

# DANUBE WATCH

THE MAGAZINE OF THE DANUBE RIVER / WWW.ICPDR.ORG 2 / 2006



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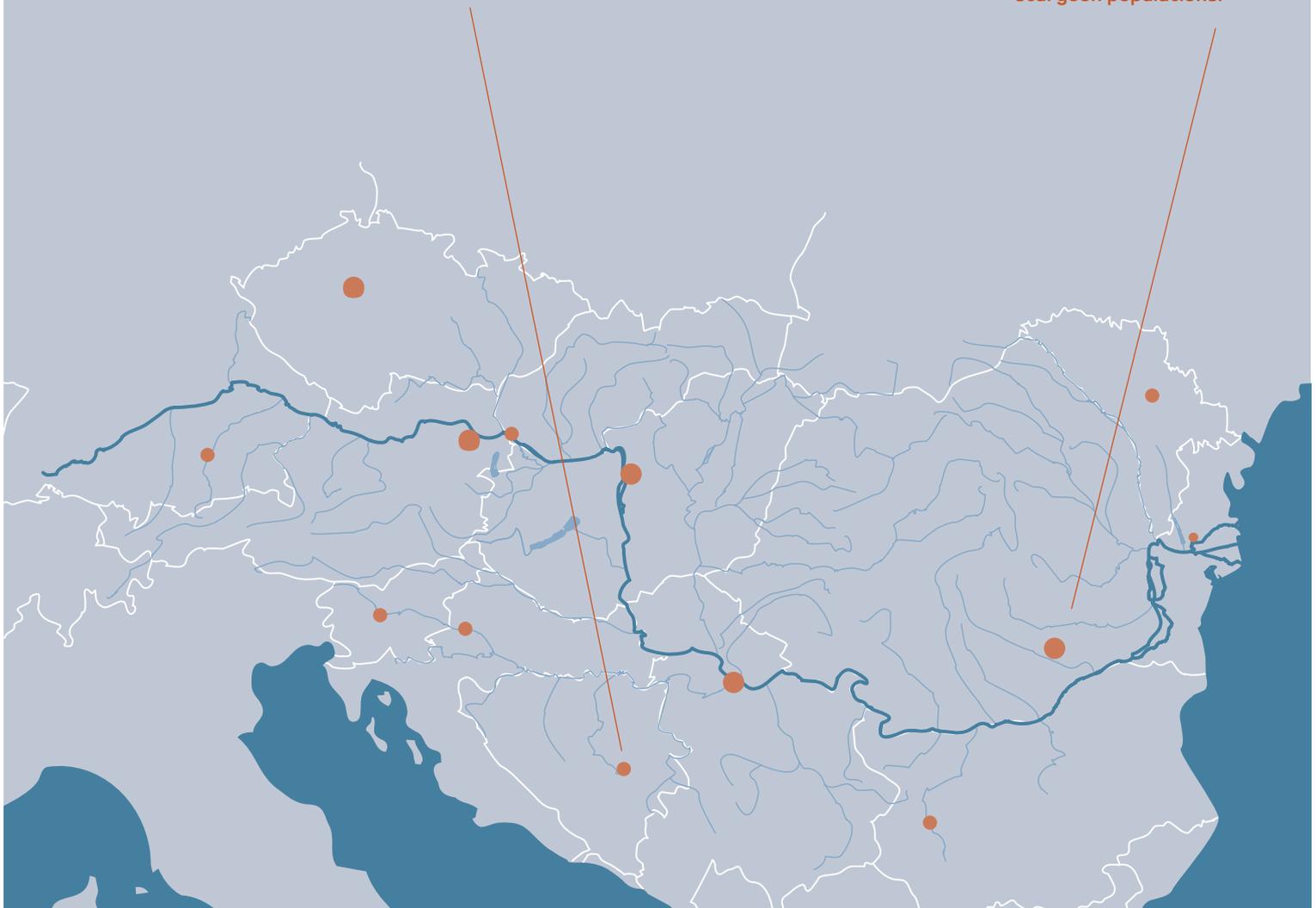
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Credit: ICPDR/Stögmüller

# Dear readers,

Floods are a way of life for many people living along the Danube and its tributaries. In Romania, the natural phenomenon of floods causes widespread disasters, and the heavy floods in 2006 emphasised the influence of social development on the landscape and led to new strategies for prevention and protection against floods.

Parts of Romania were still recovering from last year's floods when the Danube, swollen from heavy rains and melting snow, overflowed and devastated communities in southern Romania. By April 15, water flow on the Danube at the Romanian borders was 15,800 cubic metres per second — a record not seen since 1895. The floods submerged more than 3,000 homes, leaving 16,000 homeless, and tens of thousands more at risk. There was damage to 6,080 homesteads, 64,350 hectares of arable land, 8.4 kilometres of national roads, and 597 kilometres of county and local roads.

The Romanian section of the Danube is embanked, for a total of 1,200 kilometres, including embankments for communities situated in the Danube Delta. These dykes were built between 1965 and 1970, and mainly protect agricultural lands located in the former flood plain of the Danube River. Many communities later they have been extended out into the floodplains.

Romanian authorities struggled to control the situation as floods swept through the floodplain, breaching the embankments and submerging the surrounding areas. Today in Romania we speak about coordinated flood risk management with all stakeholders involved. And the involvement of all countries, as outlined in the ICPDR Flood Action Programme, is critical.

The European Union and several Danube countries have offered support to Romania for damage caused by the Danube flooding. Additionally, through the ICPDR Secretariat, several international organisations provided affected villages in Romania with relief supplies to help families left homeless by the floods.

We would like to thank the ICPDR and all countries which offered their support and sent in donations. We would also like to stress the importance of the fast and concerted implementation of the ICPDR Flood Action Programme: this spring's devastating floods underlined the importance of international cooperation. No country alone can combat floods of this dimension. 'Danube solidarity', celebrated again through Danube Day this year, must be put into practice.

*Lucia Ana Varga, Head of the Romanian Delegation to the ICPDR and the Secretary of State for Water at the Romanian Ministry of Environment and Water Management*



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## IMPRINT

**Owner/Publisher:** ICPDR — International Commission for the Protection of the Danube River, Vienna, [icpdr@unvienna.org](mailto:icpdr@unvienna.org); **Executive Editor:** Jasmine Bachmann; **Editor:** Kirstie Shepherd; **Design:** Agentur 7, Sylvia Kostenzer; **Cover photo:** DRP/Mello; **Print:** Druckerei Janetschek, Vienna

Danube Watch is the official magazine of ICPDR, the International Commission for the Protection of the Danube River. Danube Watch enhances regional cooperation and information sharing on sustainable water management and environmental protection in the Danube River Basin. It reports on current issues affecting the Danube Basin, and on action taken to deal with challenges in the river basin. Striving for scientific accuracy while remaining concise, clear and readable, it is produced for the wide range of people who are actively involved in the Danube River Basin and are working for the improvement of its environment.

The ICPDR accepts no responsibility or liability whatsoever with regard to information or opinions of the authors of the articles in this issue.



The production of this issue was made possible through financial support from the UNDP/GEF Danube Regional Project.



