

TRANSBOUNDARY WATER ISSUES IN SOUTH ASIA

- August 2007 -



RESEARCH PROJECT FOR THE MINISTRY OF FOREIGN AFFAIRS

JESSICA CHRISTINE KEETELAAR

University:	Erasmus University Rotterdam
MSc Programme:	International Public Management & Policy
Student Number:	261268
Primary Supervisor:	Mr. Dr. Jacko A. van Ast
Secondary Supervisor:	Dr. Sibout G. Nootboom

*I dedicate my thesis to my beloved grandfather,
Ruperto Torres Montaña, who always believed in me...*

List of contents

	<i>Page</i>
1 RESEARCH DESIGN	8
1.1 Water and its worldwide importance.....	8
1.2 Water as a Research Topic	8
1.3 Research Objective and Questions	10
1.4 Theoretical Approach and literature review	10
1.5 Methodology	11
1.5.1 Case Study	11
1.5.2 Gathering Empirical Data.....	11
1.6 Structure of the research	12
2 THEORETICAL FRAMEWORK	14
2.1 The tragedy of the commons.....	14
2.2 Ostroms theory on governing the commons.....	15
2.2.1 The Common Pool Resources Situation (CPRS).....	15
2.2.2 Providers and Producers in relation to appropriators	16
2.2.3 Individual choice and perception.....	16
2.2.4 The organizational challenge; from independent to interdependent action.....	17
2.2.5 The rules of the game	18
3 THE INDIAN PERSPECTIVE	20
3.1 Introduction	20
3.2 Introduction to India	20
3.3 Water in India	22
3.4 Internal conflict mechanism.....	25
3.5 India's Shared Water sources	26
3.6 Drivers of waterconflicts	28
4 TRANSBOUNDARY WATERS IN SOUTH ASIA	30
4.1 Introduction	30
4.2 The relationship between India and Pakistan	30
4.2.1 The Indus Waters Treaty 1960.....	31
4.2.2 The controversy of big dams.....	32
4.3 The relationship between India and Nepal	33
4.3.1 The Mahakali Treaty 1996.....	34
4.3.2 Sharing water and sharing power benefits	35
4.4 The relationship between India and Bangladesh	35
4.4.1 The Ganges Water Sharing Treaty 1996	36
4.4.2 Indo-Bangladesh Joint Rivers Commission.....	36
4.4.3 River intervening structures.....	37
4.5 Existing projects and cooperation on water in the South Asian region	37
4.5.1 The South Asian Association for Regional Cooperation (SAARC)	37
4.5.2 The South Asian Free Trade Area (SAFTA).....	38
4.5.3 The Indian River Linking Project (IRLP).....	38
4.5.4 Global Water Partnership South Asia (GWPSA)	39
4.5.5 WWF – International Project on 'Dialogue on Water, Food and Environment.....	40
4.6 Problem Characteristics related to water in South Asia.....	40
5 OSTROM MEETS WATER ISSUES IN SOUTH ASIA	43
5.1 Water in South Asia a Common Pool Resource according to Ostrom.....	43
5.2 Providers, Producers and the Resource System.....	43
5.3 India's Independent Strategy	44
5.4 The Identified Rules	45
5.4.1 Operational rules in the Indus Treaty.....	45
5.4.2 Operational rules in the Mahakali Treaty.....	47
5.4.3 Operational rules in the Ganges Treaty	48
5.5 Collective and Constitutional rules.....	49
5.6 Formal and Informal Collective-Choice Arenas.....	49
6 THE RELATIONSHIP BETWEEN INDIA AND THE DUTCH GOVERNMENT	53

6.1	Introduction	53
6.2	The sleeping giant	53
6.3	A shift in attitude	53
6.4	Relevant Dutch Governmental Cooperation.....	53
6.5	Ambitions and challenges for the future	54
7	CONCLUSION	55
7.1	The three research Components	55
7.2	Opportunities for the Dutch Government.....	56
7.3	Reflection on the Project	58
8	BIBLIOGRAPHY	60
9	ANNEXES.....	66
9.1	The National Water Policy	66
9.2	The Inter-State Water Disputes Act	76
9.3	The Indus Waters Treaty	81
9.4	The Mahakali Treaty	104
9.5	The Ganges Treaty	109
9.6	Presentation for Brainstorm	113
9.7	Outcomes Brainstorm Meeting.....	118
9.8	List of invitees	120
9.9	List of Interviewees.....	121

List of figures

Figure 1: The division of water worldwide.....	8
Figure 2: The research process	13
Figure 3: World population and freshwater use.....	14
Figure 4: The Internal World of individual choice.....	16
Figure 5: Linkages among rules and levels of analysis	19
Figure 6: Map of South Asia	20
Figure 7: Map of South Asia and its main rivers	27
Figure 8: The disputed area of Jammu and Kashmir.....	31
Figure 9: Proposed links IRLP	39
Figure 10: Relationships of formal and informal collective-choice arenas and CPR operational rules.....	49

List of tables

Table A: Division of responsibilities on water in India.....	24
Table B: The main rivers of South Asia.....	26
Table C: Downstream Effects of upstream water use.....	29
Table D: Country relations and perceived water issues.....	40
Table E: Regional cooperation and projects	40
Table F: Composition of the formal collective-choice arenas in South Asia.....	49
Table G: The definition and approach of water disputes	50

List of abbreviations

BHP	Baghlihar hydropower project
CPR	Common Pool Resource
CPRS	Common Pool Resource Situation
DAO	Regional Directorate Asia and Oceania of the Dutch Ministry of Foreign Affairs
DAO - ZZ	Regional Directorate of the Dutch Ministry of Foreign Affairs; Asia and Oceania Department South Asia Division
GWP	The Global Water Partnership
GWPSA	The Global Water Partnership South Asia
ICPR	International Commission for the Protection of the Rhine
IRLP	The Indian River Linking Project
IWRM	Integrated Water Resources Management
IWT	Indus Waters Treaty
JC	Joint Committee
JRC	Joint Rivers Commission
MDG	Millennium Development Goal
PIC	Permanent Indus Commission
SAARC	South Asian Association for Regional Cooperation
SAFTA	South Asian Free Trade Area
SIDA	The Swedish International Development Agency
UN	The United Nations
UNDP	The United Nations Development Program
WB	The World Bank

Acknowledgements

When first starting to ponder about the topic of my Master thesis a few things were clear. Mainly, the thesis had to concern an international and or comparative public management or policy issue.

Next to this for me the most important objective was obtaining a placement at an interesting organization. As I wanted to enhance my learning opportunities by adding a practical dimension to this academic challenge. The quest began.

Eventually I got the great chance to write my thesis for the Regional Directorate Asia and Oceania, South Asia Division, of the Ministry of Foreign Affairs in The Hague. I am very grateful to all my colleagues for the great experience I had being part of their department. I especially want to thank Dicky Methorst for being a great support and always reassuring me during the whole course of my thesis.

As for the topic, this resulted to be totally up my alley, as I like to joke that I am part of a 'water' family.

My family has always been a source of inspiration for me. And they most definitely triggered my interest for the topic. For this I would like to thank them, Cees, Gloria Myriam and Evelyn, greatly.

Out of this interest I had already taken an elective in 'Integrated Water Resources Management', during my Bachelor, taught by Jacko van Ast. Once my topic was decided I immediately thought of asking him to be my first supervisor, and luckily he said yes. A special thanks goes out to him for always guiding me in the right direction and putting up with all my questions.

I would also like to thank Sibout Nooteboom my second supervisor for giving me additional advice and for his enthusiasm.

Furthermore during my period of research several people from different organizations have shared their knowledge with me. By this they showed interest for my topic and motivated me to finish my thesis.

A last special mention goes out to all my fellow students, which became friends or even loved ones, forming part of my student life and making it a wonderful and memorable time.

Rotterdam, February 2007

Abstract

The aim of this research was to analyze the transboundary water issues in South Asia and to identify opportunities for support by the Dutch Government. This by studying India's water policy and existing bilateral water treaties signed with Pakistan, Nepal and Bangladesh.

There is no commitment to agreements, mutual interdependencies are not acknowledged and a low level of trust between these countries exists. Because of this atmosphere India is able to maintain the tradition of bilateral cooperation in the region and continues downplaying regional problems. Thus multilateral and/or international cooperation is poorly developed.

On the basis of Ostroms theory it can be said that India makes its strategic choices in accordance with their internal world and their individual perception. There level of awareness of the interdependency with Pakistan, Nepal and Bangladesh in the water sector is low. Operational rules in use are formed through formal and informal collective-choice arenas.

As for the relationship between India and the Dutch Government at the moment there is no scope for government-to-government cooperation in the water sector. There are however several other opportunities to be identified. Supporting the informal collective-choice arenas through a bottom up approach and thus obtaining influence in arenas holds the highest potential. Next to this the Dutch Government could take a lobbying role, and thus become an ambassador for the water issues in South Asia, on the international and especially the EU level.

Document Word Count: 26.805

1 RESEARCH DESIGN

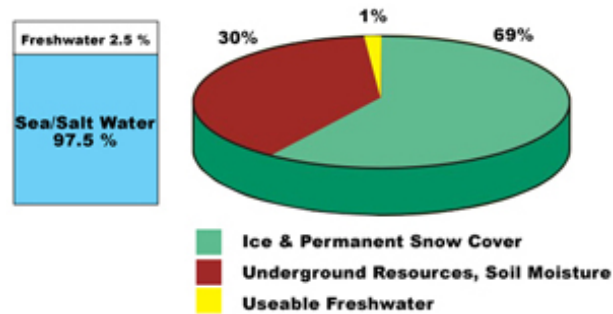
1.1 WATER AND ITS WORLDWIDE IMPORTANCE

Water is one of the primary necessities of life and unfortunately also one of the scarce resources in many parts of the world. The last decades the consumption of water has risen tremendously. Due to water shortage, water pollution and floods, water systems worldwide are being threatened. Water scarcity, poor water quality and a lack of access to water supply and sanitation work destabilizing on human health, productivity and security. They can lead to poverty and instability and trigger water conflicts. Also the balance between salt and fresh water and the unequal distribution of water sources can lead to conflicts. A lot of countries are dependent on their neighbours for their supply of water. Throughout the world around two hundred rivers and lakes are shared by two countries or more. Very often rivers form a natural border between countries. Underneath the ground there are also natural water reservoirs, aquifers, that do not pay any attention to borders (Bieckmann, and Conradi, 2000).

Water systems worldwide are being threatened due to water shortage, water pollution and floods. The available amount of fresh water is limited whilst the increase of use by people continues to rise. Even though the earth contains a vast amount of water only a small portion of this is appropriate for human uses. The balance between salt and fresh water is as follows; the oceans contain about 97.5% of the world's water, and only 2.5% is estimated to be fresh water. Freshwater resources are the most useful to human beings as they can be used for essential uses like drinking. Freshwater can be divided into three categories; brown water (groundwater), green water (such as in plants), and blue water (surface water, for example from rivers or rain). Almost 70% of the fresh water is located in ice sheets and glaciers and nearly 30% is groundwater. Making the percentage of freshwater that is directly available for human use relatively small (Hildering, 2004: p. 21).

In principle water is a renewable resource, but while using water a part of it can for example be contaminated, or evaporates. This part that thus can not be used again forms the actual water consumption. Focussing on the renewable part of water will be relevant for the future in relation with sustainability (van Ast, 2000: p. 10).

Figure 1: The division of water worldwide



Source: <http://www.indiacore.com/water.html>

1.2 WATER AS A RESEARCH TOPIC

The demand for this specific research originated from one of the objectives that is stated in the year strategy for 2006 of the Regional Directorate Asia and Oceania of the Dutch Ministry of Foreign Affairs (DAO). Which is as follows: “*contributing to a solution for the water issues in South Asia is a priority because of the effects it has on security and stability. The Regional Directorate wants to contribute by mapping the relevant Dutch expertise in integrated water resources management and offering this information to the countries concerned*”

(Ministry of Foreign Affairs 2006). The term integrated water resources management is used by the Ministry as it emphasizes the interdependence between different uses of water. Namely hydropower, water supply and sanitation, irrigation and drainage, and environment. And also because the integrated water resources management perspective aims at taking social, economic, environmental and technical dimensions into account in the management and development of water resources (World Bank 2006).

In concordance with this objective the research looked at water issues in the region of South Asia. Showing the importance of the relationship between water and society. And also the effect water management has on the relationships between countries. This was done through a broad approach looking from one country, India, at neighbouring countries that are connected through shared water flows.

Part of this research was substantiated by an internship at a Regional Directorate of the Dutch Ministry of Foreign Affairs in The Hague; Asia and Oceania Department South Asia Division (DAO-ZZ). The region of South Asia is made up of the following countries; Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. This internship especially provided in a large network and access to a lot of information.

The focus of the research is on disagreement that can occur due to mismanagement or lack of cooperation in the area of water and transboundary water resources specifically. At the moment, on a global scale this is a hot topic and the fear for future wars about water is increasing (McLoughlin 2004 and Global Policy Forum 2006). This fear also exists for the South Asian region specifically (Bajpae 2006).

This trend is further substantiated by the popularity of placing this topic on the policy agenda by several international institutions and several forums and congresses that are devoted to the theme. In 1996 there was even a “World Water Council” established as the international water policy think tank dedicated to strengthening the world water movement for an improved management of the world’s water resources and water services. Since 1997 the World Water Council has been organizing the “World Water Forum” a triennial returning event that serves as a stepping stone towards global collaboration on water problems. This event has contributed to increasing awareness of global water issues and the political mobilization of the water community and policy and decision makers from all regions of the world (The World Water Council 2006).

Part of one of the Millennium Development Goals set by the United Nations is specifically aimed at dealing with the water issue: *“Ensure environmental stability. Cutting by half the proportion of people without sustainable access to safe drinking water and sanitation by 2015”* (The United Nations 2005). Following on this goal the Dutch Ministry of Foreign Affairs has embraced water as one of the five main themes of their development policy. As combating poverty is the main goal of development cooperation, water is of great interest as it is essential to food supply, health, security and economic development (Water wat en hoe n.d.).

As shortly mentioned before, the starting point for this research has been India; the Indian water system and the main rivers that are not only part of India but also run through neighbouring countries and thus connect these with India. These rivers are the Ganges, Brahmaputra and the Indus. To get a better overview of the current situation the existing treaties concerning these rivers have been reviewed. They form the basis for comparing the relations between the countries involved with India. Thus an overview of the main issues related to these rivers and country relationships is given. As the demand for this specific research originated from the DAO year strategy, in which the ambition for contributing to security and stability in the South Asia region is stated, the relationship between India and the Dutch Government in the area of integrated water resources management is also studied. On the basis of both of these aspects an attempt has been made to distinguish opportunities for the Dutch Government to contribute to enhancing water management and cooperation.

Along with the direction this research takes stimulated by several global issues, the scientific goal that also forms an important stimulus must not be forgotten. This research was conducted as the concluding assignment for the master in International Public Management and Policy. This master is part of the science of Public Administration which characterizes itself by two main features; a) being multidisciplinary, b) being both descriptive as well as prescriptive (van Thiel 2005). This research clearly looks at a policy issue. The policy issue is strongly related to the division and allocation of ownership and property of goods opposite common goods that are strongly related to economical theories and international law. Conform the science of Public Administration it consists of a descriptive part of the particular situation and an analysis of the case. And in the end an attempt was done to make some recommendations on the specific topic.

1.3 RESEARCH OBJECTIVE AND QUESTIONS

The choices made during the orientational phase of research have led to a specific objective. The objective of this research is: *to analyze the transboundary water issues relating to India's main rivers on opportunities for support by the Dutch government.*

According to this objective the following main research question was formulated: *“Which opportunities can be identified for the Dutch government to contribute to water issues in South Asia?”*

This main research question fits the objective to analyze and give an overview of the situation in the region. And following on this look for possible opportunities for the Dutch government to contribute in this area. From the main research question three sub-questions have been derived to be able to come to a complete response by looking at all the different aspects that form part of the main research question.

The sub-questions are:

Sub-question 1:

How is the relationship between India and its neighbouring countries related to shared water resources?

Sub-question 2:

Which international cooperation concerning water in the region of South Asia already exists?

