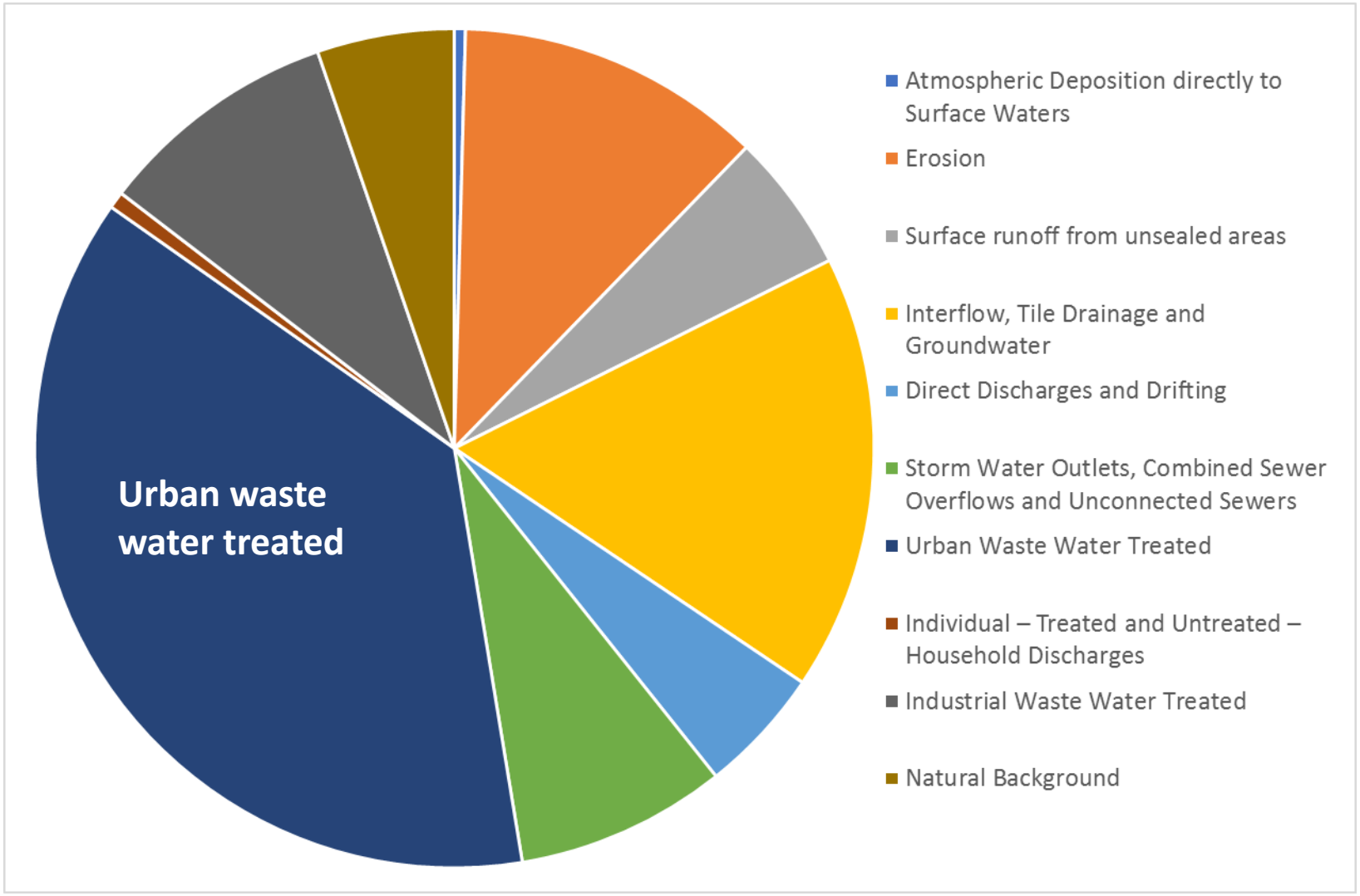


Phosphorus emissions



Based on data and projections of the countries (RBMP 2015)