Credit: ICPDR/Liska



Credit: ZINKE Environment Consulting



Credit: Apele Romane/ Biro Zoltan Attila



Credit: Rosia Montana Gold Corporation

## GREETINGS FROM THE MOUTH OF THE DANUBE TO ITS SOURCE

On May 4, the Royal Fürstenberg Palace in Donaueschingen witnessed a symbolic gesture: a plaque from Ukraine was attached to the memorial wall behind the historic source of the Danube. Kyryl Sereda and Oleksiy Iarotchevitch presented the plaque to Thorsten Frei, Mayor of Donaueschingen, who welcomed Ukraine in joining other Danube countries who have greeted the Danube's source. This symbolic step took place at the meeting of the ICPDR River Basin Management Expert Group in Ulm, Germany.

## NEW EC DIRECTIVE ON MINE AND QUARRY WASTE MANAGEMENT

The European Commission proposed a new directive on May 1 to reduce pollution from mining and quarrying waste. The directive would introduce legislation to prevent pollution from long-term storage of waste in tailings, ponds and waste heaps by requiring all mine operators to draft waste management plans to qualify for a permit. The directive was prompted by the accidental cyanide spills in Baia Mare and Baia Borsa, Romania, in 2000.

**For more information, please visit: <http://ec.europa.eu/environment/waste/mining/>**

## EU MEMBERSHIP FOR BULGARIA AND ROMANIA IN 2007

The European Commission announced on May 16 that Bulgaria and Romania, which signed the Treaty of Accession in April 2005, should be ready for EU membership on January 1 2007, provided they intensify efforts in the reform of the judiciary and the fight against corruption. The Commission plans to review the progress of the two countries by October to consider whether the date of their accession can be maintained.

**For more information, please visit: <http://ec.europa.eu/comm/enlargement/>**

## PUBLIC INVITED TO DIALOGUE ON ROSIA MONTANA MINE PROJECT

The Rosia Montana Gold Corporation announced on June 6 the opening of the public information and dialogue process for the proposed Rosia Montana mine in Romania. The consultation process follows the filing of the Environmental Impact Assessment (EIA). Comments from the public during the consultation period will be reviewed by the Ministry of the Environment and Waters Management and reverted to the company for response.

**For more information, please visit: [www.rmgc.ro/](http://www.rmgc.ro/)**

4-8/9/2006

KLOSTERNEUBURG, AUSTRIA

#### IAD INTERNATIONAL CONFERENCE: DANUBE.RIVER. LIFE

The International Association for Danube Research (IAD) provides an interface between science, administration and water management. The conference serves as a forum for presenting and discussing up-to-date research in the Danube Basin related to biodiversity, river restoration and water quality, and their link to the EU Water Framework Directive.

**For more information, please visit: [www.oen-iad.org/conference/index.html](http://www.oen-iad.org/conference/index.html)**

10-14/9/2006

BEIJING, CHINA

#### IWA WORLD WATER CONGRESS AND EXHIBITION

The themes of this congress held by the International Water Association (IWA) cover most areas of the global water industry that are relevant to both the developed and developing regions of the world. Over 4,000 people are expected to participate in the congress and exhibition over five days. Leading researchers and practitioners will present the latest innovations in the progress of sustainable water management for the new millennium.

**For more information, please visit: <http://www.iwa2006beijing.com/>**



#### NEW PUBLICATION: DANUBE ANALYSIS REPORT

With the support of the UNDP/GEF Danube Regional Project, the summary version of the Danube Analysis Report (Roof Report 2004) is now available in German, Czech, Slovak, Bosnian, Serbian, Ukrainian and Romanian. The completion of the Roof Report fulfils one of the requirements of the EU Water Framework Directive. The report describes the main environmental problems in the Danube River Basin and reveals that if no action is taken the majority of water bodies may fail to achieve 'good' status by 2015.

**For information about how to obtain a copy, visit: [www.icpdr.org](http://www.icpdr.org)**



*Credit: ICPDR/ Jovanovic*

#### KOUYUMDZHEV FOLLOWED BY KATCHAKOVA

Nikolai Kouyumdzhev was key to the development of the Danube River Protection Convention. As Head of Delegation Mr Kouyumdzhev not only represented the interests of Bulgaria, but contributed actively to the development of international cooperation. Since this spring, Mr Kouyumdzhev is working as a water expert and his position has been taken over by Lubka Katchakova, Deputy Minister of Environment and Water. The ICPDR would like to express its thanks for all efforts undertaken and wish Nikolai all the best for the future.



Karlovac's drinking water comes from wells that are being affected by the untreated human and industrial wastewater entering the local Mrežnica and Kupa rivers. *Credit: Stepinac*

## The heavy price tag for clean water

Some cities across the Danube River Basin are struggling to meet the staggering costs of complying with EU environmental regulations like the Urban Wastewater Treatment Directive.

**The 60,000 residents of Karlovac, Croatia, have never been happy about the untreated human and industrial wastewater entering the local Mrežnica and Kupa rivers. They've never liked the way it affects the groundwater sources used to supply the city's drinking water, or local swimming, fishing and boating.**

"Over the last ten years, some fish and crab have disappeared from my favourite fishing spot," says local resident Ivica Kink. "They are both sensitive to pollution so wastewater was probably the reason."

Karlovac residents wanted something done. The City of Karlovac is trying to bring them solutions. Besides local demands, other forces are driving improvements to local water quality. "Cities downstream aren't pleased about inheriting upstream waste," says Kresimir Veble, a manager at Karlovac's water supply and wastewater treatment utility where he's worked for 27 years. Croatia will also have to apply a strong set of EU water laws as part of its EU accession. These include the EU Water Framework Directive and Urban Wastewater Treatment Directive (UWWT).

The UWWT is designed to protect the environment from the adverse effects of wastewater. One requirement is that wastewater treatment should be 'more stringent' in 'sensitive areas' where water bodies are 'eutrophic' — deprived of oxygen and thereby suffocating and reducing biodiversity. 'More stringent' measures could mean introducing, at a utility, 'tertiary treatment' that removes nutrients. With Croatia now in the process of joining the EU, Karlovac is expected to be declared a 'sensitive area' and therefore in need of tertiary treatment.

"The UWWT could be the most expensive EU water quality requirement," says ICPDR Technical Expert Mihaela Popovici. "In Romania, it could account for over 45% of the total costs for complying with EU environmental regulations."

**Bad nutrients.** Nutrient pollution is a serious problem throughout the Danube River Basin (DRB), notes the ICPDR's 'Danube River Basin Analysis' (Roof Report 2004). It has led to severe ecological damage in the Black Sea. Large parts of the DRB are at risk of not meeting the objectives of the EU Water Framework Directive because of excess nutrient pollution. Wastewater from cities is a major cause, as are agriculture and industry. Municipal wastewater also causes excessive organic pollution, another key issue identified by the ICPDR.

In response, measures to reduce nutrient and organic pollution will need to be taken by Danube countries through national management plans as well as their joint DRB Management Plan, coordinated by the ICPDR. An inventory of municipal wastewater treatment plants in the DRB is now being compiled that will provide information such as location, pollution loads, treatment technologies and cost efficiencies.