Sub-question 3:

Is there any direct or indirect cooperation between India and the Dutch Government in the area of integrated water resources management?

1.4 THEORETICAL APPROACH AND LITERATURE REVIEW

For this research, use has been made of insights that fit the context of the formulated research question.

Various theories on how to approach and solve problems are advocated by different authors. Many of these theories consider problems to take place in a network of interconnected actors. Koppenjan and Klijn, for example, state the following: “Problem solving takes place in complex games and networks in which stakeholders behave strategically, guided by diverging or conflicting perceptions and rules”. Therefore a sophisticated form of network analysis and network management is needed. The case that is been studied in this research can be seen as such a ‘problem’, although preference goes out to calling it a challenge (Koppenjan and Klijn, 2004: p. xi). Furthermore in their book they give recommendations on how to manage uncertainties in networks. By advocating the “game management” approach aiming at

creating and stimulating a situation wherein actors come together. And by this providing the actors with opportunities to: “acquire knowledge of each other’s perceptions and discover opportunities for intertwining their objectives and tuning their strategies to these...it attempts to realize the necessary concerted action so that actors who depend upon each other’s resources can achieve interesting outcomes for themselves, without producing unfavourable outcomes for others” (Koppenjan and Klijn, 2004: p. 186). Their theory shows much similarity with the theory advocated by Ostrom. Only next to looking at networks and surroundings that actors find themselves in, which she refers to as arenas, she also integrates the ‘common’ aspect in her theory. Therefore the choice was made to use the work of Ostrom (1990) as the primary source. There is a strong link between her theory and the main objective of this research that can be summarized as the challenge of governing and managing natural resource systems and the reasons why some institutions seem to work in some settings and others do not.

Her theory focuses on resolving the problem of shared resources, the commons, and the design of durable cooperative institutions that are organized and governed by the resource users themselves. In her work she looks at the problem of collectively managing shared resources. One of the resources she discusses is water.

1.5 METHODOLOGY

1.5.1 *Case Study*

As stated in the objective this research focuses on a specific country and relations with neighbouring countries with regard to water and thus forms a specific case: transboundary water management viewed from the Indian perspective. The high amount of information available on this topic led to the choice for a flexible design, generating qualitative data, anticipating that the design will emerge and develop during the period of data collection. This resulted in the choice for a case study approach. A case study provides the opportunity to really dive into a certain subject and to include current developments in the area (Robson, 2002: p 163-185). The Dutch embassies in the countries concerned were approached for current information in order to provide an up to date picture. And next to this other key figures in the Netherlands were also approached in a couple of ways that will be set out in the following paragraph.

1.5.2 *Gathering Empirical Data*

When conducting a case study according to Yin (1994) different methods can be applied to obtain your empirical data, namely: 1. informants 2. respondents 3. key figures 4. artefacts 5. documents 6. interviews 7. observations.

This research is largely based on the studying of existing documents by which written documents are meant. The possibility to extend this to include non-written documents such as films and television programmes, workshops, pictures, drawings and photographs existed.

In this research the documents used range from books to newspapers, magazines, policy notes and plans, DAO records from the specific countries, articles and minutes of meetings. These documents have been obtained from public sources like internet etc. But also from non-public sources like the archive of DAO and the internal network of the Ministry of Foreign Affairs. In addition several relevant organisations have been approached for supplementary information. And also several workshops, lectures and congresses have been attended to enhance the knowledge about the topic in general. The documents have been subjected to a content analysis which is a technique for making replicable and valid inferences from data to their context. Important to keep in mind with content analysis is that in general documents are written with a certain purpose (Robson, 2002: p 348-351).

Next to the using of existing documents another source for information was formed by key figures. As above mentioned the Dutch Embassies of the countries concerned where approached for supplementary information and to verify the current situation. This occurred mainly through email resulting in some relevant articles.

With some key figures from the Dutch Water Sector, relevant Ministries, knowledge institutes and concerned NGOs unstructured interviews where conducted (see annex 9.9). Unstructured interviews are characterized by their non-standardized, informal, open-ended and in depth nature. Where by the researcher has a general area of interest and concern but lets the conversation freely develop within this area (Robson, 2002: 270-282). A list of interviewees has been included in the annexes.

In addition a brainstorm meeting at the Ministry of Foreign Affairs was organized with almost the same key figures (see annex 9.8). This meeting was held at the end of the placement in order to enhance the validity of the research results. The principal findings and following recommendations where discussed and scrutinized by the key figures. The presentation that formed the basis for the meeting and the outcomes of the brainstorm have been included (see annex 9.6 and 9.7).

As mentioned before, a significant part of this research is substantiated by a placement of approximately six months at the Ministry of Foreign Affairs in The Hague. This form of participative observation provided the researcher with the opportunity to get a better view on how an international organisation in practice works. And in accordance with the research how a bilateral relationship between two countries, like India and the Netherlands, takes form in practice.

Besides choosing the adequate research methods particularly when conducting flexible design research the importance of triangulation is undisputed as the level of available information is very high. And also because research methods and techniques are susceptible to interpretations. With a case study in relation to validity of the research special attention should go out to four points. Firstly, the design validity, which can be safeguarded by using several different sources for information. Secondly, the internal validity, which emphasizes the importance of determining causal relationships. In this research this has been taken into consideration in the sub-questions by analyzing the treaties and the role of the Netherlands. The third point is the external validity, which emphasizes the importance of being able to generalize the outcomes of research to other cases. In this research this is not the case as it is focused on one region and among other things due to cultural characteristics generalizing is very difficult. Finally, reliability is very important (Robson, 2002: p 168-177).. In this research this has been taken into account by using reliable sources, using different research methods and involving key figures.

By taking these points into account during the research process, an attempt has been made to keep a balance between the several sources to come to balanced research outcomes. In accordance with the goal to give an objective view of the current situation and the different roles actors play.

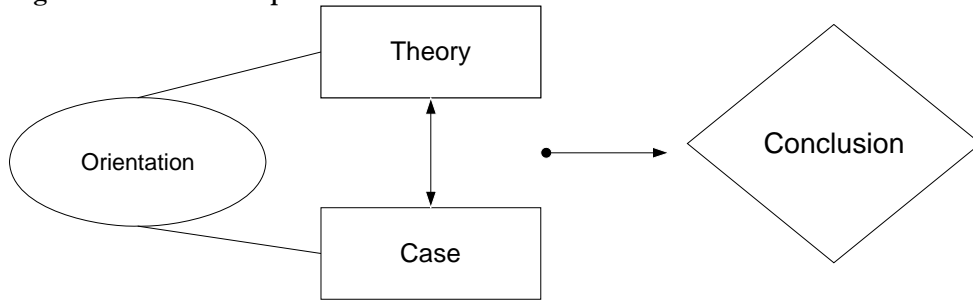
1.6 STRUCTURE OF THE RESEARCH

In this research an approach has been used that tries to apply a theory to practice. From the empirical data, recommendations based on theory have been made. The conclusion is based on qualitative data. Based on the empirical findings, the research has developed and reached its final form, this provided room for making adjustments to the research approach and the theoretical design while still collecting data.

Finally based on the findings an attempt has been done to identify opportunities for the Dutch Government on how they could approach India for cooperation. This fits with the goal of prescription that the research has.

The following figure portrays the research process.

Figure 2: The research process



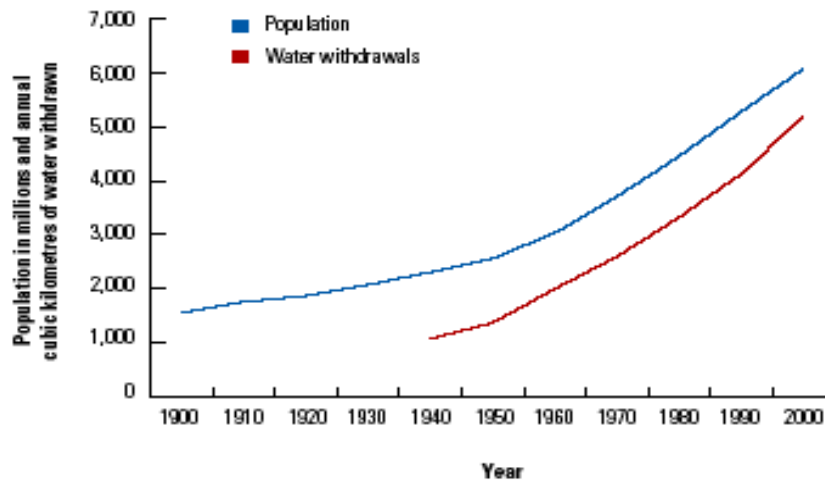
The research is built up as follows. In chapter two, entitled “Theoretical Framework”, the main theory that was studied for this research is set out more extensively. In chapter three, entitled “The Indian Perspective”, an overview is given on how water is organized in India and an attempt has been made to present their vision on water in general. In chapter four, entitled “Transboundary Waters in South Asia”, the relations between India and neighbouring countries in the case of water are described and potential seats of fire are discussed. In chapter five, entitled “Ostrom meets water issues in South Asia”, the theory and the case are integrated generating opportunities for the Dutch Government. In chapter six, entitled “The Relationship between India and the Dutch government”, the existing cooperation and the role the Netherlands currently plays in India is sketched. In chapter seven, entitled “Conclusion”, based on the answers to the sub-questions an answer to the central research question is given and in accordance recommendations are made for future cooperation between the Dutch government and India in the area of integrated water resources management. In the final paragraph reflection on the project in general takes place.

2 THEORETICAL FRAMEWORK

2.1 THE TRAGEDY OF THE COMMONS

Theories on the division of the commons, referring to the world's common-pool resources, have been advocated since Aristotle. Nowadays division problems mostly originate from the general problem of overpopulation and due to this the scarcity of natural resources. In the case of this specific research the topic is water, not only as a natural but also a shared resource. The following figure, from the World Water Development Report, gives a good view of the strong connection between the growth of the world population and the amount of water being used.

Figure 3: World population and freshwater use



(The United Nations 2003)

Garrett Hardin first posed the concept “tragedy of the commons” in 1968. He describes the tragedy by using an interesting metaphor, that of a meadow that is open to all. He examines the structure of this situation from the perspective of a rational herder. Each herder receives a direct benefit from his own animals and suffers delayed costs from the deterioration of the commons when his and others’ cattle overgraze. Each herder is motivated to add more and more animals because he receives the direct benefit of his own animals and bears only a share of the costs resulting from overgrazing. Herein lays the tragedy. Viewing the increasing scarcity of resources by looking at population he came to the following conclusion. “The only way we can preserve and nurture other and more precious freedoms is by relinquishing the freedom to breed and that very soon. Freedom is the recognition of necessity – and it is the role of education to reveal to all the necessity of abandoning the freedom to breed. Only so, can we put an end to this aspect of the tragedy of the commons” (Hardin 1968). This somewhat narrow conclusion still characterizes one of the main problems of economy nowadays, the allocation of scarce resources. In principle division/allocation of resources should take place in a fair and just way but often this occurs by way of power. More relevant for this research is the following conclusion he reaches based on his metaphor “Each man is locked into a system that compels him to increase his herd without limit – in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all” (Hardin 1968).

This metaphor can thus be seen as a prisoner’s dilemma wherein individual rationality leads to collective irrationality. Unfortunately the world’s resources are not unlimited.

Olson with his theory on the logic of collective action adds a relevant aspect to the whole. He states that whenever one person cannot be excluded from the benefits that others provide, each person is motivated not to contribute to the joint effort, but to free-ride on the efforts of others (Ostrom, 1990: p 1-7).

2.2 OSTROMS THEORY ON GOVERNING THE COMMONS

From the three most frequently used models to provide a foundation for recommending state or market solutions for commons, the tragedy of the commons, the prisoner's dilemma and the logic of collective action, Ostrom comes up with an alternative approach.

She distances herself from the idea invoked by several theorists of helpless individuals caught in an inexorable process of destroying their own resources. This view implies that citizens always need an external Leviathan, a dominating colossus, preferably central government, to coordinate, monitor and apply sanctions to those that misbehave in order to create a sustainable equilibrium. However this could only function successfully in a situation where the Leviathan disposes of complete information which in practice is rarely the case. Other scholars are of the opinion that to avoid the tragedy of the commons the common-property system should be converted into one of private property rights with a division of ownership. Ostrom argues that the capacity of individuals to extricate themselves from various types of dilemma situations varies from situation to situation.

With her approach Ostrom advocates that the possibility exists for self governed common-property arrangements in which the rules are devised and modified by the participants themselves and also are monitored and enforced by them. She aims at constructing a model for self-organizing and self-governing forms of collective action. And presumes that individuals try to solve problems as effectively as they can and that they have very similar limited capabilities to reason and figure out the structure of complex environments. She characterizes her model as an "organism", a type of human situation, that will be further referred to as a Common Pool Resources Situation (Ostrom, 1990: p. 21-26).

The objective of her theory is to find an answer to the question: how a group of principals who are in an interdependent situation can organize and govern themselves to obtain continuing joint benefits when all face temptations to free-ride, shirk, or otherwise act opportunistically.

2.2.1 The Common Pool Resources Situation (CPRS)

By a CPRS she refers to a natural or man-made resource system that is sufficiently large as to make it costly, but not impossible, to exclude potential beneficiaries from obtaining benefits from its use. A difference must be made between the resource system and the flow of resource units produced by the system. The dependence from the one on the other however must also be recognized. Resource systems are like stock variables that are capable under favourable conditions of producing a maximum quantity of a flow variable without harming the stock or the resource system itself. Resource units are what individuals appropriate or use from resource systems (Ostrom, 1990: p. 29-30).

Access to a Common Pool Resource (CPR) can be limited to a single individual or firm or to multiple individuals or teams of individuals who use the resource system at the same time. In this research where the CPR is water from the rivers of India there are multiple stakeholders involved. These withdraw resource units from the river system and thus can be denoted as appropriators. The research will focus on getting an overview of the main issues over this CPR and the relationships between the different appropriators. Also an attempt will be made to identify the CPRS, if one exists, from where the resource unit flows.

2.2.2 Providers and Producers in relation to appropriators

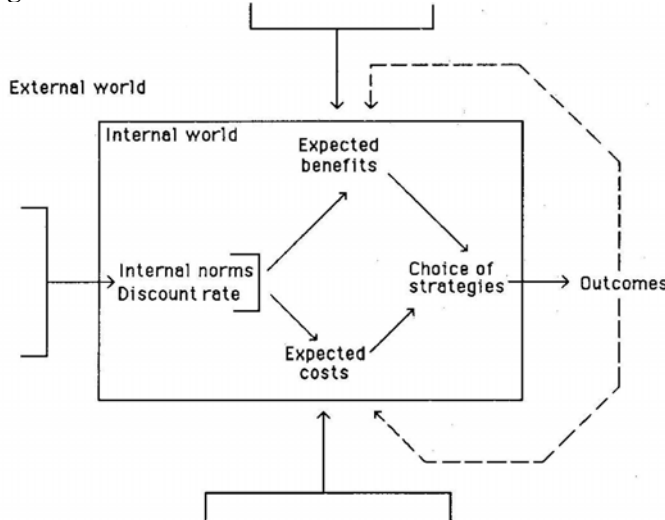
Two other terms that Ostrom introduces are “providers” and “producers”, the first referring to those who arrange for the provision of a CPR and the latter referring to anyone who actually constructs, repairs, or takes actions that ensure the long-term sustenance of the resource system itself. Often these are the same individuals but this is not necessarily the case. A difference must be made between the nature of resource units and resource systems. Resource units are not jointly used because resources are not shareable, but a resource system on the other hand is subject to joint use.

