INTERIM REPORT

ON THE IMPLEMENTATION OF THE JOINT PROGRAM OF MEASURES IN THE DANUBE RIVER BASIN 2018
1. Where Things Stand: Restoring the Danube River Basin

A 1.287 km long, the Danube River is the second longest river in Europe and its basin covers 817,000 square kilometres and 33% of continental Europe. It is a central feature of European life and is critical in the generation of hydropower, navigation, agriculture, recreation, water supply, and the natural environment. The Danube River Basin is shared by 25 countries and it is the fourth largest watershed by area and one of the most densely populated. However, while some 20 million people rely on the Danube for drinking water, currently only 5% of it is protected. The Danube has been described as a ‘jewel in the crown’ of European river basins, and an important provider for good conditions for habitats and water quality. Improving this state of affairs is essential. To work towards a crucial common cause: ensuring the sustainable use of freshwater in the Danube River Basin. A. Sustainable and efficient management of the Danube River, and collaborative management approaches are necessary. To achieve this, this document, will find an overview of the accomplishments and progress we’ve made together over the past 20 years. It depends on the cooperation of every Danube country, many different sectors, and work, and accomplishing it requires more than just a few new regulations and clean-up efforts.

2. The story of Sewage: Cleaning Up Organic Pollution

Where Things Stand: Restoring the Danube River Basin

This is where the International Commission for the Protection of the Danube River (ICPDR) came in. The ICPDR was established by the contracting parties of the Danube River Protection Convention in 1994, and its signatories have agreed to cooperate on crucial water management issues, including the conservation of surface and groundwater, controlling hazards from accidents and floods, and reducing pollution. It promotes the Black Sea from sources in the Danube River. The Convention takes a holistic approach, based on the understanding that water resources play an essential part in ecosystems as well as in human societies and economies.

3. Protecting a Legacy: Europe’s Endangered Sturgeons Are Staging a Comeback

However, the ongoing goal of the ICPDR is not only to carry out the activities under the Convention, but also to serve as the platform for EU water legislation and make it a flowing tool to benefit the Danube River Basin countries and their people.

4. Investing in the Future: Financing the Costs of Saving the Environment

Since 2000, the European Union has been one of the main drivers for river basin management in the Danube region, particularly through its Water Framework Directive, which is one of the most comprehensive water legislation in the world. To implement this Directive, the Danube countries nominated the ICPDR as the platform to coordinate the work necessary. However, while only EU Member States are legally bound by the Water Framework Directive to achieve the requirements of good conditions for habitats and water quality, all the Danube countries have agreed to implement the Directive. Through this cooperation, the ICPDR and its partners have turned the Danube into a basic example of successful integrated river basin management while also helping to reinforce the political stability of the whole Danube region.

5. Teamwork Across Sectors Finds Common Ground to Save Our Waterbodies

As required by the Water Framework Directive, the ICPDR and its contracting parties integrate each country’s river basin management plan to create the Danube River Basin Management Plan. The first Danube River Basin Management Plan was developed in 2008 and is updated every six years. The Management Plan includes an assessment on significant pressures on waterbodies, as well as a program of measures jointly agreed by the Danube countries to restore the River. The Danube River Protection Convention was signed in 1994, and its signatories have agreed to cooperate on crucial water management issues, including the conservation of surface and groundwater, controlling hazards from accidents and floods, and reducing pollution. The Convention promotes the Black Sea from sources in the Danube River. The Convention takes a holistic approach, based on the understanding that water resources play an essential part in ecosystems as well as in human societies and economies.

6. Groundwater: Protecting a Hidden Treasure

The Danube River Protection Convention was signed in 1994, and its signatories have agreed to cooperate on crucial water management issues, including the conservation of surface and groundwater, controlling hazards from accidents and floods, and reducing pollution. The Convention promotes the Black Sea from sources in the Danube River. The Convention takes a holistic approach, based on the understanding that water resources play an essential part in ecosystems as well as in human societies and economies.

7. Restoring the Aquatic Ecosystem: Reducing Nutrient Pollution Effectively

ICPDR Secretariat
Vienna International Centre / D0412 Vienna 1220 / Austria

secretariat@icpdr.org

Kirstie Shepherd, Proofreader
Hélène Masliah-Gilkarov, Editor
Edith Hödl, Teamwork Across Sectors Finds Common Ground to Save Our Waterbodies
Getting Everyone Involved: Public Participation is the Key to Saving the Danube River Basin
Looking Ahead: Building the Danube River Basin’s Future

Page 2

The ICPDR works to safeguard the Danube’s Water resources for future generation: a ”healthy” and diverse aquatic system; no risk from toxic chemicals; no threats from extraneous nutrients; damage-free floods; and a self-sustaining and financially independent international institution, the ICPDR, that will continue to lead the way toward achieving these goals.

The Goals of the ICPDR

The ICPDR works to safeguard the Danube’s Water resources for future generation:
- Healthy and diverse aquatic systems
- No risk from toxic chemicals
- No threats from extraneous nutrients
- Damage-free floods

The Danube River Protection Convention was signed in 1994, and its signatories have agreed to cooperate on crucial water management issues, including the conservation of surface and groundwater, controlling hazards from accidents and floods, and reducing pollution. The Convention promotes the Black Sea from sources in the Danube River. The Convention takes a holistic approach, based on the understanding that water resources play an essential part in ecosystems as well as in human societies and economies.

Water Framework Directives

More detailed information on cultural and environmental protection activities can be found in the national reports of each country. 