Phosphorus emissions in 2000

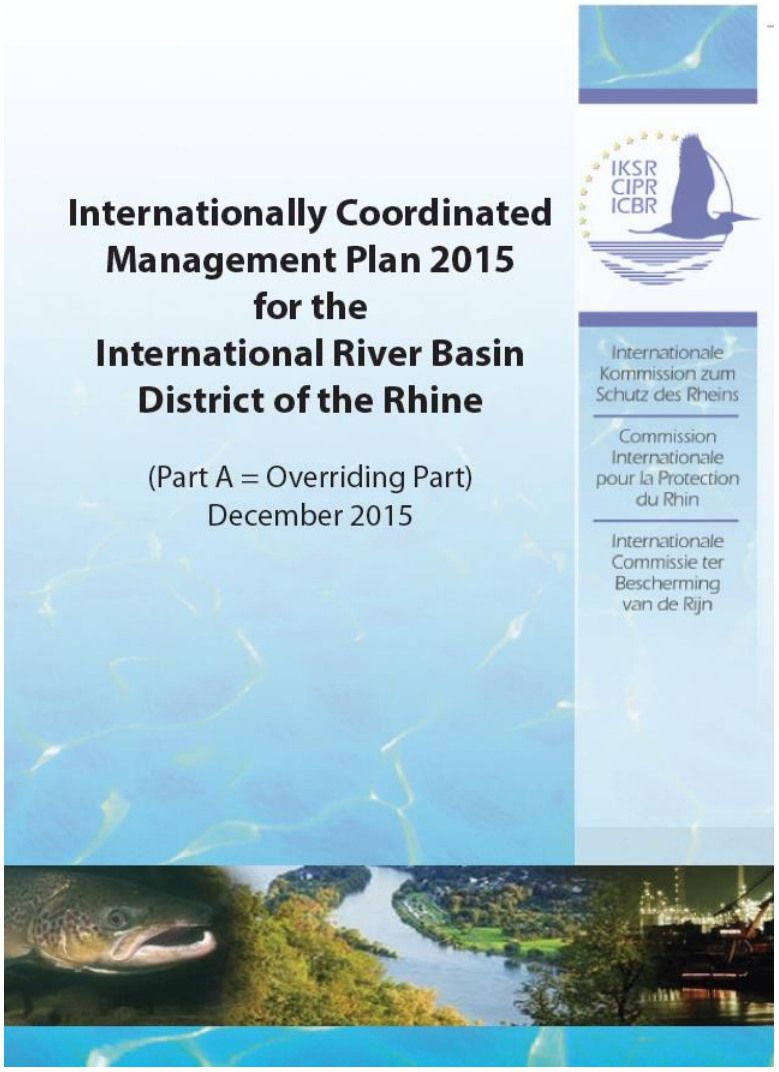


Emission pathways in 2000 (ICPR report 134)

Water quality improvement

- **Solidarity in water quality improvement**
- **Common efforts of**
  - ✓ **governments, administrations**
  - ✓ **industries**
  - ✓ **municipalities/population**
- **Since 1975, € 80 bn. invested in wastewater treatment plants within the Rhine catchment → 96% of population connected**

EU Water Framework Directive (WFD)