In the event that several appropriators rely on a given resource system, improvements to the system are simultaneously available to all appropriators. Excluding one appropriator of a resource system from improvements made to the system is costly and in some cases infeasible. A CPR is not necessarily a public or collective good but the same high costs arise from excluding potential beneficiaries from it as from exclusion of a public good. Because of this, both kinds of resources suffer from the ever present temptation to free-ride. The difference is however that free-riding on a CPR has much more serious consequences. Problems like ‘crowding’ and ‘overuse’ can become chronic with a CPR and are absent with pure public goods. The diminution of the resource unit leads to the possibility of approaching the limit of the number of resource units produced by the resource system. No appropriation of resource units can occur without a resource system (Ostrom, 1990: p. 30-33). With a CPR a process of trial-and-error mostly takes place as it is difficult to predict the way appropriators will behave. Behaviour will depend on appropriators view points and be highly influenced by the general norms existing in the specific community that they are part of. These shared norms of behaviour will affect the way alternatives are perceived and weighed. A denounced course of action will rarely occur unless the payoff is extremely large because of the high costs that can occur and effect the appropriator’s position in the community. The level of opportunism is regulated by these shared norms of behaviour but will never be reduced to zero and is thus an important issue that should be taken into account when trying to solve CPR problems. Therefore individuals should adopt contingent strategies instead of independent strategies when CPR problems are concerned (Ostrom, 1990: p. 33-36).

2.2.3 Individual choice and perception

Ostrom says that there are many contingent strategies that can be adopted based on an individual appropriator’s perception. She comes to the following model that represents her view on the internal world of individual choice.

Figure 4: The Internal World of individual choice



(Ostrom, 1990: p. 37)

In this model she distinguishes four internal variables that affect an individual's choice of strategies. When selecting strategies jointly, individuals produce outcomes in an external world conform their future expectations about the benefits and costs of actions. This model gives a general overview of a way an individual makes a choice but is of course also influenced by external factors. This can be for example the general norms existing in a community about certain situations or the opportunities an individual has. Also an individual can face complex situations where he weighs choices in a different way. The situation of mutual interdependency can also occur when a situation of co appropriators exist and they have to share resources, this forcing appropriators to take the choices of others into account when assessing personal choices (Ostrom, 1990: p. 36-38).

2.2.4 **The organizational challenge; from independent to interdependent action**

According to Ostrom the problem around CPR's is mostly one of organizing. Co appropriators being linked to each other are interdependent for as long as they share a common CPR. In order to make use of this CPR in an appropriate way without unnecessary causing nuisance to other appropriators and the CPR itself a level of organization is needed. If appropriators do not coordinate their strategies they can even end up destroying the CPR itself. The costs of converting from a situation in which individuals act independently to one in which they mutually coordinate their activities can be quite high. But on the other hand the joint return can also be much higher when cooperation or at least coordination between appropriators takes place. When establishing this atmosphere individuals might even be prepared to forgo immediate returns in order to gain larger joint benefits in the long term. Ostrom poses two theories that could possibly tackle this problem of transferring from independent action into interdependent action; the theory of the firm and the theory of the state. In both of these theories one individual undertakes the organizing of collective action, in the first an entrepreneur in the latter a ruler. The returns taking form in residual profits or losses accrue to this individual who also takes primary responsibility for supplying the needed changes in institutional rules to coordinate activities (Ostrom, 1990: p. 39-41).

Nevertheless in terms of Ostrom there are still three main problems occurring due to a collective-action problem:

- 1) The problem supplying a new set of institutions.
- 2) The problem of making credible commitments.
- 3) The problem of mutual monitoring.

Ad. 1 Most of the uncertainties occurring when coming up with a new set of institutions, rules, are related to the unpredictability of how actors will act upon them. Therefore equilibrium is needed wherein actors will reciprocate one and other. For this establishing trust and a sense of community are the appropriate mechanisms.

Ad. 2 The problem of commitment is strongly related to monitoring as the only 'solution' posed is external coercion imposed by an external enforcer. But the objective is to reach a situation where a group organizes itself and commits to each other without the necessity of an external enforcer who has the legitimacy to impose sanctions.

Ad. 3 On the whole the presumption exists that individuals will never monitor a set of rules themselves, even if they have devised those rules themselves. The free-rider problem tends to prevail.

These three problems posing the main challenges in the allocation of CPR's are very strongly linked together and thus a balance has to be found in order to obtain an endurable situation. Only if everyone, or almost everyone, follows the rules that are set and agreed upon, resource units will be allocated more predictably and efficiently,

conflict levels will be reduced and eventually the resource system will be sustained (Ostrom, 1990: p. 42-45).

The tone of these presumptions on CPR's is rather negative, viewing them as collective action problems with the structure of a prisoner's dilemma always underlying. Ostrom proposes to look at them differently. She comes up with an alternative set of presumptions:

- Appropriators in CPR situations face a variety of appropriation and provision problems whose structures vary from one setting to another, depending on values of underlying parameters.
- Appropriators must switch back and forth across arenas and levels of analysis.

Based on these presumptions she distinguishes two classes of CPR problems. The first are *appropriation problems*, these occur when the appropriators are concerned with the effects that various methods of allocating a fixed, or time-independent, quantity of resource units will have on the net return obtained by the appropriators. Appropriation problems are concerned with the allocation of the flow and are time-independent.

The second are *provision problems* and are related to the effects of various ways of assigning responsibility for building, restoring, or maintaining the resource system over time, as well as the well-being of the appropriators. Provision problems are concerned with the stock and are time-dependent.

As both of the problems occur with every CPR the solutions to both these problems must be congruent (Ostrom, 1990: p. 46-50).

2.2.5 The rules of the game

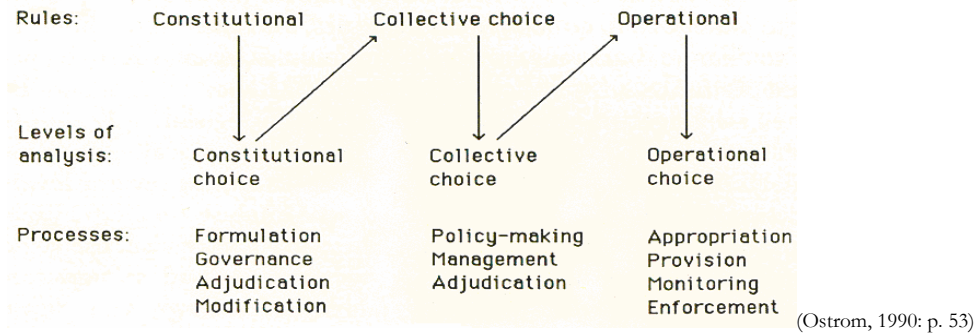
Ostrom emphasizes the complexity of the game as it takes place on multiple levels and the rules are not necessarily static. The appropriators of CPR's can switch back and forth between arenas and along the de jure rules a lot of de facto rules apply in practice. The actions of individuals in these kinds of situations affect the physical world directly. Resource units are withdrawn from a CPRS and inputs are transformed into outputs. Goods are exchanged and as a consequence appropriation and provision problems can take place.

Rules in such a situation are nested in each other, there is always another set of rules that defines the way the first set of rules can be changed. When looking at institutional change it is essential to take in to account the following:

- 1) Changes in the rules used to order action at one level occur within a currently "fixed" set of rules at a deeper level.
- 2) Changes in deeper-level rules usually are more difficult and more costly to accomplish, thus increasing the stability of mutual expectations among individuals interacting according to a set of rules.

To get a better idea of the effect that rules can have on actions taken and outcomes obtained when using CPR's three levels of rules are distinguished by Ostrom. Operational, collective and constitutional choice rules. The first directly affect the day-to-day decisions made by appropriators concerning when, where, and how to withdraw resource units, who should monitor the actions of others and how, what information must be exchanged or withheld, and what rewards or sanctions will be assigned to different combinations of actions and outcomes. The second category indirectly affect operational choices and are the rules used by appropriators, their officials, or external authorities in making policies and can be seen as the operational rules about how a CPR should be managed. The latter affect operational activities and results through their effects in determining the specific rules to be used in crafting the set of collective-choice rules that in turn affect the set of operational rules. The linkages between them are best represented by the following figure.

Figure 5: Linkages among rules and levels of analysis
An institutional approach to CPR self-governance



Changing rules is not easy and does not occur frequently as they provide stability of expectations and changing them increases the uncertainty that individuals will face. Even so, according to Ostrom, some rules are easier to change than others, especially the rules at a deeper level mostly stay fixed as they provide the main structure. Rules are drawn up in a particular situation that is mostly referred to with the term arena. An arena can be a formal setting but also a more informal setting (see figure 10). Several arenas of collective choice can be distinguished from a coffee shop to a court. Depending on which arena appropriators are part of they can influence certain rules. When analyzing CPR problems according to Ostrom keeping sight of the relations and linkages between the drawing up of rules and the arenas in which this occurs is essential. This will be done for this case in chapter five.

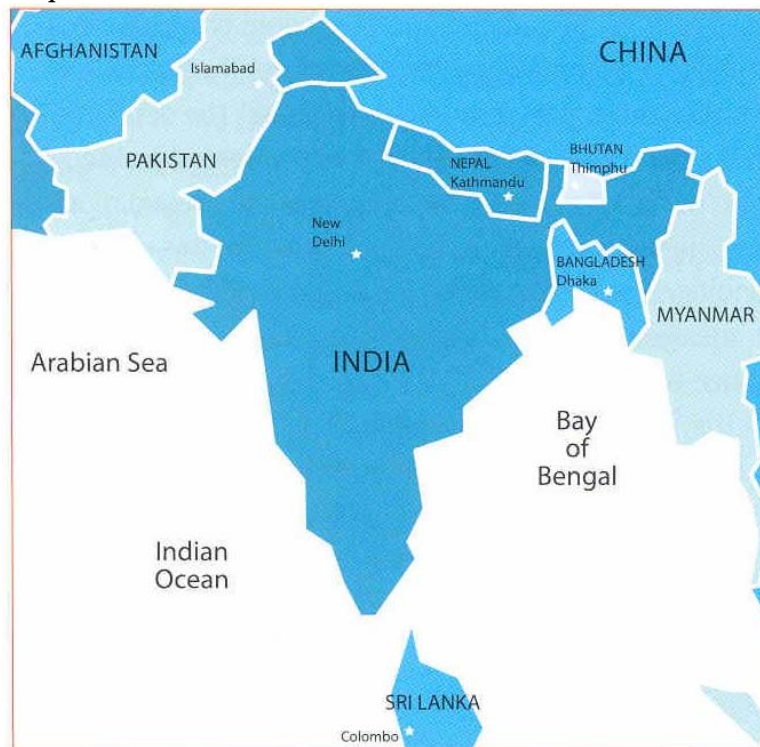
3 THE INDIAN PERSPECTIVE

3.1 INTRODUCTION

To be able to answer the first sub-question accurately an outline of the approach of India to water systems in general is also needed. This in relation to the position India takes in the region and the political relations existing with neighbouring countries that characterize the atmosphere in the region. After the case is described in the following chapters in chapter five the theory can be applied.

As mentioned in chapter one, the region of South Asia consists of the following countries; India, Pakistan, Afghanistan, Bangladesh, Sri Lanka, Nepal, Bhutan and Maldives. It is home to some 1400Mn (22% of the world population) people, projected to grow to 1800 Mn (25%) by 2015 and concentrated on 4.5 Mn. Sq. Km of land (Fourth World Water Forum, Regional Document, Asia-Pacific 2006).

Figure 6: Map of South Asia



(Fourth World Water Forum, Regional Document, Asia-Pacific 2006)

In this chapter to start with a short overview of the history of India and its polity will be given. Following on this, India's shared water resources will be briefly introduced and the existing water policy will be set out. Also some of the most common principles related to international shared water sources will be discussed. And thus some possible drivers of transboundary water conflicts will be set out.

3.2 INTRODUCTION TO INDIA

"India is the seventh largest country in the world and Asia's second largest nation with an area of 3,287,263 sq.km. It has been an independent country since 1947 when they acquired independence from Britain. For administrative purposes India is divided into 24 states and 7 union territories and thus is a federal state. It is bordered by Pakistan to the north-west, China, Nepal and Bhutan to the north, and Bangladesh and Myanmar also known as Burma to the east. The country is home to about 16%

of the world population. Physically the country is divided into four relatively well-defined regions: The Himalayan mountains; Gangetic river plains; Deccan plateau and the Islands of Lakshadweep, Andaman and Nicobar” (Government of India Directory n.d.).

Next to this geographical description the following can be said about the course of the main rivers.

“The topography of the main rivers is, briefly, as follows. The Indus and its tributaries begin in the Himalayas and their foothills, then flow west and southwest through Kashmir and (Indian and Pakistani) Punjab, and finally southwest to the Arabian Sea through Sindh in Pakistan. The Ganges has its headwaters in the Himalayas of Nepal, China and India. It flows south from the Himalayas, before turning east to dominate the geography of North India as it flows through the states of the Ganges plain (Uttar Pradesh, Bihar, West Bengal) and into Bangladesh, where it turns south as it joins the Brahmaputra before emptying into the Bay of Bengal. The Brahmaputra flows west to east through much of the length of the Tibet region of China (where it is called the Tsangpo), before falling 7,500 ft from the Himalayas to the plains of Assam, and turning through almost 180° to flow east to west, then it turns south into Bangladesh, where it joins the Ganges. (Crow, and Singh 2000)”.

In short the word that describes India the best is *diverse*. As the surface of the country is vast and the population is huge, not only the vegetation differs a lot from state to state but also the people, languages and cultural traditions. All religions are represented but the Hindu is the largest and even within has a variety of streams.

On the one hand you have the India of the future with modern media and a free and critical press and on the other hand you still have the caste system that is informally upheld. All of these factors make the breach between the rich and the poor even larger and more difficult to tackle (Soussan, 2000: p. 27-30).

Due to the dominant position India takes in terms of size, population, growth potential, economic and technological capacities, stable political system and the upstream position it has in the main rivers it could be said that India is the designated country to take the hegemonic position. Especially with regard to the transboundary water basins in the region of South Asia and other riparian states.

Goldstein (2004) describes hegemony as follows “the holding by one state of preponderance of power in the international system, so that it can single-handedly dominate the rules and arrangements by which international political and economic relations are conducted”. According to the theory of hegemonic stability the hegemon state could provide some order in the international system, reducing anarchy, and providing some functions similar to the central government. Hegemons are in the position to help resolve or at least keep conflict among middle powers or small states in check.

This is however not always the case. That is why the perception of less powerful states can be very different in practice. They can see hegemonic action more as that of an infringement of state sovereignty through which unjust or illegitimate order is being created. This can lead to mistrust, reservation and delay about bilateral negotiations out of the fear of being dominated by the hegemon state.

States in the international system nowadays rely on the principal of self-help but with a hegemon like India opposite of you this is difficult as you can be easily overruled and alliances are not easily formed as India insists on bilateral negotiations.

One of the most important norms in the international system is that of “state sovereignty” which comes down to the recognition of the right of each state government to do whatever it wants in its own territory. “States are separate, are autonomous, and answer to no higher authority. In principle, all states are equal in status if not in power. Sovereignty also means that states are not supposed to interfere in the internal affairs of other states” (Goldstein, 2004: p. 90-91).

In the coming chapter an overview of the positions of different states in the transboundary water issues in South Asia is given. The sovereignty of certain states concerning specific international water basins will be discussed and an attempt to unravel the exact power positions will be made. Thus it is set out if India can really be seen as the hegemon in this specific case.

3.3 WATER IN INDIA

In this paragraph an outline is given on how water is organised in India and how the policy on water is laid down. The legal and institutional framework of the water sector is complex and characterizes itself by a division of rights and responsibilities between the central government, state governments, local communities and individuals. Through the Indian Constitution, specific rights, responsibilities and powers are assigned to the central government and others to state governments. Even though the management of water resources is considered to be primarily a state responsibility, the central government provides the general policy and a regulatory framework. Nevertheless the responsibility for the implementation and upholding of those policies and regulations lies with the state governments who do this through state level institutions (Soussan, 2000: p. 31). The central government of India oversees the implementation of the national policy on resource development and exploitation and also manages inter-state and international rivers and river valleys. Next to this it provides technical advice to individual states if necessary in the following areas: development, flood control, navigation, coastal erosion, dam safety, navigation and hydropower (Development Alternatives 2001).

The main organ of the Indian central government that lays down policies and programmes for development and regulation of the country's water resources is The Ministry of Water Resources.