European Environment Agency

Wastewater contaminated with organic pollution – feces and household waste—that can be digested harmlessly, disappearing back into the environment in a natural cycle that maintains the source to ensure much cleaner waters for the environment, human health, and for people to enjoy. The reality is significantly different when cities, industrial facilities, and major industrial units are essential – especially for paper and wood manufacturing, the chemical industry, and petroleum processing. For European Union Member States, ensuring adequate wastewater collection and treatment systems is obligatory for municipalities (over 2,000 PE). The European Commission produces BAT reference documents defining the required technological conditions for the main industrial activities.

Best available techniques (BAT) mean using the optimal techniques – both technology and management – to work for the environment. Upgraded wastewater collection and sewer systems and treatment plants as part of their goals to clean up the rivers.

In the last two decades, Danube countries have invested more than €22 billion in wastewater infrastructure. Since 2004, almost 500 municipalities and almost 40 million PE have had a permit that is in line with the provisions of the respective EU Directives regulating industrial emissions. Many of these permits do not allow for pollution emissions into surface waters and which must ensure that the recipient waters do not suffer any deterioration and that the pollution load does not exceed the maximum concentrations of the WFD. The most significant changes have been in the regulation of pollutants discharges. The new and revised EU Directives, the most important issues are financing infrastructure projects, and ensuring sustainable wastewater management in the Danube River Basin, which includes better management of wastewater treatment plants Adding substantial capacity throughout the region.
Reducing Nutrient Pollution Effectively

Urban and industrial wastewater and polluted water from agriculture can lead to massive algae blooms when nutrient pollution flows through the Danube’s waters and enters the Black Sea.

Nutrient pollution can make water unlivable to algae and less so to fish—not to mention humans who can no longer drink from, wash in, fish in, or use for recreation the waterway that previously supported their livelihoods, health and well-being.

What is nutrient pollution?

When nutrients such as nitrogen or phosphorus enter surface waters—primarily from agriculture, but also from cities—enter surface waters, they feed algae growth. As the algae grow, they block sunlight from reaching other aquatic plants, which eventually die. Bacteria then digest the dead plants and algae, using up the oxygen in the water, and fish and other aquatic species may die.

Implementing and updating the Nitrates Action Programmes in EU Member States, which legislation requires more stringent removal technology for nutrients at municipalities bigger than 10,000 PE.

What’s more, substantial EU financial resources are spent each year in the farming sector to support farmers and finance best management practices. The percentage of these areas is already making a noticeable difference. These measures are either obligatory and linked to financial support or they are voluntary with financial compensation.

Best management practices for agriculture

Best management practices are the most effective and practical methods of preventing or reducing non-point source nutrient pollution from croplands and animal farms. They include good agricultural practices, fertilizer application limits, standards for good agricultural and environmental conditions, agri-environmental measures, and natural water retention measures.

Nitrates Action Programmes with strict rules on manure and fertilizer application are being implemented by more than 60% of the Danube River Basin.

For agricultural areas in EU Member States across the Danube River Basin, 70% are determined for direct support linked to cross-compliance and 20% receive additional subsidies for implementing environmentally-friendly measures. These financial mechanisms are linked to the EU Common Agricultural Policy. In the last decade, more than 1050 million has been spent for nutrient management projects. The percentage of these areas has increased substantially since 2006.

Meeting the Challenge

Nutrient pollution reduces the amount of oxygen in the water, and fish and other aquatic species may die. Bacteria then digest the dead plants and algae, using up the oxygen in the water, and fish and other aquatic species may die.

The solutions to reduce nutrient pollution are complex and require substantial financial, technical investments, and a change in mindset. These include installing nutrient retention technology at wastewater treatment plants, reducing the use of phosphorus in household goods like washing powder, and improving farming practices to ensure that less pollution ends up in the water.

Nitrates Action Programmes with strict rules on manure and fertilizer application are being implemented by more than 60% of the Danube River Basin.

For agricultural areas in EU Member States across the Danube River Basin, 70% are determined for direct support linked to cross-compliance and 20% receive additional subsidies for implementing environmentally-friendly measures. These financial mechanisms are linked to the EU Common Agricultural Policy. In the last decade, more than 1050 million has been spent for nutrient management projects. The percentage of these areas has increased substantially since 2006.

Where Things Stand

Nutrient inputs into surface waters have declined thanks to measures put in place, but further progress is required to enhance wastewater treatment and establish good agricultural practices that will balance the needs of water and agriculture to make water cleaner and ecosystems healthier.

Nitrates are transformed into nitrate and nitrite forms and released into the air as phosphorus is detached from wastewater with the sludge.

Since 2006, over 1,000 municipalities and more than 25 billion PLN have had treatment plants that can hold nutrients or have had to change their operations. More than 10% of these have been invested for these projects. Besides this, almost 600 million are planned or in progress by the end of 2018 to serve an additional 12 billion PLN. During the same period, 50% of the percentage of people connected to wastewater in remote and small settlements has increased by a remarkable 25% and reached 75%.

In the Czech Republic, existing treatment plants in the Brno, Szanska, Smilice, most sad, Katovice, and Katovice development zone have undergone extensive expansion and upgrades. Moreover, new sewage in Cejvno (with treatment in Straznice) and reconstruction of wastewater plants in many locations has been done. The project has been funded, the project from the EU EAGGF-4027, has been carried out. The investment is already making a noticeable difference. These measures are either obligatory and linked to financial support or they are voluntary with financial compensation.

In Germany, a model project to develop 12 demonstration farms in the federal state of Baden-Wuerttemberg is being implemented. These farms are using new environmentally-friendly methods of integrated crop production that result in less nutrient polluted water entering the water supply.

