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FOREWORD

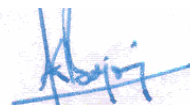
International World Water Day is held annually on 22nd March as recommended at the 1992 United Nations Conference on Environment and Development (UNCED). It serves as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources. Each year, World Water Day highlights a specific aspect of freshwater. In 2009, special focus is on transboundary waters.

Nurturing the opportunities for cooperation in transboundary water management can help build mutual respect, understanding and trust among countries and promote peace, security and sustainable economic growth. The theme chosen is extremely significant as amicable management of transboundary waters will play a pivotal role in facing the challenges ahead in water sector. "Fierce national competition over water resources has prompted fears that water issues contain the seeds of violent conflict. . . . If all the world's peoples work together, a secure and sustainable water future can be ours." (UN Secretary General Kofi Annan, on World Water Day 2002)

The theme paper has attempted to comprehensively cover several aspects related to transboundary waters management starting from generalized, global principles for the management of international rivers, most notably through the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses. The paper also highlights the Indian transboundary waters management issues with neighboring countries.

I hope the paper would meet the twin objective of highlighting one of the most critical issues in the water resources sector and helping in the launch of concerted, co-coordinated and well targeted efforts in the development of water resources in an atmosphere of cooperative participation of different countries.

I gratefully acknowledge the excellent efforts, dedication and hard work put in by the officers and staff of Basin Planning and Management Organisation, CWC in preparing the theme paper.



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TRANSBOUNDARY WATERS

1.0 Introduction

Our rivers and aquifers are the life-blood of the planet and must be shared among all those need them, and protected from the effects of conflict and over-exploitation. In the past hundred years, the global population has tripled while demand for water has increased sevenfold. The signs of a looming water crisis are evident. Since water is essential to every aspect of life, this crisis affects everything – from health to human rights, the environment to the economy, poverty to politics, culture to conflict.

Just as water defies political boundaries and classification, the crisis is also well beyond the scope of any individual country or sector, and cannot be dealt with in isolation. Sustainable water resources development and management are major challenges of the immediate and long-term future. An increasing number of states are experiencing permanent water stress, yet in most cases, mechanisms and institutions to manage disputes over water resources are either absent or inadequate.

Competition over this precious resource could increasingly become a source of tension – and even conflict – between states and sectors. But history has more often shown that the vital nature of freshwater provides a powerful natural incentive for cooperation. However, many long-standing water-related disputes still remain unresolved, and the growing demand for finite freshwater resources heightens the risk of future conflicts developing. The need for integrated, cooperative solutions is particularly urgent in the 263 river basins that are shared by two or more states, and in which nearly half the territory and population of the world are located.

In the absence of strong institutions and agreements, changes within a basin can lead to conflict. When major water projects proceed without regional collaboration, they can become a flashpoint, heightening tensions and regional instability, and requiring years or even decades to resolve. Regional peace, economic development and cultural preservation can all be strengthened by states cooperating over water. “Fierce national competition over water resources has prompted fears that water issues contain the seeds of violent conflict. . . . If all the world’s peoples

work together, a secure and sustainable water future can be ours.” (UN Secretary General Kofi Annan, World Water Day 2002)

Cooperation over water can be seen as an opportunity for some and as the only possible salvation from severe water crises and even conflict for others. The key is to encourage the realization that everyone stands to gain from cooperation over water. The essential steps include the establishment of relations among water experts and policy makers from the different riparian states and regions; the awareness of the public and local decision makers; the existence of mutually accepted and equitable agreements and treaties; and the setting up of joint institutions and mechanisms.

Some say that future wars will be fought over water, not oil. Others, more optimistically, say that history teaches us that people cooperate over water rather than fight over this life-giving resource. This paper analyses many dimensions of the issue.

2.0 Competition/ Conflicts for Water

There have always been shortages of water in some places on earth at some times. Whenever this happened, there was competition for water and sometimes conflict. But humans always learned to adapt or cope. As our technology evolved, people moved the water to them by building reservoirs, aqueducts, and pumping stations. However, in the past hundred years our population has mushroomed and large cities and mega cities have developed. Water consumption has risen to feed us and supply the industries that feed our economic growth. Pollution loads have outstripped the capacity of our ecosystems to respond. Locally and regionally, competition for water is increasing. To this must be added the threats to regional and global ecosystems caused by anthropogenic and natural climate change. Water resource users at all scales frequently find themselves in direct competition for this economic and life-sustaining resource, in turn creating tensions, and indeed conflict, over water supply, allocation and quality.

There is a strong potential conflict between the ecosystem's needs for water and human needs. Even within the context of human needs, conflicts over water are often affected by problems in the economic and political spheres as much as those generated within the water sphere itself. This has led some to claim that water wars are inevitable. A counter-movement claims that learning to cooperate in sharing water will

build peace. The World Water Vision exercise indicated that the planet does not suffer from a shortage of water, but from mismanagement of this precious resource.

One of the critical aims of water management is to continually reconcile the competing interests of all water users, be they individuals, corporations, and interest groups, administrative or sovereign entities. The management of water-related conflicts, confrontations, competitions, and cooperation is thus a part of water resources management in its broadest sense. This may range from overseeing peaceful cooperation between users of a resource to facilitating negotiation of disputes between sovereign states. The program be conceived with the idea that although shared water resources may be a source of conflict, their joint management should be strengthened and facilitated to promote cooperation between the users.

2.1 Conflict Prevention and Resolution

A national framework of laws, legal conventions, treaties, and regulations is ultimately built to codify accepted standards of behavior in that society. International law offers a series of means to resolve international disputes, both diplomatic (negotiations, consultation, good offices, mediation, fact-finding, inquiry, conciliation, and the use of joint bodies and institutions) and legal (arbitration and adjudication). Generally, water conflicts are settled through negotiations with an agreement as the final outcome.

3.0 Transboundary Scenario

Water, unlike most other natural resources, does not respect political boundaries. The natural flow of water, both on the Earth's surface and underground routinely crosses these boundaries. When two or more sovereign countries share a watercourse, which could be a river basin, lake, or aquifer, it is generally considered to be an international watercourse. Most discussion about international watercourses, however, refers to river basins.

