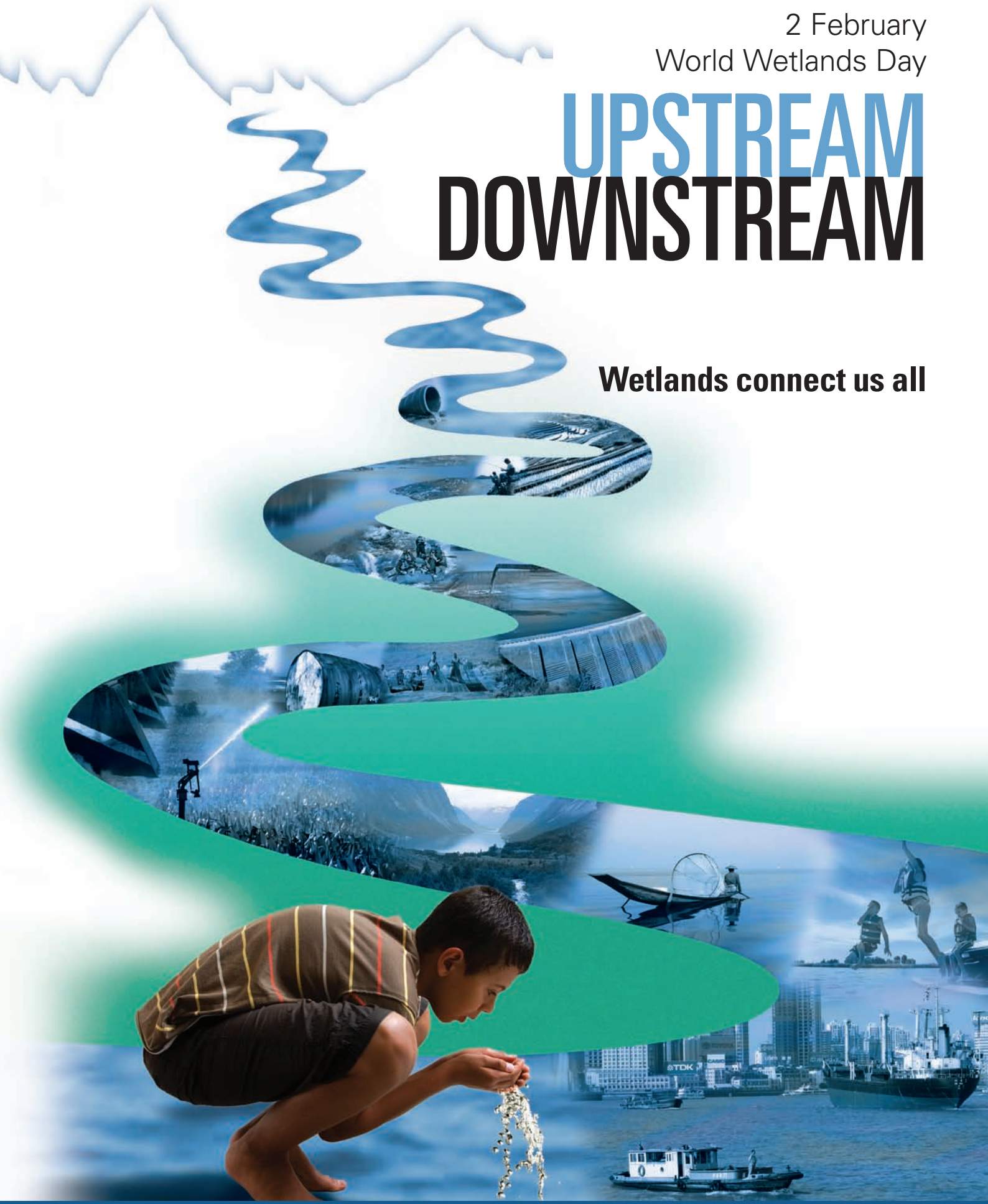
2 February
World Wetlands Day

UPSTREAM DOWNSTREAM

Wetlands connect us all



This publication has been made possible thanks to the Danone/Evian Fund for Water

Ramsar
CONVENTION ON WETLANDS
CONVENTION SUR LES ZONES HUMIDES
CONVENCIÓN SOBRE LOS HUMEDALES
(Ramsar, Iran, 1971)

9 things we all need to know about river basins

1. Wetlands, water and river basins

Water is the critical element upon which all terrestrial life depends, and it is wetlands – our rivers, lakes, marshes, floodplains… – that capture, store and transport water for all of us. Wetlands are a critical part of the water cycle that keeps us supplied with water wherever we live and whoever we are – farmer, factory owner, fisherman, or family. When rain falls over the land, it might make its way through the water cycle by evaporating quickly into the atmosphere – it may seep into the ground and end up in a waterway or in groundwater – or it may remain as surface water making its way eventually to the ocean via streams, lakes, and rivers. Since we are a water-dependent species, looking after wetlands – our 'water connectors'– is not an option, it's an imperative.

'Used and abused' best describes the world's wetlands. Today, only 21 of the world's 177 longest rivers run freely from source to sea. Why? Because of human-induced changes to deliver certain benefits for people, benefits such as more storage for irrigation water, improved river navigation, and protection from floods. Alteration of the natural flow regimes in rivers, fragmentation of waterways through human-made structures (such as dams, pipes and levees), loss of aquatic habitat, species extinction, invasive species, water pollution, depletion of groundwater aquifers … these are just some of our impacts on wetlands. What has to be emphasized about these changes is that they don't just have an impact on a particular wetland – wetlands are all connected, and the good and bad impacts of human interventions in particular wetlands are often felt throughout a river basin. Excessive water abstraction in upper areas of a basin can mean that a river and its associated streams and marshes hundreds of kilometres downstream experience less water flow – or even no water flow. But large scale changes don't just reverberate downstream, they can even adversely affect the water cycle, changing rainfall patterns that have an impact in other parts of the basin and beyond.