In the Czech Republic, existing treatment plants in the Brno, Szanska, Smilice, most sad, Katovice, and Katovice development zone have undergone extensive expansion and upgrades. Moreover, new sewage in Cejvno (with treatment in Straznice) and reconstruction of wastewater plants in many locations has been done. The project has been funded, the project from the EU EAGGF-4027, has been carried out. The investment is already making a noticeable difference. These measures are either obligatory and linked to financial support or they are voluntary with financial compensation.

In the Czech Republic, existing treatment plants in the Brno, Szanska, Smilice, most sad, Katovice, and Katovice development zone have undergone extensive expansion and upgrades. Moreover, new sewage in Cejvno (with treatment in Straznice) and reconstruction of wastewater plants in many locations has been done. The project has been funded, the project from the EU EAGGF-4027, has been carried out. The investment is already making a noticeable difference. These measures are either obligatory and linked to financial support or they are voluntary with financial compensation.
A New Course to Safer Waters

Aiming for CLEANER waters that are HEALTHIER and SAFER for both people and aquatic life, new technologies, updated regulations, and scientific measures are being implemented to reduce or halt the spread of dangerous substances in the waters of the Danube River Basin.

Meeting the Challenge

When we hear the word, “pollution,” we tend to think of hazardous substances – the toxic chemicals and metals that come from industry, farming, and everyday household activities, such as lead, mercury, pesticides, cosmetics, or medicines. Recognizing how dangerous these substances might be to human health and ecosystems, EU legislation has been steeped up significantly to reduce the pollution of these hazardous substances.

Chemical pollutants can find their way into the natural environment through municipal wastewater, polluted water from agriculture, industrial facilities, air pollution, and surface overflow, to name just a few. Depending on their concentration, they can either cause immediate toxicity or slowly accumulate in the ecosystem over time. Both pose a serious threat to human and aquatic life.

After the European Union had identified the most important hazardous substances, those that had the greatest effects to human health and to aquatic environment, it was time to find solutions. As with nutrients, pesticides, or atmospheric pollutants, management of hazardous substances ensures that the aquatic environment remains healthy.

Where Things Stand

Today, countries throughout the Danube region are developing and employing modern wastewater treatment technologies, minimizing or avoiding the pollution of these hazardous substances. Municipal wastewater treatment plants have added specific technologies activated carbon filters to remove hazardous pollut.

The fourth treatment stage

Priority and emerging pollutants, and microorganisms can only be partly treated by traditional wastewater treatment technologies. Specific methodologies – such as activated carbon filters, membrane filtration or ozone-treatment – can substantially remove contaminants from the wastewater.

The release of agricultural chemicals has been minimized thanks to measures enforcing the use of less toxic substances, ensuring proper management and safe application of pesticides and biocides, and setting emission limits. In agriculture, the use of sewage sludge which can contain hazardous substances is regulated to prevent harmful effects on soil, vegetation, crops and animals. Pollution via industrial accidents is also regulated and minimized through safety measures and reports, accident emergency plans, and early warning systems.

Sustainable use of pesticides also known as integrated pest control

Integrated pest management and the environmentally-friendly application of pesticides aim at applying the least harmful practices and products, preferring low or non-chemical methods, minimizing or avoiding pesticide use in sensitive areas, and establishing buffer zones to protect aquatic ecosystems. Pesticide use is highly limited or banned on organic farming fields.

Success Stories

A new research initiative called SOLUTIONS made great strides towards safer water and more accurate identification of chemical pollution sources. The SOLUTIONS cooperator project was a consortium of 39 renowned scientific institutions from 15 countries, including 6 from the Danube region. The project developed new research and monitoring tools for both current and under-developed chemicals that pose a risk to European waterbodies, as well as legacy chemicals, which remain in the environment long after their use has been restricted or banned. An addressable research program will create a comprehensive knowledge base that will be drawn from when looking for ways to significantly reduce hazardous pollution. The SOLUTIONS project’s activities will most closely match the Danube River Basin Strategy’s aim of reducing a wide range of hazardous substances, making it possible to address those pollutants in the 2015 update of the Danube River Basin Management Plan.

Looking Ahead

While still in its early stages, the ICPDR’s strategy on hazardous substance pollution mitigation and prevention is already producing a number of results in the Danube Basin. Both national and international authorities have expressed interest in adopting the project’s results and the ICPDR’s Danube Accident Emergency Warning System, which is also responsible for wastewater treatment in the cities of Ulm and New York, has been conducting research on the topic of improved wastewater treatment systems for more than a decade. Where the research conducted in cooperation with the Berlin University of Applied Sciences was to identify a suitable process variant that could directly reduce the discharges of hazardous substances, the study being conducted on behalf of the Water Agency of the State of New York and the New York State Department of Environmental Conservation has two main goals: to identify a suitable process variant that could directly reduce the discharges of hazardous substances and to develop a long-term strategy for phasing out priority hazardous substance emissions.

For 20 of the 42 priority hazardous substances, mitigation measures, such as improved monitoring and warning systems, have already been implemented. Moreover, a large number of substances have been phased out by the EU, including 22 out of 42 substances.

Nevertheless, further investigations are needed to close knowledge gaps on the monitoring of hazardous substances, their migration pathways and pathways in the aquatic environment, emissions, monitoring water emissions and loads, and implementing mitigation measures. In order to manage a complex system of environmental risks, which involves large amount of dangerous chemicals, particularly in the mineral processing, energy, and chemical sectors.

By using advanced wastewater treatment and pesticide application, we can minimize or eliminate hazardous substances from our waters to protect ecosystems and human health.


Meeting the Challenge

When admiring a mighty flowing river, one small island in one of its many side-arms might command your attention. The presence of an island can increase your appreciation for the size and grandeur of the river. However, if you pass by on your way to somewhere else. But hidden among the land and waters of these side-arms is a story you may not realize. One small island might not seem significant, but it can tell us a lot about the river’s past and future.