Target: „good status" of rivers

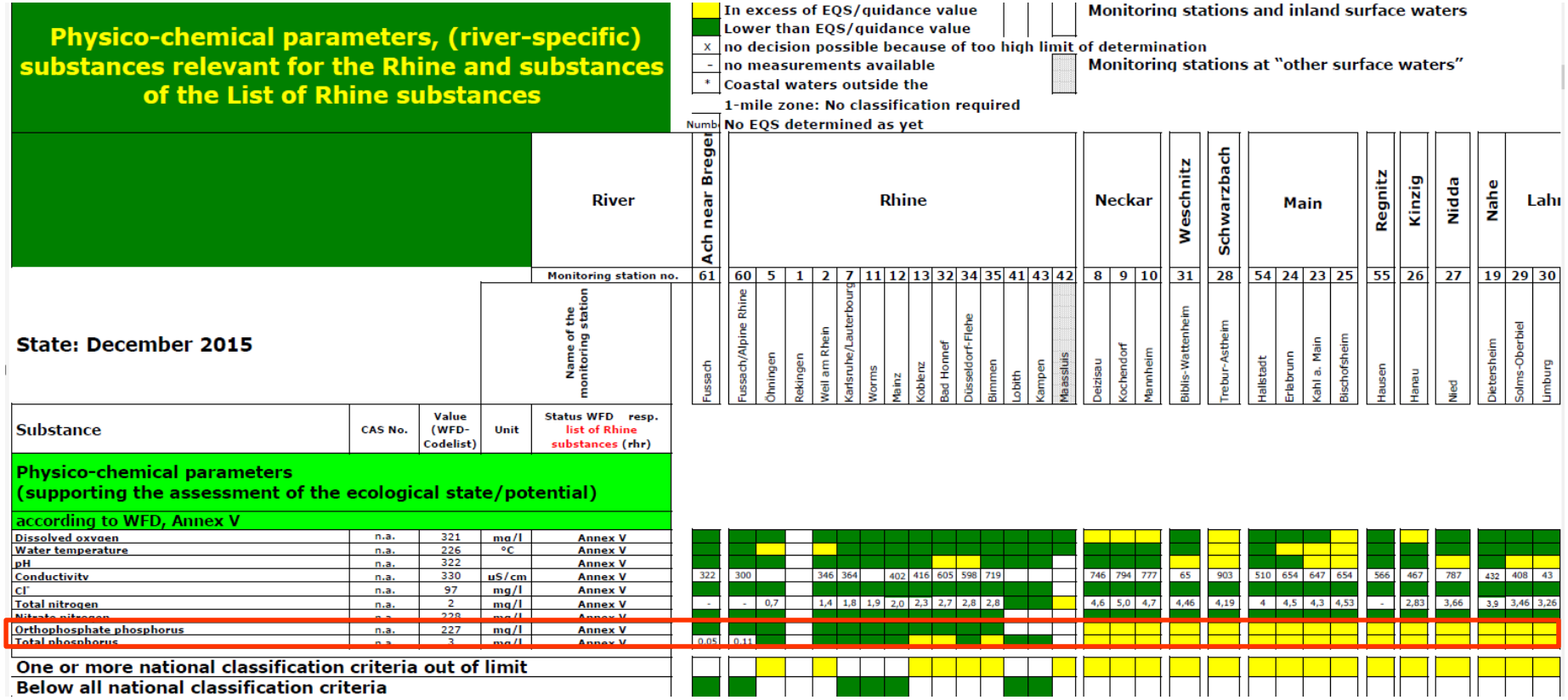
→1st River basin management plan 2009-2015

→2nd River basin management plan 2016-2021

Management plan 2015

Total phosphorus and ortho-phosphate-phosphorus

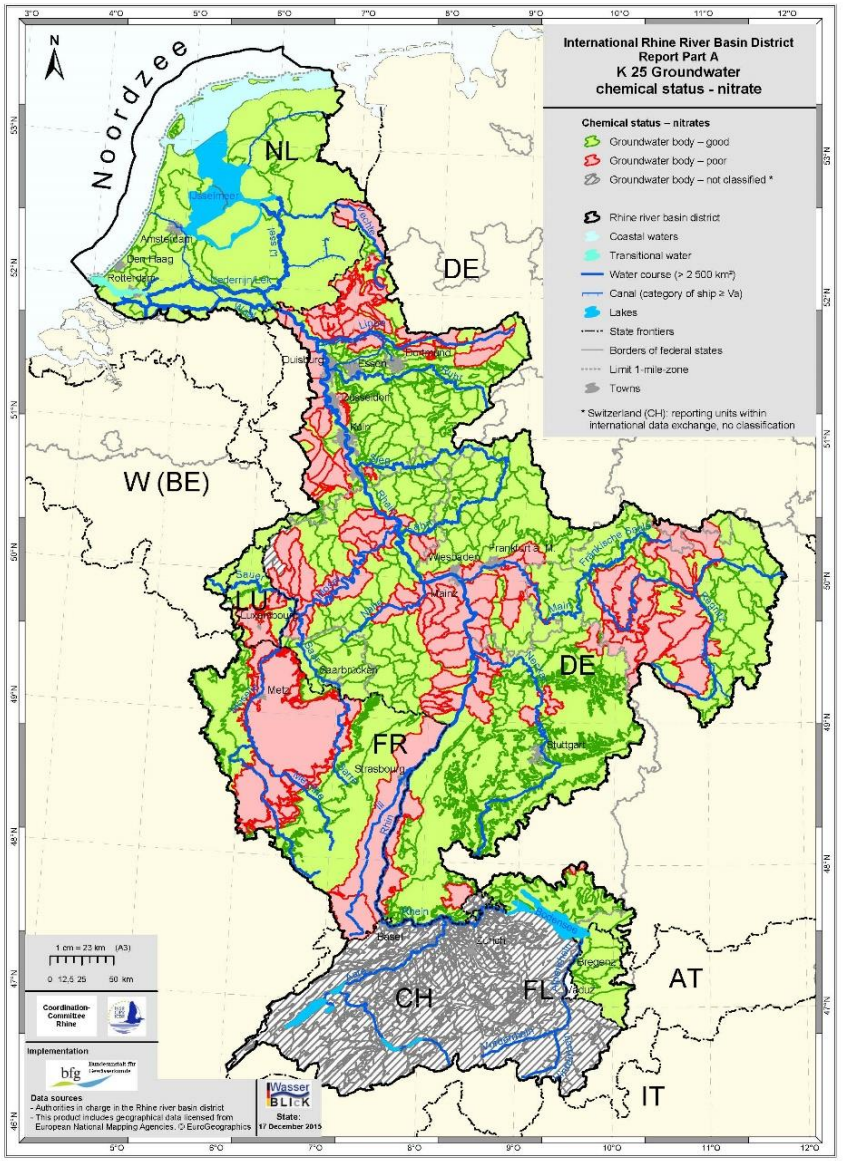
- Exceedance of national thresholds at certain monitoring stations of part A, as in many smaller waters in the catchment
- Reason: wastewater and diffuse inputs