Over 45 percent of the land surface of the world is covered by river basins that are shared by more than one country. Over 40 percent of the world's population resides within internationally shared river basins. Over 75 percent of all countries, 145 in total, have within their boundaries shared river basins. There are 263 transboundary river basins. And 33 nations have over 95 percent of their territory within international river

basins. While most transboundary river basins are shared between just two countries, there are many river basins where this number is much higher. There are 13 basins worldwide that are shared between 5 to 8 countries. Five river basins, the Congo, Niger, Nile, Rhine and Zambezi, are shared between 9 to 11 countries. The river that flows through the most countries is the Danube, which passes through the territory of 18 countries.

Great reservoirs of freshwater also move silently below our borders in underground aquifers. So far, 274 transboundary aquifers have been identified. They lie under 15 percent of the Earth's surface.

The history of international water treaties dates as far back as 2500 BC, when the two Sumerian city-states of Lagash and Umma crafted an agreement ending a water dispute along the Tigris River. The Food and Agriculture Organization of the United Nations has identified more than 3,600 treaties relating to international water resources dating from AD 805 to 1984. The majority of these treaties are concerned with some aspect of navigation. In the last century, more than 200 water-related treaties have been negotiated and signed.

International legal principles with regard to the navigational uses of international watercourses were codified and formulated relatively early, as cross-border inland navigation and timber floating were important to many countries. It was slower to develop with regard to non-navigational uses as water resource development entailing large storages and diversions was largely a product of nineteenth century technology. The verdicts of courts and tribunals in large countries with federal characteristics, like the United States of America and India, established a body of case law as a guide to action. For example, the Helsinki Rules of the International Law Association, a non-governmental body, won considerable acclaim when it was enunciated in 1966. This, however, remained a non-binding convention though evolved by an influential professional body. This prompted the United Nations (UN) to attempt to codify a set of principles in relation to international water regulation.

4.0 International Law / Treaties

International law is sometimes defined as a system of principles and rules of general application dealing with the conduct of states and of international organizations and with their relations *inter se*, as well as with some other persons, natural or juridical.

What distinguishes international law from domestic law is that the former is both created and enforced by states (at the international level) primarily in order to regulate interstate relations in various areas of human activities, while the latter involves matters within a state's borders. It is also important to note that international law – “the law of nations” – is not comparative national law, for example the system of different national legal systems. International law operates as a separate system of law, with its own distinct rules and mechanisms.

The ultimate purpose of international law is to ensure peaceful relations between states and to prevent and resolve interstate conflicts and controversies. The pacific settlement of disputes has been enshrined in the United Nations Charter as one of the main goals of the United Nations. The principal UN organs – the General Assembly, the Security Council, and the International Court of Justice (ICJ) in particular – are each entrusted with various dispute avoidance/settlement duties and functions. Nevertheless, a judgment received as a consequence of adjudication may have more effect than an agreement reached through mediation, unless the latter is also confirmed by a court.

International treaties have now replaced customary law as the primary source of international law. Compared with rules of customary law, international treaties are considered to have many advantages. They provide a clearer manifestation of the legal undertakings made by states; their norms are often more precise and more easily accessible. They are also able to deal with questions of a highly technical nature (such as freshwater quality and quantity standards, norms of water abstraction, permissible levels of discharges and emissions, and so on).

Multilateral treaties, which are often called international conventions, are normally adopted by specially convened international conferences, usually under the auspices of the United Nations General Assembly or of UN specialized agencies. Among the most important are conventions that “codify” customary international law in particular fields of interstate relations or activities such as the law of the sea, diplomatic and consular relations, and the law of the non-navigational uses of international watercourses, to name a few examples.

The Vienna Convention on the Law of Treaties codified and “progressively developed” international treaty law: the customary and other rules governing conclusion, implementation, interpretation, and termination of international agreements. Treaties are concluded, or become legally

binding, only after a series of specific actions by the state parties to them. The actions are designed to signify clearly the consent or agreement of states to be bound by their legal undertakings. States can demonstrate by signing, and in the case of important treaties, through their subsequent ratification, the act of giving consent. In modern practice ratification is usually necessary, as the constitutional law in many countries requires an elected representative body to approve of the agreement before it becomes legally binding.

5.0 International initiatives in sustainable management of world water requirements

Since the 1970s a series of international meetings and conventions have provided milestones on the way to sustainable water resource management. The UN-sponsored Conference on Water at Mar del Plata, Argentina in 1977 was the first step in the direction of improving international cooperation and coordination in the management of global water resources. Recognition of the need for an international water policy organisation grew and intensified in the 1980s and early 1990s.

These principles were endorsed in 1992 at conferences on water and the environment, held in Dublin and Rio, respectively leading to the widely accepted Dublin principles for managing water. These are:

- Freshwater is a finite and vulnerable resource, essential to sustain life, development, and the environment.
- Water development and management should be participatory, involving users, planners, and policy makers at all levels.
- Women are central to providing, managing, and safeguarding water.
- Water has an economic value in all its competing uses and should be recognized as an economic and social good.

These principles recognize the close interrelationships between economic, social, and environmental security.

The Earth Summit in Rio added recognition of the social nature of water to the Dublin principles in 1992. The organizations that endorsed the statement included the Global Water Partnership (GWP); International Water Association (IWA); International Water Resources Association (IWRA); Stakeholder Forum; Stockholm International Water Institute (SIWI); Water Environment Federation (WEF); World Business Council

for Sustainable Development; and the World Water Council (WWC).

5.1 1997 UN International Watercourses Convention

There is only one universal treaty dealing with the use of freshwater resources: the 1997 UN Convention on the Non-Navigational Uses of International Watercourses (1997 IWC Convention). The initial attempt to draft a treaty with universal application to shared international waters dates back to 1970, when the UN General Assembly 27 asked its International Law Commission (ILC) to prepare a set of rules governing the non-navigational uses of IWC. The Commission, which consists of thirty-four international lawyers serving in their individual capacities and representing the major legal systems of the world, is a special UN organ entrusted with the codification and progressive development of international law. In 1994, the ILC adopted Draft Articles on the law of the non-navigational uses of international watercourses, following close to thirty years of work on the topic. This project went forward to the UN General Assembly and its Sixth (Legal) Committee, which provided the forum for negotiating and eventually adopting the 1997 IWC Convention.

That the effort to codify international law of water resources was a challenging task is evidenced by the time it has taken to come to agreement and by the differences in legal positions that had to be reconciled. Until the very last deliberations of the UN Working Group of the Whole in April 1997, it was uncertain whether or not states could find agreement and adopt a universal convention. Seemingly irreconcilable views on the nature and extent of a state's right to use transboundary water resources that had divided upstream and downstream countries in the past resurfaced during the debate. Three central issues dominated the UN debate. They included: first, the status of existing treaties and the effect of the convention on future agreements; second, the relationship between the "no harm" rule and the principle of "equitable and reasonable utilization," including environmental considerations; and third, the provisions on dispute settlement. Notwithstanding the serious disagreements that for some time threatened the negotiations, the text was finally agreed on by the majority of state representatives in the Sixth Committee and adopted by the UN General Assembly on May 21 1997. There were 104 in favour, three against (including China), and twenty-six abstentions (including India and Pakistan). Bhutan was not present.