Wetlands are connected by more than water. We must think beyond a traditional water engineer's view of wetlands, to the ecologist's view of a living ecosystem: wetlands are a key component of our natural

Photo: ©iStockphoto.com/rhow

infrastructure. The River Continuum Concept recognizes that the flow of energy in animal and plant communities changes as you move downstream, and that what happens in any one part of this continuum can affect other parts of the system. The 'flow' of living things can go upstream too (think of salmon going upstream from the sea to breed in rivers and freshwater eels that do the opposite) and outwards from rivers and streams into floodplains, marshes and swamps. Here's an interesting story about how connected everything is. In Canada bears catch salmon from the sea in inland streams, often taking the salmon into forests to eat them. The rotting carcasses turn out to be a significant source of nutrients for forest vegetation. Now that's 'connected'!

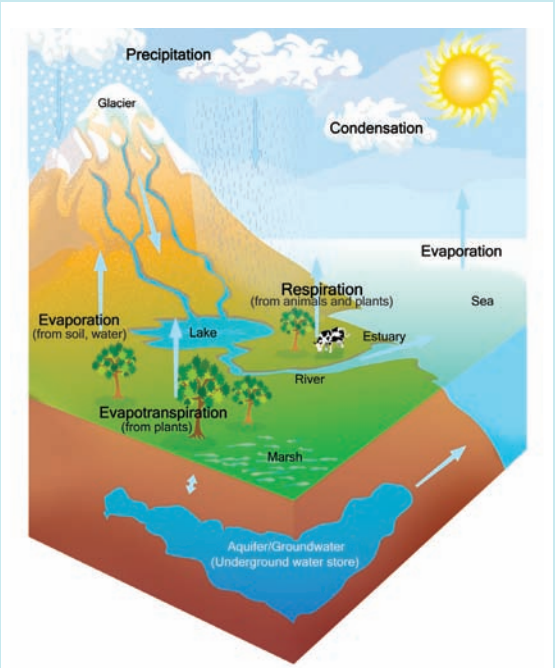
In the face of 21st century water scarcity, it is ever more important to think about how we are using, abusing, and managing our wetlands. It's not enough to consider the wetlands in our immediate surroundings. To manage them effectively we need to manage at the river basin level. And that makes management a whole lot harder!

2. What's a river basin?

For many people, river basin, watershed, and drainage basin are interchangeable terms, while for others they can have different meanings: in these briefing notes we will consider them to be interchangeable.

How might we define a basin? One definition is an area of land that is drained by a river. It includes all the land surfaces drained not only by the river but by all of its many streams and tributaries and associated lakes, reservoirs, marshes, swamps, as well as most underground aquifers. The final destination is usually through an estuary to the sea. The basin of course also includes its many inhabitants – humans and other animals, plants, bacteria, etc.

A river basin is like a giant bathtub that catches all the water that falls within its sides and sends all the rain falling on the surrounding land into a central river and out to the sea. River basins are usually separated from adjacent basins by a ridge, a hill or a mountain.



The global water cycle

And then of course there always has to be an exception. Endorheic basins are inland basins that do not drain into an ocean – rather, water is recycled entirely through evaporation or seepage. It's estimated that around 18% of all land drains to endorheic lakes or seas – such as the Aral Sea, the Okavango Delta, Lake Chad, Prespa Lake, etc.

What is most important is that the wetlands within the basin – rivers, lakes, swamps, reservoirs, etc. – are interconnected. As the world's water connectors, they act like a series of major arteries and minor capillaries that keep us alive, and all the other living things in the basin, too. Surface waters are linked to most underground aquifers – often called groundwater – and water is exchanged between them in both directions. The boundaries of underground aquifers often do not match the boundaries of the basin to whose surface waters they are hydrologically connected, but connected they are nonetheless. Groundwater sources are vitally important, storing 97% of the world's unfrozen freshwater, but just as there are limits to extracting water from rivers or lakes, the extraction possibilities for groundwater are not limitless, and over-extraction leads to a similar impairment of the water cycle and often to salt water intrusion into underground aquifers near the sea.

Not all wetlands are wet all the time, yet they still have important hydrological and ecological functions to fulfill in a river basin. Some wetlands are seasonal, meaning that they naturally partly or wholly dry up each year, and some are ephemeral, which means that they may only have visible water in them once in a while when there has been enough rainfall or water inflow. The importance of such wetlands is heightened in arid climates, where they may provide refuge and breeding sites for many species of flora and fauna that might otherwise not survive, and so they can be of critical importance to people and their livestock.

While we contemplate the sections that follow, a key message is that we ALL live in a river basin. It's really a part of your address – your house, street, town, province, basin! So how our river basin is being managed concerns us all.

3. Upstream – downstream

Human activities can bring long-term changes to the basin, both good and bad, depending upon what we do to the basin's natural resources – the soil, the water, the plants, the animals – even the air! Those of us directly involved with wetlands know only too well the negative impacts that factory waste water pouring into a stream can have in the immediate vicinity and downstream, or the effect of high nitrate and phosphate run-off from agricultural fields, or of untreated or poorly treated sewage or contaminated rainwater from urban areas pouring into local streams. The list of large and small unhealthy inputs to surface waters is long – and it all ends up downstream.

