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# INTER-STATE WATER CONFLICTS: AN INDIAN SCENARIO

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**ABSTRACT**

***Although India occupies only 3.29 million km$^2$ geographical area, which forms 2.4 percent of the world's land area, it supports over 15 percent of the world's population. With a population of more than 1.21 billion people, India supports about 1/6$^{th}$ of world population but has got only 1/25$^{th}$ of world's water resources. Besides, India also caters a livestock population of more than 500 million, which is about 20 percent of world's total. Provided this huge gap between supply and demand of water in India, its sustainable use and management becomes an inevitable task. India is gifted with a river system comprising more than 20 major rivers with several tributaries. Many of these rivers are rivers flowing through different states (Inter-state Rivers), and this geographical reality has become a bone of contention between different states of India. There are many inter-state rivers in India. The regulation and development of these river valleys continues to be a source of inter-state friction. India is a federal democracy, and most of its rivers cross state boundaries, as such constructing efficient and equitable mechanisms for allocating river flows has long been an important legal and constitutional issue. Since independence, numerous inter-state river water disputes have erupted in India. In this paper, I will try to highlight how regional politics and ineffective administration has led to the mismanagement of this precious natural resource.***

***KEY WORDS : Inter-state; Federal democracy; Mismanagement, Water Disputes, Trans-boundary Resources***

## INTRODUCTION

A wide range of water conflicts[1] appear throughout history, though rarely are traditional wars waged over water alone. Instead, water has historically been a source of tension and a factor in conflicts that start for other reasons. However, water conflicts arise for several reasons, including territorial disputes, a fight for resources, and strategic advantage. These conflicts occur over both freshwater and saltwater, and both between and within nations. However, conflicts occur mostly over freshwater; because freshwater resources are necessary, yet limited, they are the center of water disputes arising out of need for potable water and irrigation. As freshwater is a vital, yet unevenly distributed natural resource, its availability often impacts the living and economic conditions of a country or region. The lack of cost-effective water supply options in areas like the Middle East, among other elements of water crises can put severe pressures on all water users, whether corporate, government, or individual, leading to tension, and possibly aggression. Recent humanitarian catastrophes, such as the Rwandan Genocide or the war in Sudanese Darfur, have been linked back to water conflicts. Water conflicts occur because the demand for water resources and potable water can exceed supply, or because control over access and allocation of water may be disputed. Elements of a water crisis may put pressures on affected parties to obtain more of a shared water resource, causing diplomatic tension or outright conflict. 11 percent of the global population, or 783 million people, are still without access to improved sources of drinking water which provides the catalyst for potential for water disputes. Besides life, water is necessary for proper sanitation, commercial services, and the production of commercial goods. Thus numerous types of parties can become implicated in water disputes which make these issues more complicated to solve as a single dispute of such nature can leave a large list of demands to be met by courts and lawmakers. Water conflicts can occur both between countries as well as within a country among different parties or states. The conflict over Euphrates and Tigris Rivers among Turkey, Syria and Iraq; the Jordan River conflict among Israel, Lebanon, Jordan and Palestine; Nile River conflict among Egypt, Ethiopia and Sudan and the Aral sea conflict among five Central Asian Republics are all transboundary water issues. While the water disputes over different interstate rivers in India is an example of sub-national or interstate water conflict.