Under the Ministry in March 1983 the National Water Resources Council was set up as the ultimate policy making body for the development of water resources in India. The Council has the following functions (Ministry of Water Resources – Government of India 2006):

- To lay down the national water policy and to review it from time to time.
- To consider and review water development plans submitted to it (including alternative plans) by the National Water Development Agency, the River Basin Commissions, etc.
- To recommend acceptance of water plans with such modifications as may be considered appropriate and necessary.
- To give directions for carrying out such further studies as may be necessary for full consideration of the plans or components thereof.
- To advise on the modalities of resolving inter-state differences with regard to specific elements of water plans and such other issues that arise during planning or implementation of the projects.
- To advice practices and procedures, administrative arrangements and regulations for the fair distribution and utilisation of water resources by different beneficiaries keeping in view optimum development and the maximum benefits to the people.
- To make such other recommendations as would foster expeditious and environmentally sound and economical development of water resources in various regions.

In September 1987 the National Water Resources Council came together for a meeting. In this meeting the National Water Policy was adopted and the National Water Board was constituted. The National Water Board was constituted in order to monitor the implementation of the National Water Policy and when needed review it.

The main role and functions of the board are (Ministry of Water Resources – Government of India 2006):

1. To review the progress of the implementation of the National Water Policy and report to the Council.
2. To recommend the setting up of appropriate organisations and institutions for the integrated development of water resources as envisaged under the National Water Policy.
3. To assess the achievements of the different institutions/agencies working on the water related activities in the context of the National Water Policy and suggest appropriate measures for further action.
4. To make recommendations on the pattern of financing of the water development projects for speedy and systematic development of the water resources.
5. To suggest guidelines for the development and training of personnel required for the water sector.
6. To make suggestions for undertaking appropriate programmes in pursuance of the directives in the National Water Policy.
7. To suggest investment priorities in the water sector for achieving the objectives of the National Water Policy.
8. To consider any matter/problem associated with the development and management of nation's water resources and as may be brought up before the Board. Make suitable recommendations to the Ministry of Water Resources and the National Water Resources Council.

The National Water Policy can be seen as the primary document wherein the position of the Government of India in relation to water resources is stated and the practical approach is set out. Since 1987 a number of problems related to the policy occurred which evoked a revision of the entire National Water Policy in 1998, finally in 2002 the updated version was accepted and implemented (see annex 9.1).

In the first clause of the National Water Policy the following is stressed, "Water is a prime natural resource, a basic human need and a precious *national* asset. Planning, development and management of water resources need to be governed by *national perspectives*". This seems like a pretty remarkable standpoint as India has so many water sources that are shared and that can be seen as a common good. Only with Bangladesh, India already shares 54 common rivers. Throughout the document the same attitude is maintained putting a strong emphasis on the national approach to water. And if the necessity for cooperation should arise a strong preference for the upholding of bilateral relationships is advocated in the document.

In relation to the 'participatory approach', that India advocates, the following clauses are part of the policy (Government of India, 2002): "Management of the water resources for diverse uses should incorporate a participatory approach; by involving not only the various governmental agencies but also the users and other stakeholders, in an effective and decisive manner, in various aspects of planning, design, development and management of the water resources scheme. Necessary legal and institutional changes should be made at various levels for the purpose, duly ensuring appropriate role for women. Water Users' Associations and the local bodies such as municipalities and gram panchayats (states) should particularly be involved in the operation, maintenance and management on water infrastructures/facilities at appropriate levels progressively, with a view to eventually transfer the management of such facilities to the user groups/local bodies." In relation to this, private sector involvement is also part of the strategy, this is stated as follows: "Private sector participation should be encouraged in planning, development and management of water resources projects for diverse uses, wherever feasible. Private sector participation may help in introducing innovative ideas, generating financial resources and introducing corporate management and improving service efficiency and accountability to users. Depending upon the specific situations, various combinations

of private sector participation, in building, owning, operating, leasing and transferring of water resources facilities, may be considered.”

The main challenges in the area of water in India as posed in the policy document are the growing population and with this the growing demand for nourishment, leading to a large demand for water for irrigation purposes. This is underlined by figure 3 drawn up by the UN showing the causality between a growing world population and a growing amount of water withdrawals in the last century.

Next to this, the demand placed on water for the generation of hydro and thermal power and other industrial uses is large and still increasing. The prospect for the years to come is that these needs will only keep increasing, placing even more pressure on the existing water resources in India. In line with this expectation the policy also states that more research should be done on non-conventional methods for utilisation of water like for example inter-basin water transfers from one river to another.

Besides this the document also emphasizes the need for an efficient approach to water complemented by common policies and strategies on a national level, taking the needs of different states in to account, and the need for the raising of public awareness on the importance of the conservation of water. Institutional recommendations are made, like for example the establishment of river basin organisations for the planned development and management of river basins as a whole or sub-basins always placing the power with the basin states themselves (Government of India, 2002).

Interesting to this research, there is a paragraph on ‘water sharing’, which states the following: “The water sharing and/or distribution amongst the states should be guided by a *national* perspective with due regard to water resources availability and needs within the river basin. Necessary guidelines, including for water short states even outside the basin, need to be evolved for facilitating future agreements amongst the basin states” (Government of India, 2002).

Moreover the following allocation priorities are discerned in the policy in accordance with the principal uses that water fulfils in India: drinking water, irrigation, hydro-power, ecology, agro-industries and non-agricultural industries, navigation and other uses.

Conform with this a division of responsibilities is made over the various government agencies related to water.

Table A: Division of responsibilities on water in India

		Responsible for:
1.	Ministry of Water Resources	Water in India and overseeing the planning and development of the resource from policy formulation to infrastructure support.
2.	Ministry of Agriculture	The development of water resources through watershed development and popularisation of drip and sprinkler systems for irrigation.
3.	Ministry of Power	The development of hydro-power for generating electricity.
4.	Ministry of Environment and Forests	Supervision of the quality of water.
5.	Ministry of Rural Development	Watershed and ground water development and the provision of drinking water in rural areas.
6.	Ministry of Industry	The planning of development of water resources for industrial uses.
7.	Ministry of Urban Development	Urban drinking water provision and sanitation.
8.	Central Pollution Control	Monitoring the quality of water.

	Board	
9.	Indian Council of Agriculture Research	The development of water management techniques.

(Development Alternatives 2001 and Ministry of Water Resources – Government of India 2006)

Furthermore the main acts under which India's water is governed are:

- 1) The Environmental Protection Act (1986)
- 2) The River Boards Act (1956)
- 3) The Inter-State Water Disputes Act (1956)

Ad 1. This Act on environmental protection is based on decisions made at the United Nations Conference on the Human Environment in Stockholm, June 1972, and was ratified in 1986. Originating from this conference it does not lay its main focus on water resource issues but is generally concerned with "protection and improvement of the human environment". The main impact it has on water related issues is focused on protecting water from environmental pollution.

Ad 2. In 1956 this Act was ratified whereby the regulation and development of inter-state river valleys was consigned to various River Boards. These River Boards were designed to advise the central government on development opportunities, co-ordinate activities and resolve disputes.

Ad 3. As a result of the federal composition of India almost all the rivers in India are shared by neighbouring states. To be able to manage possible conflicts between states, within India, about their shared water sources this act was laid down in 1956. Through the Act the government obtains the power to constitute Tribunals to act as a mediator in case of a conflict. These Tribunals arbitrate when a dispute about distribution or control of the rivers or river valleys should occur (Government of India 2002 and Development Alternatives 2001).

Strikingly nowhere in the National Water Policy is the issue of transboundary water or watersharing with other countries mentioned. When referring to the sharing of water or possible conflicts this is all done from an interstate perspective not considering neighbouring countries at all. It could be argued that as this is the National Water Policy this is also not to be expected. But when looking at the institutions and legislation that does exist none of them are aimed at the transboundary water issue. An international equivalent of the National Water Resources Council for example could prove valuable to the atmosphere in the region and thus to India.

For a country so interconnected with neighbouring countries through its shared river basins this can be seen as a shortcoming. Realizing the value of water as a basic human need which deserves attention is very important and thus occurs in the National Water Policy. Realizing the mutual interdependencies in the South Asia region in relation to shared water resources however should be the next step.

3.4 INTERNAL CONFLICT MECHANISM

One of the objectives of this research is to get an overview of existing transboundary water issues in the South Asia region. Coming from the main goal, to identify opportunities for the Dutch Government to contribute to reduction or maybe even to the resolution of such conflicts and thus to better management of the shared water sources. As India is a federal state, internally there are also transboundary waters. This is especially an interesting point because through the Indian water policy almost all legislative and decision making power is delegated to the individual states.

Therefore in 1956 the government ratified the act shortly mentioned in the preceding paragraph, the 'Inter-state Water Disputes Act'. In order to regulate possible conflicts between the Indian states over shared water resources. In this paragraph a short overview will be given of the main points resulting from this act. As these reflect the approach India has chosen to take to internal problems over shared water resources.

Firstly there is clearly stated what a water dispute is according to the Indian government; “any dispute or difference between two or more State Governments with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley; or the interpretation of the terms of any agreement relating to the use, distribution or control of such waters or the implementation of such agreement” (The Inter-State Water Disputes Act, 1956).

In case such a water dispute should occur, the act provides the central government with the authority to act as arbitrator through a Tribunal that central government sets up. This may occur when any State Government perceives a water dispute is occurring or will occur due to actions taken by another State.

After ample research the Tribunal provides the Central government with a report and their verdict on the issue. If either Central government or any of the concerning State Governments wishes further explanation they can ask for this within three months if not the decision is final and binding to all the parties. The Tribunal as such disposes of the same powers that are vested in a civil court and neither the Supreme Court nor any other court can exercise jurisdiction in respect of any water dispute referred to a Tribunal under this act (The Inter-State Water Disputes Act, 1956). Here the delegation of power from the Central Government takes place, transferring a lot of power to the Tribunal. Based on this act several tribunals have already been formed to take action when national disputes concerning water between states occurred.

3.5 INDIA’S SHARED WATER SOURCES

Throughout the world, water sources are unequally distributed making several countries dependent on their neighbours for their supply of water. According to Tiwary (2000), the term transboundary water refers to “a water course or a water body of which not all parts are situated in one state or nation but are spread over more than one”. This sums up to 261 major transboundary river basins, covering 45 percent of the earth surface, excluding Antarctica. Resulting in 145 nations having their territory falling within international river basins and around 33 countries having more than 95 percent of their total land in such basins. Next to this as the world is so quickly changing and developing nowadays water development is not only under pressure by population growth but also technological advances, like hydroelectric generation and modernized year-round agriculture.

For the three main rivers in South Asia the following overview can be given showing the relations the rivers create between several countries. This overview however does not include all the tributaries that flow from these main rivers that create an even more complex interconnectedness between several countries.

Table B: The main rivers of South Asia

The Main Rivers of South Asia	<i>Brahmaputra</i>	<i>Ganges</i>	<i>Indus</i>
Length	2,900 km	2,510 km	3,180 km
Source	Kailas range, Himalayas.	Gangotri glacier, Himalayas.	Kailas range, Himalayas.
Mouth	Merges with the Ganges, then into the Bay of Bengal.	Merges with the Brahmaputra, when into the Bay of Bengal.	Arabian Sea.
Countries	Bangladesh, China, India.	India, Bangladesh.	China, India, Pakistan.
Population around the basin	300 million (including the Ganges)	300 million (including the Brahmaputra)	150 million

(Hazarika 2001)

Thus this overview should merely be seen as an indicator of the complexity of the relationships between the different countries related to the shared water sources in the South Asia region.

Figure 7: Map of South Asia and its main rivers



The Mahakali River that is also further studied, as a interstate treaty exists about it, can not be seen in this picture but forms the border between Nepal and India. This is the case as it is part of the Ganges River System and is thus not one of the main rivers but part of it.

International legislation on shared water sources is still developing. Even though transboundary water management has been an extensively discussed topic worldwide for decades.

Historically the main legal principles are (van Ast 2000);

- a) *Riparian rights*; the owner of the bank can use the water that flows past it or over it.
- b) *Prior rights*; ‘first in time, first in right’, meaning that the first one to appropriate the water can use it in any way he sees fit.
- c) *Public allocation*; the State is the owner of waters because of the position it takes as common good. The State can however delegate rights to citizens.

For the time being there is not yet a definite agreed-upon/accepted international legal framework to govern the use and development of international rivers by riparian countries. Nevertheless there have been several agreements made and treaties signed on how to approach transboundary waters and as a result several viewpoints on water have arisen. These developing and non-binding international legal principles hold the potential of forming a basis for international water law to develop from. These viewpoints are closely intertwined with hydrography, from where a river or aquifer originates and how much of that territory falls within a certain State, or on chronology, whom has been using the water the longest (Wolf 1999).

Up till now water disputes have mostly originated from diverging viewpoints of riparians on the appropriation and use of shared water sources and a lack of specific agreements and monitoring.

An overview of the most common viewpoints/principles related to international shared water sources can be given as follows;

- 1) *Absolute territorial sovereignty*; is based on the idea that states can undertake any action they see fit with respect to the natural resources within their territory. They have a full right to use, control and divert water within their own territory.
- 2) *Territorial or the absolute riverain integrity*; is based on the idea that states are entitled to the natural flow of a river system crossing its borders and thus entering their territory.
- 3) *Restricted or limited territorial sovereignty*; establishes that states can use their territory and thus their water sources in any way they want, but they should not cause significant harm to other riparian states.

Obviously the first viewpoint is commonly held by the upstream riparians and the second one by the downstream riparians. They go pretty far in their statement and as a result a combination of both came into being represented here by the third viewpoint (Jaspers 2002, Van Ast 2000, Wolf 1999 and Tiwary 2006).

It is not surprising that these differences of opinion occur from country to country, from riparian to riparian and from river to river as they all differ from each other. Wolf (1999) stresses very accurately the challenge that this poses for the development and especially the usefulness of international water law; “The uniqueness of each basin and its riparian States suggest that any universal set of principles must, by necessity, be fairly general. The problems arise when attempts are made to apply this reasonable but vague language to specific water conflicts.”

In the domain of international water several, interesting documents have been drawn up. The most relevant ones for this research are the *Convention on the Protection and Use of Transboundary Watercourses and International Lakes* and the *Convention on the Law of the Non-navigational Uses of International Water courses* (The United Nations Economic Commission for Europe 2006, The International Water Law Project 2006).

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes more commonly known as the Helsinki rules forms a progressive compilation of rules for the management of transboundary fresh surface water and is strongly aimed at cooperation. Central to this convention is the basin approach. The Convention on the law of the Non-navigational Uses of International Water Courses goal is to serve as a guideline for future watercourse agreement. Central to this convention is the watercourse approach, which resulted from a compromise between countries supporting the basin approach and countries that only wanted the main stream to be subjected to international agreements. Following from these conventions two principles related to shared water sources can be recognised as general principles of international law (van Ast 2000). The ‘Principle of Sic Utere Tuo Ut Alienum Non Laedas’, that obligates states not to use, or allow the use of their territory for acts contrary to the rights of other states and thus ‘not to cause significant harm’ and the principle of “equitable utilisation”. The guidelines set forth in these conventions although widely accepted by most States are however not backed up by any practical enforcement mechanism and there are also States that did not as yet sign or ratify them. This makes it difficult to hold States accountable to these principles, as they do not provide any tools or mechanism to do so.

3.6 DRIVERS OF WATERCONFLICTS

When looking at water, different uses can be identified. Mostly these are related to people’s needs and range from domestic uses, food production, drinking water and sanitation to water for tourism or recreational purposes. Of course water also plays an important role in the industrial sector and can be related to agriculture, cattle breeding, fishery, fish breeding but also to the processing of raw materials and the generation of electrical power. Hydropower is one of the main sources for the

world's electricity mostly through the construction of dams. Another important use for water is transport, navigation contributes on a large scale to the world economy. Opposite of the uses that water generates, several abuses can also be identified. The most relevant ones being pollution and large amounts of consumption (Hildering 2004). According to the main conventions on international water mentioned in the previous paragraph when a conflict between uses should occur priority should be given to human needs

The problems that occur can not only be attributed to the uses of water but are also strongly related to the specific nature of water: 1) water is divisible and amenable to sharing, 2) water is a common pool resource meaning that one unit of water used by one is a unit denied to others, 3) water has multiple uses and users and involves resultant trade-offs, 4) excludability is an inherent problem and very often exclusion costs involved are very high, 5) water involves the issue of graded scales and boundaries and need for evolving a corresponding understanding around them, 6) the way water is planned, used and managed causes externalities – both positive and negative, and many of them are unidirectional and asymmetric (Gujja, Joy, Paranjape, Goud and Vispute 2006).