"From this data, we will be in a better position to identify the measures needed," says Popovici. "These will include basic measures such as expanding utility capacity and improving technologies, and supplementary measures such as making sure regulations are in place, monitored and enforced. While sufficient wastewater treatment has already been developed in Germany and Austria, major efforts are still required for central and lower Danube countries."

"Because of these factors, Karlovac agreed to build a new wastewater treatment plant that includes tertiary treatment," says Veble. "And the sewer network will be extended to more households. With significant costs."

**State to city.** Not long ago, decisions affecting the Karlovac utility were made centrally by the state — typically the case for most former communist states in CEE. Now the city decides. Also, the utility needs

## CASE STUDY: BELGRADE

About 1.5 million people live in Belgrade. All of the city's wastewater is discharged into the local Sava and Danube rivers. Some local industries, however, have their own wastewater treatment facilities, expected to meet local regulations and standards for discharging into Belgrade's sewer system.

"On average, the flow of the Danube in Belgrade is between five and six thousand cubic meters per second," says Vladimir Tausanovic, Managing Director for Belgrade Waterworks and Sewerage. "The Danube is a strong recipient of Belgrade's wastewater and there is therefore no significant environmental impact on river water quality." After Belgrade, the Danube flows east increasing sediment volumes in the Iron Gates dam reservoir. The quality of water in the reservoir before the dam is below that of the water after the dam as it flows to the Black Sea.

A wastewater treatment was planned 30 years ago for Belgrade. According to the Belgrade Sewerage Master Plan, costs could reach more than half a billion euro. The city's development department recently prepared a new Sewerage Master Plan in accordance with changes to the city's new Urban Master Plan. The new Sewerage Plan calls for new monitoring systems, extending treatment services to municipalities without sewerage, and completion of the entire network of collectors, interceptors, pumping stations and treatment plants. One large central and four smaller treatment plants are envisioned. Only the plant planned for the settlement of Ostruznica, upstream from Belgrade's water source, will include tertiary treatment — geared mainly to removing nutrient pollution.

"Since 2000, rehabilitation of the water supply and sanitation system, international development co-operation and institutional strengthening projects have all contributed to the success of improving services and decreasing costs in Belgrade," says Tausanovic.

to cover its own operating costs. It can do that if the prices it charges its customers bring in enough revenues. If Karlovac wants to invest in improved services, it will need more funds through grants or loans.

Karlovac will now receive a €22.5 million grant from the EC's Instrument for Structural Policies for Pre-Accession (ISPA) fund, a €10 million loan from the European Bank for Reconstruction and Development (EBRD), and a €3.5 million grant from the Government of Croatia for a total investment budget of €36 million.

"The UWWT could be the most expensive EU water quality requirement," says ICPDR Expert Mihaela Popovici. "In Romania, it could account for over 45% of the total costs for complying with EU environmental regulations."

As engineers, Veble and his colleagues are prepared to build a new plant. However, as they aren't economists or financial experts, an even tougher job for them might be deciding on how to pay for the improvements.

One requirement of the EU Urban Wastewater Treatment Directive is that wastewater treatment should be more stringent where water bodies are eutrophic. This could mean introducing tertiary treatment at a utility to remove nutrients.

*Credit: Ebs Vienna (top),  
DRP/Mello (bottom).*

“We’re involved in a number of water and wastewater projects throughout CEE, having worked at the sub-sovereign level (lending to municipalities and municipal companies) for some time,” said Art Schankler, Senior Banker with the EBRD’s Municipal and Environmental Infrastructure Team. “If a project meets our criteria, then we’ll do our best to provide funding.” Criteria include a utility’s desire to switch to market economy practices and its ability to repay a loan. EBRD interest rates are comparable to the general market.

**Cutting costs.** Planning the design of the new infrastructure and equipment is one difficult task. This is the first time a Croatian utility will build a new plant that includes tertiary treatment, so there is no precedent. As engineers, Veble and his colleagues are prepared for this task. However, as they’re not really economists or financial experts, an even tougher job for them might be deciding on how to pay for the improvements.



“The first step is for utility managers to take an honest look at their true current costs and where they might be losing money now,” says Andras Kis, a consultant working on the ‘Tariffs and Charges Project’ of the UNDP/GEF Danube Regional Project (DRP) which has assisted officials in Karlovac. Reducing internal

## TEST CASE: PITESTI, ROMANIA

A few years ago in Pitesti, Romania, the manager of the nearby Dacia car factory, Gelu Mujea, complained to the city’s mayor about the poor quality of local drinking water. Eventually, Pitesti’s mayor suggested to Mujea that he take over the city’s recently ‘localised’ local water service company ‘Apa Canal Pitesti’ and try to improve it himself. Mujea took on the challenge, was appointed General Manager of the company, and started on the long road to reform.

He introduced cost-saving measures such as automating treatment processes and reducing water use through the wide installation of water meters. He also took steps to increase revenues by improving the collection of bills and increasing prices. The savings and new revenues were used to make technological improvements for the drinking water treatment plant and water network. Pitesti now has both better quality water and a more reliable water service.

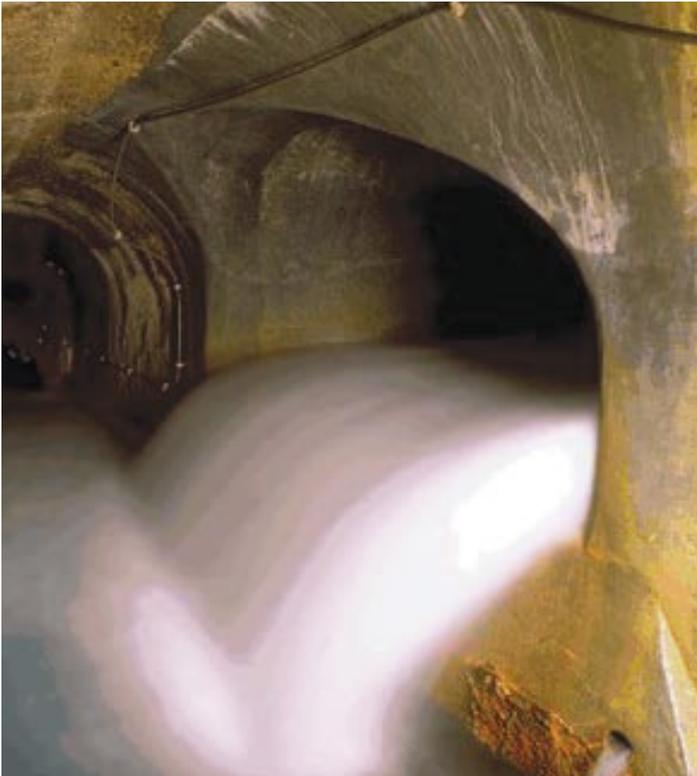
Mujea, his staff and City Council then applied for an EU ISPA grant and took out a loan from the European Investment Bank (EIB) – to extend the city’s sewer network, rehabilitate and upgrade the wastewater treatment plant, and further improve the drinking water facility. The new investments will be constructed by 2009.

To assist with financial planning, staff are now using the ‘ASTEC’ model provided by the UNDP/GEF Danube Regional Project (DRP). Together with DRP consultants, staff are using ASTEC to model the consequences of an array of expected changes, to come up with different price and investment scenarios.