Management plan 2015

Nitrogen

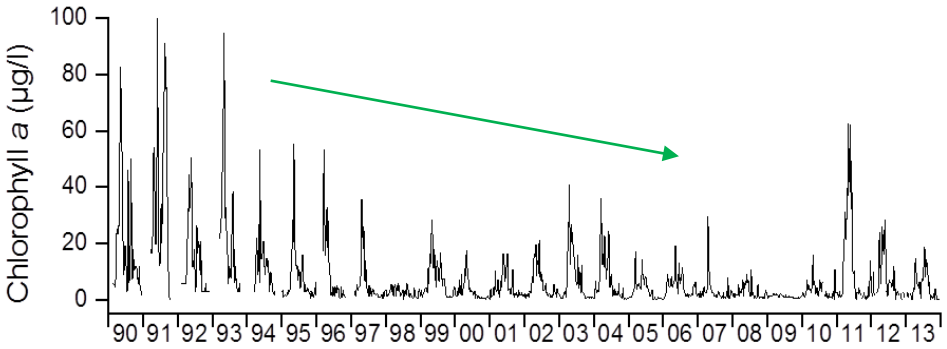
- Important → source of **coastal water pollution** (Wadden Sea)
- ICPR agreement: 15 - 20 % reduction of nitrogen load (Rhine → North Sea + Wadden Sea) → achieved: **15 % reduction since 2000**
- Concentrations still above the Dutch guidance value
- **Groundwater**: nitrogen inputs of the upper main aquifer → most important problem
- diffuse inputs getting more important → further reduction only possible in cooperation with **agriculture**



Management plan 2015

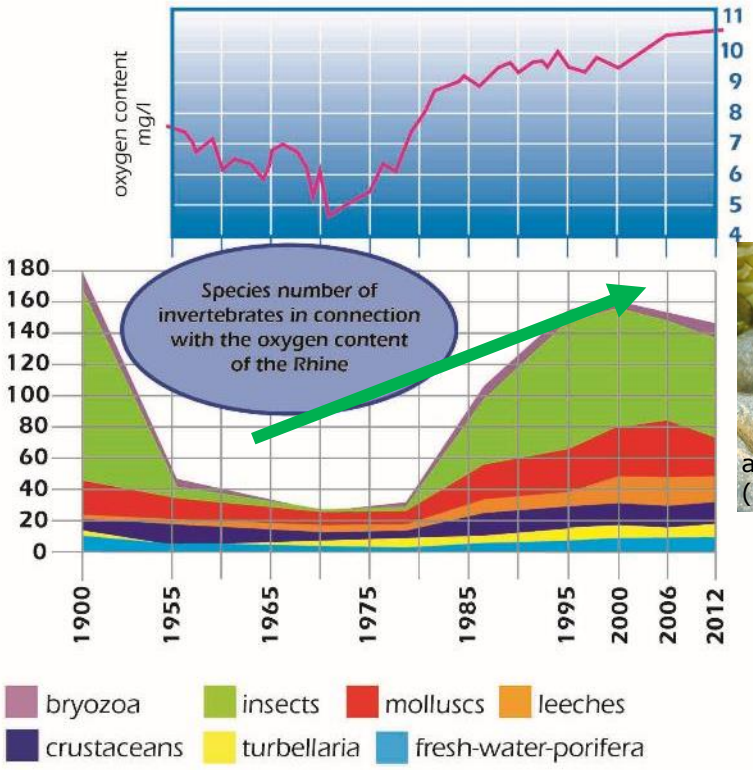
- Important instruments for the further reduction and avoidance of nutrient emissions: **nitrates directive** (91/676/EEC), **urban waste water directive** (91/271/EEC) and, IPPC directive on industrial emissions (2010/75/EG)
  + implementation of additional political programmes, such as the **Rhine Action Programme** and OSPAR recommendations
  → distinct reduction of phosphorus and nitrogen concentrations in the entire catchment area during the last decades