So far twelve countries have become parties to the 1997 IWC Convention, and eight additional states have signed but not yet ratified

it. To enter into force it needs to be ratified or approved by thirty-five states. Regardless of when and whether the Convention enters into force, it is clear that it will play a very important role in all relations involving watercourse states.

The 1997 IWC Convention applies to uses of IWC for purposes other than navigation and to measures of protection, preservation, and management related to those uses. "Preservation" includes conservation, but does not extend to living resources unless these are affected by other uses. Navigation is covered only to the extent that it affects other uses or is affected by them. The term "international watercourse" is defined as a system of surface and connected groundwater located in more than one state. The IWC does not govern the use of "confined" transboundary groundwater (also called "confined aquifers") or fossil aquifers.

Substantive rules normally defines those customary or treaty rules, which deal with the creation, definition, and regulation of rights and duties. The issue of "entitlement" is the fundamental issue. Entitlement is a legal right to use the waters of a shared watercourse located in the territory of a watercourse state.

The primary substantive rules of the 1997 IWC Convention include the governing rule of "equitable and reasonable utilization" and the obligation to take all measures necessary not to cause significant harm. A non-exhaustive list of factors to be considered in the determination of an "equitable and reasonable use" covers two broad categories. These are, first, scientific (hydrographic, hydrological, climatic, ecological, factors of a natural character; effects of use on other watercourse states, existing and potential uses, conservation measures, and availability of alternatives), and second, economic (social and economic needs, population dependent on watercourse). The convention directs that "the weight to be given each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is an equitable and reasonable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole." The ILC suggests that a watercourse state should first attempt to determine its legal entitlement to the beneficial uses of an IWC in its territory. States should take into account, in an ongoing manner, all factors that are relevant to ensuring that the equal and correlative rights of other watercourse states are respected." The primary rule of "equitable and reasonable use" includes consideration of "all relevant factors" as they

may arise in the context of new or increased uses. Thus, factors such as vital human needs, in-stream flow requirements, pollution harm, sustainable development requirements, and so forth are all part of the calculus. Implementation of the rule is flexible and tied to specific uses at specific points of time.

India abstained from signing the Convention on account of certain reservations; which are briefly mentioned below:

- Article 3, which deals with Watercourse Agreements, provides that 'an agreement may be entered into with respect to an entire international watercourse or any part thereof or a particular project, programme or use except in so far as the agreement adversely affects, to a significant extent, the use by one or more other watercourse States of the waters of the watercourse, without their express consent'. Regarding this Article, India believes that a Framework Convention should not be prescriptive but should leave states free to evolve and implement mutually agreeable terms in relation to specific international watercourses. Thus Article 3 fails adequately to reflect the principle of freedom, autonomy and the right of states to conclude international agreements without being fettered by the UN Framework Convention.
- Article 5 on Equitable and Reasonable Utilisation and Participation is not clear and unambiguous especially as the term "sustainable utilisation" has been imposed on the principle of optimal utilisation without defining what the former implies in the given context. Article 5 is, therefore, vague and difficult to implement.
- Article 32 dealing with non-discrimination presupposes political and economic regional integration of states, as say within the European Union. Otherwise, prescribing national treatment for non-nationals claiming recompense for alleged transboundary injury will be unimplementable.
- Finally, Article 33 pertaining to the settlement of disputes mandates an element of compulsion in setting up fact-finding commissions. India believes that the parties should be left free to choose any acceptable procedure for securing an amicable settlement through mutual consent.

In Indian context some of the language and concepts embodied in the Mahakali (India - Nepal) and Ganga (India - Bangladesh) Treaties bear resemblance to those found in the UN Convention. This is because these ideas and expressions were, in fact, drawn from the ongoing deliberations

on the Draft Convention by the International Law Commission, One notable difference, however, lies in the use of the phrase "no harm" in the Mahakali and Ganga Treaties. The UN Convention instead refers to "no significant harm". The difference arose because the UN/ILC text was still under formulation when the two Treaties were signed. Should the meaning of "no harm" become the subject of dispute, the expanded UN definition would provide guidance.

The bilateral or regional treaties and understandings entered into by India with any of its neighbours will normally take precedence over the UN Convention, which is a framework to which India is not a signatory. However, although India abstained from signing the Convention, we could draw upon the principles enunciated in it usefully for the purpose of evolving an interpretative matrix not spelt out in our bilateral treaties.

5.2 Stockholm Water Symposium, 2002

At the Stockholm Water Symposium in 2002 there was a rare degree of unanimity among organizations representing water managers and other stakeholders on four basic principles as given below:

Water users must be involved in the governance of water resources.

The behavior of local water users is the ultimate test of policy success. Users must be informed of and closely involved in the governance decisions affecting their freshwater use. While it is essential that government exercise a strong hand in protecting natural resources and the common good, it must accomplish this through a close, effective and continuing dialogue with water users.

We must break now the link between economic growth and water degradation.

Activities generating wealth often contaminate water, resulting in pollution of rivers and groundwater throughout the world. If this continues unabated, available water becomes too polluted to use, and the world has less water available. Positive, proactive national and local action toward water pollution abatement and restoration is essential today to avoid even more severe problems in coming decades.

Urban water services are crucial for urban stability and security.

An adequate flow of water through a city is a necessary condition for the health of its inhabitants and also for the functioning of industries,

hospitals and other city components. A secure water supply is essential for a sustainable city, and realistic, budgeted planning must extend to the poor and peri-urban areas of our cities.

Policy, planning, and implementation must move towards integrated solutions.

In its downstream flow, water is linked to land use and ecosystems in a river basin. Water management, land use, and ecosystem policies must therefore complement rather than counteract each other. Sector approaches to drinking water supply, water for food production, and water for nature must urgently be complemented by an integrated approach that considers all of these. Institutional arrangements must be put in place to ensure integration.

