

PROJECT INFORMATION SHEET

RIVER BASIN MANAGEMENT

PRODUCTS AND ACTIVITIES

THE DRP AND RIVER BASIN MANAGEMENT

Before political changes transformed Central and Eastern Europe, Danube countries had experienced minimal collaboration in integrated river basin management (IRBM). After 1990, the need for **increased cooperation** became clear. The Danube was not only the most international river basin in the world shared by 18 countries -- over the last 150 years, it had also sustained numerous damages and yet preserved incredible biological assets. Threats to the environment continued including floods and nutrient pollution to the Black Sea into which the Danube flows.

From the start, UNDP/GEF interventions were essential as a catalyst for progress. Initial efforts focused on assessing information, building capacities and institutions and supporting the creation of the Danube River Protection Convention (DRPC).

In time, the accession of many of the Danube countries to the EU and the requirement that they fulfil EU directives (laws) became the main drivers for improved multi-country IRBM in the Danube Basin, in addition to the key transboundary concerns addressed by GEF-funded interventions. After 2000, the main priority of the DRPC's implementing body, the International Commission for the Protection of the Danube River (ICPDR), became the implementation of the EU Water Framework Directive (WFD).

The WFD obliges Member States and accession countries to use a **river basin approach** for managing water resources, as does the DRPC. The WFD requires cross-border cooperation and encourages multi-stakeholder cooperation. It also obliges every EU river basin and sub-basin, including the Danube, to develop a 'River Basin Analysis' followed by a 'River Basin Management Plan (RBMP)' by 2009 which specifies a 'Programme of Measures'. The RBMPs are meant to help EU countries meet the WFD requirement of a **'good status'** for all EU waters and ecosystems by 2015.

From 2001-2007, interventions through the UNDP/GEF 'Danube Regional Project' continued to support improvements in IRBM in the Danube Basin.

WHO CAN BENEFIT FROM THE DRP PRODUCTS?

Are you involved in the management of the Danube River Basin at an international, national, district, county or local level? Or are you involved with RBM at a sub-basin level within the Danube Basin? If yes, then we can help.

WHAT ARE THE PRODUCTS AND ACTIVITIES?

1. SUPPORT FOR MEETING EU WFD REQUIREMENTS

The DRP contributed significantly to the completion of the **Danube River Basin Analysis**. Also known as the 'Roof Report', the Analysis was the first ever comprehensive analysis of the environment, and pressures impacting it, in the Danube River Basin. It was also the first significant reporting requirement of the EU WFD. Coordinated by the ICPDR, completed in 2004 and delivered to the EU in March 2005, it includes the characterisation of surface waters and groundwater, an inventory of protected areas, an economic analysis, public participation activities and a future outlook.

Its key conclusion was that pollution by organic, nutrient and hazardous substances, as well as hydromorphological alterations, were the future key water management issues in the basin, and hence, the focus for developing the **Danube River Basin Management Plan** by 2009. The Plan is the next significant WFD requirement for the Danube, again coordinated by the ICPDR with significant UNDP/GEF support. (See DRP reports on related activities at: www.undp-drp.org/drp/activities_1-1_eu_wfd_implementation.html)

2. SUPPORT FOR DANUBE SUB-BASINS

Given the immensity and internal complexities of the entire Danube Basin, efficiencies can be gained by managing smaller areas based on natural **sub-river basins**. DRP activities have supported the enhancement of IRBM and implementation of the WFD at the sub-basin level, especially for the **Sava** and **Tisza** river basins, and more recently for the **Prut** River Basin, under the umbrella of the ICPDR.

For example, DRP efforts in the Prut Basin aimed to increase public awareness about key steps leading to the Prut RBMP and changing consumer behaviour through introducing phosphate-free detergents. (See separate Information Sheets on this activity)

3. TECHNOLOGICAL SUPPORT FOR DANUBE RBM

Effective IRBM begins with quality **information** about the status of the environment and pressures impacting it. In many cases, the availability of quality data and information depends on the use of best **technologies** (See separate Information Sheet on this activity). In the Danube Basin, technologies have continuously been enhanced by the DRP to provide the best information possible. This includes the following:

1. The **Trans-National Monitoring Network's (TNMN)** main objective is to provide an overall view of pollution and long-term trends in water quality and pollution loads in the major rivers of the Danube Basin. The DRP is helping to strengthen the TNMN through supporting the development of a programme design that meets the WFD's strong requirements for monitoring.
2. Bottom sediment trapped behind Romania and Serbia's '**Iron Gates**' dam was sampled and tested for pollution including heavy metals, organics and nutrients.
3. '**Inter-calibrated**' methods are being developed that are compliant with the WFD for sampling and assessing '**macrozoobenthos**' -- a 'biological quality element' that is one determinant of 'good ecological status' under the WFD.

4. Developing a prototype for a new, harmonized **GIS system** for the Danube Basin is underway, also identified as a key issue for WFD implementation.
5. The '**MONERIS**' model is being enhanced to better estimate nutrient loads in rivers, to fill data gaps observed in monitoring programmes in the Danube Basin.

4. GRANTS FOR DANUBE NGOS

Some 130 financial grants were awarded to NGO projects in the Danube Basin through the DRP's Small Grants Programme. Many of these were geared to strengthening or supporting Danube Basin RBM. For example, one regional grant project (requiring the cooperation of NGOs from more than one country) involved raising awareness about the concept of 'river coalitions' of stakeholders in Slovakia, Hungary, Croatia, Romania and Republika Srpska. Another was a Bulgarian NGO that assisted government authorities to improve flood management through satellite imagery. (See separate Information Sheets on this activity)

5. PUBLICATIONS AND MEDIA

'15 Years of Managing the Danube River Basin: 1991 - 2006': This colour brochure presents the key political decisions made related to building IRBM in the Danube River Basin over 15 years and their results – from developing new programmes, institutions and the DRPC to environmental progress. Lessons learned in applying IRBM are presented with the hope of their transferability to other basins, as is the Danube outlook for the next 15 years. The document shows how a clear win-win situation resulted between the UNDP/GEF, ICPDR, EU and the Danube countries.

'Thirteen countries, one river, one law': This feature-length story presents how the Danube countries are taking steps to meet the EU WFD and clean up their waters in the Danube Basin. The story was printed in the June 2006 issue of *Green Horizons*, a magazine about the environment in Central and Eastern Europe published by the Regional Environmental Center for Central and Eastern Europe (REC).

Stories have also been developed for the DRP sub-project dealing with testing sediment behind the Iron Gates, and for NGO projects on RBM that received DRP Small Grants.

6. WEBSITE

See the 'RBM' section on the DRP 'themes' website at:

www.undp-drp.org/drp/themes_river-basin-management.html



THIRTEEN COUNTRIES
ONE RIVER
ONE LAW

A history of heedless exploitation of the Danube River has left a legacy of poor flood protection, pollution problems and depleted biodiversity. The EU's Water Framework Directive calls for countries to curb or eliminate the use of several risky substances and take other corrective measures by 2015. But in Central and Eastern Europe, resurgent agriculture and other economic activity will make the challenge doubly difficult.

text **Paul Csagoly** photographs **Anton Vorauer/WWF**



DELTA FLIGHT
The Danube Delta on the Black Sea provides habitat for scores of species of birds and gives a livelihood to fishermen. An irrigation channel north of the community of Sasik is at top right.



Mihaly Dukat had been down this way before — 37 times since 1967. Not bad at age 72. But he'd never been with so many others. It was an amazing feeling, solo in his one-man kayak, feeling the life force of the biggest river in Western and Central Europe behind him, sun on his face, while hundreds of other kayakers dipped paddles around him.

They came to this 50th anniversary of the Tour International Danube from all over the Danube River Basin. People of different cultures from Germany to Bulgaria and of different professions from mechanics to bankers. None of them had been elected by their country or town to come. None officially represented any of the 81 million people or 18 nations that shared the 800,000 sq km basin. They all came voluntarily. "The Danube is my life," says Dukat, a resident of Bratislava, Slovakia. "It keeps me alive."

The pack starts off June 25 from Ingolstadt, Germany. Not far downstream, they hit the first dam at Vohburg where a sluice brings them down like an elevator. They encounter more dams ahead, some with sluices, some with slides to help them pass.