“There are many opportunities to get international assistance to improve local services,” says Mujea. “We’re doing everything we can to take advantage of them.”

costs through reforms, such as reducing leakage from old pipelines, could lead to more money for new investments.

The EBRD’s Financial and Operational Performance Improvement Program (FOPIP) will assist Karlovac to improve internal cost efficiencies. “The rationale is to reduce the risks of their not being able to repay the loan,” says Schankler. “By making operations as efficient as possible, for example through improved bill collections, costs will be lowered, service will improve and prices will be more affordable.”



“The first step is for utility managers to take an honest look at their true current costs and where they might be losing money now,” says Andras Kis, a consultant working on the ‘Tariffs and Charges Project’ of the UNDP/GEF Danube Regional Project. Reducing internal costs through reforms, such as reducing leakage from old pipelines, could lead to more money for new investments. Credit: Vienna Waterworks/Lois Lammerhuber (left), GWP Hungary/Keresztes (left top and bottom)



“Business, to be economically viable, should pay market prices. This benefits everyone”, says Art Schankler, Senior Banker with the EBRD’s Municipal and Environmental Infrastructure Team.

Eliminating the big differences between prices charged to commercial and household customers is another EBRD goal. “Household prices were typically lower because it was easier politically to charge companies more,” says Schankler. “This raises the cost of doing business above the true costs of providing the service.” EBRD provided Karlovac with a ten year time frame to eliminate differences, while allowing that some differences could be justified (e.g. higher treatment costs for commercial waste). “Business, to be economically viable, should pay market prices. This benefits everyone.”

**Deciding on a price.** The next step is to determine how Karlovac will cover the added costs of financing its new investments. What reforms will need to be taken? What will be the end service price charged to consumers?

This is very complicated given the broad range of different and simultaneous considerations affecting decisions. For example, after a new tertiary treatment facility is built, the costs to operate the overall utility will most likely increase. Another possibility is that if the utility charges its customers higher service prices in the future, they could respond by using fewer services, which would reduce overall revenues.

“What if new customers are added to the sewer network?” asks Veble. “What if the national currency exchange rate changes?”

As people like Veble and his colleagues lacked the necessary ‘financial modelling’ tools to assess these

complex considerations, Karlovac was selected as a demonstration site for the DRP project. Pitesti in Romania is another pilot site (see box). The project raises awareness among utility managers about possible reforms for improving operational effectiveness. It has also developed a mathematical tool named ‘ASTE’ to test the impacts of a range of simultaneous considerations on pricing.

“At the start, we input existing cost and revenue data from Karlovac into ASTEC,” said Kis. “One quick lesson learned was that the data was not ideal and improvements would need to be made, for example in collecting payments. It also showed utility managers how the process works.”

“Using a tool like ASTEC could benefit the Karlovac utility,” says Schankler. “Karlovac will be required by the EBRD to make five-year projections of costs and tariffs, so whatever assistance they get here would be good. The model could also help with eliminating differences between commercial and household prices.”

What does the future hold? “Once Karlovac identifies and selects the potential measures and reforms it might implement, then these can be fed into ASTEC,” says Kis. “ASTE’ will then give them a range of various prices they can charge consumers for future services.” Hopefully, prices that consumers can afford.

*Paul Csagoly is a communications specialist for the UNDP/GEF Danube Regional Project, and a writer on European environmental issues since 1996.*

The next step is to determine how Karlovac will cover the added costs of financing its new investments. What reforms will need to be taken? What will be the end service price charged to consumers?



# Working together to overcome disasters

Nikola Marjanovic, Water Director at the Ministry for Agriculture, Forestry and Water Management of the Republic of Serbia and Head of the Delegation to the ICPDR, speaks about the recent floods, the importance of international cooperation and Serbia's efforts to improve the water sector.

Nikola Marjanovic, Water Director at the Ministry for Agriculture, Forestry and Water Management of the Republic of Serbia and Head of the Delegation to the ICPDR. *Credit: ICPDR/Jovanovic*



**"If we want to do something to reduce a flood risk, we must do it now. Two years in a row, and four times in the last seven years, we have had statistically significant flows in the Danube Basin."**

In its continuing series, Danube Watch presents portraits of the leaders whose passion and commitment actively steer ICPDR processes and help determine the future of the basin.

**Danube Watch: What is the present state of water management in Serbia?**

**Marjanovic:** During floods there is not much you can do — you hope the water will stay within protective structures. Sandbags can increase the height of dykes a bit, but this is not going to save you in the long run — this can provide a short term break only. You depend on your flood protection system, which means that you depend on what you have been doing for many years in the past.

Despite poor management in the water sector over the last 15 years (related to poor maintenance of the flood protection system), our protection system did not fail, not in 2005, nor in 2006. In both of these years we had record-breaking flows, in 2005 on the Tamish, in 2006 on the Danube and the Tisza. It was particularly difficult this year — we had extremely heavy flows, exceeding Q1%, along the Danube to Novi Sad. After

the confluence of the Tisza River, flows along the Danube all the way to Romania were the largest ever recorded. This was a consequence of having extreme flows on both the Danube and the Tisza at the same time. Of course, the Iron Gate Reservoir provided some manoeuvring space in terms of pre-empting the reservoir or storing water. However, it has been shown that, at extreme flows (16,000 cubic meters per second at the Iron Gate dam cross section), the limiting factor is flow capacity in the Iron Gate Canyon.

If we want to do something to reduce a flood risk, we must do it now. Two years in a row, and four times in the last seven years, we have had statistically significant flows in the Danube Basin. Therefore, we should re-examine our calculations and check if the probability of these flows has been calculated correctly. In addition to statistical analyses, we should consider

anthropogenic impacts (regulated river banks, new flood protection measures, deforestation of some areas within the basin, and so on) on flows.

**Danube Watch: Serbia shares part of the Tisza and the Sava basins – the two largest sub-river basins of the Danube. What challenges are you facing when cooperating at the sub-basin level?**

**Marjanovic:** Challenges are significant. Both of these basins are international, transboundary basins. Serbia is the most downstream country in both cases and, therefore, our interest in cooperation at the sub-basin level is the biggest. The Sava River Commission is somewhat different, because it started as a navigation project. However, now, this commission performs as a comprehensive body, oriented towards integrated river basin management. The secretariat has been established and we expect results rather soon — very high contributions can be justified only if results are provided soon, according to dynamics prepared by the commission. This will be possible only if all member countries keep the primary goals in mind and if they remember that these goals can be achieved only through hard, professional work, leaving politics behind.

## HISTORY HIGHLIGHTS

The Kingdom of Serbs, Croats and Slovenes was formed in 1918 and became Yugoslavia in 1929. During the second world war, Nazi occupation was resisted by various paramilitary bands that fought each other as well as the invaders. The group headed by Marshal Tito took full control upon Nazi expulsion in 1945. Although Communist, his new government managed to steer its own path between the Warsaw Pact nations and the West for the next four and a half decades.

In the early 1990s, Yugoslavia began to unravel along ethnic lines: Slovenia, Croatia, Macedonia, and Bosnia and Herzegovina were recognised as independent states in 1992. The remaining republics of Serbia and Montenegro declared a new Federal Republic of Yugoslavia in April 1992 and, under President Slobodan Milosevic, Serbia led various military intervention efforts to unite ethnic Serbs in neighbouring republics into a 'Greater Serbia'.