Overall the main drivers for conflicts over water can be said to relate to the riparian structure and the relationships between riparians and the diverging interests between up- and downstream, the sovereignty notions, the water scarcity, the water quality and the regional power hierarchy.

In addition an overview of downstream effects of upstream water uses can be given as follows. Which is interesting as India is upstream for almost all cases and the other countries take a downstream position.

Table C: Downstream Effects of upstream water use

	<i>Downstream effect</i>	<i>Nature of Externality</i>
<i>Water use</i>		
Hydropower		
Base load	Helps regulate river	Positive
Peak load	Creates additional peaks	Negative
Irrigation diversions	Removes water from system	Negative
Flood storage	Provides downstream flood protection	Positive
Municipal and industrial diversions	Removes water from system	Negative
Wastewater treatment	Adds pollution to river	Negative
Navigation	Keeps water in river	Positive
Recreation storage	Keeps water out of system	Negative
Ecological maintenance	Keeps low flows in river	Positive
Groundwater development	Reduces groundwater availability	Negative
	Reduces stream flows	Negative
<i>Indirect use</i>		
Agriculture	Adds sediment and agricultural chemicals	Negative
Forestry	Adds sediment and chemicals, increases runoff	Negative
Animal husbandry	Adds sediment and nutrients	Negative
Filling of wetlands	Reduces ecological carrying capacity, increases floods	Negative
Urban development	Induces flooding, adds pollutants	Negative
Mineral deposits	Adds chemicals to surface and groundwater	Negative

(Le Moigne 1992)

In the following chapter an overview of problems and possible conflicts over shared water sources in the South Asia region will be given. Here for the relationships between India and three neighbouring countries will be set out. The specific choice for these three countries was made conform the main rivers on which transboundary treaties exist in the region. And thus there will be looked at the relationships from the perspective of the shared water sources. This resulted in the following selection; the relationship between India and Pakistan, India and Nepal and India and Bangladesh.

4 **TRANSBOUNDARY WATERS IN SOUTH ASIA**

4.1 **INTRODUCTION**

This chapter consists of two parts. In the first part the following sub-question will be answered: How is the relationship between India and its neighbouring countries related to shared water resources?

A more in depth look will be taken at the specific conflicts that can occur over water. As described in the preceding chapter water conflicts can take place on several levels as water can take several forms and can fulfil several uses. Conflicts could take place on the level of political parties, states, regions and sub regions within states, districts, castes and groups and individual farmers etc. Also in India the nature of water conflicts is very diverse due to its different uses. Therefore a specific choice is made to focus on the transboundary conflicts occurring in the region between India and three specific countries and not the ones occurring on an internal and interstate level. To be able to eventually identify opportunities for the future on possible ways of cooperation between India and the Dutch Government in the area of integrated water resources management an assessment of the current situation in this area is needed. The focus of this assessment therefore lies on international cooperation and transboundary water treaties as the choice has been made to analyze this case from an international point of view. Thus in the second part the following subquestion will be answered: Which international cooperation concerning water in the region of South Asia already exists?

4.2 **THE RELATIONSHIP BETWEEN INDIA AND PAKISTAN**

The relationship between India and Pakistan is rooted deeply in the historical development of South Asia. Pakistan and India once being united in the British Empire. By the partition not only the country was split up but also the Indus basin.

“The Indus river begins in the Himalayan mountains of Kashmir on the Indian side, flows through the arid states of Punjab and Sindh, before converging in Pakistan and joining the Arabian Sea south of Karachi. The source rivers of the Indus basin remained in India, leaving Pakistan concerned by the prospect of Indian control over the main supply of water for its farmlands. The newly formed states could not agree on how to share and manage the cohesive network of irrigation, which was impossible to partition.” (Hazarika 2001)

Even though this research is focussed on transboundary water conflicts there is one determining conflict existing in the South Asian region that can not be neglected. This is the territorial dispute about the Jammu and Kashmir region taking place between Pakistan, India and China. This dispute dates from 1947, the year that the British rule came to an end and two new states were created; India and Pakistan. The princely states of India all had the option to choose if they wanted to join the secular India or the Islamic Pakistan. Jammu and Kashmir that had a predominantly Muslim population was one of these princely states and also had this option. This state was however already ruled by a King that preferred to stay independent and thus played each new nation against the other without choosing. Shortly after, the King was overthrown but ever since the territory remains disputed.

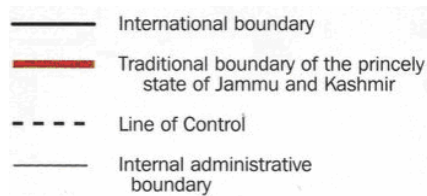
The conflict about the division of the Indus basin forms an important part of this conflict. Because Kashmir forms the origin point for many rivers and tributaries of the Indus basin. The way they were eventually divided put extra tension on their relationship as India through this division obtained a strategic advantage (Wikipedia 2006).

Due to the nuclear capabilities of both India and Pakistan this can be seen as one of the most dangerous territorial disputes worldwide. Several wars have already been fought over the region and up till now the dispute remains in an impasse. In the figure below the disputed territory of Jammu and Kashmir is shown. The green part is under Pakistani control, the dark brown part is under Indian control and the Aksai Chin part is under Chinese occupation. Also the course of the shared rivers that form part of the discussion can be seen.

Figure 8: The disputed area of Jammu and Kashmir



(Wikipedia 2006)



4.2.1 The Indus Waters Treaty 1960

4.2.1.1 The build up towards the Indus Waters Treaty

The dispute between India and Pakistan that led to the oldest and most known treaty, concerning transboundary water in South Asia, dates back to the beginning of the 19th century. It concerns the Indus Basin that comprises three Eastern rivers (the Sutlej, the Beas and the Ravi) and three Western rivers (the Indus, the Jhelum and the Chenab). And is mostly about utilization of irrigation water from existing facilities.

As mentioned in the preceding paragraph, in 1947 the Indian sub-continent was partitioned and from then on Pakistan and India formed independent countries cutting through the Indus Basin. This changed the status of the water conflicts from intranational to transboundary.

The source rivers of the Indus basin remained in India and put Pakistan in a lower riparian position. As such Pakistan was concerned by the prospect of Indian control over the main supply of water for its farmlands. The region disposed of a considerably well developed irrigation system but due to the partition and the large

scale movement of people this triggered, the system came under pressure (Iyer, 1999). In 1948 India did actually divert a part of the waters away from Pakistan and claimed sovereign rights over the waters passing through its territory. Pakistan on the other hand claimed prior appropriation rights. This made the need for an agreement on how to share and manage the common water sources high, as the irrigation network was cohesive and impossible to partition. The dispute threatened war and Pakistan proposed to settle the conflict through arbitration but India refused. At this moment The World Bank stepped in and offered to help resolve the dispute. Both the countries agreed to have The World Bank intervene as a broker in the realization of an agreement and the negotiations started in 1952. At first the World Bank pressed for a cooperative agreement where the Indus Basin would still be managed as a single water resource but after a couple of years they changed their approach. The World Bank proposed to divide the Indus and its tributaries because in this case state sovereignty would not be an issue anymore. India was offered the eastern rivers and Pakistan the western rivers. Along with this, some constructions had to be made to divert water for irrigation to Pakistan of which the costs were charged to India. India did not agree with the calculated costs and The World Bank had to lobby for some external financing. Once this was acquired the dispute was finally resolved and the Indus Waters Treaty could be signed in September 1960 (Barrett 1994).

4.2.2 The controversy of big dams

Most of the conflicts or disagreements that exist between India and Pakistan are related to the building of big dams. The building of dams has consequences for the entire region, its people and the environment. Either of the countries is not allowed to obstruct the flow of water as stated in the Indus Waters Treaty. Also according to the Indus Waters Treaty they should take each other into account when planning and eventually constructing on one of the rivers. Exchange of information was one of the main provisions in the treaty but in practice this does not seem to be totally enforced. The most significant conflict at this point in time is about the Baghlihar dam and will be set out below. In this conflict India is supposed to be the offender of the treaty. Also shortly set out below is the conflict over the Mangla dam. In this conflict Pakistan is supposed to be the offender of the treaty.

There are several other examples of conflicts and discussions related to the provisions in the treaty. For example the Salal Hydroelectric Project where Pakistan objected to the sluice gates. Agreement on this project was reached between both governments after India eliminated the construction of the sluice gates from the project. Also a discussion exists about the height of the dam of the Dul Hasti Project as Pakistan raised objections (Sharma S.P. 2006). The work on the Wullur Barrage-Tulbul Navigation Project and the Kishanganga dam was called to a halt by Pakistan. Pakistan claims them to violate the Indus Waters Treaty as they would obstruct the water flow to Pakistan. Talks on both of these projects have been taking place since 1988 through the composite dialogue but they still disagree (Deccan Herald 2005). Intervention by a neutral expert might be the next step (Chadda 2005).

Next to the conflicts that already exist between Pakistan and India over the border demarcation in the provinces of Jammu and Kashmir these conflicts over water put an extra tension on the relationship between both countries in general. Still India has a lot of other hydro power projects envisioned that could lead to more discussion under the provisions of the treaty (Husain 2005).

4.2.2.1 Baglibar Dam

In 1992 a new project, The Baglihar Hydropower Project, was conceived by India, and by 1999 the construction began. This project is on the Chenab river, one of the rivers that was allocated to Pakistan through the Indus Waters Treaty. According to the Indus Waters Treaty India is obliged to inform Pakistan about the exact details of

any such plan located on any of the Pakistani rivers. And thereupon wait for approval by Pakistan as it has only limited permission to develop such a project. The Indus Waters Treaty specifically states that when using the rivers allocated to Pakistan India should not obstruct the flow of the waters into Pakistan. The Baglihar Hydropower structure entails gated spillways thus creating the possibility for storage and the creation of a reservoir. This is the main argument that Pakistan has against the project. Also there is being speculated by Pakistan on the possibility of India using this gated structure in a war like situation to either flood Pakistan or hold back the water supply. On the opposite India claims that the project does not involve water storage, but that it is a run-of-the river project, and will provide benefits for the local people. An attempt has been made to negotiate about the project but the Permanent Indus Commission did not succeed (Hali 2004).

Thus Pakistan approached the World Bank in 2005 to appoint a neutral expert in concordance with one of the arbitration provisions in the treaty. The Swiss water expert Raymond Lafitte was appointed and initially expected to give his verdict in November 2006 this was however postponed until February 2007.

This verdict will be under the Indus Waters Treaty and thus be final and binding to both parties. India preferred to resolve the disagreement in a bilateral dialogue and it is difficult to say if they will take the verdict of a neutral expert into account. Next to this Pakistani demanded that the work on the project would be halted until a verdict has been reached. But Lafitte did not agree with this, as this would cost too much money. This is the first time in 45 years of history that the arbitration clause of the Indus Waters Treaty is executed (Rediff 2005).

4.2.2.2 *Mangla Dam*

In accordance to the Ceasefire Agreement of 1948 Pakistan committed to the following concerning Jammu and Kashmir;

- 1) Cessation of hostilities across the cease-fire line.
- 2) Withdrawal of troops from areas occupied by Pakistan.
- 3) Withdrawal of tribesmen and Pakistan nationals from Jammu and Kashmir.

(Sharma 2006)

This area is especially sensitive to conflicts by the disagreement over territorial sovereignty and next to this because the Indus River runs through it and by this adds the water dimension as a possible source for conflict.

Instead of taking this agreement into concern Pakistan started the construction on the Mangla dam over the river Jhelum. Although this river was allocated to Pakistan through the Indus Waters Treaty the building of a dam was not allowed to both parties. Also considering the Ceasefire Agreement and the dam being built in the part of the Indian state Kashmir that is being occupied by Pakistan this did not positively influence the bilateral relations between the two countries (Sharma 2006).

4.3 **THE RELATIONSHIP BETWEEN INDIA AND NEPAL**

In 1990 Nepal became a constitutional monarchy after a rich history with several absolute rulers. Up till now there is a lot of instability mostly related to the insurrection of the Maoists. They started a guerrilla war resulting in a permanent civil war. Their goal is to overthrow all institutions and establish a republic. This led to the point where the king took back all his power in order to restore peace. In 2006 after several upheavals the king declared Nepal a secular state and power was given back to the people. A revision of the constitution is still expected and the situation is still tense. However the Maoists and the government are involved in a dialogue about the future. This is partly supported by the United Nations who is keeping an eye on the cease fire agreement (Wikipedia 2006).

As for their relationship with India, this has always been good as they share strong cultural, religious, linguistic and economic ties. This was affirmed by the signing of

the India-Nepal Treaty of Peace and Friendship in the year 1950. Furthermore India supports a lot of developmental projects in Nepal (The Indian Embassy 2006).

Nepal is the buffer state between China and India, which is a tricky position as there are some tensions in the Sino-Indian relationship (Answers.com 2006).

In relation to the transboundary water sources India holds the downstream position and Nepal the upstream position. This distinguishes Nepal from Pakistan and Bangladesh.

4.3.1 The Mahakali Treaty 1996

4.3.1.1 The build up towards the Mahakali Treaty

The drawing up of the Mahakali Treaty, formally known as ‘Treaty between his Majesty’s Government of Nepal and the Government of India Concerning the Integrated Development of the Mahakali River including Sarada Barrage, Tankpur Barrage and Pancheshwar Project’, has a long prelude related to the countries mutual interest in the generation of power through hydrological projects using the rich potential of northern tributaries of the Ganges flowing from Nepal to India.

The plans for the building of a barrage on the Mahakali river, known in India as Sarda, date from the time that India was still part of the British Empire. In 1920 the countries even drew up a treaty ‘The Sarda Treaty’ which was terribly criticized as it was said to provide an unfair division of the water between India and Nepal. Besides this issue in 1950s the region, north Ganga plains, was heavily tormented by floods so India took up several projects on flood control and irrigation. To enhance the value of these initiatives India and Nepal entered in two major river treaties; the Kosi agreement (1954) and the Gandak agreement (1959). In 1971 in accordance with the Sarda Treaty Nepal began the Mahakali Irrigation Project to exert their share of the waters backed up by a loan from the World Bank. Nepal went through quite some developments in the following decades not only in the water sector but also in the government regime. The ministry of water resources developed into the largest infrastructure ministry in the country. In the area of water resources however there was not much tendency to the taking up of projects that could be beneficial to both India and Nepal (Government of Nepal 2006 and Gyawali and Dixit 2001). One of the most controversial projects was the Arun III hydro electrical project that will be set forth below. Because of the lack of communication no cooperation or deliberation took place between the two countries. Resulting in this kind of controversial projects. Another example is the plan of India to build the Tanakpur barrage. Only in this specific case Nepal took a stand and in the end India redesigned the project. If this would not have happened the Mahakali Irrigation Project would have come to stand dry. Even so India still needed a part of Nepali land to be able to totally finish the project and no agreement on this was reached. The relations between the two countries deteriorated and the internal situation in Nepal was very bad due to political turmoil. Only in 1990 democracy was restored in Nepal and negotiations were taken up. In the same year a new constitution was adopted. This constitution has an article exclusively aimed at ‘resource sharing’ and states the following ‘any resource sharing agreement needs to be ratified by a two thirds majority in parliament if it is of pervasive, serious and long-term nature’ (Gyawali and Dixit 2001).

In agreement with Nepal, India came with a new proposal for mutual co-operation. Negotiations proceeded and especially concerned the Nepali land that India needed to build Tanakpur’s left afflux bund (Gyawali and Dixit 1999). An understanding more or less developed but much debate still took place about the nature of the agreement and whether it was in violation with the constitution. It even came to the point that the issue went to court as it was decided it did fall under the article set out in the Nepali constitution. Meaning that it could be actually seen as a treaty and

should be supported by parliament. The discussion went on for the following years taking on different forms constantly and by this adhering more and more water related issues to the running debate. The long duration of the debate was strongly related to the instable government that suffered of a constant change in political party and thus a unreliable standpoint concerning the water issues. Finally in 1996 the three major Nepali government parties signed an agreement the *National Consensus on the Use of the Waters of the Mahakali River* and a poised standpoint was reached. Once this consensus was reached the treaty between India and Nepal could also be signed in the same year. The treaty initially concerning the Tanakpur barrage was extended to also regulate the development on the whole Mahakali river and in particular the Sarada Barrage and The Pancheswar project. The treaty came into force in June 1997 (Ministry of Water Resources 2006).