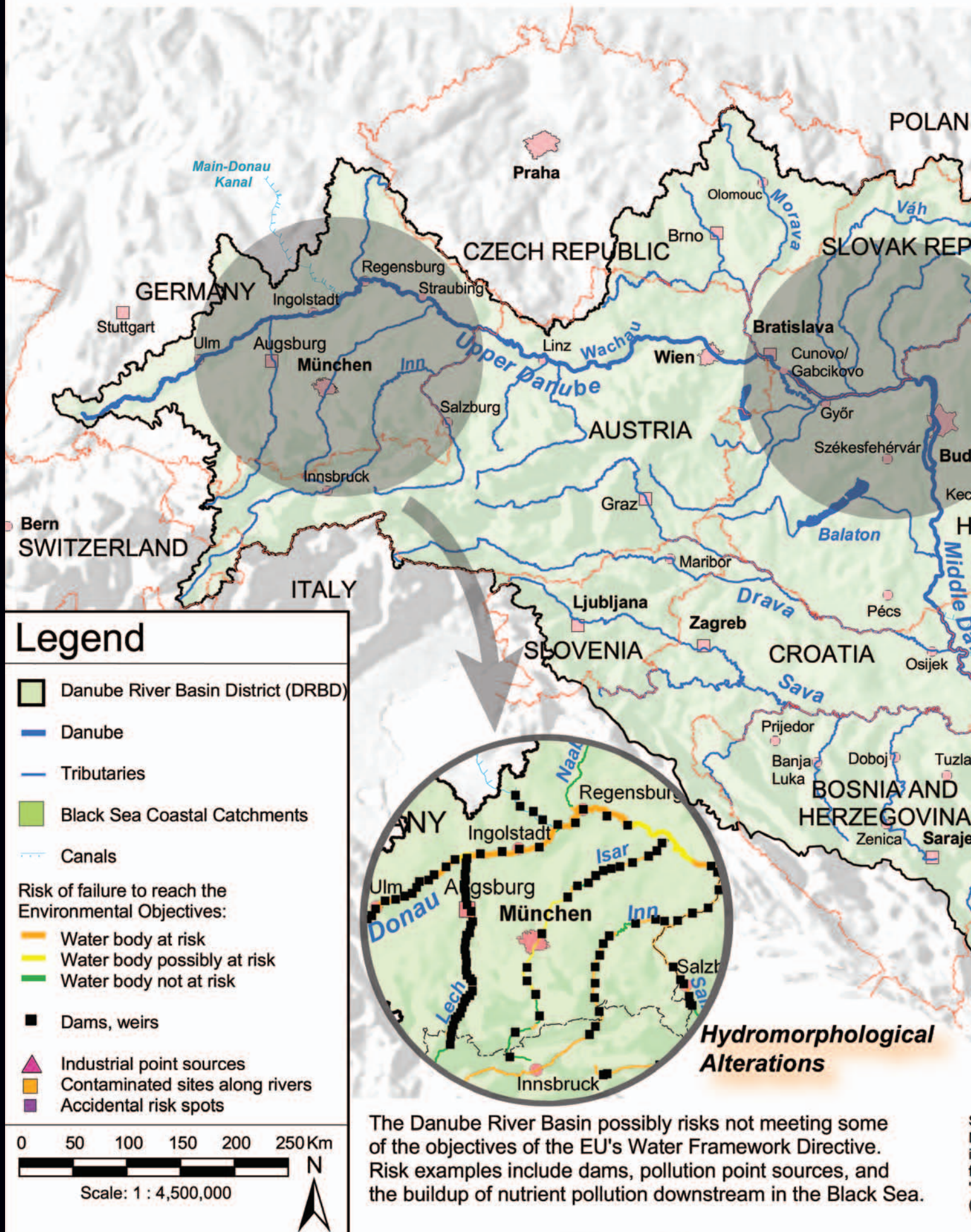
On day five, they paddle the 70 km between Straubing and Vilshofen, one of the last ecologically valuable Danube stretches in Germany. This "Noah's Ark of Bavaria" with 30 endangered fish species has international nature conservation importance. To the kayakers' dismay, however, they learn about plans to dam and canalise this stretch to "improve navigation" — plans that have long been opposed by local people and environmentalists.

After Vilshofen, more dams are followed by a free-flowing section at Wachau in Austria. Beside being the last non-dammed canyon on the upper Danube, Wachau is one of Europe's oldest settlements, a World Heritage Site of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and part of the EU's Natura 2000 network of protected habitats. With its castles, villages, vineyards, and vivid greens, it is inevitably one of Austria's biggest tourist attractions. It is also threatened by plans for dredging.

Further downstream, the pack hits the edge of Vienna, where the river splits into the old Danube and a new artificial canal for flood protection. Between the old and new Danubes is the 21 km ▶

Continued on page 22

Danube River Basin District: Map and Risk Ex

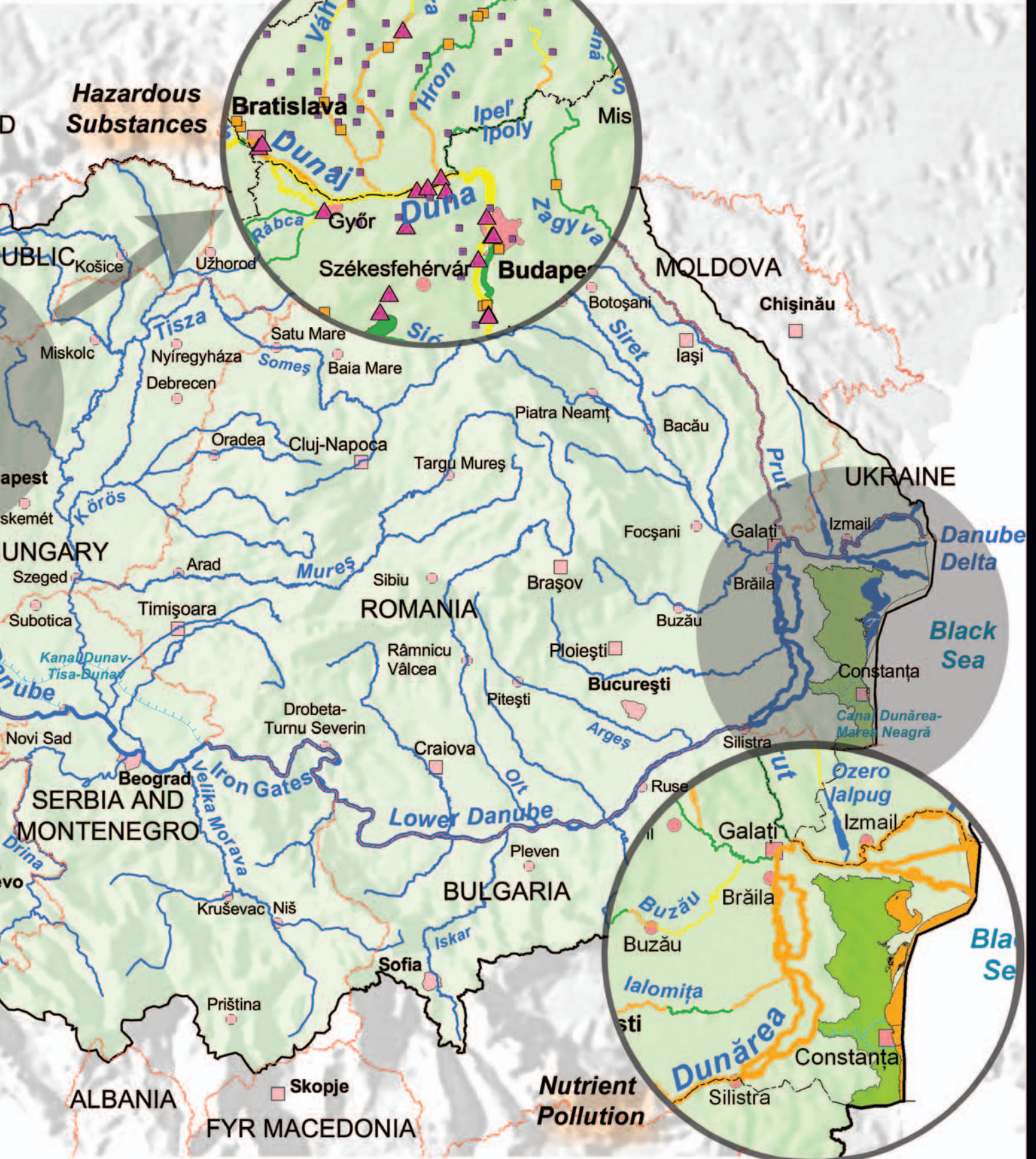


Examples

Product prepared for UNDP Danube Regional Project:



UNDP | GEF
DANUBE
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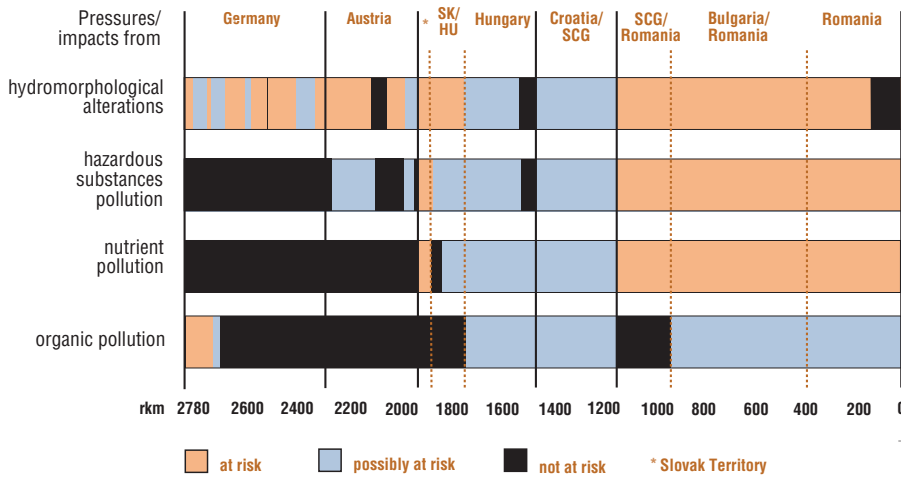


Source: icpdr ikisd
International Commission for the Protection of the Danube River
Maps and information from the ICPDR's Danube Basin Analysis (WFD Roof report 2004)

This product includes geographical data licensed from European National Mapping Agencies. EuroGlobalMap v1.0 was used as the basic topographic layer for DE, AT, CZ, IT, SI and HR. The data for the other countries is based on VMAP Level 0 data from NIMA. The outer border of the DRBD is based on national information from DE, AT, CH, CZ, SK, SI, HR, BA, CS, BG, RO, UA and MD. For PL, AL, MK and IT the data of the European Commission, Joint Research Centre was used. ©EuroGeographics™

Prepared by FLUVIUS, Vienna, May 2005

Danube risk classification by risk categories



Each full band represents the assessment for one risk category over the full course of the river, from its source in Germany to its mouth at the Romania-Ukraine border. Source: ICPDR Roof Report

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► Danube Island Vienna’s most popular spot for swimming, roller-blading and enjoying the open air. At the end of Vienna is the Freudenua hydropower dam followed by a 47 km stretch through the Danube National Park with its islands and natural side-arms. Dredging is planned here, as well.

Soon after Austria, the kayakers reach the dam at Cunovo, Slovakia. This dam impounds and diverts over 80 percent of the Danube’s waters into an artificial canal leading to a power plant near the town of Gabčíkovo. In building this massive dam system, some 8,000 hectares of riverside wetlands and woodlands were cut off from the river. Here, the kayakers slide down to what is left of the original watercourse.

Entering Hungary, they leave behind a nearly uninterrupted chain of 59 dams and power plants cutting into pieces the first 1,000 km of the river — about one dam every 16 km. “The dams are the biggest change on the Danube since 1967,” Dukat says. “They’re the biggest problem. Before it was smooth coming down.”

Ahead lies the natural 1,800 km treasure of the middle and lower Danube, interrupted only by the Iron Gate dams in Romania. Along the way the paddlers will see fascinating sites with 2,000 plant and 5,000 animal species and some of the most outstanding biodiversity in the world. Soon the splendid curves, sand banks and majestic landscapes of the Danube Bend in northern Hungary take the group to Budapest and its spectacular World Heritage downtown panorama.

The riverscape may improve after Gabčíkovo but pollution starts getting worse. Poorly treated and untreated wastewater are big problems, especially for tributaries, according to the recently published Roof Report. Released earlier this year by the International Commission for the Protection of the Danube River (ICPDR), the report is the first-ever comprehensive analysis of the Danube basin’s environment and the pressures impacting it.

Main pollution sources are municipalities, industry and agriculture, from both point sources such as pipes and non-point, or diffuse, sources such as leachate

from the ground into the river. Pollution really starts affecting water quality after Budapest. Upstream in Austria and Germany, point source pollution is low because of major recent investments in wastewater treatments plants.

The good news is that overall pollution has declined, mainly because of the drop in industry and agriculture in Central and Eastern Europe (CEE) following the political transformation in the late 1980s. But with expected economic improvements to these countries, pollution could increase again.

Nutrient pollution, mainly from nitrogen and phosphorus, has dropped in the past 20 years, but is still well above 1950s levels, states the Roof Report.

Nitrogen use doubled from the 1950s to the mid-1980s followed by a substantial reduction in the 1980s mainly due to economic changes in CEE and improved wastewater treatment in Germany and Austria. Today, levels are still almost twice those in the 1950s, largely from the use of nitrogen mineral fertilisers and raising livestock such as pigs and cows. Germany and Slovenia rank highest here while emissions decrease downstream as agriculture becomes less intensive.

The main source of phosphorus in the basin is wastewater from urban settlements. Slovenia, Croatia and Serbia and Montenegro top the list. Overall phosphorus levels are 20 percent higher than in the 1950s, in part because of increases in their use in detergents.

The biggest impact from nutrient pollution is eutrophication which reduces oxygen in the water, decreases plant and animal species and worsens water quality. As a result, Danube nutrient pollution has helped create a severe ecological imbalance in the Black Sea. Fish stocks show an alarming decline. In the 1960s, hundreds of tonnes of 26 commercial fish species were caught. After the 1980s, only five remained commercially viable.

Overall, nutrient loads dropped in the last decade. The Black Sea even shows signs of recovery. But nutrient pollution could rise again with economic improvements in CEE.



Even less visible to Dukat and the other kayakers are the hazardous substances beneath them. Hundreds are used and released in the Danube basin and many pose serious threats to environment and health.

The EU's main body of legislation for protecting water — the Water Framework Directive (WFD) — specifies 33 priority substances as hazardous, 11 of which are pesticides, and requires their phase-out within 20 years. Twenty-nine of the 33 are used in the Danube basin, many in producing cereals, rapeseed, sunflower, maize, orchard fruits and grapes. Only three are authorised in all countries while a shocking seven are not authorised in any country, many having been left in old stockpiles, some in flood-prone areas. The biggest threat is from DDT, a pesticide banned in Europe: in water samples taken from the Danube, 71 percent had DDT levels above permissible levels.

Pesticides are a serious risk in the Danube, and their levels generally increase as you go downstream. "Alarming concentrations" can be found in some tributaries and in the lower main branch of the Danube, according to the Roof Report. Since the 1990s, pesticide use has declined by 40 percent, but increases are expected with economic developments.

Kayakers witnessed 59 dams along the Danube's upper reaches. What they didn't see were the 700 large dams and weirs on the Danube's main tributaries. Many were built to harness energy at large mountainous drop-offs.

They're not pretty to the eye, and ecological impacts are plenty. For one, the self-purification capacity of the river has been reduced. On the Bavarian Danube and around the Gabčíkovo dam, for example, water quality has decreased since dams were built.

Dams have changed the living conditions for all organisms, with migratory fish especially affected. The Iron Gate dam has led to the extinction of sturgeon migrating upstream. And since **the** ▶

GLOBAL FUNDS BUOY PROJECT

The Danube could become a world model for building public awareness of pollution threats

The Danube Regional Project (DRP) was launched on December 1, 2001 — the last phase of a long-term commitment by the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF) to improve the Danube environment.

