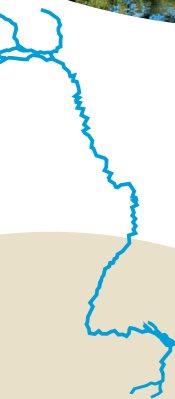




Rhine 2040





Rhine 2040

70 years of international cooperation – a success story to be continued!

The Rhine and its tributaries figure among the most important and best-known rivers in Europe. More than 60 million people live in its river basin. It is a busy waterway. Numerous cities and industrial areas are located on its banks, which benefit from the utilisation opportunities that the river offers them. Since the 19th century, man has heavily interfered with the ecosystem of the river and its catchment. In the middle of the 20th century, the Rhine was in a poor state. One of the most striking signs was that salmons, which were abundant in the past, became extinct – mainly due to heavily polluted water and the loss of ecological continuity, but also more generally because of the significant degradation of their habitats. Several industrial accidents further aggravated the situation.

The 9 states in the Rhine catchment area recognised the need for action and initiated first measures. The long-standing international cooperation within the framework of the International Commission for the Protection of the Rhine (ICPR), founded in 1950, has significantly contributed to



Salmons © Jakob Rutkiewicz - Shutterstock.com



Rhine 2040

In 2020, to meet the new challenges, the states in the Rhine catchment and the EU adopted the new programme „Rhine 2040“ – for a sustainably managed and climate-resilient catchment. The EU's „European Green Deal“ and national water protection measures will additionally support the achievement of the „Rhine 2040“ goals. We would here like to briefly present the improvements already achieved in the past as well as the „Rhine 2040“ programme with the planned measures.

the fact that the Rhine is doing better today. The water quality has demonstrably improved. The river has again been given more room and many animal and plant species typical for the Rhine have returned. Work is underway to reintroduce salmon and restore habitats.

Climate change is a new challenge for the ecosystem of the Rhine catchment, leading to rising temperatures and more frequent low water periods in summer. In addition, invasive species will continue to strongly influence the ecosystem in the Rhine. Also, human activities continue to be a burden. Micro-pollutants such as pharmaceutical residues are difficult to eliminate from the water in wastewater treatment plants.

Further information

Further information is found in the long version of the programme “Rhine 2040” at www.iksr.org/en > [ICPR](#) > [Rhine 2040](#).



Biodiversity – more life along and in the Rhine

After decades of alienation from nature, the states in the Rhine catchment are now making greater efforts than ever to improve biodiversity along and in the watercourse.



Young allis shad © Dr. B. Stemmer

What we have already achieved:

- After the river regulations during the 19th and 20th century, 140 km² of floodplains have been restored in the last 20 years. More room for the river – this is good for nature and for flood protection!
- Numerous animal species have returned – including allis shad, caddisflies and various dragonfly species. There is also a positive trend for waterfowl.
- New fish ways in the Rhine delta and the Upper Rhine, as well as the removal or adaptation of 600 obstacles on its tributaries, now allow migratory fish to again ascend from the North Sea through the Rhine into many tributaries to spawn. Several hundred salmon as well as other fish species take advantage of this opportunity every year.

Our vision for 2040:

A green ribbon of natural areas accompanies the Rhine, providing habitats for numerous hydrophilic species and mitigating the effects of climate change. Salmon can reach the Rhine Falls of Schaffhausen from the North Sea and their „nurseries“ in the tributaries.



This is what we plan to do in the next 20 years:

- Another 200 km² of floodplains will be restored and 100 oxbow lakes will be reconnected to the Rhine. Habitats typical of floodplains will be more strongly protected and interconnected.
- 400 km of the banks, which are still heavily paved in many places, will be renatured.
- Three big barrages in the southern Upper Rhine, which have so far been obstacles to migration, will be retrofitted with fish ways. Another 300 obstacles on tributaries will be removed.
- Eels migrating downstream will be better protected from the turbines of hydroelectric power plants.



High Rhine Dierscholden © ICPR



Water quality – keeping the Rhine clean

Extensive measures, such as the expansion of sewage treatment plants, have considerably improved the water quality of the Rhine.