Of course it's not just harmful 'inputs' that end up in waterways that are worrisome, there are many direct changes to waterways themselves– dams, canalizations of rivers, excessive water extraction, introduction of invasive species, and so on – that are equally so. "We all live downstream" is true for almost all of us – but from a personal, local, national and sometimes international perspective, we also need to recall that we all live upstream from someone else. Much of what you do in your basin at a personal or professional level will have an impact, either positive or negative, on those living downstream.

Sometimes 'downstream' can be a very long way, and negative impacts may travel hundreds, even thousands, of kilometers – they may even cross international borders. In January 2000, a tailings dam at a mine in Romania overflowed and released 100,000 cubic metres of effluent containing cyanide into the Zazar and Lápos waterways. This poisonous plume flowed into the Szamos River and then into the Tisza River and finally into the Danube, making its way through parts of Romania, Hungary, Serbia, and Bulgaria in the process. Three more spills from other locations occurred within the next four months and it is expected that the recovery of the rivers from the devastation of the spills will take years.

Serious problems don't only arise through accidents, though. As a result mainly of excessive agricultural fertilizer use in many parts of the Mississippi river basin, not only is the water in many of the basin's rivers and streams unfit for swimming or any other recreational contact, or for drinking, but a 'dead zone' occurs each summer in the Gulf of Mexico where the basin meets the sea. The high nitrogen levels in the Gulf create an area where the levels of oxygen are so low, because of high algal growth, that it no longer supports a normal ecosystem and precludes, for example, the activities of both commercial shrimp and recreational fishermen. This year the largest 'dead zone' ever recorded in the Gulf covered an area of 21,000 square kilometers.

4. Basin wetlands: providing ecosystem services for people

We've seen the interconnectedness of river basins and the health of the wetlands within them, and it's worth reminding ourselves just how important those wetlands are to all of us.

Hydrological functions of wetlands

• **Flood alleviation.** In recent years major flooding events have taken place all over the world with the associated loss of life, property and livelihoods. Almost two billion people are living in areas considered to be high flood risks. Flooding is an essentially natural process that plays a key role in fertilizing floodplain soils, and this natural cycle has supported human

livelihoods for millennia – but these days our engineering skills have allowed us to 'reclaim' and isolate floodplains with dams, levees, canals, etc., with the result that many modern cities and important agricultural areas are now sitting upon those ancient floodplains, the natural overspill areas during storms and heavy rainfall. The scenes of devastation by floodwaters that regularly appear on our television screens help us to remember why we need to work toward restoring our floodplains and rely again on the natural flood alleviation functions of the wetlands!

• **Groundwater recharge.** As we saw above, underground aquifers store around 97% of the world's unfrozen freshwater. They provide drinking water for between 1.5 and 3 billion people – one quarter to one half of the global population – and they play an important role in irrigated agriculture. The link between wetlands and groundwater is complex and highly variable between wetlands, but broadly we can say that many wetlands and groundwater sources are closely associated. Some aquifers depend for recharge almost entirely on the downward seepage of water from a wetland, while conversely some wetlands may depend on the outflow from an aquifer as their water source. Then, too, some wetlands are both takers from and givers to aquifers depending on the conditions at any point in time. The value of this recharge service? The Hadejia-Nguru wetlands in Nigeria play a key role in recharging aquifers that are used by local people for domestic water supplies, a service that has been valued at US$4.8 million per year. Similarly, the water storage and aquifer recharge value of a 223,000-hectare swamp in Florida has been valued at US$25 million per year.

• **Water storage.** Wetlands (including underground aquifers and artificially constructed reservoirs) are the world's freshwater stores. What more can we say? We need them in a stable, healthy condition and we need them all.

Ecological functions

• **Improvement of the quality of water.** If there is one thing that ALL humans do that impacts upon wetlands, it is to produce waste! We do it in various ways – by introducing into our waterways excessive sediments through land-use practices, heavy inputs of nitrogen, phosphates and sometimes pesticides from agricultural runoff, toxic substances from industry (including heavy metals), either accidentally or intentionally dumped, and poorly treated or untreated domestic sewage and wastewater. Wetland plants help to trap sediments and can be effective in removing excess nitrogen and phosphorous; they can deal to some extent with pathogens as well. Specially-constructed wetlands can even remove some heavy metals and other industrial wastes from water, or they can store the wastes in the wetland sediments until they can be safely removed. Wetlands are indeed water purifiers – but of course there are limits; when we pass those limits, we impair the capacity of wetland ecosystems to function normally and deliver the many services we enjoy.