A key focus of the USD 17.2 million project is to help Danube countries implement the Danube River Protection Convention (DRPC). "It's not surprising that UNDP-GEF places so much effort here," says DRP Project Manager Ivan Zavadsky. "The Danube is globally important because it's the test case for implementing the EU's Water Framework Directive (WFD) in Europe, and many see the WFD as probably the most comprehensive and integrated water legislation in the world. The Danube could also become a global model for expanding public awareness of the threats from nutrient pollution."

Significant support from the DRP flows to the Vienna-based International Commission for the Protection of the Danube River (ICPDR), the body charged with implementing the DRPC and coordinating the development of the future Danube River Basin Management Plan and the Roof Report, a comprehensive look at the river basin's environment and the threats it faces.

The Roof Report has been a success story. All 13 countries with large areas in the basin agreed to jointly develop the report; six EU member states (Germany, Austria, Hungary, Slovakia, Czech Republic, Slovenia) were obliged to contribute while three accession countries (Croatia, Bulgaria, Romania) and four other countries (Bosnia and Herzegovina, Moldova, Serbia and Montenegro, Ukraine) volunteered to help. "There was an incredible amount of cooperation from all Danube countries involved," says Phillip Weller, executive secretary of the ICPDR. "Intense discussions led to a common understanding of the main challenges — a remarkable achievement for the most international river basin in the world." The report is available online at <www.icpdr.org>.

To reduce nutrient and toxic pollution, the DRP works with a wide range of local, national and international stakeholders. For example, the project is helping national pollution control offices to assess which areas in the Danube basin are most at risk from floods washing hazardous substances into water bodies, such as the Horn and Nitra rivers in Slovakia. The project works with farmers and farmer advisory services to improve techniques for applying fertilisers and pesticides. Another initiative will help Danube governments implement voluntary bans on phosphates used in washing detergents. And a pilot project will try to demonstrate the effectiveness of wetlands removing and retaining nutrients.

NGOs are supported through the DRP's USD 2 million Small Grants Programme — operated by the REC — to implement pollution reduction activities on the ground. Examples include a project in Slovakia to clean wastewater using natural reedbeds. In the Czech Republic, an NGO is raising local awareness about hazardous waste leaking into local streams. In Hungary, farmers are learning more about how they can reduce nutrient pollution. In Serbia and Montenegro, NGOs are raising local awareness about impacts from industrial pollution through print, radio and web products. And in Croatia, targets are to stop the illegal disposal of animal waste and to inform the media about pollution scandals. A project component also implemented by REC boosts public participation in environmental decision making. "The support we have received from the DRP is crucial in our ability to help countries to meet the Water Framework Directive," says Johannes Wolf from the Danube Environmental Forum (DEF), a network of NGOs active throughout the basin.

The bigger picture is that the DRP is part of the USD 95 million GEF Strategic Partnership for Nutrient Reduction in the Danube/Black Sea Basin — one of the GEF's largest and perhaps most ambitious water-related projects in the world. The partnership supports the goals of the commissions for the Danube and Black Sea to reduce nutrient and toxic loads to the levels necessary to allow Black Sea ecosystems to recover to conditions of the 1960s. ▶



DOWN IN THE DIRT
With a REC-administered grant from the Danube Regional Project, the PRO BIO Association of Organic Farmers promotes practices that reduce pollution of the river.

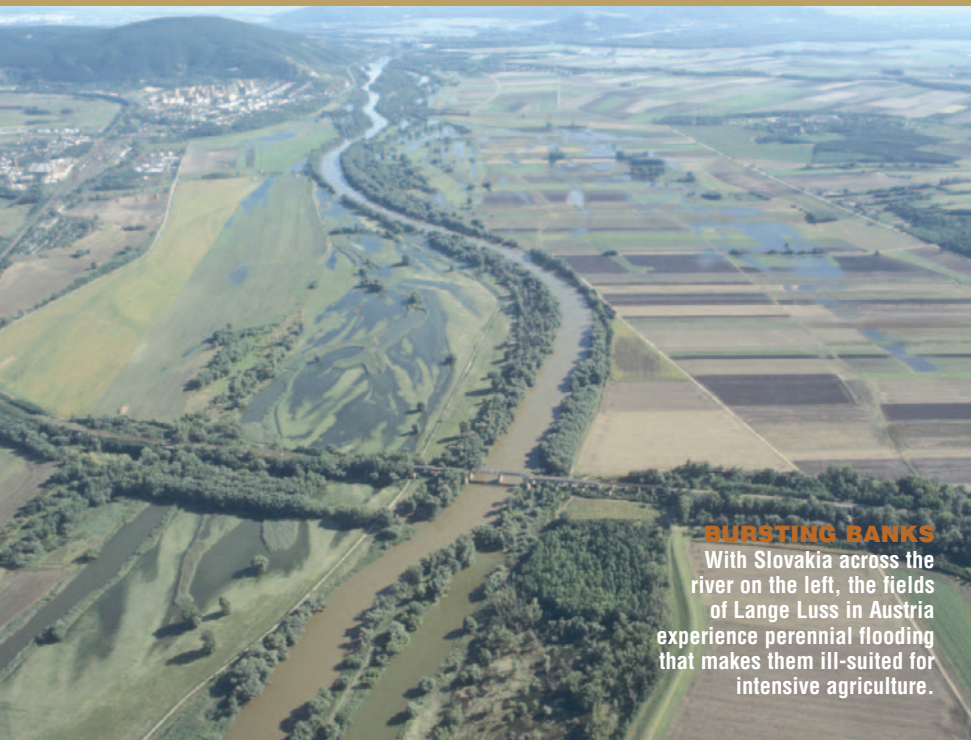
REC ARCHIVE



A NEW LEAF

Life at the mouth of the Danube has always been abundant, but better management of upstream pollution is needed to preserve it.





BURSTING BANKS
With Slovakia across the river on the left, the fields of Lange Luss in Austria experience perennial flooding that makes them ill-suited for intensive agriculture.

DISTELVEREIN

DOWN ON THE FARMS

Austrian conservationists campaign to move agriculture away from the Danube

Children get the difference. Take them to two different fields — one a meadow teeming with butterflies, birds and frogs, the other a ploughed field — and see which they choose to admire. Unfortunately, it's not as easy to convince some farmers.

That's the situation at the Lange Luss, a 350 hectare natural floodplain next to the Morava River along the Austria-Slovakia border upstream from its confluence with the Danube. Abounding with rich meadows 50 years ago, much of the area has been transformed into farmland. Today, only 50 hectares of meadows remain. Wheat, corn and sunflowers take up much of the rest.

The area floods on a regular basis, making farming difficult. Many of the landowners only farm to make a second income, some lease their lands to others, and some have put their ploughs away for good. At the same time, the area belongs to the southern part of the Trilateral Ramsar Site of the Floodplains of the Morava-Dyje Confluence, a highly protected area.

"Farming here doesn't make much sense," says Gerhard Neuhauser from the Austrian conservation NGO Distelverein. "It pollutes the Morava and Danube with nutrients and chemicals from fertilisers and pesticides. It doesn't fit with the wise-use concept for a Ramsar site. And it doesn't help Austria meet its obligations to the Water Framework Directive."

In response, Distelverein will campaign to change land use from agriculture to grasslands. "Many farmers won't be thrilled with the idea," says Neuhauser. "But once we explain the benefits, we think they'll be more convinced."

Distelverein hopes to create new areas for meadows, and for pastures that feed cattle. They'll also try to influence the Austrian government's system of subsidies to farmers. Now, about half of a farmer's income comes from subsidies that go to crops such as wheat and corn. The NGO hopes to switch subsidies to practices that are more suited to the grassland environment, such as low-intensity grazing and growing hay.

Another idea is that farmers selling environmentally friendly products could get more involved in tourism. Nearby in the town of Marchegg, tourists already flock to see the large protected colonies of storks — these actually depend on meadows for feeding grounds. And up above Lange Luss, the newly re-opened Schloss Hof, a beautiful castle on par with Schonbrunn and Versailles, is sure to attract loads of tourists. "If a tourist can see the storks and the castle and bring home some nice organic products, then they've had a true experience — a real story," says Neuhauser.

