Water Resources

Sunday, October 30 2011, 3:07 AM

Issues with Water User Associations

1. WUAs which are male dominated. Membership rules which provide for land holders or heads of households preclude women from becoming members.
2. Their relationship with PRIs is not clear. The PRIs by their constitution are more inclusive (with mandatory inclusion of women, SCs and STs) whereas WUAs represent only landholder interests.

Ganga Action Plan

Objectives of Phase 1

1. Phase 1 was launched in 1985 and completed in 2000. Parts of Phase 2 projects began in 1993. As a part of it, NGRBA was created and currently a sewage processing capacity of 1100 mm litres per day has been installed. Total 2900 mlpd gets discharged.
2. Also focus was laid on reducing non point pollution sources like open defecation, disposal of dead bodies and runoff from solid garbage dumps.

Limitations of Phase 1

1. States were unable to provide their share of the operational costs of sewage treatment plants and pumping stations. Sewage connection plants need to be ultimately connected to home sewers which is the responsibility of states. They also need electricity to run.
2. Industrial discharge is only 20% of total discharge but contains toxic chemicals. Environment protection norms need to be strengthened.
3. Acceptance of electric crematoria has been low.

Objectives of Phase 2

1. To ensure that by the year 2020, no untreated municipal sewage and industrial effluents flow into the Ganga. The sewage treatment plant (STP) capacity in the Ganga basin is only 31% of the domestic sewage generation. As a result, in many locations along the Ganga, the BOD/COD has worsened.

Changes from Phase 1

1. The capital cost was to be shared equally between centre and states while the cost of maintenance to be borne fully by states.
2. Decentralized approach and survey based designed to be used in deciding projects. A study has been conducted by IIT Roorkee to recommend the ecological flow requirement of Ganga.
3. Maintenance of minimum flow requirement to be considered while approving major projects like dams.
4. Improved wood based crematoria to replace electric crematoria.

Reasons of Failure - Parliamentary Standing Committee Report

1. One of the reasons for the failure of government schemes lies in the fact that government has so far adopted only engineering centric approach to solve the problem with undue emphasis on creation of sewage treatment plants. It should also approach it as a social engineering problem through which people living on or around the banks of the rivers are involved.
2. It recommended that services of various institutes of social sciences, apart from IITs should be sought by the government to seek a viable solution of pollution.
3. Another reason for the failure is that the catchment areas especially of Yamuna has been encroached upon and diverted for construction and development activities. Unless the flow of the rivers is maintained at a reasonable level, no other effort is going to be successful and recommended that the flow of Ganga and Yamuna upstream is not disturbed or blocked.
4. Despite justification and persuasion, the Planning Commission did not allocate adequate resources for prevention and control of pollution and sufficient budgetary allocations must be made.

Threat by Illegal Sand Mining

1. Sand has the ability to let water percolate through deep and release slowly. Thus if we take away the sand form around the river beds we are left with scenarios of heavy floods in rains and dry beds in summers.
2. It also increases the risk of river breaking its bank and overflowing or altering course. Allahbad's Shankargarh area is the worst affected area.
3. It also leeds to rapid fall in water table of the area.

Indo - Israeli Cooperation in Ganga

1. 92% of Israel's waste water is treated and about three quarters of that re-used for agriculture. Israel will help India to establish a test farm for drip irrigation in India. This will imply changes in the old farming practices where monsoons are relied upon for flooding resulting in chemical run off into Ganga.
2. Another Israeli company is looking at natural constructed wetlands as a way to rehabilitate the Ganges. It involves a series of bypasses that divert domestic and industrial waste water from the river to cleanse it naturally and it needs almost no maintenance.

Yamuna Action Plan

1. Phase 1 of YAP was from 1993 to 2003 and Phase 2 began from 2004. A sewage treatment capacity of 700 mlpd has been installed.
2. The new phase envisages recycling raw sewage by setting up treatment plans and creation of better sanitation facilities in Uttar Pradesh, Haryana and Delhi.

Radon contamination

1. The becquerel is the SI-derived unit of radioactivity. One Bq is defined as the activity of a quantity of radioactive material in which one nucleus decays per second. 1 siveret = 100 rem. 5.5% chance of eventually developing cancer. It is joules absorbed per kg of body tissue.
2. Radon is a radioactive, colorless, odorless, tasteless noble gas, occurring naturally as the decay product of uranium or thorium. Its most stable isotope, ^{222}Rn, has a half-life of 3.8 days. Radon is one of the densest substances that remains a gas under normal conditions. It is also the only gas that only has radioactive isotopes, and is considered a health hazard due to its radioactivity.
3. As the radioactive gas of radon decays, it produces new radioactive elements called radon daughters or decay products. Radon daughters are solids and stick to surfaces such as dust particles in the air. If contaminated dust is inhaled, these particles can stick to the airways of the lung and increase the risk of developing lung cancer.
4. Radon gas from natural sources can accumulate in buildings, especially in confined areas such as attics and basements. It can also be found in some spring waters and hot springs. Typical domestic exposures are about 100 Bq/m^3 indoors, and 10–20 Bq/m^3 outdoors