Federal elections in the fall of 2000 ousted Milosevic and installed Vojislav Kostunica as president. In 2002, the Serbian and Montenegrin components of Yugoslavia began negotiations to forge a looser relationship. These talks became a reality in February 2003 when lawmakers restructured the country into a loose federation of two republics called Serbia and Montenegro. The constitutional charter of Serbia and Montenegro included a provision allowing either republic to hold a referendum after three years that would allow for their independence from the state union. Montenegro's formal declaration of independence came on June 3 2006 and Serbia's on June 5 2006.

With regard to the Tisza River Commission, our attitude is that all aspects of water management should be considered. As I have already mentioned, Serbia is the most downstream country in both basins. Therefore, we are very concerned with issues related to water quality and water quantity.

Finally, I would like to emphasise that all activities of both commissions must be under the ICPDR umbrella for these activities to be fruitful for member countries.

**Danube Watch: How is the topic of 'water pricing' being tackled in Serbia?**

**Marjanovic:** Water pricing is, actually, my favourite topic. I use every single opportunity to raise that issue. Financing the water

sector is the biggest obstacle in achieving better management in the water sector. In Serbia, financial means can be provided from the water price only, there is no other source. Currently, the water price in Serbia is €0.3 per cubic meter of drinking water, which is very low and far from the economic price of water. Here, we have spent a great deal of time and energy to convince local authorities who are responsible for water supply systems to increase the price of water. I believe we shall soon start getting closer to the target price of €1 per cubic meter of drinking water.

**Danube Watch: Thank you very much, Mr Marjanovic.**

*Jasmine Bachmann works on public participation in the ICPDR Secretariat, and is the Executive Editor of Danube Watch.*

**"Water pricing is, actually, my favourite topic. I use every single opportunity to raise that issue. Financing the water sector is the biggest obstacle in achieving better management in the water sector."**

## SERBIA: FACTS AND FIGURES

Size of the country (km <sup>2</sup> )	Serbia total: 88,361 Central Serbia: 55,968 Vojvodina: 21,506 Kosovo i Metohija: 10,887
Area within the Danube River Basin	81,374 km <sup>2</sup> (92% of total area)
Share of the total Danube River Basin	10%
Population	7.5 million (without Kosovo i Metohija)
Population in the Danube River Basin	7.48 million (without Kosovo i Metohija)
Capital	Belgrade
Per-capita GDP	\$3500 (without Kosovo i Metohija)
Main tributaries to the Danube	Sava, Tisza, Velika Morava, Tamis



## A new line for Sarajevo citizens

A successful public awareness campaign, with funding from the UNDP/GEF Danube Regional Project, is raising awareness about green detergents and changing the way consumers in Bosnia and Herzegovina think about water pollution.

As part of communication activities, local NGO Ekotim distributed over 20,000 leaflets to citizens in Sarajevo at a range of locations from shopping centres to street actions to bars. *Credit: Ekotim*



**During the war, the city of Sarajevo's wastewater treatment facility was destroyed. Ever since, untreated residential and industrial wastewater has poured into the local Miljacka River, which flows into the Bosna River to the Sava River to the Danube.**

To help curb pollution, local NGO 'Ekotim' received a grant from the UNDP/GEF Danube Regional Project to reduce the amount of nutrient pollution in wastewater — specifically, phosphates coming from household detergent use.

The project aimed to raise awareness among Sarajevo consumers about the links between their detergent use and water pollution. It would promote more use of phosphate-free detergents. And it would sample municipal wastewater to measure phosphate discharges, and to see if their strategy was working.

**Getting the word out.** Communication activities proved highly successful, reaching some 200,000 Sarajevo citizens. Over 20,000 leaflets were distributed through a range of activities and locations from shopping centres to street actions to bars. A radio jingle was played ten times a day for 11 months, along with 20

radio shows, reaching the ears of over 150,000 people. Other actions included the distribution of 9,000 postcards throughout the city, workshops in schools, advertising billboards placed in public toilets and stories printed in national newspapers and journals.

Samples of wastewater, tested for free by the partner Institute for Hydromechanics, proved that the campaign significantly reduced the quantity of phosphorus in wastewater. In the first part of the project, total phosphorus discharge to the river decreased from 310 to 245 kg per day.

"The phosphate detergent industry, mainly Proctor & Gamble and a detergent factory from Croatia, opposed us with their own TV commercials," said Rijad Tikvesa from Ekotim. "But the Bosnian company 'Dita' from Tuzla ended up developing a new line of phosphate detergents with environmentally friendly labelling. So we think we've had a very positive effect."

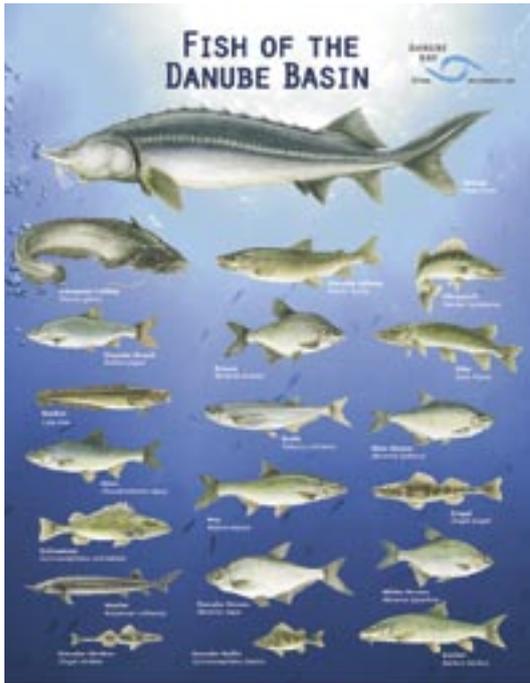
*Paul Csagoly is a communications specialist for the UNDP/GEF Danube Regional Project, and a writer on European environmental issues since 1996.*

# Danube Day: River of Life

Danube Day celebrations this year highlight the variety of wildlife that swims the waters of the Danube River Basin and the important role they play in signalling the health of the environment.

The rivers of the Danube River Basin are teeming with life. The habitats created by the Danube and its tributaries house about 2,000 types of vascular plants and more than 5,000 different animal species. The Danube River Basin is home to more than 300 varieties of birds, and offers shelter for countless amphibians, reptiles and mammals.

It is fish, however, that play an important role in the Danube rivers. Fish are more than just a valuable source of food for the people living in the basin; healthy numbers of fish also serve as an important indicator of the biological quality of the river.



Posters and stickers are available showcasing the fish that make their home in the waters of the Danube and its tributaries. Contact the ICPDR to get your copies!

The theme for this year's Danube Day — The Danube: River of Life — aims to celebrate all the life in the Danube, be it with feet or feathers or fins. To highlight the importance of our finned friends the ICPDR has produced a Danube Day poster focusing on some of the fish that make their home in the waters of the Danube River Basin.