Looking down from the Schloss, one sees the castle gardens, the agricultural fields of Lange Luss, the Morava and then the pristine grasslands of Slovakia on the opposite bank — preserved largely because it was part of the buffer zone that made up the former Iron Curtain. "Wouldn't it be nice if the Lange Luss became grasslands that gently merged with river and grassland on the other side? Now that would be a perfect sight to see." ▲

► building of the Jerrenback dam on Germany's Inn River in 1921, fish species have decreased from 30 to two. Many dams also release water to generate hydropower. The resulting artificial floods, several times a day, sweep away life downstream while drying out areas between floods.

The movement of natural sediment downstream has been blocked. Behind the Iron Gate, 325 million tonnes of sediment piled up from 1972 to 1994, causing drinking water supply problems. Another impact is that areas downstream from a dam need to be stabilised through "donations." For example, 160,000 cubic metres of sediment are donated to the river at Freudenauten every year.

Dams are only one type of hydromorphological alteration in the Danube. Others include the building of weirs and sluices and the canalisation of rivers. The three main driving forces for these alterations have been power generation, flood protection and navigation, with smaller impacts from gravel and water abstraction, recreation and fisheries.

According to the Roof Report, 80 percent of the river's length has been regulated through actions such as straightening the river for navigation or erecting flood protection dikes.

Overall, some 80 percent of the Danube's historical floodplains have been lost in the last 150 years. In Hungary, 3.7 million hectares of floodplains have been diked. By 1990, one quarter of the Danube Delta's wetlands had been diked to create agricultural polders and fishponds. Wetlands have been "drastically altered," according to the report, hurting fish and bird species that depend on them for dynamic habitat. In the lower Danube since 1980, fish species have dropped from 28 to 19.

These problems don't just violate the environment, they may also break the law. The Roof Report has provided the European Commission (EC) an assessment of how Danube countries will meet the Water Framework Directive by 2015.

EU countries need to assess whether water bodies within their boundaries are "at risk," "possibly at risk" or "not at risk" of failing to meet the directive's objectives. This must be done in relation to four key risk categories: organic pollution, hazardous substances, nutrients and hydromorphological alterations. The next step will be the development of a Danube River Basin Management Plan by 2009 on how to achieve the 2015 objectives.

At first glance, the risk analysis results from the Roof Report don't look very positive. The portion of the Danube at risk or possibly at risk is 47 percent from organic pollution, 55 percent from nutrient pollution, 73 percent from hazardous substances, and 86 percent from hydromorphological alterations (see figure). At the same time, it's important to know that the current results are based on incomplete data and as more data is collected, results

could change.

Many areas show a substantial change in character and have been provisionally identified as heavily modified water bodies (HMWB). In total, HMWBs total 78 percent of the Danube. The upper Danube stretches in Germany and Austria, and the Iron Gate area, are all HMWB. For tributaries, the total length of HMWB is 6,300 km.

Navigation is the most dominant use on Danube HMWBs followed by flood protection, urbanisation and hydropower, while the main physical alterations are dams and weirs. For Danube tributaries, the most dominant use is flood protection and then hydropower, while the main physical alterations are bank reinforcements.

The delta is at risk from hazardous substances and nutrient pollution. All Black Sea coastal waters are at risk from nutrient pollution and possibly at risk from the other three. And the pesticides DDT and Lindane are at risk of failing to meet the WFD.

The Roof Report also tried to assess groundwater in the basin for the first time. Most countries appear to be at high risk of groundwater pollution from fertilisers and chemicals, untreated sewage and leaching from contaminated soils. That's a big problem because groundwater is the source of 95 percent of the public water supply in some Danube countries.

Clearly, challenges lay ahead. Many locations appear to be at risk of failing the EU test, although incoming information may change the story. Regardless, countries will need to cooperate to develop an excellent Danube River Basin Management Plan by 2009.

The next 10 years will witness more major changes on the ground. Economic development in the middle and lower parts of the Danube region will inevitably increase. Reappearing threats and risks will need to be minimised.

Many plans for infrastructure projects such as dams and efforts to improve navigation pose threats, some even to the last few remaining free-flowing sections of the Danube. (See navigation story.)

Wetlands and floodplains should be protected, restored and reconnected to the river. This will help to improve flood prevention, purify groundwater, enhance habitat and species diversity, fish migration and manage pollution. "Danube floodplains are among the most important remaining floodplains in Europe," says Tobias Salathe from the Ramsar Convention on Wetlands.

Some 80 percent of the Danube floodplains have been lost, but some of what remains is now protected and success stories are coming in. From 1994-2003, 15 percent of the embanked area in the Danube Delta was restored to its natural state. And through one of Europe's largest river restoration projects on the upper Drava River in Austria, natural flood retention capacity improved by 10 million cubic meters over a 200 hectare space.

As for pollution, sustainable agriculture with less intensive practices is needed for the entire basin with reductions in

fertilisers, pesticides and nutrients. Here, the potential of a reformed EU Common Agricultural Policy should be fully explored — for example, in eliminating subsidies for unsustainable activities. In the upper Danube (e.g. Germany, Slovenia), the focus should be on reducing diffuse agricultural sources of pollution, especially nitrogen.

In the middle and lower sections, economic development will probably intensify agriculture and increase diffuse nutrient inputs. To compensate, the focus should be on point sources. Here, a few sources are responsible for nearly half of all point source discharges, so a "remarkable reduction of total point source pollution" is possible, the Roof Report states. Wastewater treatment in Germany and Austria sets an example other countries should follow, the report notes.

Phosphorus can be reduced through improved wastewater treatment, especially at places like the Arges River in Romania. Introducing phosphate-free detergents is a good idea. Big improvements can be made before farmers become dependent on the use of agro-chemical products. And countries should phase out harmful pesticides.

The past management of the Danube Basin was predicated on a view that man was a better engineer than nature. It was seen as best to control and harness the river's power with canals, dykes and dams. The river has also been seen as a convenient garbage dump.

Our understanding of river ecology has progressed exponentially. Many now speak of the "living river."

Today, we also better understand impacts from our past actions. How dams have changed the natural character of rivers. How pollution didn't just disappear but rather caused problems downstream and for ground waters. How cut off floodplains increased the risk of floods to local residents. And the list goes on...

Today, we are realising again what a great engineer nature is, that it created all that splendour in the first place. To make sure we get it right this time, people and organisations throughout the basin must become more aware and more involved.

That definitely happened last year, on June 29, when the first international Danube Day was held: the river's largest celebration and a time for people to symbolically communicate the importance of their river. Slovakian children sent greetings to neighbours downstream, a torch was carried along the Danube in Romania, and ship workers saluted the river by blasting a "wave of sound" upstream through Bulgaria, Romania, Hungary and Slovakia.

This Danube Day, Dukat and his fellow kayakers will be in Straubing, Germany — Bavaria's threatened 'Noah's Ark'. "It's a beautiful place," Dukat says. "I sure hope that it stays that way." ■

Paul Csagoly is a freelance writer and consultant.

Dredging up controversy

Western Europe increasingly sees new trade opportunities with the new and candidate EU countries to the east and beyond. However, many are constrained by transportation gaps. In response, the transport arm of the European Commission (EC) created the Trans-European Network for Transport (TEN-T) to close the gaps.

The Danube is one of the most important parts of TEN-T. Named the Pan-European Transport Corridor VII, the Danube is envisaged as a the major part of a continuous navigable corridor from the North Sea to the Black Sea that would be used more intensively for inland shipping and waterway transport.

In 2003, TEN-T identified a number of bottlenecks, or shallow sites along the river, that impede navigation. Many in the navigation lobby, including canal and ship builders, interpreted this as a call for the bottlenecks to be eliminated. Not surprisingly, many plans for costly infrastructure projects now exist to make that happen, usually through deepening of the river.

At the same time, the sites that the EC labels as bottlenecks have great ecological value. According to the EC, over 65 percent have existing or potential Natura 2000 status. Also potentially affected by the plans are three national parks, 11 Ramsar sites and one world heritage site. These include the last four free-flowing stretches of the upper Danube.