Physical changes to a waterbody are usually caused by projects that serve people, such as dams, fragmenting rivers, ponding or channelizing them, and abstracting water – have led to changes in the physical conditions of the Danube and its tributaries. Natural habitats have been substantially decreased and biodiversity significantly reduced.

Meeting the Challenge

Today, however, Danube countries are working hand-in-hand to make our waters a healthy home for aquatic life once again, with great benefits for society.

Where Things Stand

Balancing our demands on the rivers with needs of water protection is a shared responsibility. One of the major challenges faced by the ICDPR is to restore rivers to a more natural state and strengthen their resilience against pressures without having to give up the water uses that have been cut off from the river, providing enough water for aquatic species to survive, re-establishing spawning grounds, and have a greater capacity for self-purification to cope with pollution. What’s more, restored rivers can provide important services to society such as providing of drinking water, and can avoid additional damage and costly restoration measures, and safeguard rivers for the future.

Now with a better understanding of how physical changes to rivers affect the environment, Danube countries are identifying concrete actions to mitigate these impacts and increase the character of a river so much that it resembles a stagnant pond. In addition, the Danube River Management Plan addresses the pressures caused by changes in quantity and dynamics of flow of the river, as well as groundwater levels.

The rivers of the Danube Basin contain valuable habitats and spawning grounds that are vital to the life cycle of fish and have to be accessible for fish migration. When migratory fish are blocked due to the increase in the number of dams, it becomes so high that almost no water, apart from the highest floods, could rise in the reservoirs of impoundments – as well as significant abstractions for hydropower use, in addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.

Progress of projects improving river flow for fish migration.

The rivers of the Danube Basin contain valuable habitats and spawning grounds that are vital to the life cycle of fish and have to be accessible for fish migration. When migratory fish are blocked due to the increase in the number of dams, it becomes so high that almost no water, apart from the highest floods, could rise in the reservoirs of impoundments – as well as significant abstractions for hydropower use, in addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.

The rivers of the Danube Basin contain valuable habitats and spawning grounds that are vital to the life cycle of fish and have to be accessible for fish migration. When migratory fish are blocked due to the increase in the number of dams, it becomes so high that almost no water, apart from the highest floods, could rise in the reservoirs of impoundments – as well as significant abstractions for hydropower use, in addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.

meeting the challenge

When admiring a mighty flowing river, one small island in one of its many side-arms might command your attention. The presence of an island can increase your appreciation for the size and grandeur of the river. However, if you pass by on your way to somewhere else. But hidden among the land and waters of these side-arms is a story you may not realize. One small island might not seem significant, but it can tell us a lot about the river’s past and future.

physical changes to a waterbody are usually caused by projects that serve people, such as dams, fragmenting rivers, ponding or channelizing them, and abstracting water – have led to changes in the physical conditions of the Danube and its tributaries. natural habitats have been substantially decreased and biodiversity significantly reduced.

meeting the challenge

Today, however, Danube countries are working hand-in-hand to make our waters a healthy home for aquatic life once again, with great benefits for society.

Where things stand

Balancing our demands on the rivers with needs of water protection is a shared responsibility. One of the major challenges faced by the ICDPR is to restore rivers to a more natural state and strengthen their resilience against pressures without having to give up the water uses that have been cut off from the river, providing enough water for aquatic species to survive, re-establishing spawning grounds, and have a greater capacity for self-purification to cope with pollution. What’s more, restored rivers can provide important services to society such as providing of drinking water, and can avoid additional damage and costly restoration measures, and safeguard rivers for the future.

Now with a better understanding of how physical changes to rivers affect the environment, Danube countries are identifying concrete actions to mitigate these impacts and increase the character of a river so much that it resembles a stagnant pond. In addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.

The rivers of the Danube Basin contain valuable habitats and spawning grounds that are vital to the life cycle of fish and have to be accessible for fish migration. When migratory fish are blocked due to the increase in the number of dams, it becomes so high that almost no water, apart from the highest floods, could rise in the reservoirs of impoundments – as well as significant abstractions for hydropower use, in addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.

The rivers of the Danube Basin contain valuable habitats and spawning grounds that are vital to the life cycle of fish and have to be accessible for fish migration. When migratory fish are blocked due to the increase in the number of dams, it becomes so high that almost no water, apart from the highest floods, could rise in the reservoirs of impoundments – as well as significant abstractions for hydropower use, in addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.

The rivers of the Danube Basin contain valuable habitats and spawning grounds that are vital to the life cycle of fish and have to be accessible for fish migration. When migratory fish are blocked due to the increase in the number of dams, it becomes so high that almost no water, apart from the highest floods, could rise in the reservoirs of impoundments – as well as significant abstractions for hydropower use, in addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.

Now with a better understanding of how physical changes to rivers affect the environment, Danube countries are identifying concrete actions to mitigate these impacts and increase the character of a river so much that it resembles a stagnant pond. In addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.

The rivers of the Danube Basin contain valuable habitats and spawning grounds that are vital to the life cycle of fish and have to be accessible for fish migration. When migratory fish are blocked due to the increase in the number of dams, it becomes so high that almost no water, apart from the highest floods, could rise in the reservoirs of impoundments – as well as significant abstractions for hydropower use, in addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.

