

Preparing for WWD-2009

These are intended to 'set the scene' for WWD event organizers, generating some ideas to focus on at WWD celebrations.

Freshwater is the critical resource upon which all life depends and it is wetlands that capture and deliver water to all of us – thus, wetlands are critical in considering river basins.

2. What's a river basin?

A River basin is the area of land drained by a river and its tributaries. It includes the entire land surface divided and drained by many streams and rivulets that flow downhill into one another, and eventually into one river. The final destination is an estuary or an ocean.

It may also be defined as the area of land surrounding a body of water where precipitation from rain and snow drains downhill into the river, lake or ocean. A river basin sends all the water falling on the surrounding land into a central river and out to the sea.

Everyone lives in a river basin. Even if we don't live near the water, we live on land that drains to a river or lake, and our actions on that land affect water quality and quantity far-off downstream.

3. Upstream-downstream: we're all connected

We can change what happens in our river basin, for better or worse, by what we do to the basin's natural resources. Our behaviour can have an impact on the soil, water, air, plants and animals. And whatever we do will eventually have an effect downstream (and sometimes an effect upstream!).

Upstream-downstream relationship exists because every upstream activity will affect the quality and quantity of water available to the downstream area. Similarly, certain downstream activities affect the upstream area's ability to use the river water. Manmade influences include changing lateral inflow, altering downward percolation, introducing contaminants directly into inflow or recharge water and reducing the capacity of recharge areas, although some activities of upstream benefit the quality of a downstream aquifer (e.g., regulation and controlled releases downstream).

4. Wetlands: their ecological and hydrological functions

Hydrologic functions include long term and short term water storage, subsurface water storage, energy dissipation, and moderation of groundwater flow or discharge.

By absorbing the force of strong winds and tides, wetlands protect terrestrial areas adjoining them from storms, floods, and tidal damage.

HYDROLOGICAL FUNCTIONS: Wetlands have many important hydrological functions. They affect both ground and surface water supplies. They recharge aquifers; serve as surface water sources for wildlife, human consumption, recreation, irrigation, industrial processes, etc and also act as natural filters for the water that passes through them. Wetlands play a very important role in regulating the movement of water within the basin and also in the global water cycle. Wetlands store precipitation and surface runoff and then slowly release the water into associated water resources, aquifers, and the atmosphere. Wetlands help uphold the level of water table. This facilitates ground water recharge and discharge to other water bodies. Wetlands contribute in climate control by their annual water inputs to the atmosphere through evapotranspiration.

ECOLOGICAL FUNCTIONS :

- Habitat for resident and migratory birds.
- Stabilization of local climate.
- Refugia for rare and endangered species
- Preservation of biodiversity
- Natural storage base for carbon
- Natural sinks for pollutants
- Retention of nutrients
- Erosion control

6. Getting involved

You too can help...

- Better understand the significance and problems of ecosystems
- Conducting ecological and bio-diversity surveys
- Documenting the knowledge, local values and local views
- Sharing day-to-day and past information
- Organizing Lectures, Camps, Competitions and Rallies to spread awareness
- Mobilizing students, panchayats and the general public for an effort of this magnitude
- Reporting your views and extending suggestions

Do's

- Be aware and make others aware about the values, functions, uses and attitudes of such ecosystems.

- Take care of the plants and plant more trees and shrubs. Protect wildlife habitats.

Don't's

- Try to learn about the birds including migratory water fowl.
- Avoid unnecessary environment damage.
- Do not throw hazardous chemicals and solid wastes into water bodies.
- Do not drain wetlands.
- Do not litter and defecate along water courses.
- Do not burn agrowastes- this could cause acid rains that may damage flora and fauna.
- Avoid use of inorganic chemicals (pesticides and fertilizers) in area adjoining wetlands. Use only biochemicals.

7. Water scarcity

The next war across the continents may be triggered by water scarcity. Already a third of the world is suffering from water shortages. Though, rainfall had been adequate, which means the water is there. Water scarcity in Asia and Australia alone affects 1/4th of the world's population and is triggered by mismanagement and over-usage. Water scarcity around the world has come about primarily due to quintessentially wasteful practices. Over the past 100 years, water usage has gone up by six times globally, and is threatening to double again by the year 2050.

INDIA is facing a serious problem of natural resource scarcity, especially that of water in view of population growth and economic development. Water is a key natural resource, a basic human need and a precious national asset. Its use needs appropriate planning, development and management.