International Laws on Sharing River Waters

Doctrines on Water Sharing

1. Harmon Doctrine / Territorial sovereignty: It states that riparian states have sovereign rights over waters flowing in their territories, irrespective of the effect it has on others. This theory favors upper riparians.
2. Territorial integrity theory: It states that lower riparians have a right to the natural flow of a river, and upper riparian can use it but must allow the waters to flow unchanged in quantity and quality. It favors lower riparians.
3. Prior appropriation theory: It argues that the prior users have priority in law. It argues in favor of those who have asserted their rights earlier, to the detriment of those who even for valid reasons could not exercise their rights.
4. Equitable apportionment theory: It argues in favor of the needs of all claimants to be settled under a legal arbitration.
5. Equitable utilization and community of interests theory: It recognizes that water is a common property and even when shared must be treated as one unit. It should serve the interests of larger number of people. It relies more on discussion and negotiation and less on arbitration.

Historical Agreements

1. In 1815 the Congress of Vienna laid down the framework of international river law for almost a century. The Barcelona Convention in 1921 declared that states are forbidden to create obstacles for navigation in any way. The Pan American Declaration (1933) stated that states can exploit rivers as long as the use of the river will not effect the activities of another state through which the river flows. Also the declaration was made that navigation could not be impaired by agriculture.

UN Framework

1. All nations agree that only riparian nations—nations across which, or along which, a river

flows—have any legal right, apart from an agreement, to use the water of a river. Beyond that there is lack of agreement.
2. The upper-riparian nations initially base their claims on absolute territorial sovereignty, typically claiming the right to do whatever they choose with the water regardless of its effect on other riparian nations. Downstream nations, on the other hand, generally begin with a claim to the absolute integrity of the river, claiming that upper-riparian nations can do nothing that affects the quantity or quality of water that flows in the watercourse.

Concept of Equitable Utilization

1. The rule of equitable utilization, based on the concept that an international drainage basin is a coherent legal and managerial unit, embodies a theory of restricted sovereignty under which each nation recognizes the right of all riparian nations to use water from a common source and the obligation to manage their uses so as not to interfere unreasonably with likely uses in other riparian nations. The rights are defined according to some selected historic pattern of use, although occasionally some other more or less objective measure of need is advanced (e.g., population, area, arable land).
2. What amounts to an "equitable" share of the waters of an international water basin often is not clear. Some have argued that "equitable" sharing must mean equal sharing. The standards are found in Article 6 of the UN Convention, which contains a long list of relevant factors: (a) The geographic, climatic, ecological factors; (b) The social and economic needs of the watercourse nations; (c) The effects of the use or uses of the watercourse in one watercourse nation on other watercourse nations; (d) The existing and potential uses of the watercourse; (e) The conservation, protection and the economy of use of the water; and (f) The availability of alternatives.

The UN Convention on the Non-Navigational Uses of International Watercourses

1. Art 5: It is based on the rule of equitable utilization. It requires the riparian nations to utilize an international river in an equitable and reasonable manner with a view to attaining optimal and sustainable development.
2. The no harm rule - Art 7: The UN Convention also originally embraced a second principle, termed the no-harm rule. But it was very controversial because it seemed to contradict the rule of equitable utilization. The final version of the rule makes clear that the "no-harm rule" is subordinate to the rule of equitable utilization. This requires riparian nations, in utilizing an international watercourse, to take all "appropriate measures" to prevent the causing of significant harm to other watercourse nations. If significant harm nevertheless is caused to another watercourse nation, the nation whose use causes such harm must, in the absence of agreement for the use, take all appropriate measures in consultation with the affected nation, to eliminate or mitigate the harm and, where appropriate, to discuss the question of compensation.
3. Art 5 vs Art 7 controversy: If an upstream State A has not significantly developed its water resources because of its mountainous terrain. The topography of the downstream states on the watercourse, B and C, is flatter, and they have used the watercourse extensively for irrigation for centuries, if not millennia. State A now wishes to develop its water resources for hydroelectric and agricultural purposes. States B and C cry foul, on the ground that this would significantly harm their established uses. Hence the controversy between Art 5 and Art 7.

Other Features of the Convention

1. Each member state would be required to provide information about the condition of the watercourse and about their planned uses, allowing sufficient time for others to study the use and object if the use is perceived to be harmful.
2. The convention permits a state with urgent need to immediately utilize a watercourse, providing that it notifies sharing states both of the use and the urgency. In the event that a use is perceived to be harmful, it would have required members states to negotiate a mutually acceptable solution, appealing for arbitration to the International Court of Justice if needed.
3. It also requires states to take reasonable steps to control damage, such as caused by pollution or the introduction of species not native to the watercourse and to take corrective actions or compensate sharing states for the loss.
4. It includes emergency provisions like floods and droughts.