Results
Linking water quality and ecology

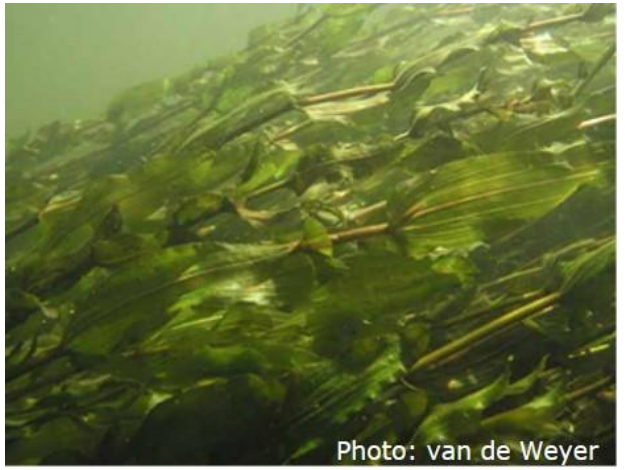


Long-term trends

- Increased diversity of invertebrates
- decrease of phytoplankton biomass
- 44 macrophyte species
- 64 fish species




authochthonous Rhine-dayfly (larva)



Master Plan Migratory Fish Rhine (2009)

Goal: self sustaining, stable populations of migratory fish in the Rhine catchment as far as Basel (CH)

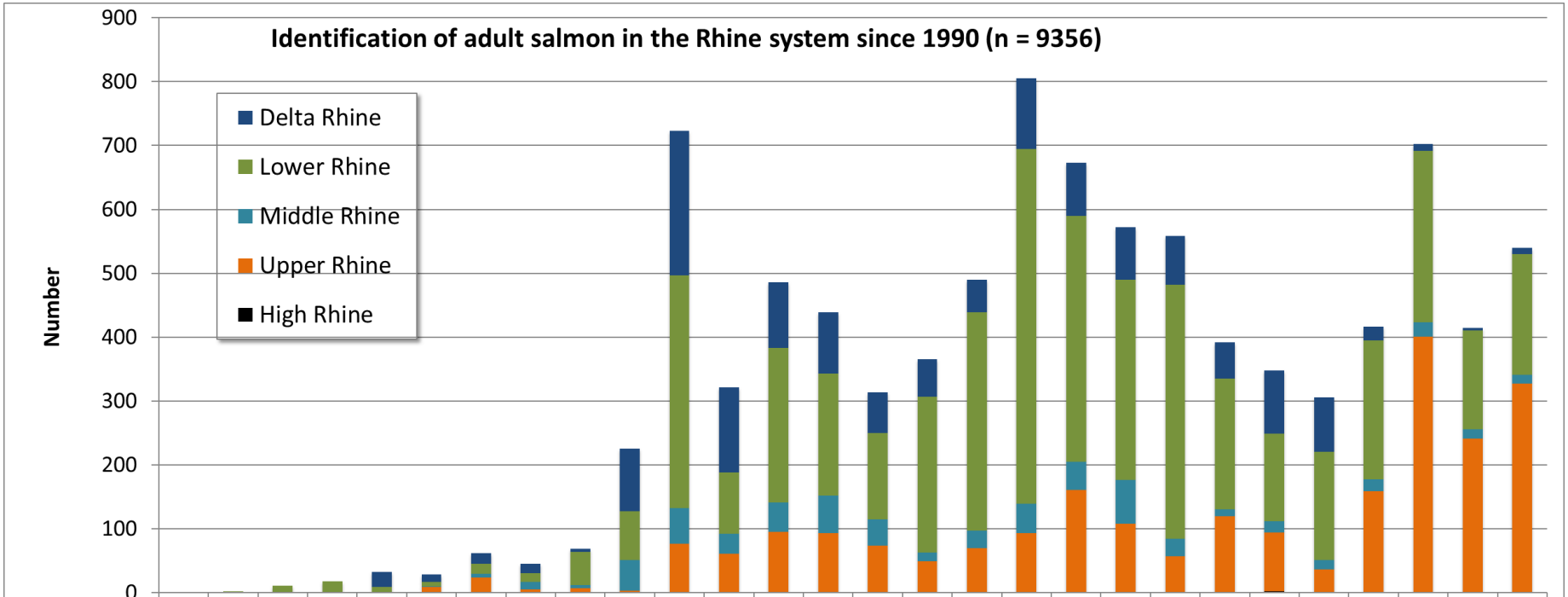
Measures:

- **River continuity in the program waters**
- **Restoration of habitats**
- **Stocking (i.a. salmon, allis shad)**

Costs 2000-2015: € 627 Mln

Salmon is back in the Rhine!

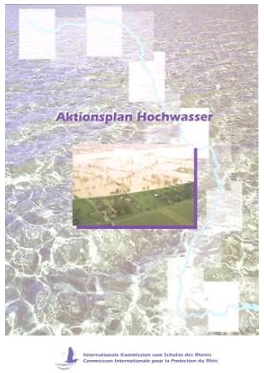
- Since 1990 more than 9000 salmon have been identified in the Rhine system!
- Salmon as symbol … but other migratory fish (allis shad, houting) are on the rise as well



Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Delta Rhine	0	0	0	0	23	11	17	15	5	98	226	133	103	96	63	58	51	110	83	82	76	57	99	86	21	10	4	10
Lower Rhine	1	2	10	18	9	7	16	13	52	76	365	96	242	191	135	244	342	556	385	314	398	205	137	169	218	269	154	189
Middle Rhine	0	0	1	0	0	1	5	12	5	48	56	31	46	59	42	14	27	46	44	68	27	10	18	15				
Upper Rhine	0	0	0	0	0	9	24	5	7	3	76	61	95	93	73	49	70	93	161	108	57	120	92	36				
High Rhine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0				

Transboundary flood risk management
Why?

- ✓ **Dec. 1993 and Jan./Feb. 1995: Cities flooded in Germany and The Netherlands**
- ✓ **Action Plan on Floods (1998)**
  (4 action targets: reduce damage and water levels, improve flood forecast and risk awareness)
- ✓ **1st Flood Risk Management Plan (2015) (EU Floods Directive)**

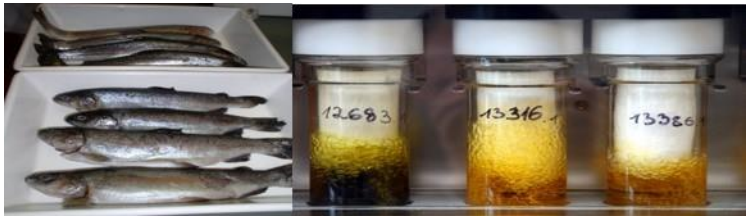


Future challenges

Adaptation to climate changes (changes in runoff and temperature, storm rain)

Water quality: New substances (micropollutants), microplastics

Contamination of fish



Ecological continuity: Migration of fish up- and downstream

Conclusions

- The story of the river Rhine is a **success story** given the improvements achieved in its **water quality and biodiversity**.
- Nonetheless, **new challenges** are ever present such as effects of climate change and micropollutants.
- Success can be explained by
  - →the **institutional governmental framework** for cooperation of states and involvement of **stakeholders** through ICPR
  - →pressure/acceptance from the **public**
  - →building common **trust**;
  - →identifying common **interests**;
  - →defining **common goals**, reinforced through a recognizable objective/symbol (Salmon)
  - → open and transparent **communication**

and …..Patience.

European Riverprize 2013, Vienna (Austria) & International Riverprize 2014, Canberra (Australia)

Thanks for your attention!
… questions?

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