Between Rio and the World Summit on Sustainable Development in Johannesburg in 2002, the world's nations met in several major conferences under the guidance of the United Nations, including the Monterrey Conference on Finance for Development and the Doha Ministerial Conference. These conferences defined for the world a comprehensive vision for the future of humanity. Recognizing the importance of building human solidarity, heads of state in the closing political statement urged the promotion of dialogue and cooperation among the world's civilizations and peoples, irrespective of race, disabilities, religion, language, culture, or tradition. It is to be hoped that this solidarity will also embrace hydrosolidarity: the solidarity between downstream and upstream citizens of a watercourse in managing their water in the interest of all.

None of these statements or declarations, however, focuses exclusively on international freshwater sources. Despite the efforts over the past decade to expand global institutional capacity over freshwater resources, no supranational agency exists to manage transboundary resources globally. While many of the principles of national water management apply to international rivers and lakes, the political, social, and economic dynamics associated with transboundary waters can require special consideration.

6.0 International cooperation in Indian Context

India is drained by a number of international rivers those rise beyond its borders or flow into lower riparian countries. The co-sharers of these common rivers are Nepal, Bhutan, China, Myanmar, Bangladesh and Pakistan. Obviously, national water resource planning cannot ignore this fact. Most of the storages in the north and north-eastern states are near the international borders, 'water diplomacy' for effective and optimal utilization of the water resources in the region is likely to play a key role in the economic development of the people of the region. India has been taking a lead in all these initiatives as an equal partner with capabilities to provide the technical leadership in the area.

The issue of international water relations arose in an acute form immediately after 1947 with the partitioning of the Indus river basin and what had earlier been a single irrigation system in Punjab. It was settled through the Indus Waters Treaty (1960) which allocated the entire flows of the three Eastern Rivers, the Sutlej, Beas and Ravi, to India except for domestic use, non-consumptive use and restricted agricultural use by Pakistan and that of the three Western Rivers, the Chenab, Jhelum and Indus, to Pakistan, less domestic use, non-consumptive uses and limited agricultural use by India. The Treaty also permits India generation of hydroelectric power on the Western Rivers and subject to certain conditions, such use is unrestricted. The uses permitted to India and Pakistan will be as specified in the Treaty.

India also entered into project-specific agreements with other neighbours like Nepal and Bhutan, but these essentially do not constitute sharing arrangements. A treaty has been signed with Nepal on the Integrated Development of Mahakali River including Sarda Barrage, Tanakpur Barrage and Pancheshwar project. Negotiations are on for the beneficial use of waters of many other rivers flowing in the Himalayan region through Nepal and India.

The more recent Treaty on Ganga waters with Bangladesh (1996) prescribes a formula for sharing the lean season flows of the river at Farakka between the months of January and May every year. It also envisages similar agreements or understandings with regard to other common rivers.

There are yet other rivers, which flow through other neighboring countries like China, Bhutan and Myanmar before entering into India. In

course of time, efforts are underway to reach agreements with these co-basin countries also in respect of the use of waters of such rivers.

The important water-related issues with regard to each of our neighbours are discussed in subsequent sections.

6.1 Bangladesh

Issues of sharing the Ganga, Brahmaputra, Meghna and 51 other common rivers have been in contention between the two countries over the past many decades. An Indo-Bangladesh Joint Rivers Commission (JRC) is functioning since 1972 with a view to maintain liaison in order to ensure the most effective joint effort in maximizing the benefits from common river systems which is headed by Water Resources Ministers of both the countries. Since the establishment of Indo-Bangladesh Joint River Commission many issues of common interest in the field of water resources have been discussed and deliberated.

Actual sharing of the lean flows of the river Ganga became problematic in 1975 with the commissioning of the Farakka Barrage. A series of agreements were put in place until 1988. Thereafter, relations soured on this issue until a breakthrough was achieved with the signing of the Ganga/Ganges Waters Treaty by the Prime Ministers of India and Bangladesh on 12th December 1996 on the sharing of waters. The Treaty shall remain in force for a period of thirty years to be renewable by mutual consent. For monitoring the implementation of the Treaty, a Joint Committee has been set up. The Committee observed that Joint measurements on Ganga at Farakka (India) and Ganges at Hardinge Bridge (Bangladesh) during lean season had been held to the satisfaction of both the countries.

The Treaty stipulates an "emergency" situation when discharges fall below 50,000 cusecs, necessitating an immediate dialogue between the two countries to decide on sharing arrangements; and calls on both sides to cooperate in finding a solution to the long term augmentation of the lean season arrivals at Farakka and conclude water sharing agreements with regard to other common rivers.

Formula for Sharing the Lean Season Flows at Farakka		
Availability at Farakka	Share of India	Share of Bangladesh
70,000 cusecs or less	50%	50%
70,000-75,000 cusecs	Balance of flow	35,000 cusecs
75,000 cusecs or more	40,000 cusecs	Balance of flow
Subject to the condition that India and Bangladesh each shall receive guaranteed 35,000 cusecs of water in alternate three 10-day periods during the period March 1 to May 10.		

Both India and Bangladesh have Teesta Barrages on either side of the border and plan to irrigate extensive commands whose full requirements cannot be met without lean season augmentation or integrated use of the waters of rivers adjoining the Teesta within the Brahmaputra system. Meanwhile, the discharge data of the Teesta must be reconciled before even adhoc allocations of its flows can be made. These issues are being addressed by the two Governments through the Indo-Bangladesh Joint Rivers Commission.

Other Indo-Bangladesh issues pertain to water quality, shifting course of Boundary Rivers, impact of anti erosion measures, exchange of hydrological and flood discharge data in real time and the tying up of flood embankments on common rivers.

Discussions have been continuing with Bangladesh for sharing of waters of Teesta river. A joint Committee of Experts (JCE) under Secretary (WR) has been formed to workout long term resolution of Water Sharing of other seven rivers i.e. Teesta, Dharla, Dudhkumar, Manu, Khowai, Gumti and Muhuri. In addition to this, the Standing Committee of JRC for resolution of common/border river problems between the two countries has been activated. Cooperation has also been continued in transmission of Flood Forecasting and Warning data to Bangladesh during monsoon period.

The existing system of transmission of flood forecasting data on major rivers like Ganga, Teesta, Brahmaputra and Barak during the monsoon

season from India to Bangladesh was continued. The transmission of flood forecasting information from India during the monsoon has enabled the Civil and Military authorities in Bangladesh to shift the population affected by flood to safer places.

6.2 Nepal

Hydro-power could be for Nepal what oil is to the Gulf. However, its currently assessed techno-economic potential of 42,000 MW needs a market which primarily lies in India. These complementarities apart, India would benefit by storages in Nepal to moderate floods and expand irrigation in the Uttar Pradesh and Bihar plains.