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## INDIAN SCENARIO

Irrigation in India is as old as its civilization. It involves the development of water resources, either by the proper channelizing of flowing rivers or by the utilization of waters from 'natural dams' such as lakes and tanks. The development of water resources assumes an added significance in India for reasons which are both geographical and natural. India receives annual precipitation of about 4000 $km^3$. The rainfall in India shows very high spatial and temporal variability and paradox of the situation is that Mousinram near Cherrapunji, which receives the highest rainfall in the world, also suffers from a shortage of water during the non-rainy season, almost every year. The total average annual flow per year for the Indian rivers is estimated as 1953 $km^3$. The total annual replenishable groundwater resources[2] are assessed as 432 $km^3$. The annual utilizable surface water and groundwater resources of India are estimated as 690 $km^3$ and 396 $km^3$ per year, respectively. With rapid growing population and improving living standards the pressure on water resources is increasing and per capita availability of water resources is reducing day by day. Due to spatial and temporal variability in precipitation the country faces the problem of flood and drought syndrome. Overexploitation of groundwater is leading to reduction of low flows in the rivers, declining of the groundwater resources, and salt water intrusion in aquifers of the coastal areas. The quality of surface and groundwater resources is also deteriorating because of increasing pollutant loads from point and non-point sources. The climate change is expected to affect precipitation and water availability. So far, the data collection, processing, storage and dissemination have not received adequate attention.

India has a network of rivers which are reasonably well spread over its entire territory except in the north-west region of Rajasthan comprising the desert areas. These rivers can be divided into two groups, the snow-fed perennial rivers of northern India and the rivers of central and southern India. Nine out of the total twelve major rivers in India are inter-state in nature, and 85 percent of total land mass of the country lies within these major and medium inter-state rivers. These rivers have been flowing on the same route from the times immemorial. It is only the change in the political boundaries that have made some rivers inter-state. Traditionally, India has been an agriculture-based economy. Hence, development of irrigation to increase agricultural production for making the country self-sustained and for poverty alleviation has been of crucial importance for the planners. Accordingly, the irrigation sector was assigned a very high priority in the 5-year plans. Giant schemes like the Bhakra Nangal,[3] Hirakud,[4] Damodar Valley,[5] Nagarjunasagar,[6] Indira Gandhi Canal project,[7] etc. were taken up to increase irrigation potential and maximize agricultural production. In many of these projects, the states have cooperated by jointly developing the river concerned in an integrated manner. They therefore derive the optimum benefits. However this cooperation is not seen everywhere. The demand for water has been steadily increasing while the supply is always constant or may even get reduced if the monsoon is not adequate. In such a situation the disputes are aggravated. As such, numerous inter-state river water disputes have erupted in India, some of which are briefly discussed here:

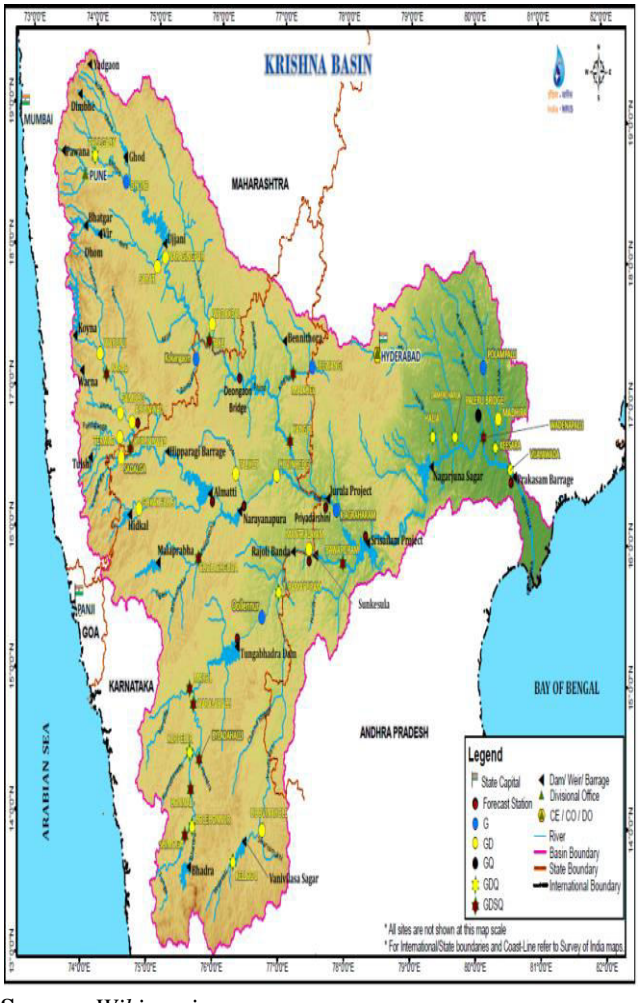
## THE KRISHNA-GODAVARI DISPUTE

The Krishna and Godavari are two major rivers of peninsular India. The two rivers drain the eastern slopes of the Western Ghats and during their course eastwards into the Bay of Bengal, they receive the surface flow from a large part of the Deccan Plateau. The River Godavari is the largest east-flowing river of peninsular India. It rises in the Nasik district of Maharashtra and Andhra Pradesh. The River Krishna is the second largest of the east-flowing rivers of the peninsular India. It rises in the Western Ghats near Mahabaleshwar and flows through Maharashtra, Karnataka and Andhra Pradesh finally flowing into the Bay of Bengal. It is joined by many tributaries along its course. The Krishna and Godavari basins cover an area of about 2,21,000 square miles, approximately more than one-sixth the entire area of India. In territorial terms the two basins include most of Andhra Pradesh, Maharashtra, Karnataka, parts of Madhya Pradesh and Orissa. Thus both the rivers are inter-state rivers and consequently disputes have arisen between some of the states over the allocation of waters to their respective territories.

The Krishna-Godavari water dispute among Maharashtra, Karnataka, Andhra Pradesh (AP), Madhya Pradesh (MP), and Orissa could not be resolved through negotiations. Here Karnataka and Andhra Pradesh are the lower riparian states on the river Krishna, and Maharashtra is the upper riparian state. The dispute was mainly about the inter-state utilization of untapped surplus water. The Krishna Tribunal reached its decision in 1973, and the award was published in 1976. The Tribunal relied on the principle of "equitable

apportionment" for the actual allocation of the water. The Tribunal concluded that projects that were in operation or under consideration as in September 1960 should be preferred to contemplated uses and should be protected. The Tribunal also judged that except by special consent of the parties, a project committed after 1960 should not be entitled to any priority over contemplated uses. The diversion of Krishna waters to another waterline was also legalized when the water was diverted to areas outside the river basin but within the political boundaries of the riparian states. The Tribunal specified that all existing uses based on diversion of water outside the basin would receive protection.

**Fig 1:** *Krishna Basin*




**Source:** *Wikimapia.com*

The Godavari Tribunal commenced hearings in January 1974, after making its award for the Krishna case. It gave its final award in 1979, but meanwhile the states continued negotiations among themselves, and reached agreements on all disputed issues. Hence the Tribunal was merely required to endorse these agreements in its award. Unlike in the case of other tribunals, there was no quantification of flows, or quantitative division of these flows: the states divided up the area into sub-basins, and allocated flows from these sub-basins to individual states – this was similar in approach to the successful Indus agreement between India and Pakistan. Another difference was that the agreement was not subject to review, becoming in effect, perpetually valid.

## THE CAUVERY DISPUTE

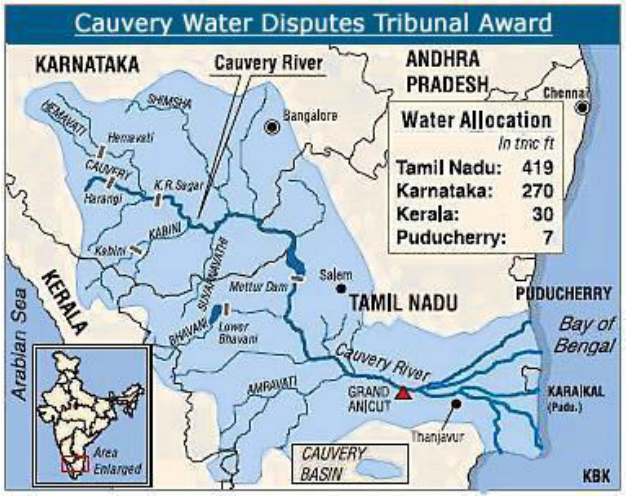
The River Cauvery is an Inter-State river in Southern India. It is one of the major east-flowing rivers of the peninsular India which drains into the Bay of Bengal. The Cauvery rises at Talakaveri on the Brahmagiri Range of Hill in the Western Ghats, presently in the Coorg district of the State of Karnataka, at an elevation of 1.341m (4,400 ft.) above mean sea level. The catchment area of entire Cauvery Basin is 81,155 sq. km. including the other basin states of Cauvery River System and their drainage areas are indicated below;