The seriousness of the matter can be gauged that 'Cherrapunjee', despite being the wettest place on earth is suffering from acute water scarcity, earning for itself the nickname 'wet desert'.

Problems of water scarcity can best be addressed by better efficiency in its utilization, recycling, pricing of water, transportation without losses, leaks and pilferage, and through education of its dangers to all humanity.

8. Urban living impacts

Urban dwellers place heavy demands on river basins – they need water, they produce wastes, their buildings and roads create huge areas that are impervious to water, and all of this has an impact on the quality of the freshwater and the biodiversity it supports downstream.

9. Transboundary issues

The term 'Trans-boundary issues' refers to the movement of physical and biological resources or of impacts associated with these resources, across political boundaries.

A shared resource is one in which the activities of one country upon the resource can directly increase or decrease the quantity, quality or availability of the same resource in another country. Water is the typical trans-boundary resource in river basins. The resource needs to be "shared" because the activities of one country can directly influence water resource availability in another (e.g., extracting water upstream reduces water availability downstream).

Trans-boundary water systems pose special problems for managers. International waters are key natural resources for future prosperity and security. About 90 percent of the world's population currently lives in the countries sharing these rivers. Therefore, these resources are coming under mounting pressure of populations' growth with economic development. Trans-boundary resource issues plays an important role in managing river resources and subsequently for the sustainable development of the water, fish and other physical or biological resources that move across the international boundaries within the river basin.

All international rivers create some extent of strain among the societies they bind. The consequences of these can reach far beyond the river itself. It is imperative to identify mechanisms and instruments to support the use of water as a catalyst for regional cooperation rather than a source of potential conflict. Management and development of these rivers requires great skill, strong institutions, considerable investment, and strong cross-border cooperation.

10. Major threats in basins

Rivers basins are the system by which nature gathers and delivers water for human use.

River basins provide electricity generation, transport, recreation, tourism, flood & drought regulation, sediment retention and habitat for diverse fauna and flora.

Many activities threaten river basins. Six have been identified as the most important:

1. Dams and infrastructure: While creating recreational opportunities, water storage, flood control and hydro-power, dams are among the most damaging habitat alterations to rivers and creeks. Major downstream impacts of dams include temperature changes (affecting spawning timing), decreased dissolved oxygen levels (affecting respiratory functions) and fluctuating water levels during electricity generation (scouring the channel,

- causing bank erosion and disrupting spawning). Additionally, migratory pathways for many fishes are blocked by impoundments.
2. Excessive water extraction: Most rivers have been left biologically dead, with some of the big rivers reduced for a time, or forever, to be used as waste water canals for the new industries, and others almost dried out from excessive water extraction before they reach the sea.
 3. Climate change: Climate change threatens to alter all the rules that rivers have lived by for thousands of years. Climate change would threaten basins in a number of ways. Increased temperatures would adversely affect temperature sensitive plant and animal species. Decreased precipitation in the areas would result in shrinkage of water bodies that will release more carbon into atmosphere due to decay of organic matter. Climate change may also lead to shifts in the geographical distribution of basins. Climatic conditions affecting water availability will influence the nature and function of specific basins including availability of the type of plant and animal species.
 4. Invasive species: Invasive species are one of the greatest threats to our natural resources. Invasive species can change whole ecosystems by altering the water, soil, nutrient and energy cycles. Some invasive species can also be harmful or poisonous to humans or livestock and can have negative impacts on agriculture. In addition to causing environmental damage, invasive species have a large economic cost as well. Invasive species can also hamper recreational opportunities by reducing access, degrading the quality of recreational areas and altering the aesthetic beauty of scenic natural areas
 5. Over-fishing: Declining fish populations is a major visible result of over-fishing. Most important however is where entire biological groups of fish, not just individual species, start to disappear. Over-fishing also results in declining populations of migratory birds and other drastic alterations in aquatic biodiversity.
 6. Pollution: sedimentation, point-source releases, non-point source runoff, storm water runoff, air pollution, past industrial and land use practices, introduced or exotic species and water transfers outside the basin. Most of these threats are associated with land-use practices and a growing human population in the basin. Human population growth and the accompanying land development is the biggest threat to the river systems. Pollution fouls the waters, turning life-giving rivers into threats to human health.

**FACT: RIVER BASINS ARE THREATENED AND THAT
THREATENS US**