The rivers of the Danube Basin contain valuable habitats and spawning grounds that are vital to the life cycle of fish and have to be accessible for fish migration. When migratory fish are blocked due to the increase in the number of dams, it becomes so high that almost no water, apart from the highest floods, could rise in the reservoirs of impoundments – as well as significant abstractions for hydropower use, in addition, the Danube River Management Plan also offers many significant benefits for people. Restoring rivers to a more natural state means opening the river to migratory birds to nest during migration, and also maybe a lovely place for people to relax. Even small areas like these can be massively affected when the river’s natural course is changed.
Protecting a Hidden Treasure

With groundwater making up most of the Danube region’s drinking water supply, protecting it from pollution and drought is a top priority. Over-abstraction of groundwater and environmental pollution have put stress on essential groundwater bodies. The Danube countries have therefore launched wide-reaching measures to tackle both problems head-on. Their goal is to restore and maintain CLEANER groundwater while managing its use for a more ecologically balanced and HEALTHIER water supply.

Meeting the Challenge

Over 50 million people in the Danube River Basin get their drinking water from groundwater – that’s 72% of the total population. The groundwater is extremely vulnerable to over-abstraction, when more water is used than can be replaced by nature. What’s more, agricultural pollution caused by runoffs from fields or pesticides entering groundwater via the soil or connected surface water has also become a major problem. Since groundwater flows so slowly, once the supply deteriorates or is contaminated it can take years for decades. This combination of need and sensitivity has created a serious problem.

Where Things Stand

Danube countries are undertaking projects throughout the region to tackle this problem on all fronts. Measures include improved farming techniques, water use regulation, pollution clean-up and a wide range of ingenious economic activities.

In Bavaria, a number of improved agricultural practices are underway to reduce nitrogen discharge through annual soil analysis, organic-farming, reduction or elimination of organic mineral fertilizers, water-conserving crop rotation, the avoidance of high-yield crops like winter greening, and extended grasslands and wildflower planting. The Bavarian Ministry of Food, Agriculture and Forestry has also appointed advisors to help individual farmers put optimal groundwater protection measures in place.

Over-abstraction of groundwater has been addressed throughout the region by establishing registers of groundwater extraction, which collect data on water usage that can be used to provide information for a variety of water conservation measures. In Hungary, for example, reconstruction of the drinking water supply networks decreased abstractions between 2009 and 2015. Hungary has also met legislation concerning licensing for wells and construction, as well as adopted demand management measures and adopted agricultural production by using innovative techniques such as drought-resistant crops. Similar registers and legislation in Romania and Slovenia have resulted in improved data on actual agricultural water use to water management and administrative bodies and research agencies. This will help water managers plan new and more efficient irrigation systems that reduce over-abstraction.

When wheat farmers in the Lower Franconia region of Bavaria discovered that their multi-stage fertilization process was leading to unused nitrogen flowing into the groundwater, they were faced with a dilemma; using fertilizers during the final stages of crop production is not only more cost-effective, but was clearly not good for the environment. They were faced with a dilemma; using fertilizers during the final stages of crop production is not only more cost-effective, but was clearly not good for the environment. When wheat farmers in the Lower Franconia region of Bavaria discovered that their multi-stage fertilization process was leading to unused nitrogen flowing into the groundwater, they were faced with a dilemma; using fertilizers during the final stages of crop production is not only more cost-effective, but was clearly not good for the environment.

The solution was the “Wasserschutzbündl Intercantonal” initiative to encourage farmers to stop using fertilizer during the final stages of crop production. The farmers still get a fair price for their crop, but was clearly not good for the environment. The farmers still get a fair price for their crop, but was clearly not good for the environment. The farmers still get a fair price for their crop, but was clearly not good for the environment.

Success Stories

Since the vast majority of surface and groundwater bodies in Hungary use the same property of the ground, protection is a joint effort. A new project called “VIZEK” aims to reduce the administrative burden on water users through a fully electronic water licensing process. The system will provide credible data on actual agricultural water use to water management and administrative bodies and research agencies. This will help water managers plan new and more efficient irrigation systems that reduce over-abstraction.

Looking Ahead

With the data gathered over the years, groundwater restoration programs in the Danube region will succeed in meeting their goal of improved water management. The farmers are ensuring that generations to come will enjoy the enjoyment of purifying the same pleasure that comes from a robust, clean body of groundwater.

This type of ingenuity and teamwork – involving everyone from top-level experts to farmers and every-day people – is the way forward for all groundwater restoration efforts. Under the ICDPR’s vision, these include stopping the emission of polluting substances, cleaning up pollution that already exists, and balancing water use against the available supply.

To protect our precious groundwater resources, Danube countries are working together to realize the best of water uses – today and while at the same time avoiding over-abstraction through effective water management.
Where Things Stand

With the TransNational Monitoring Network collecting and analyzing data for over 20 years, the knowledge base is impressive and the results are encouraging. As a result of the joint monitoring network, we know that 25% of the region’s 28,836 kilometres of rivers had the potential to meet environmental objectives for good water quality and habitat conditions, and 71% were cleaner, healthier, and safer in the region. The joint Danube Survey, coordinated by the ICPDR, takes place every six years along the Danube River and is the largest survey of its kind. Lasting for several weeks, all Danube countries work together intensively to monitor the Danube and its tributaries to gather data on pollution, pollutants and species. Once analysed, this information reveals areas that need improvement – a victory for comprehensive research.

You Can’t manage What You Can’t Measure

Water protection in the Danube Basin requires reliable information about the state of our rivers, especially where water is shared by countries. With a joint monitoring network and regular joint surveys, the Danube countries are putting their collective knowledge to use for new efforts to maintain CLEANER, HEALTHIER, and SAFER waters in the region.