"These future plans for shipping threaten the very ecological basis of Europe's lifeline," says Christine Bratrich from the WWF Danube Carpathian Programme. WWF is not against inland navigation, she adds, as long as it is sustainable and that projects to improve navigation cause no ecological damage. "The Roof Report clearly shows that navigation has been the dominant human use on heavily modified water bodies. Danube navigation, to be viable, will therefore have to change to better respect the river's natural processes. The ships should be changed to fit the river, not the other way around. The Danube isn't just a corridor, it's a living river."

The Roof Report, an environmental study by the International Commission for the Protection of the Danube River (ICPDR), also raises a number of red flags related to Danube navigation, noting that all Danube stretches faced with TEN-T projects, including the last free-flowing stretches, are at risk of failing to meet WFD objectives unless it is clearly demonstrated that no deterioration in status will occur. "It is of paramount importance that an EIA be carried out first that includes the criteria of the WFD in order to ensure that these water bodies remain intact," the report notes.

PROJECT INFORMATION SHEET

RIVER BASIN MANAGEMENT

PRODUCTS AND ACTIVITIES: SUPPORT FOR DANUBE SUB-BASINS

INTRODUCTION

Given the immensity and internal complexities of the entire Danube Basin, efficiencies can be gained by managing smaller areas based on natural **sub-river basins**. Sub-basin initiatives, as pilot projects, also provide lessons for strengthening IRBM and the implementation of the EU Water Framework Directive (WFD) **basin-wide**.

UNDP/GEF Danube Regional Project (**DRP**) activities have supported the enhancement of IRBM and the implementation of the WFD at the sub-basin level, especially for the **Sava** and **Tisza** river basins, and more recently for the **Prut** River Basin, under the umbrella of the ICPDR.

SAVA RIVER SUB-BASIN

The 'Sava River' is the **third longest** tributary of the Danube, is its **largest** tributary by **discharge** and reaches its **confluence** with the Danube in Belgrade, Serbia. The 'Sava River Basin' covers areas in the **five countries** of Slovenia, Croatia, Bosnia and Herzegovina, Montenegro and Serbia.

A DRP project was launched 16 November 2005 to help the **four national** governments sharing the Sava River Basin to develop their first **Sava River Basin Management Plan (RBMP)**, under the coordination of the new **Sava River Basin Commission**. On 24-25 January 2007, the DRP project ended with a workshop agreeing on the **structure** of the future **Sava RBMP** and related **Road Map**, including steps for **public participation**. (*See separate Information Sheet on this activity.*)

In December 2005, a **DRP Small Grant** was awarded to four NGOs to strengthen public involvement and NGO participation in EU WFD implementation in the Sava Basin. Their main goal was to jointly take actions to ensure that NGOs, and the people and issues they represent, **participate** in the development of the new **Sava RBMP** at the Sava Commission. (*See full story in separate Information Sheet*)

PRUT RIVER SUB-BASIN

The Prut River is the **second longest** and last major tributary of the Danube, meeting the Danube just upstream from the Danube Delta. It is shared by the **three countries** of Moldova, Romania and Ukraine, serving as a border between the first two.

The DRP's '**Prut River Basin Management Case Study**' is assisting Prut Basin countries with initiating the development of the **Prut River Basin Management Plan**, in line with the EU

WFD and country commitments to the ICPDR. The project is also **raising awareness** on issues such as pollution from agriculture, helping to change **consumer behaviour** regarding phosphate-containing detergents and generally improving **stakeholder involvement** in environmental issues.

With the support of experts from Romania, Hungary, Slovenia, Germany and Slovakia, two **workshops** were held on WFD implementation in Moldova and Ukraine. These joint ICPDR/DRP meetings were an opportunity for experts to share their experiences and collectively identify priorities for the next steps in implementing the WFD.

Also, five **NGOs** are working on a range of activities supported through the DRP Small Grants Programme in the Prut Basin. The one Romanian and four Moldovan organizations are actively developing and implementing programmes on **nutrient reduction** (e.g. best agricultural practices), **awareness raising** for the public on environmental issues and providing **educational** materials for schools.

Building on the initial work conducted by the DRP, a proposal was submitted by the countries for a **larger project** to the Global Environmental Facility (GEF).

TISZA RIVER SUB-BASIN

The Tisza River Basin is the **largest sub-basin** of the Danube Basin. The six countries of Hungary, Montenegro, Romania, Serbia, Slovakia and Ukraine share not only its beauties, but also problems relating to water supply, severe flooding, droughts, landslides and erosion in the uplands, and pollution from agriculture as well as accidental pollution from mining accidents.

Tisza countries are now preparing the '**Tisza Analysis Report**' as the first step toward meeting the EU Water Framework Directive. The DRP provided technical assistance to **Ukraine** to participate actively in the ICPDR's initiative for the Tisza Sub-Basin.

WEBSITE:

See the 'RBM' section on the DRP 'themes' website at:
www.undp-drp.org/drp/themes_river-basin-management.html

PROJECT INFORMATION SHEET RIVER BASIN MANAGEMENT

PRODUCTS AND ACTIVITIES: SUPPORT FOR THE SAVA RIVER SUB-BASIN

ABOUT THE SAVA

The 'Sava River' is the **third longest** tributary of the Danube, the **largest** tributary by **discharge** and has the Danube Basin's **second largest catchment** area. It reaches its confluence with the Danube in Belgrade, Serbia. The 'Sava River Basin' covers areas in the **five countries** of Slovenia, Croatia, Bosnia and Herzegovina, Montenegro and Serbia.

The **UNDP-GEF Danube Regional Project (DRP)** supported river basin management efforts in the Sava Basin primarily through assistance to the new **Sava River Basin Commission** and to **NGOs** in the basin. Its focus was on the development, with maximum stakeholder and public input, of the **Sava River Basin Management Plan (RBMP)** -- a requirement under the **EU Water Framework Directive (WFD)**. Although only Slovenia, as an EU Member State, and Croatia as an Accession Country, are required to fulfil the WFD, Bosnia and Serbia **voluntarily** agreed to comply. Montenegro was invited to join into this process after its independence in summer 2006.

Assistance from the DRP and other international projects has put the Sava countries into the position of a **pilot region** in terms of WFD implementation in Europe.

SUPPORT FOR THE SAVA COUNTRIES AND SAVA COMMISSION

In 2003, DRP consultants already compiled for the Sava Basin a summary of national data and information on water management and socio-economic indicators. This assistance also provided a concept for preparing the Sava RBMP.

A follow-up project was launched 16 November 2005 to help the **four national** governments sharing the Sava River Basin to develop their first **Sava RBMP**, under the coordination of the new **Sava River Basin Commission**.

Activities were guided by the **ICPDR's** ongoing work for making the Danube RBMP, including its structure and Road Map, and progress made in the **Tisza** River Basin with WFD reporting. Financial and technical support was provided through the DRP until early 2007 with the long-term goal of full plan completion with ICPDR guidance by 2009. The regional DRP activities also worked in synergy with a **CARDS** Sava project focusing on local sub-basins in the Sava region.

Tasks began with a **gap analysis** to assess the national availability of information needed for EU WFD reporting in Bosnia and Herzegovina, Croatia and Serbia. During joint working sessions, Austrian and German consultants then advised local government experts from the Sava countries in how to meet **WFD reporting obligations** in terms of hydromorphology (risk

assessment, identification), groundwater characterization, GIS tools and point and diffuse source pollution.

On 13-14 November 2006 in Sarajevo, a regional workshop, also involving Slovenia, identified preliminary **key water management issues** and topics of **measures** for the Sava Basin. On 24-25 January 2007, the DRP project ended with a workshop agreeing on the **structure** of the future **Sava RBMP** and related **Road Map**, including steps for **public participation**.

To view the reports related to this activity, visit:

www.undp-drp.org/drp/activities_1-1_sava_river_basin_management_plan.html .

SUPPORT FOR THE INTERNATIONAL SAVA RIVER NGO COMMITTEE

In December 2005, a **DRP Small Grant** was awarded to four NGOs, one from each of the four Sava Basin countries, to strengthen public involvement and NGO participation in EU WFD implementation in the Sava Basin. Their main goal was to jointly take actions to ensure that NGOs, and the people and issues they represent, **participate** in the development of the new **Sava RBMP** at the Sava Commission.