4.3.2 Sharing water and sharing power benefits

Most of the conflicts between India and Nepal originate from the mutual ambition to carry out major hydro power projects to generate power. This is strongly related to the geographical position and the availability of the Himalayas that provide such opportunities. Also as all the Nepali rivers drain into the Ganges contributing to almost more than half of its flow a dependency of India on these rivers exists. The political restlessness in the country however sustains the influence India can have on the country as they offer much support to Nepal.

Several dams have been constructed, like the Kulekhani, and some are still under construction, like the Kaligandaki and West Seti. And on some debate with India is still going on, like the Karnali and the Kosi High Dam Project. Discussion however exists as the building of high dams involves quite some drawbacks like silt disposition and negative influence on the environment and the displacement of people. Next to this these kinds of projects are very expensive and it is difficult to acquire investors (Onta 2006).

4.3.2.1 ARUN III

In the early 90s one of the largest state run, hydro development projects took place, ARUN III. This 1.1 billion dollar project was funded through a loan by the World Bank (Both Ends 2006). There was however a large lobby set up against the project as it was argued that the project could undermine Nepal's economy because of the excessive costs, displace local indigenous population and damage the environment (Udall 1995). The World Bank eventually had to withdraw from the project as it indeed violated its own principles concerning the protection of indigenous people and the environment (Escher 1995).

4.4 THE RELATIONSHIP BETWEEN INDIA AND BANGLADESH

The official relationship between Bangladesh and India dates from 1971 as before Bangladesh as an independent country did not exist. It once was part of India and after that formed the eastern province of the federation of Pakistan. This independence did not come naturally but followed on a war wherein India supported Bangladesh. This has been rather determining to the country relationship and some even speak of a "Big Brother symptom" or a love-hate relationship. Also the geographical position of Bangladesh opposite India is determining as they border almost exclusively with India except for 193 kilometres with Myanmar. Because of river erosion the border is moving, which results in a constantly changing border demarcation and land loss for both countries.

Bangladesh holds a somewhat insecure attitude towards their giant neighbour originating from the past dependency on India and the fear that India might undermine their interests (Wikipedia 2006 and South Asia Analysis Group 2006).

The main conflicts between India and Bangladesh originate from the shared water resources. Which is not surprising knowing that they share 54 international rivers in respect of all of which India holds the upper stream. Through this shared river system the dependency on India is enhanced as Bangladesh holds the downstream position and its climate falls under the ‘tropical monsoon’, resulting in unstable discharges in the lean period of the season for both countries.

The Ganges-Brahmaputra basin which is partly formed by these 54 rivers but also extending beyond them is the second largest hydraulic region in the world. Of this basin about 63 percent lies in India, 7 percent in Bangladesh, 8 percent in Nepal, 2.5 percent in Bhutan and the rest in China. In this basin India takes up a unique riparian position being as well downstream and upstream. Furthermore the basin is also one of the most densely populated regions of the world (Tiwary 2000).

“The Ganges is one of the most culturally and economically significant rivers on earth. Bangladesh, being in the downstream and delta portion of a huge watershed, has been most vulnerable to the water quality and quantity that flows from upstream. The way rivers are used in one country can indeed have far-reaching effects on nations downstream.” (Hazarika 2001)

The Brahmaputra river is also one of the main rivers shared by India and Bangladesh. There is however not elaborated on this river as no treaty related to it exists and the treaties formed the basis for the selection made for this research.

4.4.1 The Ganges Water Sharing Treaty 1996

4.4.1.1 The build up towards the Ganges Treaty

The origin of the Ganges water dispute dates back to 1951 when India first came up with the idea of building a barrage at Farakka to divert the water of the Ganges. India wanted to build this barrage in order to preserve and maintain the port of Calcutta by improving the regime and navigability of the Bhagirathi-Hooghly river system. Pakistan feared for the consequences of the barrage. Finally India begun the building of the Farakka Barrage in 1961 and it was finished by 1975, Bangladesh, was confronted with all the consequences. In the dry season, the barrage blocked the natural flow of water into the country, causing drastic water shortages. And in the rainy season, sudden water releases caused floods and extensive damage, including the loss of property and human lives (Tiwary 2006).

After several rounds of negotiations in 1972 the governments of India and Bangladesh agreed to establish the Joint Rivers Commission on a permanent basis. A more detailed description of the commission will follow in the next paragraph.

Under international pressure, as Bangladesh formally protested against India through the UN, the Ganges Waters Agreement was signed in 1977 eventually leading to the signing of the Ganges Treaty in 1996 (Transboundary Freshwater Dispute Database 2005).

4.4.2 Indo-Bangladesh Joint Rivers Commission

As stated in the above paragraph in 1972 the Joint River Commission was established by India and Bangladesh; “to develop the waters of the rivers common to the two countries on a cooperative basis” (Transboundary Freshwater Dispute Database 2005). There is one in Bangladesh and one in India, they are each other’s counterparts. The commission is composed of a Chairman and three members and is appointed by the concerned government. Since 1978 the chairman position in both countries is fulfilled by the Minister for Water Resources. The commission is supported by a team of engineers, scientists and staff providing expert services and secretariat support. The JRC in Bangladesh is responsible for 57 identified border rivers, 54 that are shared with India and 3 with Myanmar (Burma). A large part of the

data held on trans-boundary rivers is however considered restricted information (National encyclopedia of Bangladesh 2006).

4.4.3 River intervening structures

Even though a treaty exists there are still a lot of tensions between India and Bangladesh due to river intervening structures. These structures that India is constructing on almost all the transboundary rivers are influencing the situation in Bangladesh. The displacement of people is taking place due to unexpected floods and droughts. Both countries are heavily dependent on the flow of the Ganges. And both countries are aware of the fact that sooner or later the present dry season flow of the Ganges must be augmented. There are two proposals: 1) India proposes to divert the Brahmaputra at Jogighopa in Assam through Bangladesh into Ganges near Farakka, 2) Bangladesh proposes to build storage reservoirs in the Ganges basin itself to augment the dry season flow. A compromise seems remote as both are sticking to their own proposals (Thapa 2006). This conflict is a typical up- and downstream riparian issue as India wants to divert water for its own irrigation, navigability and water supply and Bangladesh want to maintain the historic flow for its own uses.

Another example of a dam that has large effects on Bangladesh is the Gozaldoba dam that India built upstream on the river Teesta. There is no communication about the management of the gates and thus floods, chaos and the displacement of people occurs (The Asian Development Bank 2006).

4.5 EXISTING PROJECTS AND COOPERATION ON WATER IN THE SOUTH ASIAN REGION

In addition to giving an insight in the relations between India and three of its neighbouring countries this chapter also attempts to give a brief overview of the main projects and international cooperation on water in the region.

Some initiatives could influence the region in a positive way but some may also raise the strain on relationships and enlarge possible tension and trigger other conflicts. Thus these are relevant to include as part of this research even though they are only briefly mentioned.

4.5.1 The South Asian Association for Regional Cooperation (SAARC)

Even though a high level of interaction between states in the South Asian region is missing, and thus bilateralism prevails, in the 1980s the “South Asian Association for Regional Cooperation” was established. To be exact, the agreement was signed and ratified in 1985 after several years of negotiations between the seven countries, India, Bangladesh, Bhutan, Nepal, Sri Lanka, the Maldives and Pakistan, on the exact objective of SAARC. In the preamble of the charter the following aspiration is stated: “promoting peace, stability, amity and progress in the region through strict adherence to the principles of the United Nations Charter and Non-Alignment, particularly respect for the principles of sovereign equality, territorial integrity, national independence, non-use of force and non-interference in the internal affairs of other States and peaceful settlement of all disputes” (Coppes 1994).

In the negotiation process a couple of core areas for cooperation were identified:

- 1) Agriculture and Rural Development;
- 2) Health and population activities;
- 3) Women, Youth and Children;
- 4) Environment and forestry;
- 5) Science and technology and meteorology;
- 6) Human resources development; and
- 7) Transport

(SAARC 2006)

And thus it holds the potential to evolve into more than an economic cooperative relationship.

The establishment of these core areas is strongly related to the tensions and the large diversity in the region. By choosing these core areas the possibility for cooperation was secured as certain issues where as such of limit. Especially India is strongly in favour of maintaining this approach as in almost all bilateral issues India takes a part (SAARC 2006). By keeping them of the SAARC agenda India can preserve its position in the region. When such issues would be put on the SAARC agenda and thus be approached as multilateral this would undermine their position.

4.5.2 The South Asian Free Trade Area (SAFTA)

Following on the South Asian Preferential Trading Arrangement that was signed in 1993 the SAFTA came in to being as of January 2006. Aiming at the reduction of tariffs for interregional trade among the member countries (Bilaterals.Org 2006). Significant economic cooperation under SAFTA however does not seem feasible unless relationships among the major countries of the region improve creating an atmosphere where the level of trust can be enhanced.

4.5.3 The Indian River Linking Project (IRLP)

The interlinking of rivers is one of the largest water projects on the agenda of the Indian Government still to be completed. Under the Ministry of Water Resources the National Water Development Agency was formed in 1982 to promote scientific development for optimum utilization of water resources in the country. They are the main puller of the IRLP project. The idea originates from the perception of the Indian Government that some major rivers like the Ganges and the Brahmaputra have surplus water which could be redistributed to areas with water deficit. The project objective is to link 37 Indian rivers in the Himalayan Peninsular area (Ministry of Water Resources 2006).

The rivers in the Himalayan area make it a transboundary issue as they are not completely in Indian territory but shared principally with Nepal and Bangladesh. Because of this connection the project will not only affect India but also Nepal and Bangladesh. The question is whether this will have positive or negative effects.

India is taking a unilateral position towards this project by not informing either of the countries officially or involving them in the project generates tensions in the relationships between the countries. The figure below shows the plan as envisioned by India. Some of the links are located on the main rivers the Ganges and the Brahmaputra. These links could have far reaching results, as these are transboundary rivers.

Figure 9: Proposed links IRLP



(Transboundary Rivers Group Bangladesh 2006)

One of the main objections is the feasibility of the entire project mainly because of the lack of transparency about initial studies and the fact that a lot of data is restricted and not publicly available, which makes it difficult to assess the project in an appropriate way. Assessing this is not within the scope of this research but this project is mentioned as it puts a strain on all the country relations in the South Asia region (Transboundary Rivers Group Bangladesh 2006 Khalequzzaman 2003).

4.5.4 Global Water Partnership South Asia (GWPSA)

The GWPSA is an independent regional secretariat set up as a part of the Global Water Partnership (GWP). Currently it is located in Colombo, Sri Lanka.

The GWP is a working partnership that has as their mission to: “*support countries in the sustainable management of their water resources*” (Global Water Partnership 2006). The GWP was set up by the WB, the United Nations Development Program (UNDP) and the Swedish International Development Agency (SIDA) in 1996. As the outcomes of several conferences on water showed a growing need for a coordinating organisation. Because a comprehensive approach to water management in connection to sustainable development and participatory institutional mechanisms was sought. One of the objectives was thus to promote Integrated Water Resources Management (IWRM) through a worldwide network. The GWPSA was therefore established in December 2002 with almost the same objective; “to promote the concept and implementation of IWRM as a vital approach to managing the world’s water resources” (Global Water Partnership 2006).

4.5.5 WWF – International Project on ‘Dialogue on Water, Food and Environment

In India for this WWF supported project a forum with several civil society organisations was established. With the following objectives, a) to bring all the groups who are concerned about water conflicts within India together, b) to evolve a common methodology to document the water conflicts, c) to organize a national policy dialogue, d) to establish dialogues on several long standing water conflicts.

The objectives a, b and c have been met and the focus is now more on objective d. The organization is looking in to possibilities to expand to South Asia but the emphasis is however on national interstate water conflicts that occur in India (World Water Institute 2006).

4.6 PROBLEM CHARACTERISTICS RELATED TO WATER IN SOUTH ASIA

In this chapter the principal rivers and related country relationships were studied and a brief overview of cooperation and projects on water in the region was given.

An overview can be given as follows in the figures below.

Table D: Country relations and perceived water issues

Country relations	Water issues
India – Pakistan	Baglihar Dam
	Mangla Dam
	Salal Hydro electrical project
	Dul Hasti Project
	Wullur Barrage-Tulbul Navigation Project and Kishangangadam
	IRLP
India – Nepal	ARUN III Hydro electrical project
	Tanakpur Barrage
	Karnali and Kosi high Dam Project
	IRLP
India – Bangladesh	Farakka Barrage
	Gozaldoba Dam
	IRLP

Table E: Regional cooperation and projects

Regional cooperation and projects
SAARC
SAFTA
IRLP
GWPSA
WWF International project on ‘Dialogue on Water, Food and Environment’

Finding the relevant data was not so easy as it turned out that retrieving specific and up to date information was quite a challenge. Thus this compilation is based on the information that was accessible in relation to the chosen research methods. This does however not mean that if a different research approach is chosen the same amount of cases and cooperation will be found. It is very well possible that if field research would have been done much more cases and cooperation would be identified.

In spite of this the chapter gives insight to the main and most defining country relations in the region, the atmosphere and cooperation as perceived. And through this provides an answer to the first two sub-questions.

The South Asia region has undergone lots of historical developments, the important ones related to this research are the independence of India, the partition creating Pakistan and the independence of Bangladesh and all the instable governments in Nepal.

Next to these developments the chosen countries distinguish themselves in the region by a shared characteristic. Being that they all signed a bilateral treaty with India on one of the major rivers in the region. To be precise these are the Indus Waters Treaty, the Mahakali Treaty and the Ganges Water Sharing Treaty. Of course this does not mean that the relationships that India might have with other countries through their shared rivers is not relevant to this research, these are however not elaborated as this does not fall within the scope of this research.

These treaties have generated a certain sense of goodwill between India and these neighbouring countries. It could thus be said that through the signing of the treaties the international disputes in the transboundary rivers being part of these specific river basins have been settled through diplomatic channels. In practice however disputes regarding the allocation and management of the water in these basins still exist. As can be clearly seen in table D here above. Conflicts seem to be related especially to the generation of hydro power and the equitable distribution of irrigation water.

In this paragraph, based on this information, an attempt has been made to give an outline of the main characteristics of the identified relations. Similarities and differences have been identified. And thus an attempt has been made to classify possible issues that could occur in the future and those that have already occurred over shared water resources

First of all defining the countries riparian positions has proven to be very enlightening as these contribute to the explanation of their approach to water. In regard to the Indus Waters Treaty between India and Pakistan a clear distinction can be made. India holds the upper riparian position and thus embraces the principle of *absolute territorial sovereignty*. Pakistan on the other hand being in the downstream position claims *prior appropriation* and upholds the principal of *territorial or absolute riverian integrity*. This is clearly underpinned by the way the treaty finally came in to being. A total division of specific rivers took place as this was the only way to reach agreement. By this the cooperative and interdependent aspect of the treaty was shifted to the background. And basically the pressure to cooperate was taken away. In a provision there is mentioned that sharing info on future projects is essential. But there is no mentioning of integrated mutual projects whatsoever.

As for the Mahakali Treaty that not only entails the sharing of a river the upper riparian position is held by Nepal, making India the downstream riparian. Nepal however holds up a fairly good but dependent relationship with India thus not being able to impose strictures on India.

In the case of the Ganges Water Treaty India also up holds the upper riparian position and Bangladesh the downstream riparian. Thus imposing a lot of river altering projects on Bangladesh without consultation.

Judging from the conflicts that have been identified, the agreements are laid down on paper but a discrepancy exists between the formal agreements and the way it works out in practice.

Treaties mostly are formed by the countries involved and in some case, like the Indus Waters Treaty, there is an arbitrator involved. Mostly this arbitrator takes a neutral position and merely facilitates the process.

When looking at the existing treaties it is striking that they are all based on a bilateral agreement. While the basins concerned are shared by more than two countries. Reasons for India to prefer a bilateral approach seem to be related with the following:

- The feeling that negotiations are difficult and protracted enough between two countries, and that they will become vastly more complicated and intractable when three or more countries are involved.