Meeting the Challenge

In 1996, the ICDPR established the TransNational Monitoring Network (TNMN), aiming to provide an overview of the general status and long-term changes to surface water and groundwater basin wide. It includes 134 monitoring locations across the Danube and its main tributaries. Samples are taken at least 12 times a year to monitor chemical parameters and once or twice a year for selected biological parameters. Since the Danube is the most international river basin in the world, a key focus has been tracking the pathways of pollution that cross borders, and the effects of measures taken to reduce them.

All Danube countries are involved in these monitoring activities, which collect data on the concentration of pollutants to assess the status of surface water and groundwater bodies. The results are published annually in the TNMN Yearbooks, which can be downloaded from the ICPDR website. Monitoring data is also an important part of the Danube River Basin Management Plan, which is published every six years.

The Joint Danube Survey, coordinated by the ICPDR, takes place every six years along the Danube River and is the largest survey of its kind. Lasting for several weeks, all Danube countries work together intensively to monitor the Danube and its tributaries to gather data on pollutants and species. Once analysed, this information reveals areas that need improvement, and areas where there is cause to celebrate.

Success Stories

Results from JDS3 showed that improvements to wastewater treatment have had a positive impact. Levels of nutrient pollution, especially nitrogen and phosphorus, have declined since the previous JDS. JDS3 found a high degree of biodiversity of plants and animals in the Danube (over 139,000 fish of 67 species were sampled). However, comparisons with results of the previous two surveys clearly showed that invasive species were continuing to deplete the habitat of native Danube fish.

Most of the hazardous substances found were below levels of concern, but some substances exceeded environmental quality standards, such as mercury concentrations in all fish samples. New analytical techniques and strategies were used to target hazardous substances, which resulted in the most comprehensive information ever gathered.

Looking Ahead

While monitoring and assessment of water status have improved since 2009, some gaps still exist. JDS3 in particular revealed the need to harmonize monitoring practices across the Danube countries, and demonstrated that a lack of analytical instruments and methods in certain areas is preventing a full picture of the state of chemical pollution. These lessons are why such joint monitoring efforts are essential. Building on these findings, the next round of data collection (JDS4) will take place in 2019 and will include monitoring of microplastics for the first time.

Monitoring water quality provides us with the information needed to design appropriate measures to achieve good conditions for habitats and water in the Danube River Basin.

© Andre Künzelmann (UFZ)
Europe’s Endangered Sturgeons are Staging a Comeback

A historic species essential to the Danube region’s ecosystem has weathered seismic change over millions of years, only to be driven to near extinction in the last century by human activity. A coordinated effort is now underway to turn this situation around and restore healthy waterbodies and habitats for sturgeons, so they have a fighting chance of survival.

Where Things Stand
The last native Danube sturgeon species, the European sturgeon is already extinct and the ship sturgeon is now considered functionally extinct, with only accidental catches recorded in years to come. The Sterlet, a freshwater species, is considered threatened in the lower Danube and the Beluga sturgeon (or great sturgeon) are also rapidly declining. The Sterlet, a freshwater species, is considered threatened in the lower Danube and the Beluga sturgeon (or great sturgeon) are also rapidly declining.

Many factors have caused this sharp decline in the status of the Danube’s flagship fish, including over-exploitation and illegal fishing, migration routes blocked by dams, and the loss of habitats from rivers to the sea – waters for migrating, feeding, and spawning – and these patterns make them vulnerable to finding creative solutions to problems that benefit everyone, especially the sturgeons! A continuum of success stories continues to bring together key stakeholders from different fields and organizations.

Meeting the Challenge
Sturgeons are among the oldest and largest fish species still living in freshwaters – first appearing in Europe over 200 million years ago – and they are an integral part of Europe’s heritage. And yet, with their numbers in dramatic decline, these species are critically endangered. The establishment of the Danube Sturgeon Task Force was a significant step toward reversing this downward spiral, with the goal of protecting lower Danube sturgeons from extinction.

Looking Ahead
With several successful projects already underway, the path forward in reversing these trends for the Danube sturgeons looks very promising. Working with fishing communities, the project aims to develop alternative income sources that will reduce dependency on illegal activities. Law enforcement efforts will be supported in their fight against poaching, and the markets for sturgeon eggs and sturgeon meat will be closely monitored and forced to conform to legal requirements.

The MEASURES project contributes to the implementation of both EU and re-wilding concepts, aiming to enhance and protect migratory fish in the Danube River Basin. It has a strong emphasis on promoting communication activities at the policy level, targeting stakeholders involved in water uses.

The European Commission’s Directorate-General Regional and Urban Policy (DG REGIO) is supporting the “LIFE for Danube Sturgeons” project, which focuses on the protection of lower Danube sturgeons from extinction.

The “LIFE for Danube Sturgeons” project focuses on protecting lower Danube sturgeons from poaching and illegal trading. Working with fishing communities, the project aims to develop alternative income sources that will reduce dependency on illegal activities. Law enforcement activities will be supported in their fight against poaching, and the markets for sturgeon eggs and sturgeon meat will be closely monitored and forced to conform to legal requirements.

Sturgeons and their sturgeon meat will be closely monitored and forced to conform to legal requirements. Working with fishing communities, the project aims to develop alternative income sources that will reduce dependency on illegal activities. Law enforcement activities will be supported in their fight against poaching, and the markets for sturgeon eggs and sturgeon meat will be closely monitored and forced to conform to legal requirements. Sturgeons represent the natural heritage of the Danube River basin. Their conservation is important for maintaining healthy water ecosystems.
Financing the Costs of Saving the Environment

The Danube countries are financing the region’s wide-ranging water protection projects, and a mix of public and private funding sources are answering the call, thereby ensuring the Danube River Basin’s ecological future.