Earlier diversion schemes on the Sarada (Mahakali), Kosi and Gandak notwithstanding, Indo-Nepal water resource development for regional benefit has made limited progress on account of a variety of misperceptions and misgivings on both sides. The landmark Mahakali Treaty of 1996 hopefully heralds a new beginning. It is a good example of bilateral cooperation in joint water resource development. Both Parties agree that they have equal entitlement in the utilisation of the waters of the Mahakali River without prejudice to their respective existing consumptive uses.

The cost-benefit assessment and sharing principle is repeated verbatim in the understanding reached by Indo-Nepalese experts in 2001 on the Sapta Kosi project. The earlier Kosi and Gandak Agreements also stipulated certain conditions with regard to Nepalese uses, local inter-basin transfers and navigation. The latest Indo-Nepal understanding on the Sapta Kosi commits India to making a feasibility study for providing a navigation link either by river or a canal from Chatra to the confluence of the Kosi with the Ganga in Bihar.

Flood forecasting and hydrological and other relevant data exchange represents another important area of cooperation. It is encouraging that there is some agreement for sharing hydro meteorological data. Nepal and India have also agreed to upgrade and modernise the network and also increase the density and coverage of stations which will help better assessment and utilisation of water resources.

There is good scope for cooperation between India and Nepal in the field of Water Resources including hydropower development. A few water resources development projects, with predominant hydropower generation components, like Pancheshwar Multipurpose Project, Sapta

Kosi High Dam, Kamla and Bagmati projects have been under consideration of both the governments for a number of years.

6.2.1 Mahakali Treaty & Pancheshwar multipurpose project

The Treaty on integrated Development of Mahakali River had been signed between the Government of India and Government of Nepal in February 1996, which came into force in June 1997 (Mahakali Treaty). The Treaty enjoins India to ensure a flow of not less than 10 cumec (350 cusec) downstream of the Sarada barrage "to maintain and preserve the river eco-system". Further, it provides that the water requirements of Nepal "shall be given prime consideration in the utilisation of the waters of the Mahakali river".

Pancheshwar Multipurpose Project on river Mahakali known as Sarda in India is the centrepiece of the Treaty. India - Nepal Joint Group of Experts (JGE) has been overseeing the physical and financial progress with respect to finalization of Joint Detailed Project Report of Pancheshwar Multipurpose Project.

The Mahakali Treaty stipulates that the cost of the project shall be borne by the parties "in proportion to the benefits accruing to them". The power, irrigation, flood control and other benefits accruing to the parties "shall be assessed". The letters exchanged with the Treaty provide that "net power benefit shall be assessed on the basis of, inter alia, savings in costs to the beneficiaries as compared with the relevant alternatives available"; irrigation benefits "on the basis of incremental and additional benefits due to augmentation of river flow"; and flood control "on the basis of the value of works saved and damages avoided". But this "precludes the claim in any form by either Party on the unutilised portion of the shares of the waters of the Mahakali River of that Party".

6.2.2 Sapta Kosi High Dam multipurpose project and Sunkosi Storage cum diversion scheme

As per the understanding reached between Government of India and Nepal, it has been agreed to conduct joint investigations and other studies for the preparation of Detailed Project Report (DPR) of Sapta Kosi High Dam Multipurpose Project and Sun Kosi Storage-cum-Diversion Scheme to meet the objectives of Hydro Power Generation; Irrigation Development; Flood Control/ Management; and Navigation.

A Joint Team of Experts (JTE) consisting of experts from the both the countries were constituted in 1991 to finalize the modalities of investigation and method of assessment of benefits through joint studies / investigations. An Inception Report indicating the scope of work and studies required to be carried out for the finalisation of DPR of both the projects was prepared by the JTE which was approved by the Governments of both countries and the same is the guiding document for JPO-SKSKI, Biratnagar, Nepal. The Joint Committee on Water Resources (JCWR) of both countries has given a directive to JPO-SKSKI to examine the likely constraints in the implementation of Kamala & Bagmati Multi Purpose Projects and prepare the Feasibility Report of Kamala Multi Purpose Project and Pre-feasibility Report of Bagmati Multi Purpose Project.

The Joint Project Office (JPO) has been established at Biratnagar, Nepal on 17th August, 2004. A 269 meter high concrete/Rock fill dam on river Sapta Kosi was envisaged with underground power houses with an installed capacity of 3000 MW at 50% load factor. In addition, a barrage on river Sapta Kosi (in Nepal) would be constructed about 8 km downstream of the High Dam to re-regulate the water released from the dam. Two canals namely, Eastern Chhatra Canal and Western Chhatra Canal, would be off-taking from the either bank from the barrage to provide water for irrigation both in Nepal and India. The Navigation through Kosi up to Kursela and in the reservoir of Sapta Kosi dam is also under consideration during the detailed study.

6.2.3 Standing Committee on Inundation Problems

For dealing with the problems of inadvertent inundation caused by the construction of various works on rivers straddling the Indo – Nepal border, a Standing Committee on Inundation Problems (SCIP) between India and Nepal was set up in 1986 with a view to identifying the problem areas and suggesting possible solutions on a continuing basis. Various issues relating to inundation problems near India – Nepal border were resolved through this mechanism. This committee has now been replaced by a new Committee, namely, Joint Standing Technical Committee (JSTC) which would look into other related matters of water resources development of mutual interest.

6.2.4 Sub Committee on Embankment Construction (SCEC)

The India — Nepal Joint Sub Committee on Embankment Construction was set up in 2004 to look into planning, design and construction of embankments. Funds for construction of embankments in Nepal are being provided by Ministry of External Affairs on the recommendations of this sub-committee. Now, this committee has also been renamed as Joint Committee on Inundation and Flood Management and its role has been enlarged including issues of inundation and flood warning system on common rivers.

6.2.5 Flood Forecasting & Warning System on Rivers Common to India & Nepal

Flood Forecasting and Warning System on rivers common to India and Nepal has 42 meteorological / hydrometric sites in Nepalese territory and was put in operation since 1989. A Master Plan was prepared for upgrading of data transmission system and exchange of hydrological and meteorological data for an integrated flood management. Further, for qualitative improvement of flood forecasting in Indian side, the Nepalese side agreed to transmit hydrological data in respect of the five key stations located on rivers Ganga, Kosi, Rapti, Bagmati and Mahananda twice a day.