The main output of the one-year project was to establish an '**International Sava River NGO Committee**' to represent NGOs during development of the Sava Plan. The committee was launched on **10 November 2006** in the city of Krapinske Toplice, Croatia. (*See full story in separate Information Sheet*)

WEBSITE:

See the 'RBM' section on the DRP 'themes' website at:

www.undp-drp.org/drp/themes_river-basin-management.html.



RIVER BASIN
MANAGEMENT

Photo: Victor Mello

NGO Grant Story

THE DOOR OPENS WIDER FOR THE PUBLIC HELPING THE SAVA

A DRP grant for a four-NGO partnership in the Sava River Basin opens the door for better public input in managing the basin.

Where do most of the people of the Sava River Basin actually live? No, not right next to the Sava River itself. Most live near to the many tributaries of the Sava River, from the Kolpa to the Bosna to the Drina to the Spreca.

“When it comes to addressing the main problems and challenges faced in the Sava Basin at an international level, the focus is usually on the Sava River itself. Its tributaries are often neglected,” says Irma Popovic of the Croatian NGO ‘Green Action’. “There’s also lots of talk about navigation issues, but nature conservation gets little attention. For example, the industrial contamination of the Spreca River last year got a poor response for taking further action.”

Miodrag Botic from the Sava NGO 'Doboj' agrees. "Until now, nobody was looking for who was responsible for the contamination. Our campaign tried to find the polluters and now we're raising awareness about the Spreca's contamination problems."

The *Sava River* is the third longest tributary of the Danube River and holds the largest volume of water for a sub-basin in the Danube Basin. Its confluence with the Danube is in Belgrade, Serbia. The *Sava River Basin* covers areas in the five countries of Slovenia, Croatia, Bosnia and Herzegovina, Montenegro and Serbia.

Although only Slovenia, as an EU Member State, and Croatia as an Accession Country, are required to fulfil the EU Water Framework Directive (WFD), Bosnia and Herzegovina and Serbia agreed to comply. Montenegro was invited to join into this process after its independence in summer 2006.

The WFD obliges countries to use a river basin approach for managing water resources as well as cross-border and multi-stakeholder cooperation. It also obliges every EU sub-basin, such as the Sava, to develop a 'River Basin Management Plan (RBMP)' by 2009 which should help countries meet the WFD requirement of a 'good status' for all EU waters and ecosystems by 2015.

PARTNERS FOR THE PUBLIC

To make sure the Sava RBMP addresses all of the main environmental issues affecting the Sava Basin, and that public input and participation is effective, Green Action partnered with NGOs in three other Sava countries. Partners include the Center for Environmentally Sustainable Development (CESD) from Bosnia and Herzegovina, Society of Bird Research and Nature Protection (DPPVN) from Slovenia and the Danube Environmental Forum (DEF) Serbia. Their efforts were supported through a Small Grant from the UNDP/GEF Danube Regional Project (DRP).

"Our biggest goal was to create an alliance of Sava NGOs that would be informed about how the WFD implementation process works and how it is progressing in the Sava Basin," says Igor Palandzic from CESD.



Photo: Victor Mello

"Once informed, the NGOs could then inform the people in the communities that they serve. And then the NGOs and the communities could provide valuable input into the overall planning process for the basin. Only then would the current top-down process be balanced with a bottom-up process."

The top-down process is being coordinated by the new International Sava River Basin Commission which officially opened in July 2006. The Sava Commission is mandated with implementing the 'Framework Agreement for the Sava River Basin' and developing the Sava RBMP on behalf of the Sava countries.

One key success of the NGO regional partnership project was the creation of a new informal NGO network that will act as an intermediary between WFD proceedings at the Sava Commission level and NGOs. To date, four Serbian, two Slovenian, six Bosnian and four Croatian NGOs have joined, with more growth expected in the future.

"Our NGO works on almost 200 km of the Sava River," says Tomislav Lukic from local environmental NGO 'Earth', one of the new network members from Croatia. "We see that there will be benefits in terms of trans-border cooperation, communications and help in implementing our projects and reaching our goals." The NGO now identifies water polluters throughout their county of Brodsko Posavska and they plan to spread this activity to the entire area of Slavonia "because there are no active NGOs currently working on water pollution issues there".

The long-term goal for the alliance is to get observer status with the Sava Commission, says Mirjana Bartula of DEF/Serbia. "But first, the alliance needs formal status. For now, we were able to successfully have Green Action granted observer status from the Commission, which means their participation in all future Commission meetings."

The informal network was launched on 10 November 2006 in the city of Krapinske Toplice, Croatia. A few days later, Green Action was officially informed about having been granted observer status at the Sava Commission.

COMMUNICATING IS KEY

The alliance now plays a key role as a "communication network". Basin-level information is distributed down to national focal point NGOs who in turn distribute it onwards to local NGOs and they to their communities. "More and more local awareness raising is happening. For example, the NGOs disseminated a multi-language brochure about the natural values still existing in the Sava Basin. In the future, some of this could turn into campaigning," says Bartula.

The four-NGO partnership also held national workshops in each country to disseminate information about issues such as the WFD process and the rights of the public to participate, and the importance of wetlands and agriculture's impacts on water. Over 150 people participated. "In some cases, even government staff from local nature protection agencies came to learn more," says Milan Vogrin of DPPVN.

"Very few people at the local level are aware of many of these things," says Lukic. "It certainly needs to be popularized more on all levels of society."

The four NGOs' biggest success was that they were able to learn a lot about and get closer to the Sava Commission and their plans, says Popovic. "We now have a good relationship and communications with them which means Sava NGOs will be better placed to get their views and opinions heard in the future."

Green Action's first opportunity as an observer at a Commission meeting comes soon. "I'll start by saying that getting observer status was a good first step," says Popovic. "Then I'll encourage them to start the required public participation process linked to WFD implementation as soon as possible. It makes sense to include the public, such as our new NGO alliance, into developing the public participation strategy. And we'll make sure all of the key issues get addressed, including nature protection and water pollution."

That's good news for NGOs like Dobj. "We joined the new Sava NGO network because we think it's an opportunity to make a difference. Regarding the Spreca River, we will now be more able to inform people and spread the message, including how to protect the river and to identify its polluters."



RIVER BASIN MANAGEMENT

Photo: Victor Mello

NGO Grant Story

HARNESSING THE POWER OF COALITIONS TO CLEAN THE RIVER

One problem along the lower Hornád River downstream from Kosice in eastern Slovakia was that communal wastewater was usually discharged directly or via septic tanks into receiving waters. Another was US Steel – its wastewater treatment plant is still the biggest point source of pollution in all of Slovakia.

In response, in 2004, the NGO Sosna created a 'river coalition' among key stakeholders, including US Steel, in 16 villages. The first step was to get stakeholders to sign a 'river contract' requiring them to execute future activities to improve water quality.

"River coalitions improve public awareness and the sharing of responsibility for water quality," says Sosna's Stefan Szabo. "In fact, they help to implement the EU Water Framework Directive at the local scale. The main motivation for the 25 members of the Hornád River Coalition, including representatives of governments, farmers, small businesses, schools and NGOs, was to increase their ability to solve local, river-related problems through mutual cooperation and partnership."

Coalition members periodically met and held round tables with representatives of local governments, the Association of Fishermen, East Slovakian Waterworks, Hornád River Basin Management, polluting firms and other local groups acting in the same micro-region of the Hornad watershed.

"In 2006 there were three negotiations between the Hornád River Coalition and US Steel," says Szabo. "They promised to support tree planting activities in the region, and thanks to the financial and material support from US Steel, altogether 11 green zones in nine river coalition villages were realized until June 2006."

One task specific to Sosna was to restore and re-connect an oxbow lake with the Hornad River near the Hungarian border. Here they gained support from the water agency for planning, from US Steel for transporting excavated material and from local residents.

The UNDP/GEF Danube Regional Project (DRP) funded the installation of two compost toilets and the promotion and practical introduction of municipal bio-waste composting in three villages. The transfer of know-how included the selection of proper public composting sites, training of persons responsible for composting and the setting up of three information boards.