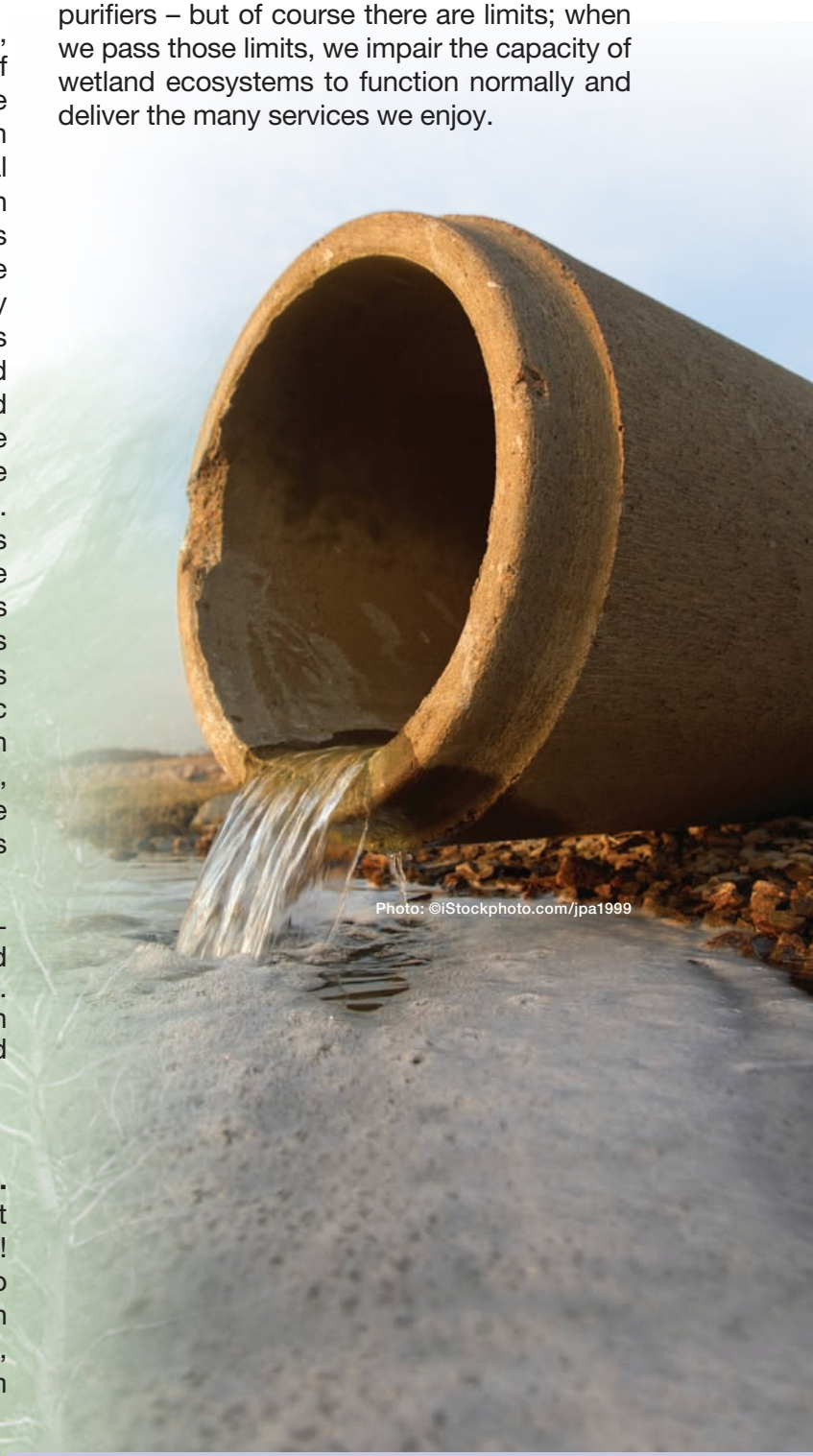


Photo: ©iStockphoto.com/jpa1999

• **Biodiversity support.** Relative to total area, freshwater inland wetlands have a higher species diversity than either marine or terrestrial ecosystems. For example, just looking at fish, marine areas cover roughly 67% of the globe, inland waters only 1%, yet inland waters are home to 40% of the world's fish species. It is also estimated that 25-30% of all vertebrate diversity is concentrated in and around wetlands. This biodiversity is what keeps our wetland ecosystems functioning.

• **Nursery areas for fish.** Nurseries for fish are especially important in coastal areas where estuaries and oceans meet. Reducing water outflow or pouring pollutants out to these areas from our river basins can have dramatic impacts on the nursery areas that are essential to support marine fisheries, our main source of fish at a global scale. The reduction in sediment carried by rivers to the sea, often because of dams, can also reduce the 'nutrients' that ensure the quality of important nursery areas for marine fish. Floodplains in river basins also provide essential breeding and nursery areas for certain freshwater fish species.

• **Fish production.** While inland waters only provide 10% of global fish catches, they are critical to the livelihoods of millions and provide the only source of protein in some developing countries. They employ over 50 million people globally and provide recreational fishing opportunities for hundreds of millions. In the Lower Mekong Basin in Asia, an estimated two million tons of fish and other aquatic animals are taken and consumed annually with a total value of US$ 2 billion. Wetland ecosystems need to have adequate quantities and quality of water to sustain this vital food production.

• **Plant growth.** Many species of freshwater plants occur over very broad geographical ranges. The most famous aquatic plant of course is rice, the staple food for half the world's population. Although no naturally growing aquatic plant is exploited on the same scale as rice, other freshwater aquatic plants are used as animal fodder, harvested for human consumption, and used for building materials. Excess nutrients in wetlands can promote excessive plant growth leading to a gradual deterioration in the health of the wetland – and the loss of some of the ecosystem services.