**Beluga sturgeon (Huso huso).** The beluga sturgeon is the largest freshwater fish and can live to 100 years. Beluga

sturgeons are capable of moving freely between freshwater and estuaries. Adult beluga sturgeons swim at middle depths and in the Black Sea prey on species such as flounder and other flatfish, gobies and Black Sea anchovy.

All native sturgeon species are under pressure in the Danube Basin, due to their over-exploitation for caviar, the pollution and degradation of spawning grounds, and the interruption of migration routes. Efforts are under way to implement a Sturgeon Action Programme to bring all the sturgeons back to the Danube.

**Danube streber (Zingel streber).** The Danube streber is yellow-brown in colour and has several dark bands crosswise along its body. The average length is approximately 15 centimetres, but they can grow to over 18 centimetres long.

The Danube streber is found in fast-flowing river stretches. It becomes active after sundown when it goes searching for food. A remarkable characteristic of the Danube streber is its ability to hold itself on the riverbed, despite even the strongest currents. The Danube streber feeds almost exclusively on organisms that are driven near it by the water.

**Danube salmon (Hucho hucho).** This large freshwater fish has an elongated body, a large head and mouth, and strong teeth. The back of the Danube salmon is grey-brown to red-brown in colour and patterned with numerous dark spots; the sides are reddish grey with a copper-coloured gloss, and the belly is silvery-white. It prefers cool, oxygen-rich water.

**Sterlet (Acipenser ruthenus).** The sterlet has a narrow, pointed snout with four long, fringed barbels. It has a tail like that of a shark, where the backbone continues into the top lobe, which is longer than the bottom lobe. Sterlets grow to a maximum length of 70 centimetres.

The sterlet inhabits rivers and their tributaries, living in brackish freshwater at depths of around one metre. The sterlet uses its sensitive barbels to locate food, preferring insect larvae, worms and snails.

**Get involved!** Danube Day is a celebration of the Danube and its tributaries. This day strengthens 'Danube identity' and the knowledge that we all depend on each other. Nothing can be achieved without cooperation; it takes people from all walks of life across the basin to make a real difference.

**To find out more about Danube Day visit [www.danubeday.org](http://www.danubeday.org) or contact your national Danube Day contact person.**

*Kirstie Shepherd is a freelance journalist and the Editor of Danube Watch. She has called the Danube River Basin home since 2000.*

# Flooding fears return to the Danube

Following last year's disastrous floods, the Danube River Basin was hit again by terrible spring floods. Communities in Hungary, Serbia, Romania and Bulgaria were hit hardest.



The floods this spring underlined the urgent need for all countries in the Danube River Basin to work together to protect against floods. Credit: Directorate for water, Serbia

**Heavy floods inundated central and eastern Europe this spring, due to melting snow and heavy rainfall. Swollen rivers and rising groundwater levels caused widespread damage and forced thousands to leave their homes. For the first time in history, high water was recorded on the Danube, Sava and Tisza at the same time – causing dramatic floods where these rivers come together downstream.**

Germany faced heavy precipitation and snow thaw causing floods along several small rivers. In one 24-hour period in February, Bavaria received over 35 mm of rain. A state of emergency was declared for the southern Morava area in the Czech Republic and five towns were evacuated. Over 4,000 people were forced to leave their homes and five people were killed.

Two people died in Slovakia where river levels were initially critical. A state of emergency was declared in Trstice when rivers reached dangerous levels. Some 250 households were affected in Austria, and flooding caused dam failures and disrupted rail connections there.

Severe floods killed nine people in the Trans-Carpathian area of Ukraine. Flood waters covered towns and villages, damaging houses, roads and bridges. Moldova was spared serious flooding and no evacuations were necessary. Still, floods caused €1.5 million in damage, mainly to agricultural crops and small enterprises.

Anti-flow from the Danube was the main problem in Moldova – estimated at 40 km up the Prut.

**Record high flood waters.** The level of the Danube River rose to 861 cm in Hungary, higher than previous records in 2002. The Tisza River reached a record high of 9.8 m, threatening 160,000 people and over 50,000 homes. Over 12 million sandbags were used in Hungary during the disaster — 700,000 on just one day.

A dozen cities were damaged and hundreds of people were evacuated in Serbia. Near Veliko Gradište, the Danube reached 9.65 m, making it the highest recorded flood in Serbia. Due to efficient flood measures based on integrated management, damage was significantly less than that caused by the floods in 1981 — which were 20 cm lower.

The increase of the Danube's level flooded 12 counties in Romania. Over 15,000 people were evacuated, and 5,000 homes were flooded. Floods damaged 500 km of roads, 255 bridges and over 80,000 hectares of farmland. Although there were no human victims, the extent of the damage and the number of evacuated people by far surpassed the floods of 1970 which, until 2006, were considered the worst in Romania.

Over 20 communities were affected in Bulgaria, and a state of emergency was declared in seven regions. Over 1,000 homes were flooded, and over 50,000 hectares of farmland were damaged. A prompt response by state agencies, local authorities, and citizens restricted the material damage. Approximately 150 people were evacuated, but no casualties were reported.

**Action for flood protection.** In December 2004, Danube countries adopted the 'Action Programme for Sustainable Flood Protection' to manage flood risks. Key elements include mapping high risk areas, giving rivers more space by creating new water retention zones, and ending new building in natural floodplain areas. The development of the Action Programme is based on an integrated approach as requested by the EU Water Framework Directive.

"There has been a change in mindset in the recognition that building defence mechanisms against floodwaters is not sufficient," says Philip Weller, ICPDR

# Romania bans sturgeon fishing for ten years

Executive Secretary. “This means giving more space for the rivers, allowing the floodplains to be what they are, and to combine these kinds of strategies with measures to protect cities and public infrastructure.”

**The ICPDR’s efforts to streamline cooperation.** Danube governments are now focusing their attention on flood response and short-term relief measures. This summer, the ICPDR will review the flood response and the assessment will determine how the implementation of the Flood Action Programme could be accelerated.

One major element of the Action Programme is an international flood warning system, being developed by the EU Joint Research Centre and overseen by the ICPDR. The system will supplement national systems and give up to ten days’ warning of expected floods. “The flood alert system,” says Philip Weller, “will allow additional warning on where floods may develop based on meteorological and soil conditions and should give extra time to prepare and organise defences.” Trials for the system will be introduced by the end of the year and it is hoped that the full system will be fully operational in 2007.

**A European Response.** On January 18 2006, the European Commission proposed a directive on the assessment and management of floods to reduce the risks posed to human health, the environment infrastructure and property. The proposed directive creates an EU framework for flood risk management that builds on and is closely coordinated with the WFD.

Members of the European Parliament recently passed amendments to the proposed directive, making more explicit the need to cooperate on trans-border issues as well as giving individual countries more room to use existing resources and local and regional expertise.

“From each flood we have learned something. We are gaining a better understanding of what happens during floods, and recognising that we have to find ways to live with floods and this has been the philosophy that has been adopted in the Danube River Basin.”

*Kirstie Shepherd is a freelance journalist and the Editor of Danube Watch. She has called the Danube River Basin home since 2000.*



**The Romanian government has issued a ban on the commercial fishing of all wild sturgeon species (including ship, Danube, stellate, sterlet and beluga sturgeon) for a ten-year period. The order also bans the trading of products or sub-products obtained from sturgeon captured in Romania, and requires any sturgeon captured accidentally to be released, regardless of its condition.**

The ban was ordered in response to concerns over the continuing decline of sturgeon populations and the extinction of other sturgeon species in Europe over the last century.