- The fear that the smaller countries may join hand and make common cause against the bigger country.

(Iyer 1999)

Summarizing constraints on intergovernmental negotiations over water in South Asia according to Crow and Singh (2000) three kinds of obstacles can be identified.

- 1) The strict practice of bilateral negotiation.
- 2) The construction of grand national plans for river development. Taking away interest in plans with benefits for other countries or for the whole region.
- 3) The limits of bilateral diplomacy have been confined further by the restrictions of barter exchange. Because transactions are then only possible when each government has what the other government wants.

These obstacles have not only constrained cooperation but also contributed to the rise of tensions between States. The above mentioned regional historical developments also add to this attitude and internal orientation.

The focus of the agreements is not on cooperation but on individual action as they do not really recognize the interdependency on one and other. This will be more extensively discussed in the following chapter in the framework of Ostroms theory.

Through the setting up of SAARC an attempt has been made to promote a more regional approach. Nevertheless this approach has not yet taken a predominant position in the region. This is also not feasible if tensions are maintained or keep growing worse. Especially the Kashmir conflict, the relationship between India and Pakistan, and the building up of nuclear powers are determining factors for possible cooperative developments in the region and put a strain on country relationships.

5 OSTROM MEETS WATER ISSUES IN SOUTH ASIA

This chapter will go in to the division and allocation of the shared water resources as identified for this specific case related to the treaties and country relations set out in chapter four. In the two preceding chapters it was set out more detailed how water is administered and thus how division and allocation takes place. Problems are taking place in both categories devised by Ostrom and are as such related to appropriation and provision. Based on the amount of conflicts still occurring within these relations it could be said that there is a discrepancy between the agreements and what is actually happening. And thus maybe division and allocation is not always fair and just and thus unsatisfactory. To get a more founded view the case will now be scrutinized according to Ostroms theory on managing the commons. The Indian perspective has been reflected along the frame of Ostroms internal world of individual choice, the existing rules have been set out and formal and informal collective choice arenas have been distinguished.

As Ostroms theory in the end aims to come up with a system, referred to as a 'self governed common property arrangement' or CPRS, wherein mutual benefits form the binding components stimulating a collective approach to a common pool resource, an attempt has been made to characterize the atmosphere for this specific environment/policy issue.

Although Ostrom assumes that actors are able to achieve cooperation, as they are free to communicate with one another, on a voluntary basis by themselves. She also states that an atmosphere where mutual trust and reliability prevails.

For this research the aim is to identify opportunities for the Dutch government to contribute to water management. Which comes down to contributing to stimulating an environment where such a system can evolve.

5.1 WATER IN SOUTH ASIA A COMMON POOL RESOURCE ACCORDING TO OSTROM

Coming back to the specific case, first and foremost it can be stated that transboundary water conform the theory can be classified as a common pool resource. As it meets the distinctive characteristics defined by Ostrom. It is a limited resource subjected to multiple uses and accessible to multiple appropriators and thus susceptible to free-riding and abuse. Ostrom provides a relevant framework to study this specific case.

As this research studies water resources from India the resource system consists of the internal organisation of water in India and the existing bilateral treaties belonging to the specific shared river basins that have been chosen. As a result for this research the appropriators are India, Pakistan, Nepal and Bangladesh. Other neighbouring countries like China, Bhutan and Burma/Myanmar can also be seen as appropriators but are however not studied. Nevertheless this does not mean that they could not come to obtain a significant role in future conflicts over water, certainly with respect to the IRLP, and thus they should be kept in mind.

As for the relationship with China for example, tensions over the Brahmaputra river already exist. As a landslide occurred in Tibet in 2000 causing a dam to collapse, unleashing water that charged through India destroying all the bridges built over the river and eventually flooding Bangladesh. Next to this both China and India have plans to divert water from the Brahmaputra but the sharing of information on these projects is limited (Hazarika 2001).

5.2 PROVIDERS, PRODUCERS AND THE RESOURCE SYSTEM

As the resource system is subject to joint use changes, ranging from improvements to deteriorations, to the system have consequences for all appropriators. Exclusion of

as well the good as the bad is in this case rather challenging and thus sustains the temptation for appropriators to free ride. In terms of Ostrom among the appropriators of the resource system providers and producers can be identified. Differentiating from each other by either regulating the provision of the CPR or sustaining the resource system on the long term. In this specific case I would say that all full fill as well the providers as the producers role. As they not only withdraw the resource but also add to the system by for example building dams and developing hydro electrical project. As such there is not a clear role division and projects are developed simultaneously without mutual deliberation. This can be seen as one of the weaknesses of the resource system. Within a well organised collective resource system, based on mutual cooperation and communication, interdependence and joint responsibility should prevail.

5.3 INDIA'S INDEPENDENT STRATEGY

In this case the CPR is water, characterized by its finite nature, thus needing responsible management. Responsible management is dependent on the behaviour of appropriators. As set out in chapter two according to Ostrom behaviour is influenced in several ways at various levels and is also strongly related to the position the appropriator takes in the community. In this research the position of India is studied. Based on the approach that India takes to water on national level and international level it can be said that they largely start from their independent strategy. They have extensive policy and regulation on water but view this strictly as a national concern. Also of all the institutions and agencies none of them has as a explicit task/objective to occupy itself with the international aspect of water or the sharing part. Only in specific cases being the three existing the treaties, special committees exist. These three river treaties on three specific basins and some projects however do not entail all water sources that India shares with neighbours and neither entails all of the appropriators. More insight on this can be obtained by reflecting this against Ostroms model on the internal world of individual choice. It can be said that choices made by India are largely based on their own internal world of individual choice as identified by Ostrom, see figure 4, with little to no influence of external factors even though interdependency does exist. As stated in paragraph 2.2.1 Ostrom uses the terms individual approach and collective approach for analysing the basis of resource systems. Through chapter three and four an attempt has been made to do the same for India. With as a result a identification of a individual approach wherein mutual interdependency is not weighed as a determining factor. As a consequence India's relationships with the studied neighbouring countries are predominantly bilateral. Whilst if a collective approach would prevail much more multilateral cooperation would be identified.

The internal world of individual choice according to Ostrom consists of internal norms, discount rate, expected benefits and expected costs all influencing the choice of strategies and thus the outcomes. The strategy India chooses at the moment is to focus on its own water provision, very much realizing that this could become a huge problem in the future. One can ask oneself if the other appropriators are even part of their consideration process. The IRLP affirms this internal orientation as the other appropriators are not taken into account

On the other hand a somewhat passive attitude on the co-appropriators sides can also be perceived. As action and opposition seems only to be triggered by problems (negative results) for their own territory and inhabitants. It can thus be said that a large tendency towards individualism exists with all appropriators studied in this case. Mostly resulting from a lack of awareness of their everlasting interdependency, as they will always share the same water resources, and the joint return that cooperation and collective organization could bring.

As India holds a hegemon position in the region the theory of the state could be applied to reach interdependent action. In this theory a ruler who takes primary responsibility for providing the needed changes to the institutional rules in order to be able to coordinate activities undertakes the organizing of collective action. Linked to the ambition that India clearly shows to become one of the leading powers this would not be a surprising move to take. This role is however not taken up by India as of yet.

5.4 THE IDENTIFIED RULES

Through the treaties several rules have been drawn up predominantly on an operational level supposedly influencing the processes of appropriation, provision, monitoring and enforcement, see figure 5. Per treaty these operational rules will be set out below. They have been divided into three specific categories, regulatory, institutional and arbitral. Both the regulatory and the institutional categories attempt to influence the appropriation and provision processes while the arbitral category is aimed at monitoring and enforcement.

5.4.1 Operational rules in the Indus Treaty

5.4.1.1 *Regulatory rules*

The Indus Waters Treaty is very extensive; the division of the eastern and the western rivers forms the basis. The eastern ones, the Ravi, The Beas, The Sutlej, were granted to India and the western ones, the Jhelum, the Chenab, the Indus, to Pakistan all the surface and tributaries of the rivers are elaborately specified. "All the waters of the Eastern Rivers shall be available for the unrestricted use of India, except as otherwise expressly provided in this Article." "Pakistan shall receive for unrestricted use all those waters of the Western Rivers which India is under obligation to let flow." (The Indus Waters Treaty 1960). The main goal of the treaty was: "to negotiate an equitable allocation of the flow of the Indus River and its tributaries between the riparian states". And next to this to develop a rational plan for integrated watershed development (Transboundary Water 2006).

The Articles range from provisions on the division of the rivers, on financial issues and on the exchange of data and co-operation in the future. From the beginning in the preamble the emphasis is put on the interdependent relationship the two countries have through this river basin. The treaty speaks of rights and obligations to one another concerning the use of the waters and the importance of communication. In the first article they clearly set out the definitions used in the treaty. Most importantly they define of which tributaries the Indus consists and clearly state which are the eastern and which are the western rivers. Also the article defines three main uses that come forward in the treaty, being: 1) agricultural use, 2) domestic use and 3) non-consumptive use.

As one of the discussion points for coming to an agreement was formed by the financial aspect. This is also elaborated in the treaty, stating exactly how much Pakistan and India have to pay and for what.

To further the communication the article on 'Exchange of data' is introduced in the treaty. In this article a range of data is specified that should be transmitted monthly to one and other by each party.

- a) Daily (or as observed or estimated less frequently) gauge and discharge data relating to flow of the rivers at all observation sites.
- b) Daily extractions for or releases from reservoirs.
- c) Daily withdrawals at the heads of all canals operated by government or by a government (hereinafter in this article called canals), including link canals.
- d) Daily escapages from all canals, including link canals.
- e) Daily deliveries from link canals.

(The Indus Waters Treaty 1960)

Further it is stated that other available data related to any provision of the treaty should be supplied to the other party and vice versa on request.

Throughout the treaty the common interests are emphasized and confirmed “The two Parties recognize that they have a common interest in the optimum development of the Rivers, and, to that end, they declare their intention to co-operate, by mutual agreement, to the fullest possible extent.” (The Indus Waters Treaty 1960)

As India still remained the upper riparian placing it in a beneficial position some restrictions are placed on the country. These restrictions mainly concern the prohibition on building of storage on the rivers that were allocated to Pakistan and the development of irrigation systems.

In relation to the future several provisions are made on sharing information about possible plans or engineering projects on the rivers. Most importantly the following is agreed “If either Party plans to construct any engineering work which would cause interference with the waters of any of the Rivers and which in its opinion, would affect the other Party materially, it shall notify the other Party of its plans and shall supply such data relating to the work as may be available and as would enable the other Party to inform itself of the nature, magnitude and effect of the work. If a work would cause interference with the waters of any of the Rivers but would not, in the opinion of the Party planning it, affect the other party materially, nevertheless the Party planning the work shall, on request, supply the other party with such data regarding the nature, magnitude and effect, if any, of the work as may be available” (The Indus Waters Treaty 1960).

5.4.1.2 *Institutional rules*

In article VIII of the treaty institutional arrangements that form part of the treaty are elaborated. Resulting in the formation of a ‘Permanent Indus Commission’. This commission is made up of one commissioner from each country. Each Commissioner is a representative of his Government for all matters arising out of the Treaty and serves as the regular channel of communication on matters relating to the implementation of the Treaty. Either party is obliged to notify the other of plans to construct any engineering works which could affect the other party.

The main purpose of the commission is to establish and maintain co-operative arrangements for the implementation of the treaty, to promote cooperation between the parties in development of the waters of the Rivers and to settle promptly any question arising between the Parties and to spot any possible problem that could arise. 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 River for the facts on development and work on the rivers. They are also obliged to meet regularly at least once a year, alternately in India and Pakistan. And should report to each government every year and whenever considered necessary (The Indus Waters Treaty 1960).

5.4.1.3 *Arbitrational rules*

If disagreement should arise this should in first instance be resolved by the Permanent Indus Commission. When they are unable to reach agreement the case should be referred to the two governments, and in worse case scenario there should be fallen back on an arbitration mechanism. First by appointing a neutral expert and if the expert fails to resolve the dispute by letting the countries appoint negotiators. These negotiators can then meet with one or more mutually agreed upon mediators. If this does not work and the issue is labelled as a ‘dispute’ a Court of Arbitration can

be convened (The Indus Treaty 1960). What issues should be labelled as a dispute is however not explicitly stated in the treaty. There is stated what can be seen as interference with the waters but also that insignificant interference can be ignored. Defining interference this vaguely could provide a lot of ground for discussion.

5.4.2 Operational rules in the Mahakali Treaty

5.4.2.1 Regulatory rules

The treaty has a broad aim as it attempts to regulate several water related projects specifically that are related to the sharing of the Mahakali River between India and Nepal. In the preamble they recognize their interdependent relationship as follows; “Reaffirming the determination to promote and strengthen their relations of friendship and close neighbourliness for the co-operation in the development of water resources; recognizing that the Mahakali River is a boundary river on major stretches between the two countries; realizing the desirability to enter into a treaty on the basis of equal partnership to define their obligations and corresponding rights and duties thereto in regard to the waters of the Mahakali River and its utilization” (The Mahakali Treaty 1996).

In article I provisions are set out on the division between both countries of the amount of water coming from the Sarada Barrage in certain seasons and situations.

India that was dependent on Nepal for a peace of ground to be able to build the eastern afflux of the Tanakpur Barrage, receives consent for this in article II. Nepal thus obtains the right to a part of the water and a part of the energy being generated by the Tanakpur Barrage. In article III of the treaty the entire approach towards the eradication of the Pancheswar Multipurpose Project is set out. It is emphasized that “both parties have equal entitlement in the utilization of the waters of the Mahakali River” (The Mahakali Treaty 1996). This equal right to water is further substantiated by article V wherein is stated that the water requirements of Nepal shall be given prime consideration, but also; “both the parties shall be entitled to draw their share of waters of the Mahakali River from the Tanakpur Barrage and/or other mutually agreed points as provided for in this Treaty and any subsequent agreement between the Parties” (The Mahakali Treaty 1996). Projects and development by each country independently on the tributaries of the Mahakali are still allowed as long as they take the following provision into account; “In order to maintain the flow and level of the waters of the Mahakali River, each Party undertakes not to use or obstruct or divert the waters of the Mahakali River adversely affecting its natural flow and level except by an agreement between the Parties. Provided, however, this shall not preclude the use of the waters of the Mahakali River by the local communities living along both sides of the Mahakali River, not exceeding five percent of the average annual flow at Pancheswar” (The Mahakali Treaty 1996).

5.4.2.2 Institutional rules

In article VIII the institutional provisions related to the treaty are set out. Resulting in the creation of a “Mahakali River Commission” formed by a equal number of representatives from both the countries. The principles of equality, mutual benefit and no harm to either Party are the guidelines. Their main tasks are informing both parties, checking the structures and if they comply with the treaty, to provide recommendations on how to uphold the treaty and how to conserve the Mahakali river, and to coordinate and monitor future plans. Also if any differences should occur they should examine the grounds and recommend the parties how to act/proceed (The Mahakali Treaty 1996).

5.4.2.3 *Arbitrational rules*

In the case that the commission is not able to come with useful recommendations or the parties do not agree with them, according to the treaty a dispute has arisen. The dispute will then be referred to a tribunal composed of three arbitrators for a decision. The tribunal is composed as follows; “One arbitrator shall be nominated by Nepal, one by India, with neither country to nominate its own national and the third arbitrator shall be appointed jointly, who, as a member to the tribunal, shall preside over such tribunal” (The Mahakali Treaty 1996). The final decision is determined by a majority of the arbitrators of the tribunal and is final, definitive and binding.