6.2.6 Joint Committee on Water Resources

In order to have interaction at higher level pertaining to the cooperation in the field of Water Resources, including implementation of various agreements and understandings, a Nepal – India Joint Committee on Water Resources (JSCWR) headed by Water Resources Secretaries of both the countries is functioning with the mandate to act as an Umbrella Committee of all committees and groups.

6.3 Pakistan

At the time of independence, the boundary line between the two newly created independent countries i.e. Pakistan and India was drawn right across the Indus Basin, leaving Pakistan as the lower riparian. Moreover, two important irrigation head works, one at Madhopur on Ravi River and the other at Ferozepur on Sutlej River, on which the irrigation canal supplies in Punjab (Pakistan) had been completely dependent, were left in the Indian Territory. A dispute thus arose between two countries regarding the utilization of irrigation water from existing facilities.

Negotiations held under the good offices of International Bank for Reconstruction and Development (World Bank), culminated in the signing of Indus Waters Treaty in 1960. The Treaty was signed at Karachi by Field Marshal Mohammad Ayub Khan, the then President of Pakistan, Shri Jawaharlal Nehru, the then Indian Prime Minister and Mr. W.A.B. Illif of the World Bank on 19th September, 1960. The Treaty however is effective from 1st April, 1960 (Effective Date).

The Treaty apportioned the entire waters of the three Eastern Rivers, the Sutlej, Beas and Ravi to India, except for domestic, non-consumptive and irrigation uses by Pakistan as specified. The waters of the three Western Rivers, namely the Indus, Chenab and Jhelum, were allocated to Pakistan, less certain uses by India as specified. The Treaty has worked satisfactorily, despite strained Indo-Pakistan relations and two wars, and the mechanism of the two Indus Commissioners has functioned fairly smoothly.

There is no quantitative limit on Indian uses from the Western rivers for domestic and industrial purposes. Therefore the Government of India and the State Government are entitled to formulate appropriate schemes of rural and urban water supply in the portion of Indus basin lying in India. Control or use of water for Non-consumptive uses for purposes of navigation, floating of timber or other property, flood protection or flood control, fishing or fish culture, wild life or other such beneficial purposes, is permitted provided exclusive of seepage or evaporation incidental to the control or use, the water remains in, or is returned to the same river or its Tributaries. However, these permitted uses effected by India on Western Rivers, are subject to cumbersome and, sometimes, unkind provisions in the Treaty leading to unproductive situations.

The Treaty allows India specified withdrawals from Ranbir and Pratap Canals. It further allows to irrigate about 13.4 lakh acres of Irrigated Cropped Area from the three Western Rivers. However, Irrigated Cropped Area means the total area under irrigation crops in a year, the same area being counted twice if it bears different crops in *kharif* and *rabi*. It excludes only small blocks of *ghair mumkin* lands, lands dependent on rain or snow to which no irrigation water is applied, areas naturally inundated by river flow and cultivated on sailab thereafter, area under floating gardens or *demb* lands in and along any lakes and any area under water plants growing within the water-spread of any lake or in standing water in a natural depression. It includes irrigation from an open well, a tube-well, a spring, a lake (other than a Connecting Lake)

or a tank. However, generally the quantum of water for irrigation, or the type of crop has not been specified (Thus, there is no bar on changing the cropping pattern to optimise agricultural production). Further, the permissible irrigable acreage may be redistributed among the three Western River drainage basins in such manner as may be agreed upon between the Indus Commissioners of India and Pakistan. The available scope within the provisions of the Treaty needs to be exploited fully.

Storage of Water permitted to India on the Western Rivers from all Single-purpose and Multi-purpose reservoirs constructed after the Effective Date				
(1)	River System	Conservation Storage Capacity		Flood Storage Capacity (M.A.F.) (4)
		General Storage Capacity (M.A.F.) (2)	Power Storage Capacity (M.A.F.) (3)	
(a)	The Indus	0.25	0.15	Nil
(b)	The Jhelum (excluding the Jhelum Main)	0.50	0.25	0.75
(c)	The Jhelum Main	Nil	Nil	As provided in Paragraph 9 of Annexure E to the Treaty
(d)	The Chenab (excluding the Chenab Main)	0.50	0.60	Nil
(e)	The Chenab Main	Nil	0.60	Nil

The above permitted storage is subject to certain provisions specified in the Treaty.

The Indus Treaty enables India to build appropriate storages on the three Western Rivers to the extent of 0.40 MAF on the Indus, 1.50 MAF on the Jhelum (excluding the Jhelum Main), 0.60 MAF on the Chenab Main, and 1.10 MAF on the Chenab (excluding the Chenab Main). This total permissible

storage of 3.60 MAF on the three Western Rivers by India is further broken down purpose-wise into 1.60 MAF for power, 0.75 MAF for flood cushioning, and 1.25 MAF for general storage which may also be used for hydroelectric power generation and other purposes. No storage has been constructed so far.

Till storage is constructed and an annual release of 0.5 MAF into Jhelum/ Chenab is made as specified, the Irrigated Cropped Area by withdrawals from river flow is limited to about 9.1 lakh acres only. To achieve the full permissible Irrigated Cropped Area of about 13.4 lakh acres, construction of storage is therefore essential.

In accordance with the Treaty both India and Pakistan have each created a post of Commissioner for Indus Waters. The two Commissioners together constitute the Permanent Indus Commission whose purpose is to establish and maintain co-operative arrangements for the implementation of the Treaty, to promote co-operation between the Parties in the development of the waters of the Rivers and to settle promptly any question arising between the Parties. Unless either Government decides to take up any particular question directly with the other Government, each Commissioner will be representative of his Government for all matters arising out of the Treaty and will serve as a regular channel of communication in all matters relating to implementation of the Treaty. The Commission is also required to undertake periodical inspection of the Rivers for ascertaining the facts connected with the various developments and works on the Rivers. The Commission has also to meet regularly at least once a year, alternately in India and Pakistan and to submit to the Govt. of India and Govt. of Pakistan, before the first of June of every year, a report on its works for the year ended on the preceding 31st March, and may submit to the two Governments other reports at such times as may be considered necessary. The Commission may also meet when requested by either Commissioner.

In fulfillment of the obligations of Indus Waters Treaty, India has supplied the requisite data of 30 Projects on Western Rivers including Small Plants, Run-of-River Plants etc. to Pakistan. Every month, the data with respect to the flows in and utilization of the waters of the rivers of Indus Basin are being exchanged. Also every year before 30th November, India furnishes to Pakistan the data of Irrigated Cropped Area (ICA) from the Western Rivers.