**Table 1**

| Sl.No. | Name of the Basin State | Catchment area in Sq.kms |
|---|---|---|
| 1 | Karnataka | 34,273 |
| 2 | Kerala | 2,866 |
| 3 | Tamil nadu | 43,868 |
| 4 | Karaikkal region of Pondicherry | 148 |
| | Total | 81,155 |

This 800 km long river has a drainage basin of 8,000 square km spread over the states of Karnataka, Kerala, Tamil Nadu, and Pondicherry, though it mainly flows through Karnataka and Tamil Nadu into the Bay of Bengal. The core of the Cauvery dispute relates to the re-sharing of a fully utilized water resource. Two agreements, concluded in 1892 and 1924 respectively between the erstwhile states of Mysore (now Karnataka) and Madras (now Tamil Nadu), form the basis of the river water sharing and are also at the core of the dispute.

**Fig 2 – *Cauvery Basin***

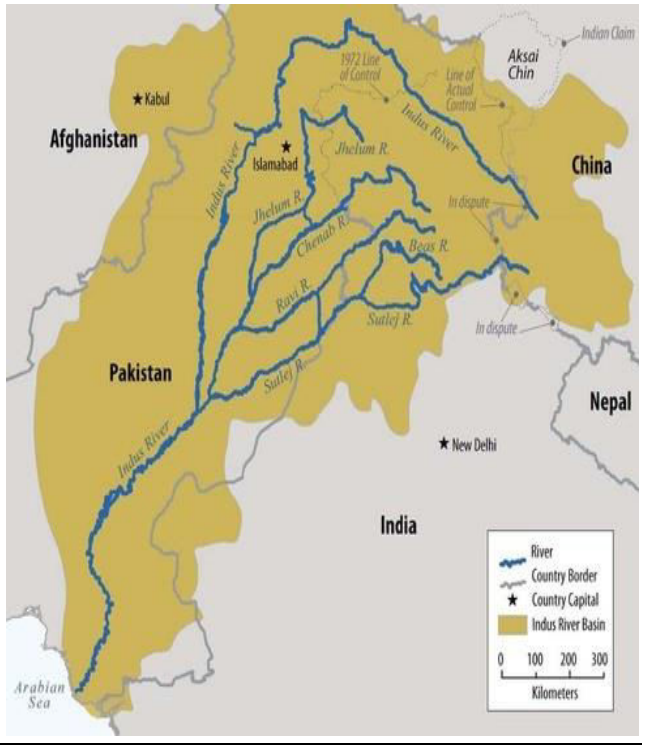



The independence of India in 1947 changed the equations drastically. Tamil Nadu was carved out of Madras Presidency and Mysore province along with other Kannada speaking areas became State of Karnataka. Further in 1956, the reorganization of the states of India took place and state boundaries were redrawn based on linguistic demographics. Kodagu or Coorg (the birthplace of the Kaveri), became a part of Mysore state. Huge parts of erstwhile Hyderabad state and Bombay Presidency joined with Mysore state. Parts of Malabar which earlier formed part of Madras Presidency went to Kerala. Pondicherry had already become a de facto Union territory in 1954. All these changes further changed the equations as Kerala and Pondicherry also jumped into the fray. Kerala staked its claim as one of the major tributaries of the Kaveri, the Kabini, now originated in Kerala. Karaikal region of Pondicherry at the tail end of the river demanded the waters that it had always used for drinking and some minimal agriculture. While these additional claims complicated matters greatly at a technical level, Karnataka and Tamil Nadu remained the major parties to the dispute. By the late 1960s, both states and the Central government began to realize the gravity of the situation as the 50 year term of the 1924 agreement was soon coming to an end. Consequently, negotiations were held throughout the 1960s and 1970s but to no effect. Between 1968 and 1990, there were 26 ministerial meetings between the Karnataka and Tamil Nadu concerning Cauvery, of these five were bilateral, while 21 were tripartite meetings involving the Union Minister for irrigation as well. From 1972 to 1990, there was substantive development and change in the inter-state utilization of the Cauvery waters. By 1981, the claims from the riparian states became quite divergent with Kerala and Pondicherry also joining the cry for a better deal. Union of India due to political compulsions did not effectively mediate the dispute. The state of Tamil