“We were beginning to see a trend in beluga sturgeon numbers that we’d seen a few years ago with the Danube sturgeon,” says Radu Suci, Head of the Sturgeon Research Group at the Danube Delta National Institute. “If fish are well managed, the majority of the population should be young first-time spawners,” explains Suci. “Instead, the beluga sturgeons being caught in 2005 were between 25 and 30 years old — old fish, and there simply weren’t young fish born after 1990 surviving to maturity.”

The ban in Romania is a good start, but the Sturgeon Research Group will bring the data to the next meeting of the North-western Black Sea and Lower Danube Sturgeon Management Group, to ask fellow members Bulgaria, Serbia and Montenegro, and Ukraine to enact bans of their own. “We expect that once other countries see the data, they will adopt similar conservation measures,” says Suci.

*Kirstie Shepherd is a freelance journalist and the Editor of Danube Watch. She has called the Danube River Basin home since 2000.*

The methods used for artificial propagation will be strictly controlled under the ban. Young sturgeons for restocking will be tagged before being released in the river.

*Credit: DDNI Tulcea/Sucin*

**Romania’s ten-year ban will give time to put restocking programmes into place to bring populations back up to sustainable numbers.**



Studies in Switzerland and the USA show the greatest benefits (70% to 90% reductions in phosphorus loads) to lakes and rivers resulted where a combination of reduced detergent phosphorus and improved wastewater treatment was implemented.  
*Credit: Csagoly*

## Clean clothing, dirty river?

You just washed three loads of clothing and hung it in the sun to dry. Family is thankful. You feel good and clean. Did you pollute?

**Phosphates, or compounds with phosphorus (P), are added to some detergents to improve washing effectiveness. They soften the water in your machine, make it bubblier and help dissolve cleaning agents. That's good for your clothes, but bad for your river.**

Excess volumes of nutrients, however, can cause massive algal blooms. Left unchecked, sub-surface life becomes deprived of oxygen and suffocates, killing fish, reducing biodiversity and reducing the value of many water uses.

Mismanagement of nutrients in the Danube River Basin (DRB) has led to severe ecological problems including the deterioration of groundwater resources

and the eutrophication of rivers, lakes and the Black Sea. The upcoming DRB Management Plan, requested by the EU Water Framework Directive, will need to include measures to solve the Danube's nutrient problems.

**Treatment and P-free alternatives.** To reduce phosphate pollution, there are two main options. The first is more and better sewage treatment. The second is making detergents 'P-free'. The main alternatives to phosphates in detergents are called 'zeolites', which are neither toxic nor lead to eutrophication.

To date, Austria and Germany have virtually gone completely P-free. Slovenian use of detergents is about 75% P-free. Czech Republic P-free detergent use

is about 50%. These four countries together account for about 28% of the total DRB population. Of the remaining DRB countries, only Hungary and Serbia and Montenegro use significant proportions of P-free detergents (about 50%), together accounting for a further 25% of the DRB population. The remaining seven DRB countries use little or no P-free detergents and make up almost half the entire DRB population.

**Costs and industry.** “Zeolites have been shown to be a cost-effective alternative for P-based detergents and there is no evidence of higher costs to consumers,” says Helene Horth, an expert at WRc working as an independent consultant for the UNDP/GEF Danube Regional Project (DRP).

“It’s hard to say,” says Jaroslav Slunecko, a representative of a group of detergent producers in the DRB who are all members of the international Association for Soaps, Detergents and Maintenance Products (AISE), the official representative body for detergent and cleaning product industries in the EU. “It’s country and company dependent. Each company has a different supply chain and cost structure in each country. It’s important to look at how and from where ingredients are supplied. Local tax structures and transportation costs also need to be considered when determining costs and prices.” Each country also has consumers with different demands, he adds.

“Companies should be free to formulate detergents that fit best with a specific place’s consumer preferences, economic conditions and environmental situation,” says Slunecko. “The environment is one important factor, but not the only one.”

**The success of going P-free.** “Industry believes that no long-term solution to the problem of eutrophication will be possible without a clear commitment of stakeholders to implement waste water treatment plants and best management practices in agriculture fully. Industry will support all measures designed to reduce phosphate emissions into surface waters, either through sewage treatment plants or the marketing of phosphate-free products, provided proven cost-effective and environmentally sound alternatives are defined, yielding a sustainable resolution of eutrophication.”

According to recent investigations in the Czech Republic, the phosphorus from detergents creates 23% of total phosphorus discharged to municipal wastewaters, says Doubravka Nedvedova from the Czech Ministry of Environment’s Water Protection Department. This is why plants with more than 10,000 PE are equipped or will soon be equipped with phosphorus removal technology. “Considering that nutrients (phosphates and nitrogen) enter the water not only from municipal but also from agricultural sources, the measure (eli-

minating phosphates from detergents) is one of many others that we have to apply to remove nutrients from waters.”

**Pushing the switch.** In the DRB, two options exist for getting industry to switch to P-free production and sales — voluntary agreements or regulation through legislation. The Czech Republic started with a voluntary agreement with a group of detergent producers. Partial success was achieved with total phosphate content in detergents almost halved between 1994 and 2003. However, non-members to the agreement increased their market share resulting in increased phosphate levels in 2005, and the government reacted by enacting new legislation.

“The Czech lesson appears to apply to many former Central and Eastern European countries (CEE) in the Danube Basin,” says Horth. “It’s difficult to make voluntary agreements with industry work without legislative back-up. They prefer to wait for legislation.”

The goal of the DRP’s detergent project is to develop recommendations for reducing phosphorus in detergents. “To date, we have found many challenges to using voluntary agreements,” says Horth. “For example, without legislation, even if agreements can be made between national governments and industry, the field is left wide open for others to produce or import P-detergents.”

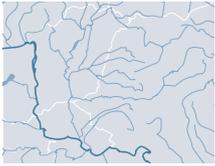
A new EU Regulation on detergents entered into force October 8 2005. Its Article 16 says: “...by April 2007, the Commission shall evaluate, submit a report on and, where justified, present a legislative proposal on the use of phosphates with a view to their gradual phase-out or restriction to specific applications”.

“Any EU decision should be based on science,” says Slunecko. “I can’t say whether the EU should enact legislation to ban P-based detergents or not. Let’s wait and see. Industry will respect the EC’s decision. We are committed to cooperating with local and national bodies and the ICPDR to find the best solutions.”

As for Horth: “We hope that the 2007 review will support a phase-out of detergent phosphates, as we now have the curious situation where several EU countries have contributed significantly to combating eutrophication by reducing the use of P-detergents, either through national legislation or voluntary agreements, while others have not. Another step in the right direction will be to make consumers more aware of the problem and choices available to them. NGOs can be a big help here.”

*Paul Csagoly is a communications specialist for the UNDP/GEF Danube Regional Project, and a writer on European environmental issues since 1996.*

“True progress will only be made in the DRB if the EU enacts legislation banning phosphates in detergents,” says Helene Horth, an expert working with the UNDP/GEF Danube Regional Project (DRP).