5. Water scarcity

Freshwater is our ultimate renewable resource, yet issues of water scarcity are discussed regularly on our TV screens and in our newspapers. Even if not directly affected, most people are aware that there is a big and rapidly growing problem. Globally 2.5 billion people live in river basins under at least moderate levels of chronic water stress – that's over 40% of the world's people – and 1–2 billion people suffer high levels of scarcity. The total amount of water withdrawn or extracted from freshwater systems is 35 times greater than it was 300 years ago, and it has been increasing by 20% each year since 1960. We know this cannot go on and yet the situation is not improving – the most recent predictions indicate that by 2025 as many as two-thirds of the world's population could be living in water-stressed areas, with South Asia, Africa, and the Middle East likely to be the worst affected. Of course, those who suffer most in water-stressed countries are usually the economically disadvantaged – the world's poor.

Closely linked to water scarcity is the global food crisis. Agriculture currently uses 70% of the water we withdraw from our wetlands and groundwater sources (and higher levels are

Photo: David Rogers (www.davidrogers.co.za)

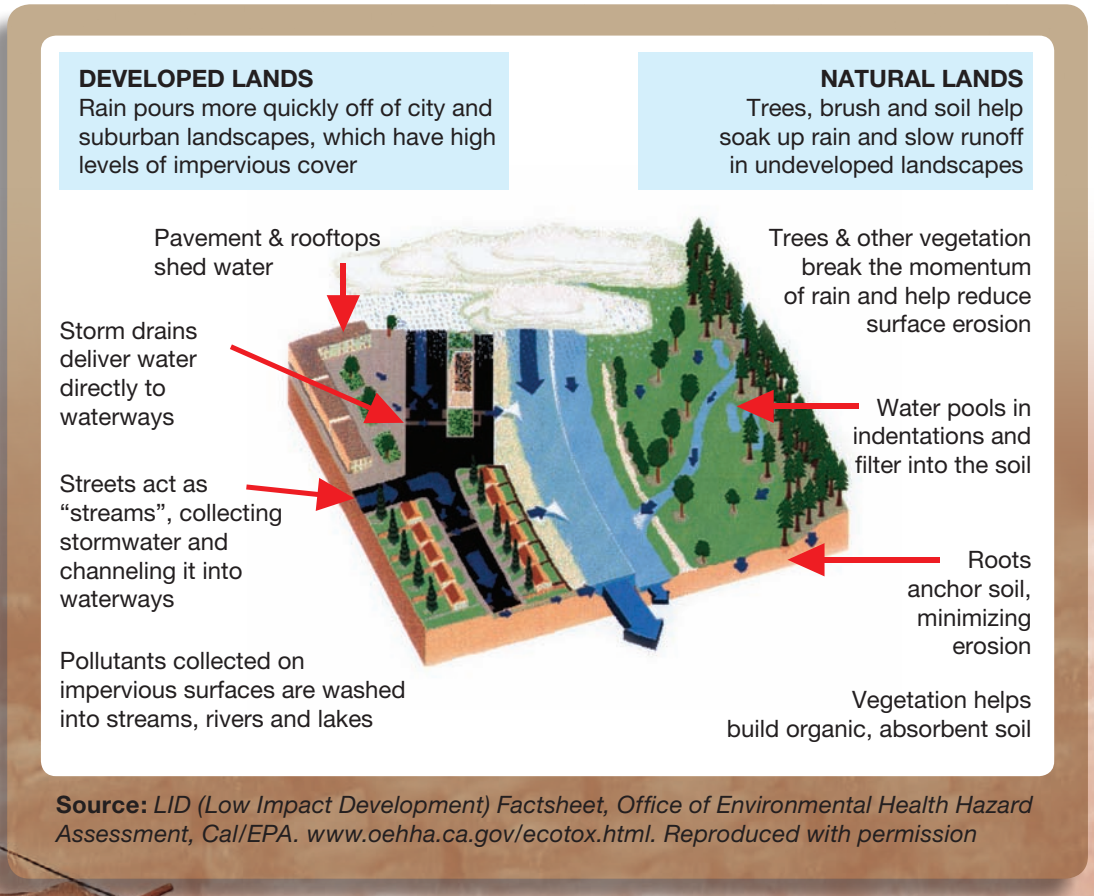
recorded in some countries), and most of that is used for irrigation. Even though only 17% of our cropland is irrigated, that portion produces 30-40% of the world's crop production, so irrigation needs are not likely to diminish. With increasing global population growth, economic development, and urbanisation, we can expect increasing demand from the three key users of freshwater – agriculture, industry and domestic users – with such high water withdrawals resulting in large changes to the river flows essential for maintaining ecosystems.

What do the Colorado, the Nile, the Indus, the Murray-Darling, and the Yellow rivers all have in common? These are just some of the once mighty rivers that in the past few years now regularly fail to reach the sea or are hugely reduced by the time they do. While there are many factors behind this, over-extraction of water for human agricultural use and physical alteration of rivers, such as through the building of dams, are the key factors resulting in this water scarcity.

This scarcity and competition for water underline the need for an integrated approach to managing water – and the wetlands that carry it. While governments and research institutions look at a whole array of options that can contribute to finding solutions to feeding us all with a limited water supply, through rainwater harvesting, more efficient irrigation techniques, improved crop varieties and so on, there is also an urgent need to more effectively manage the water supply we have – and to remember that the wetland ecosystems that capture, carry, purify and release the water are a critical part of the solution.

6. Urban living impacts

In 2005 the Millennium Ecosystem Assessment noted that "globally, urban dwellers will outnumber rural populations by around 2007", and other reports now confirm this. At national levels, figures already show that in high income countries 70-80% of the population are urban dwellers, and this is being replicated in developing countries. What effect does urbanization have on river basins?