EXPORTS TO OTHER COUNTRIES

In 2005, Sosna also 'exported' this system and other concepts to its four DRP regional project NGO partners in other river basins in Hungary, Romania, Serbia, Croatia and Slovenia, including help to establish river coalitions. Communications were made by e-mail, interlinked websites and joint annual meetings for experience sharing and training.

Hungarian partner Holocen's project focused on rural tourism in the village of Szanticska, an open air museum of traditional houses and lifestyles. Alternative wastewater treatment using compost toilets and a constructed wetland were demonstrated to visitors, while the foundations for a new river coalition were laid.

The Croatian partner Green Osijek had extensive education experience in Kopacki rit, one of the most important floodplain areas in the Danube basin. "The river coalition is a model we considered very useful and applicable in our region for improving water quality. SOSNA has a long experience with this model and in this project we wanted to implement that 'know-how' in Eastern Croatia," says Green Osijek's Jasmin Sadikovic.



Since autumn 2005, the „Budov kut“ side-arm at Čaňa village (SK) is again connected to Hornád river at both of its ends: During higher flows the oxbow will be filled again with water and it will function as a wetland.

Green Osijek built two composting sites in the Baranja region, jointly cleaned river banks and Danube villages, conducted monthly water quality surveys at the mouth of the Drava into the Danube, held five stakeholder meetings and promoted their Baranja River Coalition via the media. River contracts were signed in autumn 2005 and the first activities were executed in 2006. The three main industries in the city of Osijek, Cepin Oil, Saponia and a sugar factory, participated actively in the Danube Day celebrations of 2005 and 2006. Green Osijek was therefore able to establish cooperation and trust with the business sector, local government, state institutions and other NGOs.

In Romania, project partner NGO EKE held 65 stakeholder meetings, eventually leading to the creation of a new river coalition, *Eco NaTur Microregional Association*, officially founded in May 2006. They also restored a floodplain on the Tur River with 1,500 trees planted by 86 participants.

In Serbia, project partner Tisa Klub established a new river coalition with 27 members in 2005. They cleaned up waste from the Tisa floodplain, organised numerous environmental and cultural events and conducted a media campaign about industrial waste and an awareness campaign about the improper use of agricultural pesticides.



Photo: Victor Mello

On Danube Day 2006, all five NGO partners presented a public exhibition about their river coalitions work and achievements. In autumn 2006, they published and disseminated an information brochure about their work.

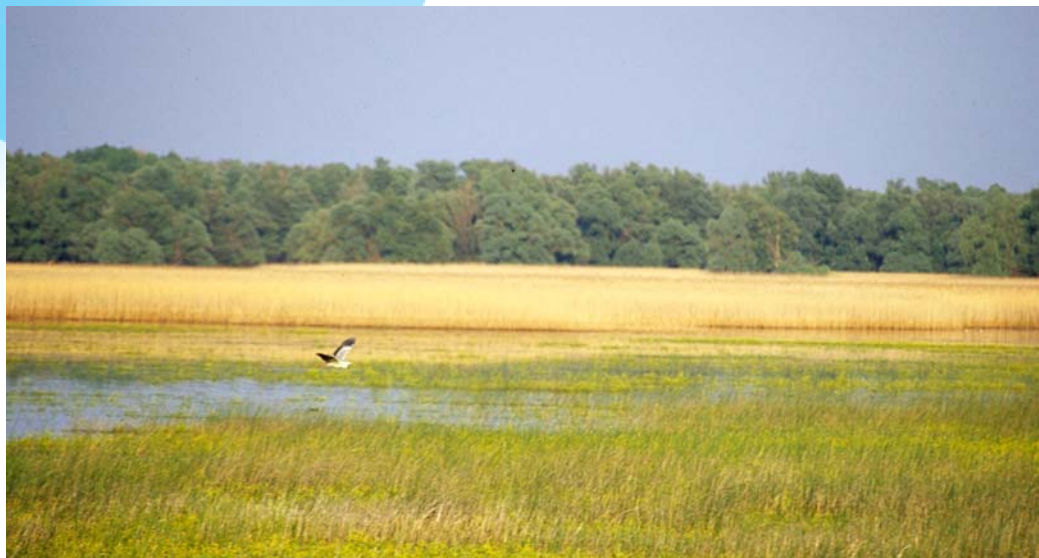


Photo: Victor Mello

PROJECT INFORMATION SHEET

RIVER BASIN MANAGEMENT

PRODUCTS AND ACTIVITIES

TECHNOLOGICAL SUPPORT

INTRODUCTION

Effective integrated river basin management (IRBM) begins with quality **information** about the status of the environment and pressures impacting it. In many cases, the availability of quality data and information depends on the use of best **technologies**. Furthermore, the EU **Water Framework Directive** has many strict requirements that Danube countries need to meet regarding information, monitoring and analysis.

To provide the best information possible in the Danube Basin, the DRP is implementing a number of significant **technological activities** including support for:

1. The **Trans-National Monitoring Network (TNMN)**
2. An analysis of sediment trapped behind the '**Iron Gates**' dam
3. Inter-calibration and assessing '**macrozoobenthos**'
4. Developing a prototype for a new Danube **GIS system**
5. The '**MONERIS**' model to estimate nutrient loads in rivers

1. TRANS-NATIONAL MONITORING NETWORK (TNMN)

The **Trans-National Monitoring Network (TNMN)** was formally launched by the ICPDR in June **1998** in Bratislava, Slovakia. Its main **objective** is to provide an overall view of **pollution** and long-term trends in **water quality** and pollution loads in the major rivers of the Danube Basin. By ensuring that comparable data and techniques are exchanged in a common format, it further provides decision-makers with the data required to make policy and investment **decisions** to improve water quality.

TNMN has been upgraded to be WFD-compliant and there are now more than 100 monitoring stations in the trans-national network. Specifically, the DRP has supported outputs including the development of a **biological database** for biological monitoring, nutrient standards and the design of a basin-wide monitoring programme meeting the needs of the WFD, to be submitted to the European Commission in March 2007. (See related reports at www.undp-drp.org/drp/activities_2-2_tools_for_wq_mlim.html)

2. IRON GATES DAM SEDIMENT

The Iron Gates dam is shared between the countries of Serbia and Romania, located at their common border on the Danube River. The DRP assisted government teams from each country, with support from Hungarian scientists, to assess the **quality** of bottom sediment accumulating in the large reservoir behind the dam.

Samples were collected from the Serbian **ship Argus** and **tested** for pollution including heavy metals, organics and nutrients. The tests will provide information about the accumulation and distribution of, and changes to, pollution in the reservoir over time. The DRP sub-project is also reviewing **current information** on sediment pollution in the reservoir and **impacts** that might follow the potential remobilization of sediment pollutants. Recommendations for future **monitoring** and **precautionary measures** will also be provided. Initial findings indicate no extreme pollution values as well as a need to better map the structure of the unique gorge underlying the reservoir. (*See the story Information Sheet on this project*)

3. INTER-CALIBRATION AND ASSESSING 'MACROZOOBENTHOS'

Inter-calibrated and consistent methods are being developed that are compliant with the WFD for sampling and assessing '**macrozoobenthos**' -- a 'biological quality element' that is one determinant of 'good ecological status' under the WFD. To date, methods used in Danube countries lacked a consistency of approach, thereby making basin-wide comparisons difficult. The programme was developed by German institute 'Schulung Fließgewässer GbR'. Three DRP-led **training** courses were held in Hungary, Romania and Slovakia for hydro-biological and monitoring experts from 11 Danube countries.

4. DANUBE GIS SYSTEM

Developing a prototype for a new, harmonized **GIS system** for the Danube Basin is underway, also identified as a key issue for WFD reporting requirements. The system will be a tool for integrating data and providing a sound basis for future IRBM-related decisions. The prototype is now available for further testing and development. (See related reports at: www.undp-drp.org/drp/activities_1-1_danube_gis.html)

5. NUTRIENT MODEL -- MONERIS

MONERIS has been accepted as an important tool for estimating **nutrient loads** from diffuse sources. Extensive use was made of the model results for the 'Danube River Basin Analysis'. The DRP updated the model to reflect the catchment boundaries adopted for WFD implementation and to provide a recalculation based on new data provided by the countries.