As per the provisions of the Indus Waters Treaty, flood flows of rivers the Ravi, the Sutlej, the Beas, the Jammu Tawi, the Chenab and the Jhelum

were being transmitted to Pakistan through telegram since 1962. Broadcasting of flood flows of rivers the Ravi, the Jammu Tawi and the Chenab was started in 1974. Subsequently on the request of Pakistan, the Commissioners for Indus Waters of India and Pakistan agreed in 1989 to communicate the flood flows of rivers the Ravi and the Sutlej to Pakistan on telephone and on river Chenab & Jammu Tawi by telegram & Radio Broadcast during the period 1st July to 10th October. From the year 2006 on request of Pakistan communication of flood flow information by telegram has been replaced by telephone. A control room is operated round the clock in the Indus Wing for the above purpose. No cost is being charged to Pakistan for communication of flood flow even though the Treaty provides for the same. This is purely a goodwill gesture from our country towards Pakistan in response to the request made by Pakistan on humanitarian ground.

With Bhakra Nangal, Pong, Pandoh and Ranjit Sagar reservoirs already completed, envisaged storage reservoirs for harnessing 33 MAF of Eastern Rivers is available. Projects having about 7183 MW installed capacity have already been completed and projects having 4515 MW installed capacity are in different stages of construction. Since India has not built any Conservation Storage on Western Rivers, India can develop irrigation by withdrawals from river flow only within the restricted area of 2,70,000 acres over and above the area as on effective date. India could irrigate an area of 7,97,860 acres against permissible of 9,12,477 acres during the year 2007-08 as per details given below:

Basin	I.C.A. as on the effective date (Acre)	Additional ICA permissible(Acre) without storage	Net ICA permissible (Acre)	Total I.C.A. achieved in 2007-2008 (Acre)
Indus	42,179	70,000	1,12,179	51,311
Jhelum	5,17,909	1,50,000	6,67,909	6,39,818
Chenab	82,389	50,000	1,32,389	1,06,731
Total	6,42,477	2,70,000	9,12,477	7,97,860

Also against identified 18653 MW of Installed capacities from Western Rivers, projects having installed capacity of about 2324 MW have already been completed and projects having installed capacity of about 659 MW are in different stages of construction.

6.4 China

6.4.1 Existing Arrangements & Bilateral Understanding

In the year 2002, the Government of India had entered into an MOU with China for provision of hydrological information on Yaluzangbu/ Brahmaputra river in flood season by China to India. In accordance with the provisions contained in the MOU, the Chinese side provided hydrological information (Water level, discharge and rainfall) in respect of three stations, namely Nugesha, Yangcun and Nuxia located on river Yaluzangbu/ Brahmaputra from 1st June to 15th, October every year (upto 2007), which was utilized in the formulation of flood forecasts by the Central Water Commission. The above MoU expired in 2007.

A new Memorandum of Understanding (MoU) upon Provision of Hydrological Information of the Brahmaputra / Yaluzangbu River in Flood Season by China to India with a validity of five years has been signed with China on 05.06.08 during the visit of Hon'ble External Affairs Minister of India to Beijing from June 4-7, 2008. In pursuance, the Chinese side has started supplying the monsoon data for the three stations w.e.f. 08.09.08.

Another Memorandum of Understanding was signed during the visit of the Chinese Premier to India in April, 2005 for supply of hydrological information in respect of Sutlej (Langquin zangbu), in flood season. Chinese side is providing hydrological information in respect of their Tsada station on river Sutlej (Langquin zangbu) from the monsoon of 2007. Implementation Plan was signed in this regard during April, 2008.

The Hon'ble President of the People's Republic of China, paid a state visit to the Republic of India from 20 to 23 November, 2006. During the visit, it was agreed to set up an expert – level mechanism to discuss interaction and cooperation on provision of flood season hydrological data, emergency management and other issues regarding trans-border rivers as agreed between them. Accordingly, the two sides have set up the Joint Expert level Mechanism. The Expert Groups from both sides are led by the Joint Secretary level officers.

The first meeting of the Joint Expert Level Mechanism was held on 19-21 September, 2007 at Beijing wherein the issues related to bilateral cooperation on exchange of hydrological information between the two countries were discussed. The 2nd meeting of Expert Level Mechanism (ELM) on Trans-Border Rivers was held at New Delhi from 10-12th April, 2008. During the meeting, work regulations of the Expert Level

Mechanism were agreed and signed by the two sides. It has been agreed that the Expert Level Mechanism shall meet once every year, alternatively in China and India.

6.4.2 Parechu Crisis

An artificial lake was formed in (June/July, 2004) on Pare-chu in Tibet (China) as a result of landslide. The bursting of the lake would have caused havoc downstream on the Indian side in Himachal Pradesh to the people and the infrastructure including the Naptha Jhakri H.E. Project. The Government of India kept a close watch on the day to day development in this regard. In order to discuss the situation in Pare-chu, a team led by Shri R.K. Singh, Joint Secretary and Central Relief Commissioner, Ministry of Home Affairs comprising of officers from Ministry of Water Resources, Ministry of External Affairs, Central Water Commission, Geological Survey of India and Central Mining Research Institute held discussions with the Chinese authorities at Lhasa on 19th and 20th September, 2004. The team discussed various possible measures to address the situation and agreed to take up further action through diplomatic channels.

Subsequent to the visit to Lhasa, a technical team visited Beijing (China) from 26th to 29th December 2004 to hold in depth discussion regarding blockade on river Pare-chu and establishment of additional hydrological stations on Langquin Zangbu (Sutlej) and Parlung Zangbo (tributary of Yaluzangbu i.e. Brahmaputra) and Zayu Qu (Lohit). In March, 2005 a Secretary level delegation visited Beijing to discuss the measures to be taken on Pare-chu issue. China agreed for exploring possibility of controlled release of artificial lake water and as to measures. But before any action could be taken the landslide dam breached on 26th June 2005.

6.5 Bhutan

A scheme titled "Comprehensive Scheme for Establishment of Hydro-meteorological and Flood Forecasting Network on rivers common to India and Bhutan" is in operation. The network consists of 35 hydro-meteorological/ meteorological stations located in Bhutan and being maintained by the Royal Government of Bhutan with funding from India. The data received from these stations are utilized in India by the Central Water Commission for formulating flood forecasts. A Joint Expert Team (JET) consisting of officials from the Government of India and Royal

Government of Bhutan continuously reviews the progress and other requirements of the scheme.