Source: *LID (Low Impact Development) Factsheet, Office of Environmental Health Hazard Assessment, Cal/EPA. www.oehha.ca.gov/ecotox.html. Reproduced with permission*

Earlier we looked at the water cycle and the way water constantly moves between the atmosphere, the land, and waterways. Urban areas tend to interfere with that natural cycle, especially when there are many such areas and some of them are particularly large, since they present large amounts of impervious surfaces. Roads, buildings, car parks, building sites, typical components of urban areas, are all impervious to water. Rainfall in urban areas is concentrated rather than dissipated as it would be in the countryside. To prevent flooding, water is channelled through roads and storm drains and eventually pours into nearby streams or lakes. Does this matter since the water still ends up in our waterways? It does. Because of the impervious surfaces, urban rainwater cannot percolate slowly through the soil, replenishing groundwater or slowly reaching streams, rivers, lakes and other wetlands. Instead it is very quickly channelled to streams in large volumes, causing erosion, elevated chances of flooding, alteration of streams, impacts on downstream fish stocks and other biodiversity. With natural ground cover, on average only 10% of rainfall becomes surface runoff; in an urban area, this figure rises to 50%.

Equally damaging are the pollutants that wash off our streets from homes, building sites, urban factories and workshops during rainfall and are carried directly into our waterways. Intensive survey work in Maryland in the USA puts the problem in perspective: “No watershed with more than 15 percent of impervious cover — such as roofs, roads and parking lots — was rated in ‘good’ biological condition”.

To add to the water quantity and quality problems in a river basin that result from ubanisation, city dwellers also need to be connected to water supply and sewerage systems. Even in developed countries, inadequate attention to water treatment occurs often and results in the release of toxic compounds and the threat of waterborne diseases. In developing countries the problem is much greater, of course: it is estimated that 85–95% of sewage is discharged directly into rivers, lakes, and coastal areas. An alarming 1.2 billion people have NO access to sanitation facilities.

These are some of the key impacts on river basins associated with urban living – nearly ALL of them affect the people living downstream much more than they affect the people causing the problems.

Photo: ©iStockphoto.com/Petegar

7. Who's in control?

As we consider the inter-connectedness of wetlands within a river basin, it seems clear that the most effective management makes most sense at the basin scale, even though this often presents administrative difficulties at a national or state/provincial level. When we think of the water cycle and the key sources of freshwater for human use, we see that the river basin is the natural geographical and hydrological unit for managing water resources. Two approaches are in common use today for managing at this level, Integrated Water Resources Management (IWRM) and Integrated River Basin Management (IRBM).

From a wetlands point of view, it is important to remember that these two approaches are often led by the water sector and their policies. So where do wetlands, the world's water carriers, fit in here? Sometimes they don't. And this is the key challenge for the wetlands people. Wetlands are 'natural' infrastructure in a basin, so when planning some of the 'unnatural' infrastructures we use to manage water – our dams, pipes, levees, channels, etc. – we need to remember that they can (and often do) interfere with how our natural infrastructure functions, and they often have a negative impact on the ecosystem services provided to people.

IWRM and IRBM both present opportunities for the wetland sector in each country to engage effectively with the water sector and the land sector, to ensure that wetland issues are taken into account in managing water resources at the basin level. From the Ramsar Convention's point of view, IRBM is perhaps the better approach since it generally implies a broader perspective, taking account of the ecosystem services supplied by the land and water in basins and not just the water resource itself.

River basin management involves both planning and implementation activities, and both have to be undertaken at different scales – at national level (and international level in transboundary river basins), at the river basin level, and at local or community levels. All levels of course have to work collaboratively and all have to ensure that a broad range of stakeholders are actively involved.

So who's in control? While a national government may have overall control of the management of a basin, there are many other 'management units' that must have the capacity, both financial and human, to operate at the basin, sub-basin, and local levels, and at all these levels wetland managers have to be actively engaged in ensuring that planning and implementation maintain the integrity of wetlands. Inevitably there will have to be trade-offs between human water needs and the water needs of wetland ecosystems to fully maintain their functions, and it is here that the economic valuation of ecosystem services can present strong arguments in favour of wetlands.

The Ramsar Convention will be debating a new Resolution and guidance on managing river basins that is specifically directed to the wetland sector – it's intended to prepare the wetlands personnel to engage effectively with the water and land sectors in managing water resources in a way that respects the fundamental role of wetlands in the water cycle, and thus their role in maintaining water resources, whilst recognizing the many vital ecosystem services that require healthy wetland ecosystems.

8. Transboundary challenges

Water in river basins has to be shared both between uses (irrigation, industrial needs, domestic needs, etc.) and between users, such as the local, provincial, and national administrations within a country. It is estimated that 263 basins cross international boundaries involving 145 countries, so for these countries, sharing has to operate at an international level as well. Europe has the largest number of international basins (69), followed by Africa (59), Asia (57), North America (40), and the Neotropics (38). These basins cover 45% of the Earth's land surface, affect 40% of the world's people, and account for at least 60% of global river flow – so it's a widespread issue of huge importance in terms of managing the world's freshwater.

As water scarcity has become recognized and analysed over the past decade, much has been said about the potential for conflicts, even wars, over shared water systems. Yet the evidence suggests that the tendency is much more towards cooperative interaction than towards conflict. Over the past 50 years, one study identified 1,200 cooperative interactions that have occurred in shared basins, versus 500 conflictual ones, with no formal wars and only 37 incidents of violent conflicts (and 30 of these involved one particular country and its neighbours). In the second half of the 20th century, almost 295 international water agreements were negotiated and signed. That's the good news. Despite this, the challenges of effective management of transboundary basins are immense, and there are few examples of overall success, though many of significant progress. Characterizing the successes is the very long commitment in time and financial input – measured in decades and millions – to make notable progress.