Meeting the Challenge

“How much will it cost?” This is the key question when discussing major environmental restoration programs such as those underway in the Danube River Basin. It takes more than just teamwork and ingenuity to clean up and prevent pollution, improve natural water retention, and establish migration routes for fish; it takes funding on a massive scale from everyone who has a stake in the future of the region’s waterbodies.

Financing the Costs of Saving the Environment

The Danube countries are financing the region’s wide-ranging water protection projects, and a mix of public and private funding sources are answering the call, thereby ensuring the Danube River Basin’s ecological future.

Meeting the Challenge

“How much will it cost?” This is the key question when discussing major environmental restoration programs such as those underway in the Danube River Basin. It takes more than just teamwork and ingenuity to clean up and prevent pollution, improve natural water retention, and establish migration routes for fish; it takes funding on a massive scale from everyone who has a stake in the future of the region’s waterbodies.

Financing the Costs of Saving the Environment

The Danube countries are financing the region’s wide-ranging water protection projects, and a mix of public and private funding sources are answering the call, thereby ensuring the Danube River Basin’s ecological future.

Meeting the Challenge

“How much will it cost?” This is the key question when discussing major environmental restoration programs such as those underway in the Danube River Basin. It takes more than just teamwork and ingenuity to clean up and prevent pollution, improve natural water retention, and establish migration routes for fish; it takes funding on a massive scale from everyone who has a stake in the future of the region’s waterbodies.

Financing the Costs of Saving the Environment

The Danube countries are financing the region’s wide-ranging water protection projects, and a mix of public and private funding sources are answering the call, thereby ensuring the Danube River Basin’s ecological future.

Meeting the Challenge

“How much will it cost?” This is the key question when discussing major environmental restoration programs such as those underway in the Danube River Basin. It takes more than just teamwork and ingenuity to clean up and prevent pollution, improve natural water retention, and establish migration routes for fish; it takes funding on a massive scale from everyone who has a stake in the future of the region’s waterbodies. It takes more than just team-

Where Things Stand

To support their financing efforts, EU Member States can call on help from the EU through several key funds. These include:

- **European Regional Development Fund (ERDF)**
  - Aimed at economic, social, and territorial cohesion in the EU.
- **European Social Fund (ESF)**
  - The main EU financial instrument for investing in employment opportunities, education, help for vulnerable people, and the environment.
- ** Cohesion Fund (CF)**
  - Supports investments in TEN-T transport networks and the environment in EU Member States with below-average Gross National Income.
- **European Agricultural Fund for Rural Development (EAFRD)**
  - Finances the Rural Development and Environment Programs of the EU Common Agricultural Policy.
- **Agricultural Fund for Rural Development (EAFRD)**
  - Finances the Rural Development and Environment Programs of the EU Common Agricultural Policy.
- **European Maritime and Fisheries Fund (EMFF)**
  - Supports marine and fisheries policies in the EU.
- **European Neighbourhood Instrument (ENI)**
  - Provides direct support for the EU’s external policies, including environmental protection.
- **LIFE**
  - Entirely devoted to environmental objectives.
- **Innovation for Accession Assistance (IPA)**
  - Provides assistance for building institutions and cross-border cooperation.
- **INTERREG Europe**
  - Helps regional and local governments across Europe develop policies to protect the environment and improve resource efficiency.

Looking Ahead

While there are still gaps in financial coverage for the many water protection projects needed throughout the entire Basin, success stories do provide examples of how to close them. In order to successfully reach the environmental goals of the Danube River Basin, it will be necessary to accelerate the funding of existing programs, which, when combined with other EU legislation and to environmental measures are needed in EU funding instruments. Danube countries need more and better targeted EU funding to reach environmental objectives with a more simplified application process, yet even with these sources in place, many cost-effective projects still face difficulty meeting their share of the financial responsibility. Strengthening cooperation between different sectors and in public-private partnerships will be vital in shifting more responsibility onto the entities that created the situations in the first place.
Meeting the Challenge

Most of us don’t think much about the water we use on a daily basis; we turn it on, make a cup of coffee or tea, and turn it off. But the water that flows into the kitchen sink when we wash our breakfast dishes is just a small part of the water’s journey. It flows away, through the sewers to water treatment plants, and, once clean, back out into the river to a hydropower plant supplying electricity for a small town, into a farmer’s irrigation channel along the riverbanks and into streams that feed larger waterways where a cargo ship is bringing goods from one country to another. Just like a river flowing from country to country regardless of borders, water touches many aspects of our lives, through all types of industries with overlapping needs and sometimes conflicting interests. Meeting this challenge means working together to find solutions that balance what we need from water with our responsibility to preserve it.

Where Things Stand

One of the many interconnected issues facing the waterbodies of the Danube River Basin is hydropower which, although it is a crucial tool for reducing greenhouse gas emissions, it can also have a negative impact on aquatic ecology. The challenge here is to find new solutions that balance what we need from water with our responsibility to preserve it.

Agriculture is a major source of income for the Danube countries, with large areas under rice, wheat, and sugar beet. Hydropower is a major source of electricity; it is a crucial tool for reducing greenhouse gas emissions, it can also have a negative impact on aquatic ecology. The challenge here is to find new solutions that balance what we need from water with our responsibility to preserve it.

Looking Ahead

The ICPDR’s activities for cooperating with different sectors with interests in the Danube region’s environment continue are already underway at a national level throughout the Danube countries. The ICPDR is leading efforts to balance the overlapping needs of the river throughout the region and integrate these issues at all levels of decision-making and implement integrated projects.

To address the conflicting concerns of increasing renewable energy while minimizing its impact on the environment, the ICPDR has developed “Guiding Principles on Sustainable Hydropower Development in the Danube Basin.” The Guidelines provide a framework for understanding the potential conflicts between development and protection, and sustainable use of hydropower. Workshops have been organized to support stakeholders to apply the guidelines and learn about new developments.