Nadu requested the government of India in 1986 to constitute a tribunal under the ISWD Act, 1956. The Union of India constituted the tribunal on June 1990 essentially to effect to the Supreme Court direction in this regard. The Tribunal gave two Awards(Interim & Final). But the dispute has not yet been resolved. On Supreme Court's instruction and Tamil Nadu's plea, the Tribunal gave an interim award on 25 June 1991. After 16 years, the three-member Cauvery Water Disputes Tribunal delivered its 1000 page final award on February 5, 2007.

## THE RAVI-BEAS DISPUTE

The Ravi is a transboundary river crossing Northwestern India and Eastern Pakistan. It is one of the six rivers of the Indus System in Punjab region. It is an integral part of the Indus River basin. The waters of the Ravi River drain into the Arabian Sea through the Indus River in Pakistan. The river rises in the Bara Bhangal, District Kangra in Himachal Pradesh, India. The river drains a total catchment area of 14,442 square kilometers in India after flowing for a length of 720 kilometers. The Beas River is a river in north India, which rises in the Himalayas in central Himachal Pradesh and flows for some 470 kilometers to the Sutlej River in Punjab. Its total drainage basin is 20,303 square kilometers.

**Fig 3 - *Indus Basin***



Punjab and Haryana, the main parties involved in this dispute, are both agricultural surplus states, also termed as 'granary of India'. Both states produce large quantities of grains. In view of the scarcity and uncertainty of rainfall in this arid area, irrigation is the mainstay of agriculture and is responsible for its tremendous progress. With the introduction and widespread adoption of high-yielding varieties of food grains by forward looking farmers of these states, irrigation became increasingly important from the late 1960s onwards. Through an inter-state meeting, an initial agreement on the sharing of the waters of the Ravi and Beas after partition of India was reached in 1955. With the reorganization of Punjab in November 1966, Punjab and Haryana were carved out as successor states. Thereafter, the present dispute between Punjab and Haryana about Ravi-Beas water started. Four perennial rivers, Ravi, Beas, Satluj and Yamuna, flow through these states. As a result of protests by Punjab against the 1976 agreement allocating water from Ravi-Beas, further discussions were conducted (now including Rajasthan as well), and a new agreement was accepted in 1981. This agreement faced opposition and a series of events led to the constitution of a tribunal to examine the Ravi-Beas issue in 1986. Both states sought clarifications of aspects of the award by this tribunal, but the centre has not provided these. Hence, the original award has not been notified, and does not have the status yet of a final binding decision.