The matter relating to problem of floods created by the rivers originating from Bhutan and coming to India was taken up with the Royal Government of Bhutan. A Joint Group of Experts (JGE) on Flood Management was accordingly constituted between India and Bhutan to discuss and assess the probable causes and effects of the recurring floods and erosion in the southern foothills of Bhutan and adjoining plains in India and recommend to both Governments appropriate and mutually acceptable remedial measures.

The first meeting of JGE was held in Bhutan from 1st to 5th November, 2004. The JGE had series of discussions and also made field visits to some of the affected areas which included the sites prone to landslides and dolomite mining areas. Based on the discussions, the JGE felt that a more detailed technical examination is required and accordingly a Joint Technical Team (JTT) under the Chairmanship of Member (PID), North Bengal Flood Control Commission was constituted.

JTT held its first meeting in April, 2005. The JTT studied some sources of sediment load, nature of slides and suggested further studies and preparation of maps to be taken up for deciding remedial measures to be recommended by the JTT. Preliminary report (Jan 2006) of Joint Technical Team was received in MoWR during Feb, 2006.

Further, as per the decision taken in the first meeting of JGE, a five members Indian team visited Tsatichu lake in Eastern Bhutan (which was formed due to massive landslide occurred on the right bank of river Tsatichhu on 10th September, 2003) alongwith the officials of Royal Govt. of Bhutan between 18th and 23rd December 2006. During the joint visit, it was observed that the quantity of water in the lake at present is very small and the threat of flood to downstream areas, including Indian Territory is negligible, however, it was recommended that there is a need to monitor any future development like further landslide leading to blockade of outlet and the level of water in the lake should be monitored specially during monsoon.

Second meeting of JGE was held on February 26-27, 2008 at New Delhi. During the meeting, preliminary report (Jan 2006) of Joint Technical Team, report of Joint visit (Dec. 2006) by India – Bhutan Experts Team to Tsatichu Lake in Bhutan and Permission of Royal Government of Bhutan

(RGoB) for construction of bullheads on river Manas near Mathanguri were discussed.

During the second meeting of JGE, the JTT has been reconstituted and in the modified ToR of the reconstituted JTT, some rivers/streams flowing from Bhutan into Assam to be identified by JTT based on the field visit have also been included for studies/recommendations for remedial measures. Further, during the second meeting of JGE, it has been decided to undertake another joint visit by India and Bhutan Experts Teams to the landslide dam site in 2008.

6.6 Myanmar

A number of small streams rising in eastern Manipur drain into the Kubaw Valley and, like the larger Imphal/Manipur river, flow into Myanmar to drain into the Chindwin which falls into the Irrawaddy. India has some small irrigation uses on the Manipur river within Manipur and has developed the Loktak Hydro Project (105 MW). There appears to be little likelihood of any conflict of interest with Myanmar here.

There is also scope for Indo-Myanmarese cooperation in jointly developing the hydro potential of the Chindwin to mutual benefit.

The Chhimtuipui River (otherwise known as the Kaladan or Kolodyne) rises in Myanmar, then marks the Indo-Myanmar border for quite some distance before entering southern Mizoram and then finally re-entering Myanmar to empty into the sea near Sitwe (Akyab). The river is navigable in Myanmar from Paletwa, some 100 kms from the tip of Mizoram, to the sea. Mizoram state administration would be interested to utilise this water. Even adjacent areas in Northeast India would be interested to have a direct outlet to the sea in the future.

7.0 Summing up

As the population grows in a watershed or region, there is increasing *competition* for the finite resource that is water. There is competition between allocations for human use (e.g. drinking water and sanitation, energy production, irrigation, industrial use). There is competition between these uses and water needed for environmental sustainability, and sometimes to respect cultural values. Water resource users at all scales frequently find themselves in direct competition for this economic and life-sustaining resource, in turn creating tensions, and indeed conflict, over water supply, allocation and quality. This competition

brings with it *tension*, which in turn may lead to *conflict* among users. If this conflict cannot be resolved peacefully, it leads to *disputes* that may be resolved legally to avoid *armed conflict* or even *war*. But, history has more often shown that the vital nature of freshwater provides a powerful natural incentive for cooperation.

Managing water resources is a complicated process. Watercourses typically meet a variety of economic as well as ecosystem needs, although in many cases, not enough water is available to meet all of the identified needs. Transboundary waters transcending human-defined political and administrative boundaries pose one of the major water management problems.

When a country's water needs are not being met in an international watercourse, the absence of cooperation is likely to result in tension. Some experts have predicted that conflicts over water might be inevitable as water scarcity increases. The potential for conflict appears to be highest where much of the land is either semiarid or arid, and most of the unexploited water resources are in international watercourses. International cooperation is required to ensure that the mutual benefits of a shared watercourse are maximized.

Caring for our water resources is everyone's business. We also share the responsibility for managing the transboundary waters for current and future generations. Political arrangements are necessary with the nations which share them (i.e., co-riparian nations) in order to manage them efficiently. Nurturing the opportunities for cooperation in transboundary water management can help build mutual respect, understanding and trust among countries and promote peace, security and sustainable economic growth.

India is drained by a number of international rivers that rise beyond its borders or flow into lower riparian states. We have already reached agreement with Pakistan on the use of Indus waters by way of Indus Water Treaty. A treaty has also been signed with Nepal on the Integrated Development of Mahakali River including Sarda Barrage, Tanakpur Barrage and Pancheshwar project. With Bangladesh also, an agreement has been reached with regard to sharing of Ganga waters at the common boundary between India and Bangladesh. Negotiations are on for the beneficial use of waters of many other rivers flowing in the Himalayan region through Nepal and India. Since most of the storages in the north and north-eastern states are near the international borders, 'water

diplomacy' for effective and optimal utilization of the water resources in the region is likely to play a key role in the economic development of the people of the region. India has to take a lead in all these initiatives as an equal partner with capabilities to provide the technical leadership in the area.

Treaties like Mahakali between Nepal and India and the Ganges Water Treaty between India and Bangladesh reveal that they incorporate several internationally recognised transboundary water resources management principles, e.g. the principle of equitable and reasonable utilisation, an obligation not to cause significant harm, principles of cooperation, information exchange, notification, consultation and the peaceful settlement of disputes.

The presence of the internationally accepted principles also offers plenty of common ground, which could serve as guidelines to promote sustainable water resources management throughout the region. With many challenges ahead there is every reason to hope that world will live in water peace.

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