Despite many international climate protection actions, enhanced adaptation to climate change is urgently needed. Trends are expected to increase across the Danube River Basin during this century, with higher temperatures and winter precipitation occurring in the north and higher temperatures and warmer summers occurring in the south. Since water is an issue that cuts across different sectors, it is key to adapting to the pressures of climate change.

Lastly, rivers are a natural source on all river systems, but they can cause disastrous consequences for the people living there, especially when the threat of floods is made worse by human activity. Climate change is expected to increase the magnitude and frequency of floods and the ongoing decades and decades ahead is likely to see a higher risk of flooding in Europe, with greater severity. While flooding cannot be prevented, it is possible to reduce its impact by returning rivers to a more natural state, which is where the conflicting concerns of flood risk management and river basin management meet.

Success Stories

Collaborating on solutions to these interconnected challenges is essential, since each stakeholder continues to develop additional measures to balance the overlapping needs of the river throughout the region and integrate these issues at all levels of decision-making and implement integrated projects.

To address the conflicting concerns of increasing renewable energy while minimizing its impact on the environment, the ICPDR has developed “Guiding Principles on Sustainable Hydropower Development in the Danube Basin.” The Guidelines provide a framework for understanding the potential conflicts between development and protection, and sustainable use of hydropower. Workshops have been organized to support stakeholders to apply the guidelines and learn about new developments.

The Danube countries highlight the need for cross-cutting measures of water management and the need for integration of all relevant sectors including flood risk management, inland navigation, hydropower development, agriculture, and climate change adaptation.
Public Participation is the Key to Saving the Danube River Basin

Public participation is essential for sustainable water conservation. As a result of the IPCDR's work, public participation is increasing throughout the Danube River Basin, as these living in the region have a say in managing the river for the public good. The IPCDR has always supported public participation in its decision making, and that’s because success depends on strengthening partnerships between different sectors with a vested interest in the Danube's waterbodies. More interaction, more analysis, and new technology will help in this regard.

Looking Ahead

The ICPDR has been committed to involving as many partners as possible in decision-making, because this leads to greater public understanding, support, and ownership. The IPCDR's success in building partnerships with stakeholders will ensure that the public participation initiatives already in place will continue to keep people informed, and engaged in the process.

Public participation is giving everyone in the Danube River Basin a chance to get on board!

Building the Danube River Basin’s Future

With so much progress undertaken in the region, it’s important to take stock of where we’ve been and how we’ve managed to get to this point. The water quality and environmental conditions for habitats. Continuing the existing cooperation between countries, sectors, and everyday citizens, will ensure that we are building on the successes of the past, and making a difference in people's lives. From day one, the ICPDR has been committed to involving as many people as possible in the management and flood protection measures regardless of their professional background, creating remarkably valuable input on two key elements of water management and river basin management: environmental protection for the region.

Integration

The ICPDR draws on the experience of the European Union’s environmental and sustainability policies, as well as on the technical and professional competences that can be mobilised within countries. It is a knowledge platform bringing together different lessons learned for the benefit of transboundary water management.

A number of EU regulatory frameworks, including the Water Framework Directive, the Biodiversity Strategy, and the Habitats and Birds Directives, are also relevant. The ICPDR and its Member States are working towards the integration of the Danube into the wider EU and global water governance systems and networks, and the development of the Danube River Basin’s Future.

Where Things Stand

The three main objectives for public participation in efforts to restore the Danube are to:

- increase public awareness and understanding of the problems
- engage citizens in decision making
- increase public participation, involvement and commitment

The three main objectives for public participation in efforts to restore the Danube are to:

- increase public awareness and understanding of the problems
- engage citizens in decision making
- increase public participation, involvement and commitment

Danube Day

Danube Day is the ICPDR’s most widely known communication event, and is a unique celebration of the river that occurs every year on 29 June. The launch of Danube Day in 2004 marked the start of a whole new era in public participation activities, as it mobilises not only stakeholders, but also society in general. Each year’s theme is different, so those who value the Danube will organise a competition which invites schools to organise a field trip to the Danube – or use its facilities – and create art works.

The Danube Foundation

In addition to communications, the Danube Foundation is a vital piece of the public participation puzzle. An important goal of the ICPDR is to make sure people are informed, involved, and feel a sense of ownership and responsibility for the Danube and its waters.

Public participation is crucial for ensuring that water conservation policies work. An important goal of the ICPDR is to make sure people are informed, involved, and feel a sense of ownership and responsibility for the Danube and its waters.

Looking Ahead

from the hydropower sector, and new measures for navigation or flood protection need close attention, especially in the mineral processing, energy, and chemical industries. Further work will be needed to build capacity to improve safety management at industrial facilities, especially in the ICPDR region. Improved collaboration, training, and technology should be made available. The ICPDR’s successful projects will continue to keep people informed, involved, and engaged in the process.

Looking ahead, from the ICPDR’s point of view, the Danube is the region’s most widely known communication event, and is a unique celebration of the river that occurs every year on 29 June. The launch of Danube Day in 2004 marked the start of a whole new era in public participation activities, as it mobilises not only stakeholders, but also society in general. Each year’s theme is different, so those who value the Danube will organise a competition which invites schools to organise a field trip to the Danube – or use its facilities – and create art works.

The Danube Foundation

In addition to communications, the Danube Foundation is a vital piece of the public participation puzzle. An important goal of the ICPDR is to make sure people are informed, involved, and feel a sense of ownership and responsibility for the Danube and its waters.