What we have already achieved:

- Many pollutants have been successfully reduced – some heavy metals such as lead by 70 - 100% since 1970 and nutrients such as nitrate and phosphorus by up to 50% since 1990.
- All businesses and over 95% of households in the Rhine catchment are connected to wastewater treatment plants.
- With the International Warning and Alarm Plan Rhine, the Rhine bordering states can now inform each other quickly and react should an incident occur.
- Polluted sediments were remediated at 10 sites along the Rhine.

With respect to the water quality of the Rhine are we today facing new challenges. A prominent example of this are micro-pollutants in the form of residues from household chemicals, personal care products, pharmaceuticals and pesticides and industrial and commercial production. They can enter surface waters and groundwater, both of which serve as drinking water resources.



Our vision for 2040:

The Rhine and its tributaries are clean. The quality of the groundwater and the sediments at the bottom of the rivers is also good. Living organisms on and in the Rhine benefit from this. Drinking water can be obtained with as little effort as possible from Rhine water.



Glass of water © gorodphoto – Shutterstock.com



This is what we plan to do in the next 20 years:

- The load of pollutants and nutrients will be further reduced.
- Micropollutants will be reduced by at least 30%, through preventive actions primarily at source to improved waste water treatment.
- The countries will cooperate to test and introduce new methods for monitoring substances.
- Pollution of rivers by waste, especially plastics, will be significantly reduced.
- Remedial actions will further reduce the historical pollution of sediments.



Floods – protect and prevent

Flooding is a natural process. But the floods of 1993 and 1995 caused billions in damage along the Rhine and its tributaries. Since then, the states have jointly made great efforts to improve the situation.



What we have already achieved:

- The states in the Rhine catchment have created flood retention areas with a volume of 340 million m³. More than 14 billion euros have been invested in these and other flood protection and flood prevention measures.
- The flood maps in the Rhine Atlas have contributed to raising the risk awareness of the population for floods along the Rhine.
- Due to improvements in flood forecasting, people are now warned of floods much earlier.
- The risk of flood damage has already been reduced by 25%.

A new challenge is the aggravation of the flood risk as a consequence of climate change. At the same time, further population growth is predicted for many cities along the Rhine, which may increase the damage potential.



Flooding Netherlands © J. Kruijschoop

Our vision for 2040:

The Rhine has even more room to spread out in harmony with nature during floods. People in the settlements along the Rhine are well prepared for floods.



This is what we plan to do in the next 20 years:

- The risk of flood damage will be reduced by another 15% by 2040.
- By 2030, the flood retention area is to increase to around 540 million m³. Sites for additional flood polders and dike relocations will be identified.
- Undeveloped floodplains are kept free of new development. In regions at risk, the construction of new buildings that cannot be avoided will be flood-adapted.



Low water – coping with lean periods

Just like floods low water is a natural process. After decades with less pronounced low water, the hot, dry summers of 2018 and 2019 with long and pronounced periods of low water have however made us realise that climate change has already become a reality in the Rhine catchment.

What we have already achieved:

- In 2015, the first climate change adaptation strategy was published with forecasts of future runoff and water temperatures of the Rhine.
- Since 2018, there has been joint monitoring of low water.



Our vision for 2040:

Thanks to joint approaches to solutions, the Rhine catchment can better cope with the impacts of low water. The adverse consequences for ecology, water quality, drinking water production and other water uses are less severe.

This is what we plan to do in the next 20 years:

- The climate change adaptation strategy will be updated by 2025.
- Monitoring will be improved to better predict periods of drought.
- The amount of water that will be available in the Rhine catchment in the future will be studied.
- Knowledge of the impacts of climate change on aquatic ecosystems and biodiversity will be further deepened.
- Joint approaches to solutions will be developed in order to be able to cope better with low water in the future.
- The answer to climate change and invasive species is to provide nature with water bodies and riverine zones that are as close to nature as possible: That is, what the ICPR is committed to do!



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Oxbow lake of the Rhine near Kaltsruhe © ICPR

Picture front cover: Valley of the Middle Rhine © Picold - Shutterstock.com