It is the scale of the challenge that often makes it so difficult. The Danube basin in Europe covers over 800,000 km^2, with a population of 81 million, and includes all or part of 17 countries; the Danube River runs for 2,780 km. The 13 key countries signed the Danube Convention in 1994 and through this they have established the International Commission for the Protection of the Danube River (ICPDR), which works to ensure the sustainable and equitable use of waters and freshwater resources within the basin, in the context of the EU Water Framework Directive. Sitting within this huge basin are three sub-basins and these too have agreements between countries and management plans in force. Even with these solid legal and political mechanisms to support cooperative management, progress, while positive, is slow.

The Mekong River Basin covers parts of China, Myanmar and Viet Nam, nearly one third of Thailand and most of Cambodia and Lao PDR – the total land area is 795,000 km^2, with the main waterway, the Mekong River, running for 4,800 km. The Mekong River Commission was established in 1995 by an agreement between the governments of Cambodia, Lao PDR, Thailand and Viet Nam, with China and Myanmar acting as dialogue partners. Considerable progress has been made but the overall challenges remain daunting. The Nile Basin covers 10 countries, over 3 million km^2, and is home to more than 360 million people and the River Nile, the longest river on earth at 6,695 km. The Nile Basin Initiative, involving all riparian countries and including a ministerial council, was set up in 1995 and continues to work on sustainable management issues.

Operating at a different scale, but still delivering significant benefits to wetlands, are the Transboundary Ramsar Sites (TRS) that have been designated. Under the Convention, member countries are committed to consult with one another when a wetland extends over national boundaries, and some countries have used this opportunity to jointly designate their Ramsar sites on parts of a single wetland system as a TRS to signify their commitment to collaborating on the management of the whole wetland. The first TRS was designated by Hungary and Slovakia in 2001, and since then seven more sites have been so named. While this does not deal with wetland wise use at the basin scale, it is assisting in transboundary management of wetlands within river basins.

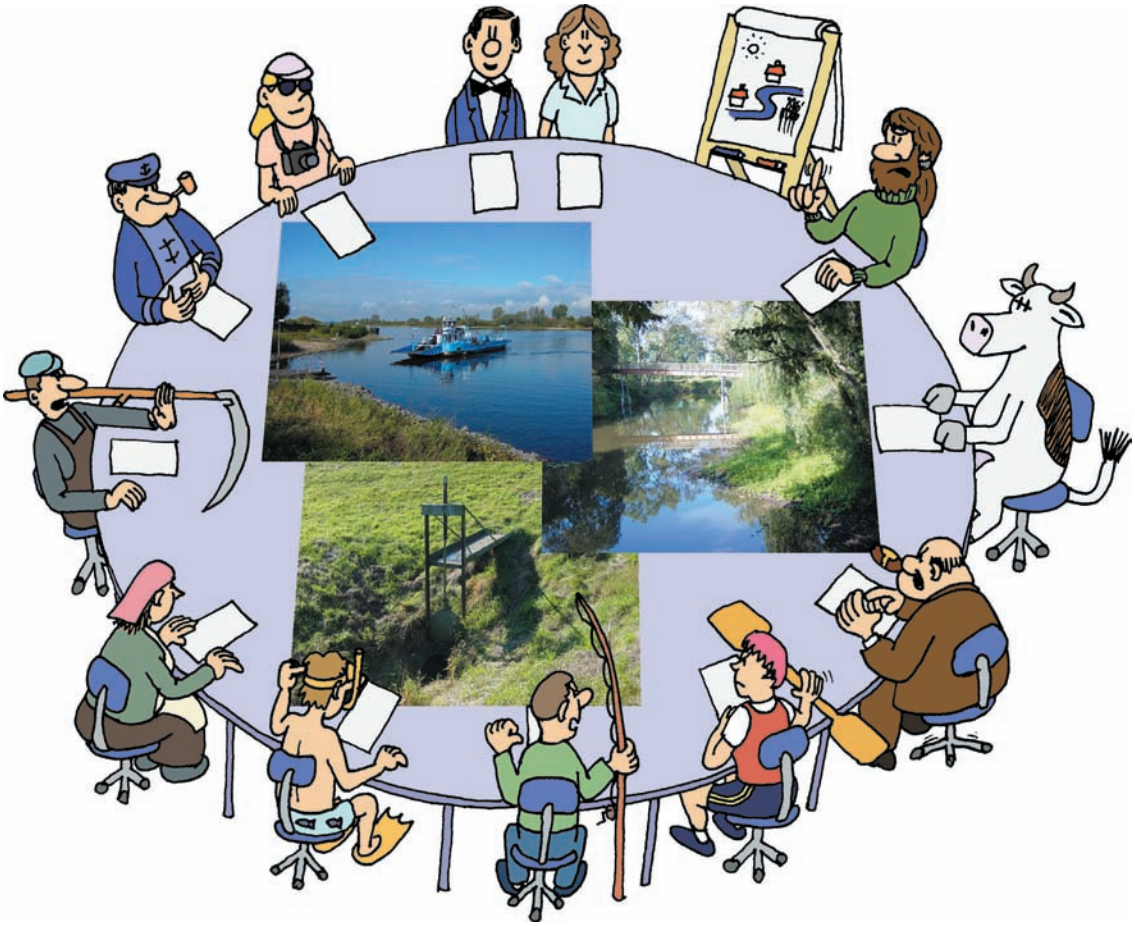
Photo: ©iStockphoto.com/Glandwr

9. The need for everyone's involvement

Since we all live in a river basin somewhere, should we be involved in its management? At the site level, there is a great deal of evidence of the involvement of local stakeholders in managing Ramsar sites and other wetlands around the world. While this can be challenging, it is on a quite different scale from stakeholder involvement at the basin level. Why should stakeholders be involved in either of these? Because top-down management without input from the broad range of users is usually bound for failure – this much the Ramsar Convention has learned in its 37 years of wetland conservation.