# Tisza Basin Cooperation

Five states share territory in the largest sub-basin of the Danube River Basin, and they are finding that success in addressing regional problems comes through sub-basin cooperation.



The Szamos River is one of the tributaries of the Tisza River Basin, which drains an area of 157,186 square kilometres and is the largest sub-basin in the Danube River Basin.  
*Credit: Zóka*

**Hungary, Romania, Serbia and Montenegro, Slovakia and Ukraine share not just the beauties of the Tisza, but also the 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 activities.**

There is a relatively long history of cooperation in the Tisza River Basin. Older treaties dealing with specific issues of transboundary cooperation have formed the basis for the transboundary water agreements in place today.

International focus on sub-basin cooperation and attention on the Tisza River Basin as a whole has increased since 2000, after heavy floods and pollution events in the basin, as well as the implementation of the EU Water Framework Directive. Shortly thereafter the Tisza Water Forum was established by the Budapest Ministerial Declaration in 2001 to harmonise national flood control programmes and led to the development of the Tisza River Basin Flood Control Concept.

## PROJECTS IN THE TISZA RIVER BASIN: UNDP/GEF MSP PROJECT

- Project title:** Establishment of Mechanisms for Integrated Land and Water Management in the Tisza River Basin
- Countries:** Hungary, Romania, Serbia and Montenegro, Slovakia, Ukraine
- Partners:** UNDP, national governments, EU, UNEP, ICPDR
- Duration:** 36 months
- Start date:** Mid 2006 (planned)
- Objective:** This project will address the issues of flooding, pollution, loss of biodiversity, adaptation to climate change, and the need for sustainable development in the Tisza River Basin. A major product will be the development of a regionally owned Integrated Tisza River Basin Management Programme.

The project will be closely linked to the activities of ICPDR ad hoc Tisza Group.

**The guidance of the ICPDR.** Recently the ICPDR has taken an active role in sub-basin planning – supporting and encouraging the processes and assisting in stakeholder involvement as well as providing additional information to local and regional planners. At the first Ministerial Meeting of the ICPDR, held in December 2004, ministers and high-level representatives of the five Tisza countries signed the Memorandum of Understanding on International Integrated Tisza River Basin Coordination Development. At the same time the ICPDR established the Tisza Group for coordination. The Tisza Group is a platform for strengthening coordination and the exchange of information related to international and regional activities in the Tisza River Basin to ensure harmonisation and effectiveness.

#### PROJECTS IN THE TISZA RIVER BASIN: KÖRÖS/CHRIS PROJECT

**Project Title:** Transboundary River Basin Management of the Körös/Crisuri River  
**Countries:** Hungary, Romania  
**Duration:** 36 months  
**Start date:** 2005  
**Objective:** This project will support Hungary and Romania in the process of developing a River Basin Management Plan, which will address issues like sustainable development and integrated management of natural resources, flooding as well as water pollution. The project is closely linked to the objectives and activities of the ICPDR RBM EG and to the ad hoc Tisza Expert Group.

The Tisza countries currently face the challenge of producing a sub-basin-level Tisza River Basin Management Plan by 2009 to meet requirements of the EU Water Framework Directive. The first step towards this objective is the preparation by 2007 of the Tisza Analysis Report – including an overall characterisation of the basin, an analysis of anthropogenic pressures and impacts, and flood risk mapping.

Recent events such as the floods this spring stress the necessity of a common understanding and emphasise the importance of the Tisza Sub-basin initiative – supporting strengthened flood protection and environmental safety in the region.

*Diana Heilmann is an environmental management and agricultural engineer working as an intern at the ICPDR, contributing to the work of the Tisza Group.*

#### FLOOD SAFETY PROJECTS ALONG THE TISZA RIVER IN HUNGARY

Between 1998 and 2001, four extraordinary floods occurred in the Tisza River Basin. Considering the magnitude of the endangered areas, the populations threatened, and the goods damaged, these floods broke every record in the upper and middle Tisza areas. Evaluation of the repeat floods made it clear that the method of heightening and strengthening dams to protect the country against floods should be reconsidered.

The 'Improvement of the Vasarhelyi Plan' (IVP) project has been developed, aiming to provide flood safety by storing excess water in reservoirs. The overall objective of the programme is to increase the discharge capacity of the flood bed together with the ecological revitalisation of the floodplain.

Preparatory studies have looked at ways to facilitate an increase in the discharge capacity of the flood bed through alteration of land use, and have identified around 30 sites which might be able to store excess water as reservoirs. Between 10 and 12 sites have been selected which have the total storage capacity of around 1,500 million cubic metres. According to preliminary calculations, this capacity is enough to decrease the peak levels of extreme floods by one metre all along the Hungarian section of the Tisza.

Prompted by the results of these extensive preparatory studies, the Hungarian government adopted a decision on the first stage of the IVP in 2003. During this first stage of the plan, six reservoirs (Cigand-Tiszakarád, Szamos-Kraszna-közi, Nagykunsági, Hanyi-Tiszszülyi, Tiszaroffi reservoirs and part of the Nagykunsági reservoir) will be built. In addition, the discharge capacity of the flood bed will be improved.

The IVP also aims to establish new landscape management in the territory of the reservoirs as well as regional, rural, and infrastructure development – which will result in a healthier Tisza River Basin.

*Benedek Göncz is Head of Department of the Flood Defence Department at the Hungarian Ministry of Environment and Water.*



The Tisza Analysis Report, the first step towards producing the Tisza Basin Management Plan, will include a map of the sub-basin. Fold out to see the Tisza River Basin Map.

**ICPDR MEETINGS**

For final dates, please consult the ICPDR calendar, available at [www.icpdr.org](http://www.icpdr.org).

26-19/6/2006  
24-27/7/2006  
2-5/8/2006

HUNGARY  
LOCATION TO BE DETERMINED  
ROMANIA

**ICPDR TRAINING: WFD COMPLIANT SAMPLING  
(ASSESSMENT METHODS, MACROINVERTEBRATES)**

10-11/7/2006

NEUSIEDL AM SEE

**ICPDR WORKSHOP: WFD AND HYDROMORPHOLOGICAL  
ALTERATIONS IN THE DANUBE RIVER BASIN**

18-21/7/2006

CONSTANTA

**UNDP/GEF DRP SEMINAR: ACTIVITIES FOR ACCIDENT  
PREVENTION – PILOT PROJECT: REFINERIES**

20-21/7/2006

CONSTANTA

**ACCIDENT PREVENTION TASK GROUP**

20/9/2006

LOCATION TO BE DETERMINED

**UNDP/GEF DRP WORKSHOP: DETERGENTS**

25-26/9/2006

LINZ

**PRESSURES AND MEASURES EXPERT GROUP**

25-26/9/2006

VIENNA

**GROUNDWATER TASK GROUP**

29/9-1/10/2006

MUNICH

**FLOOD PROTECTION EXPERT GROUP**

**DW 03/06**

**UPCOMING ISSUE**

**Looking Back on Danube Day 2006**

**State of the Black Sea**

**Prut River Cooperation**

# Tisza/Tysa/Tisa Sub-Basin