## DISPUTE SETTLEMENT

There have been several interstate water disputes in India before and after its independence. In fact these disputes are as old as the rivers themselves. Intersecting of river's natural course by political boundaries induces an asymmetrical power relationship between the States involved. The upstream State is always at an advantage. This power relationship is complicated in countries with a history of colonial rule; political boundaries are often reorganized. States in India have undergone reorganization more than once. River courses or resource distribution were not considerations in delineating state boundaries. The reorganization does not just complicate existing water sharing agreements, but also becomes a breeding ground for politically inspired contestations and disputes. Linguistic homogeneity was the basis for reorganization of states in India after its independence. It is quite possible that the previous agreements for sharing water resources are contested later. While this is a common issue at the root of major interstate water disputes in India, there are several other factors like colonial and postcolonial reorganization of boundaries, disputing of water sharing arrangements as part of political power plays triggered by say, change in political configurations or a 'vote bank' political strategies and structural deficiencies induced by techno-legalism. Therefore various attempts at different times were made to reach for any acceptable settlement of these disputes. An earnest attempt was made in India to solve these problems in 1935 when India was still under British rule. The Government of India Act 1935 for the first time provided for the settlement of water disputes under Section 130 of the Act. But a strong constitutional provision for the inter-state water dispute settlement was provided in the form of Inter-States Water Disputes Act, 1956. It was enacted by the Parliament under Article 262 of the Constitution for adjudicating disputes relating to waters of Inter-State Rivers of river valleys. Article 262 provides for adjudication of disputes relating to water. These clauses essentially confer exclusive authority on the Parliament and Union Govt. to resolve Interstate River – water disputes. It also makes it very clear that in the matter of inter-state river water disputes, the legislative power is superior to the judiciary. Another Act, The River Boards Act, 1956 was enacted under Entry 56 of List I of the Constitution of India for the establishment of River Boards for the regulation and development of Inter-State Rivers and River valleys. The Central Government has, however, not been able to constitute any River Board under this act so far. The role of the River Boards as envisaged in the said Act is only advisory in nature. In addition to the above constitutional provisions, there are also two entries in the seventh schedule of the Constitution.

## UNION LIST : ENTRY 56

Regulation and development of inter-state rivers and river valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest.

## STATE LIST: ENTRY 17

Water that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to provisions of Entry 56 of the Union List. The legislative competence of the State Governments under Entry 17 of the State List remains unfettered only because Parliament has not made much use of the powers vested in it by Entry 56 of the Union list. The Inter-State Water Disputes Act of 1956 was

legislated to deal with conflicts, and included provisions for the establishment of tribunals to adjudicate where direct negotiations have failed. However, states have sometimes refused to accept the decisions of tribunals. Therefore, arbitration is not binding. Significantly, the courts have also been ignored on occasion. Finally, the center has sometimes intervened directly as well, but in the most intractable cases, such as the sharing of the Ravi-Beas waters among Haryana, Jammu and Kashmir, Rajasthan, and Punjab, central intervention, too, has been unsuccessful. One can view much of the conflict or disagreement over inter-state river waters in India as an attempt to influence or determine the initial allocation of property rights over water, by methods such as lobbying. Models of lobbying implicitly include some political considerations for the center, beyond maximizing the joint welfare of the two parties to the dispute. Rather than the rather passive role assigned to the center in the standard rent-seeking model, we can think of it having its own objective function, and bargaining with the two states: the states have political support to offer the center, in return for a favorable decision on the water issue. The flaws associated with governance and institutions are however of immanent nature and have deeper roots. Interstate water disputes recur partly because their history and evolutionary context provide opportunities for contestations.

## CONCLUSION

In view of the existing status of inter-state water resources and increasing demands of water for meeting the requirements of the rapidly growing population of their respective basins as well as the problems that are likely to arise in future, a holistic, well planned long-term strategy is needed for sustainable resources management of these rivers. The inter-state river management practices may be based on increasing the water supply and managing the water demand under the stressed water availability conditions. Data monitoring, processing, storage, retrieval and dissemination constitute the very important aspects of their management. These data may be utilized not only for management but also for the planning and design of the structures involved or needed for their proper management. In addition to these, decision support systems are being developed for providing the necessary inputs to the decision makers for these inter-state waters. Also, knowledge sharing, people's participation, mass communication and capacity building are essential for their effective management. For an equitable and sustainable management of shared water resources, flexible, holistic approach of Integrated Water Resources Management (IWRM) is required, which can cater to hydrological variations in time and space and changes in socio-economic needs along with societal values.