Under the European Union's Water Framework Directive, a Union-wide approach to managing water at the basin level, public participation is a requirement, not an option. Defined at three levels – information supply, consultation, and active involvement – the first two are to be ensured, and the third encouraged.

Typically, the first two requirements have the general public as the key target, the broadest of groups covering everyone living in the basin. Web sites, television, newspapers, local fairs and meetings are commonly used communication tools that have been effective in keeping the general public informed and consulted about ongoing basin management issues.



Source: *Learning together to manage together – improving participation in water management, by HarmoniCOP; illustrator Michael Fredrich. Reproduced with permission.*

Active involvement implies much more of a collaborative approach to decision-making, and of course it is much more time consuming and costly. It is this level of involvement that is usually targeted at key stakeholders and NGOs. So what exactly is a stakeholder? A widely used definition is a person, group or organization with an interest or 'stake' in an issue either because they will be affected or because they may have an influence on its outcome. Thus citizen leaders, farmers, fishermen, industrialists, local water and wetland authorities, etc., would all be considered key stakeholders in many basins.

The challenges are considerable, not least because many stakeholders often come with limited knowledge of the complexities of river basins outside their own experiences – thus getting everyone up to the same level of understanding is difficult, but essential. While the challenges are great, so too are the benefits – there are so many 'users' of the water in river basins that reaching a common understanding and appreciation of the diversity of needs, managing the range of expectations, and ensuring a facilitated process that allows stakeholders to reach agreement on management solutions has proved to be worth the effort – unless everyone is on board, any management plan is likely to have implementation problems.

From a number of pilot basin management projects going on in the EU, stakeholder involvement was never in question, it was an expected part of the process. The 'lessons learned' on stakeholder involvement agree well with other similar assessments:

Photo: Sara Sverlij

1. *Good involvement takes time, start early!*
2. *Develop and share a sense of ownership for the river basin.*
3. *Work to build and maintain trust with your partners.*
4. *Undertake "mapping" of stakeholders to find out more about them and their interests.*
5. *Learning from mistakes is as important as sharing successes.*
6. *Listening is as important as talking.*
7. *Be passionate for your cause, passion persuades.*
8. *Work with each other and build a common vision for your basin, to put the management plan into context.*
9. *Nobody can do it alone. True partnership leads to shared responsibility and decision making for shared actions.*
10. *Where cultures and traditions vary, agree key messages and adapt to their needs.*

River basin management is not new and there are many good and bad experiences to help guide today's processes, with tested tools available on identifying key stakeholders and managing stakeholder processes in management planning and implementation. It can take a great amount of time and money – but experience has shown that effective river basin management is not possible without it. And the friends of local wetlands may well find their own efforts frustrated without effective river basin management as well.

Photo: ©iStockphoto.com/LUGO

The WWD 2009 challenge

To make these briefing notes relatively easy to read, we may have oversimplified the complex situation in our river basins with regard to water, wetlands, and their management, and have not been able to cover some issues in detail. What we have done is to stress that the threats to river basins are diverse and that they necessarily imply threats to individual wetlands as well. It's certain that we do have a global freshwater problem and that this will become worse in the coming decades. It's clear too that managing our river basins and their wetlands better is a significant part of the answer. So here's the WWD challenge. Having read these few pages, **what can YOU do to improve the river basin that you depend upon?**

Within these 9 sections you should be able to see yourself – fisher, farmer, family, factory owner, decision-maker in the wetland, water, or development sector, wetland manager, politician, urban-dweller, or any other kind of stakeholder. What do you do personally, or in your daily work, that harms your river basin? And what can you do to help make river basin management more effective?

Managing floods and droughts, reducing the impact of invasive species, controlling the input of pollutants into waterways through sound policies, making sound decisions on water extraction for agriculture, controlling harmful infrastructure development, assessing the impacts of urban development on waterways, controlling the harvesting of wetland products, using our water more efficiently, working cooperatively with neighbouring countries in shared basins – these are just some of the challenges in river basins, and they are also opportunities for us all to help in finding solutions through our own efforts, our citizen organizations, and our elected officials.

Dealing with these challenges through whatever avenues of action are open to you will help you and others to manage your river basin, and all of the wetlands within it, more effectively. Healthy wetlands will be a natural outcome of effective management – but there is much more that can be done.

And what about undoing some of our past assaults on wetlands? Restoration of badly degraded or even destroyed wetlands is considered by many experts to be an essential step in closing the "freshwater gap", that gap between what we have and what we need now and in the future, and ensuring the continued delivery of the ecosystem services we depend upon.

Rise to the challenge!

Ramsar's mission is

"the conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world".

To find out more about the Ramsar Convention and its work, visit the Ramsar website, managed by the Ramsar Secretariat and updated daily:

www.ramsar.org

Please send your report on your World Wetlands Day activities to
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