Water disputes can also be avoided or for that matter minimized by going for certain water demand reduction and management measures. The demand or water use reduction measures conserve the existing limited water supply through the practices which require less water and reduce wastage and misuse of water. These measures are directed towards making the existing inadequate supply, whatever it may be, serve water users as effectively as possible and a balance between supply and demand is achieved. Thus the fundamental nature of these measures is their effectiveness in accomplishing a temporary allocation of the limited supply in a manner which serves the users to bridge the gap between supply and demand. The various techniques used for the purpose are based either on giving economic incentives or penalties or involve rationing, legal sanctions and various other types of social or political pressures. These may be based on strategies that include legal restrictions, economic incentives and issuance of public appeals. A comprehensive data monitoring and information system relating to different inter-state rivers among the concerned states can also prove as a vital tool for coordination and management. For planning, design and operation of the water resources projects, temporal and spatial data of various hydrometeorological variables as well as basin characteristics are required. However, in India the network of monitoring the hydrometeorological variables is inadequate. Also the data collection, processing, storage and dissemination are not well organized. In this regard, a comprehensive, reliable and easily accessible Hydrological Information System (HIS) is a pre-requisite. To achieve these objectives, there is a need to strengthen the existing monitoring network of data and develop the HIS by improving the data processing, analysis and dissemination techniques through proper coordination amongst the various agencies. This information system will be useful for processing, storage and dissemination of the reliable and spatially intensive data on water quantity and quality in computerized databases. Recent techniques, such as remote sensing and Geographic Information System (GIS) coupled with field-based monitoring stations may be utilized to monitor the data in real time and update the database.

**NOTES**

[1]Water conflict is a term describing a conflict between countries, states, or groups over an access to water resources. The United Nations recognizes that water disputes result from opposing interests of water users, public or private.

[2] Replenishable Resources are capable of being used over and over, again and are capable of regeneration.

[3] Bhakra Dam is a concrete gravity dam on the Satluj River in Bilaspur, Himachal Pradesh in northern India. The dam forms the Gobind Sagar reservoir. Nangal Dam is another dam downstream of Bhakra Dam. However, sometimes both the dams together are called Bhakra-Nangal Dam though they are two separate dams.

[4] Hirakud Dam is built across the Mahanadi River, about 15 kilometres (9.3 mi) from Sambalpur in the state of Odisha in India. Behind the dam extends a lake, Hirakud Reservoir, 55 km (34 mi) long. It is one of the first major multipurpose river valley projects started after India's independence.

[5] The Damodar Valley Corporation (DVC) is a government organization which operates several power stations in the Damodar River area of West Bengal and Jharkhand states of India. The corporation operates both thermal power stations and hydel power stations under the Ministry of Power, Govt of India. DVC is headquartered in the city of Kolkata, West Bengal, India.

[6] Nagarjuna Sagar Dam was built across the Krishna river at Nagarjuna Sagar where the river forms the boundary between Nalgonda District in Telangana and Guntur district in Andhra Pradesh states in India. The dam created a water reservoir whose gross storage capacity is 11.472 billion cubic metres (405.1×109 cu ft). The dam is 490 feet (150 m) tall from its deepest foundation and 0.99 miles (1.6 km) long with 26 flood gates which are 42 feet (13 m) wide and 45 feet (14 m) tall.

[7]The Indira Gandhi Canal is one of the largest canal projects in India. It starts from the Harike Barrage at Harike, a few kilometers below the confluence of the Satluj and Beas rivers in the Indian state of Punjab and terminates in irrigation facilities in the Thar Desert in the north west of Rajasthan state. Previously known as the Rajasthan Canal, it was renamed the Indira Gandhi Canal in 1985 following the assassination of Prime Minister Indira Gandhi.

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