5.4.3 **Operational rules in the Ganges Treaty**

5.4.3.1 *Regulatory rules*

The treaty is rather brief and the main points that are recorded are on the sharing of a part of the water. The main objective is to determine the amount of water released by India to Bangladesh at the Farakka Barrage. An important point is that through this treaty both countries acknowledge the Ganges as an international river and recognise the mutual need of a solution to the long-term problem of augmenting the flows of the Ganges. This is stated in the introduction as follows; “being desirous of sharing by mutual agreement the waters of the international rivers flowing through the territories of the two countries and of making the optimum utilisation of the water resources of their region in the fields of flood management, irrigation, river basin development and generation of hydro-power for the mutual benefit of the peoples of the two countries” and in article VIII as follows; “The two Governments recognise the need to cooperate with each other in finding a solution to the long-term problem of augmenting the flows of the Ganges during the dry season” (The Ganges Treaty 1996). For the sharing of the water specific periods and amounts of water are agreed upon in the first three articles of the treaty. Also there is stated in article VIII that the principles of equity, fair play and no harm to either party will be taken into account in the case of a emergency, low water level, and the necessary adjustments to the agreement will be made. The Treaty was signed for a period of thirty years and incorporates a provision for a review of the agreement to take place every five years.

5.4.3.2 *Institutional rules*

In article IV to VII the institutional provisions are set out. One of the outcomes of the agreement substantiated by the treaty is the constitution of a Joint Committee. The Committee consists of representatives nominated by the two Governments in equal numbers. The main task is monitoring the implementation of the treaty on both sides. This is stated in the treaty as follows; “implementing the arrangements contained in the treaty and examining any difficulty arising out of the implementation of the above arrangements and of the operation of Farakka Barrage” (Ganges Treaty 1996). Next to this their task is to set up joint teams at Farakka and Hardinge Bridge to observe and record the daily flows. All this data has to be submitted to both governments and next to this a yearly report. When further actions are needed as a result of the report the governments shall meet to decide upon this.

5.4.3.3 *Arbitrational rules*

Dispute resolution is in principle also a task of the Joint Committee, if they do not succeed the issue shall be referred to the Indo-Bangladesh Joint Rivers Commission. And as a last resort both the Governments shall have to meet on a suitable level to resolve any mutual discussion (Ganges Treaty 1996).

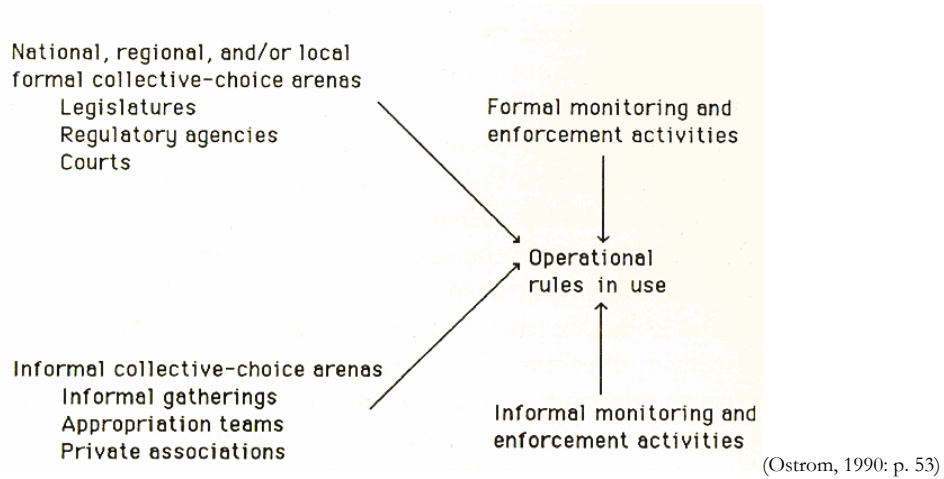
5.5 COLLECTIVE AND CONSTITUTIONAL RULES

The lack of collective and constitutional rules in the transboundary relations is a deficit. As rules can be used as tools for improving the country relationships. This is however strongly related to the view that India has on water, seeing it purely as a national asset. Formulating both collective and constitutional rules could improve relations. Especially the drawing up of collective choice rules together, aimed at the management of the CPR, and would be an improvement. Because in the end all countries are managing the same CPR. Mutual agreement on how to do this could prevent conflicts.

5.6 FORMAL AND INFORMAL COLLECTIVE-CHOICE ARENAS

As stated before in chapter two influencing rules is challenging especially at a deeper level. If you want to influence rules you have to be part of the relevant arena. According to Ostrom several arenas exist on different levels. The most important distinction she makes is the one between formal collective-choice arenas and informal collective-choice arenas that can influence the rules in use, the operational rules. In the following figure the relationship between arena's and the drawing up of rules is visualized according to Ostrom.

Figure 10: Relationships of formal and informal collective-choice arenas and CPR operational rules



These collective-choice arenas have been studied for this research as influencing the operational rules in use can influence the whole situation. The local level is however not studied as the research is aimed at the transboundary issues. The table below gives an overview of the composition of the formal collective-choice arenas viewed from India.

Table F: Composition of the formal collective-choice arenas in South Asia

Composition of the formal collective-choice arenas	
<i>National Level</i>	
<i>Legislatures</i>	<ul style="list-style-type: none"> – National Water Policy – The Environmental Protection Act – The River Boards Act – The Inter-State Water Disputes Act
<i>Regulatory Agencies</i>	<ul style="list-style-type: none"> – The Ministry of Water Resources – The National Water Resources Council – The National Water Board – The River Boards

<i>Courts</i>	– Tribunals set up by the Central Government under the Inter-State Water Disputes Act
<i>Regional Level</i>	
<i>Legislatures</i>	– The Indus Waters Treaty – The Mahakali Treaty – The Ganges Treaty
<i>Regulatory Agencies</i>	– The Permanent Indus Commission – The Mahakali River Commission – The Joint Committee for the Ganges – The Indo-Bangladesh Joint Rivers Commission
<i>Courts</i>	– Court of Arbitration for the Indus – Tribunal for the Mahakali

The formal collective-choice arenas are rather well developed. To be able to see this in perspective the following table gives an overview on the formal monitoring and enforcement activities in relation to the definitions and approach of a water dispute.

Table G: The definition and approach of water disputes

Agreement	Definition and approach of a Water dispute
<i>The Inter-State Water Disputes Act</i>	A water dispute is: any dispute or difference between two or more State Governments with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley; or the interpretation of the terms of any agreement relating to the use, distribution or control of such waters or the implementation of such agreement. If such should occur it is referred to the Tribunal. The Tribunal's decision is final and binding to all parties.
<i>The Indus Waters Treaty</i>	When the PIC is not able to create agreement and neither are the two governments then a neutral expert is appointed. If the neutral expert can not create agreement either then a dispute has occurred and the issue is referred to the Court of Arbitration. There is no clear definition for a water dispute.
<i>The Mahakali Treaty</i>	In the case that the commission is not able to come with useful recommendations when a dispute arises or the parties do not agree with them, according to the treaty a dispute has arisen. And it will be referred to the Tribunal their final decision is final, definite and binding. There is no clear definition for a water dispute.
<i>The Ganges Water Sharing Treaty</i>	There is no clear definition for a water dispute. The Joint Committee is responsible for the resolution if any dispute should occur. If they do not

	succeed then it is referred to the Indo-Bangladesh Joint Rivers commission and if they do not succeed it is referred to the Central Governments.
--	--

The main observation is that a lot of differences exist between the agreements among themselves.

The differences between the national level and the regional level are important. As from here lessons can be learnt for the improvement of cooperation on regional level. It is quite striking that none of the transboundary relations are brought up in the national water policy, the responsibilities of the government agencies or the other Acts under which water is governed in India. Fact remains that a large part of the rivers flowing through India do not only have appropriators from multiple Indian states but also from multiple countries.

When looking at the specific treaties the structure seems to correspond even though some are more extensive. They are composed of operational rules at a regulatory, institutional and arbitrational level.

The main weaknesses are found on the arbitrational level that aims at monitoring and enforcement. Starting from the fact that the only binding legislature that exists is formed by the three treaties. Also the definition of a water dispute is not coherent making it difficult to act on a dispute. Initially in all cases the designated commission is responsible, from then on the following steps vary.

The Indus Treaty in this case is especially interesting as it is the only treaty with a provision for the involvement of a neutral expert before taking a dispute to court. The involvement of a neutral expert changes the whole perspective of the dispute as it is internationalized.

The verdict of the neutral expert in the case of the Baglihar dam will be determining for the future as it is the first time in 45 years that the arbitration clause is executed.

The legislature on the national level is very elaborate and discusses almost all levels involved in water management. Only the international aspect is missing, taking up the interdependency between India and neighbouring countries due to shared water sources and thus the relevance of cooperation in the national water policy would be a big step ahead. As only by realizing their interdependency a CPRS can be reached and mutual monitoring and cooperation will prevail. As for the regulatory agencies, setting up international variants will also add to the possibility of reaching a CPRS.

There is however not one common Government approach that is being executed on how to tackle transboundary water conflicts. And as such the vision on water of the Central Government of India remains limited. Viewing water merely as a national asset to be guided by national perspectives. Such an approach does however exist for inter state water disputes, which is set out in the Inter-State Water Disputes Act. This Act although not always drawn on seems to be working. This comes forward from the examples of some cases that have been settled positively through the implementation of provisions as stated in this Act.

When an interstate dispute occurs the Tribunals verdict is binding and final to all parties. For the outcome of a courts discussion on a regional level dispute this is not in all treaties explicitly stated. Also there is no clear definition of what a water dispute consists of. On a national level there is, this could be copied to the transboundary level creating much more clarity.

As for the Dutch Government influencing the formal collective-choice arenas will be difficult. Especially since 2003 when India decided to stop their relationship with amongst others the Dutch Government, which will be elaborated in the following chapter, as a donor country. They only accept cooperation on NGO level, not on a Government to Government level.

The verdict of the neutral expert in the case of the Baghlihar dam will be determining. As in principle the advice given by a neutral expert under the Indus Treaty is binding. If both parties accept and act on it this could mean that third party involvement through the involvement of a neutral expert holds much potential for the resolution of water disputes in the future.

There is however scope for the Dutch Government on the informal collective-choice arenas level. As this appears to be not so well developed. They should consist of informal gatherings, appropriation teams and private associations. But have only been perceived in the case of specific conflicts. And also through the participation in a workshop two active Bangladeshi NGO's have been identified. These are Uttaran and Banglapraxis, they describe themselves as collective initiatives for research and action. Influencing the operational rules as such, whether through the formal or informal collective-choice arenas, can create a better atmosphere for cooperation.

6 THE RELATIONSHIP BETWEEN INDIA AND THE DUTCH GOVERNMENT

6.1 INTRODUCTION

One of the main objectives of this research is to identify opportunities for cooperation between India and the Dutch Government in the area of integrated water resources management. On that account it is useful to take existing cooperation if any exists as a starting point. Reviewing cooperation can lead to relevant outcomes and complement the answer to the main research question. This will be done in this chapter by answering the following question: *“Is there any direct or indirect cooperation between India and the Dutch Government in the area of integrated water resources management?”*

6.2 THE SLEEPING GIANT

After India gained independence in 1947 they chose for a developmental approach starting from their own knowledge, strength and insights. Since 1969 there has been an extensive development assistance relationship between India and the Netherlands. All kinds of programs to support India’s development were set up through fixed bilateral cooperation. Initially aid consisted mostly of the supply of goods that were financed through loans. Begin 80s the amount of aid through projects increased substantially. In the 90s projects were conducted in the following states; Uttar Pradesh, Kerala, Gujarat and Andhra Pradesh, Karnataka, West-Bengal and Haryana. The main focus areas were drinking water, land and water (irrigation), water supply, environment, women and primary education. After 1999 the focus was on the states of Gujarat, Andhra Pradesh and Kerala. The sectoral approach was introduced and specific sectors for cooperation were selected. The aid was specifically aimed at States and ranged from the sectors primary education, water management, mental healthcare, urban environment to rural development, integrated water management to local administration (Ministry of Foreign Affairs – Government of the Kingdom of the Netherlands n.d.).

6.3 A SHIFT IN ATTITUDE

For years India had been characterized as the sleeping giant and it seems as though in 2003 they decided to take a more proactive stand in obtaining the position they aspired. To be recognized as a regional super power and eventually as a world power concurring with their vision that worldwide the three superpowers ought to be The United States of America, China and India. Its geopolitical position strengthens its possibility to really evolve as such.

In the beginning of March 2003 The Indian government took the unilateral decision to stop receiving financial assistance from a number of small donor countries. And thus bilateral development cooperation with several donor countries including the Netherlands ended. As of then The Indian Government only wanted to sustain a developmental relationships with large nations that are part of the G8 and with the EU. By 2005 all the major components of the bilateral relationship as for development cooperation were phased out (Ministry of Foreign Affairs – Government of the Kingdom of the Netherlands 2006).

6.4 RELEVANT DUTCH GOVERNMENTAL COOPERATION

As for cooperation in the area of integrated water resources the role of the Dutch Government at the moment is almost non-existent. There are however several Dutch companies actively involved in developmental projects. And the Dutch Trade Board is also actively cooperating with India and even set up a ‘India action plan’.

The support that does exist mainly goes through the organisations that are active in the region. For example through the Partners for Water Programme, that is a public private partnership between the government, the private sector, knowledge institutions and NGOs also active in the South Asian region (Ministry of Foreign Affairs – Government of the Kingdom of the Netherlands 2006).

It is relevant for this research to mention that water is one of the main themes of the Dutch developmental policy, formulated by the Dutch Ministry of Foreign Affairs, in order to contribute to the achievement of the MDGs. As such they promote IWRM as this is essential to sustainable development. As part of the objective to contribute to the achievement of the MDGs the Dutch Ministry of Foreign Affairs has set up relationships with certain specific countries, partner countries. For the water theme one of these partner countries is Bangladesh. Support mostly takes place through the funding of specific water projects. As for the transboundary aspect, relevant for this research, The Dutch Embassy in Bangladesh takes a supporting role in the dialogue between Bangladesh and India on the use and management of the water from the Ganges. Some workshops have been organised for key figures to interact and a specific transboundary water project proposal is being worked on (Ministry of Foreign Affairs – Government of the Kingdom of the Netherlands n.d.)

6.5 AMBITIONS AND CHALLENGES FOR THE FUTURE

“India and the Netherlands have enjoyed good bilateral relations for decades, not only at government level, but also between businesses, knowledge institutions, civil society organisations and individuals. As all these contacts increase, it is important to make them more coherent. Closer coordination between activities by the government (ministries in The Hague and Dutch diplomatic missions in India) and by other players can generate synergies” (Ministry of Foreign Affairs – Government of the Kingdom of the Netherlands 2006). This is stated in the Policy Memorandum that was recently published. For this the ambition is to focus on policy areas where the added value of the Dutch knowledge and experience prevails. One of the important policy issues of the Dutch Government in relation to India is to promote international security and regional stability. As water obviously forms a destabilizing factor, offering support in this sector would be in harmony with realizing this objective.

The challenges for the future are two-fold, influencing the Indian Water Policy and thus India’s internal world of individual choice and influencing the operational rules that are currently in use for the transboundary water resources. These challenges, that hold several opportunities, will be set out more extensively in the following and final chapter.

7

CONCLUSION

Water issues are becoming more and more defining for global politics. As water holds the potential to influence security and stability in a country and even in a region. It can cause serious political tensions. Therefore in order to maintain political stability agreements are needed.

Next to this typification the awareness of the negative consequences of uncoordinated uses of water is growing. Also making it an important topic on the global political agenda.

Conform this trend the research aimed at studying transboundary water issues in the South Asia region. And in addition also aimed at identifying opportunities for the Dutch government to contribute to these issues through their relationship with India. This was done by searching for the answer to the main research question as set out below.

“Which opportunities can be identified for the Dutch government to contribute to water issues in South Asia?”

The answer was sought by finding the answers to the subquestions that form the three components that the case stools on.

- The relationships between India and its neighbouring countries in terms of shared water resources.
- International cooperation on water in the South Asia region.
- Cooperation between India and the Dutch Government on water.

These components have been extensively discussed in the matching chapters and scrutinized according to the theory of Ostrom. In the following paragraph the answers to the subquestions will be shortly summarized. Further in this chapter, founded on these components, the main research question will be answered. Next to this there will also be reflected on the research project and further recommendations will be given.

7.1

THE THREE RESEARCH COMPONENTS

The first subquestion was: *“How is the relationship between India and its neighbouring countries related to shared water resources?”*

The answer to this question is based on chapter three and four wherein firstly the Indian perspective is studied and secondly the specific relationship between India and neighbouring countries; Pakistan, Nepal and Bangladesh.

The main conclusion that can be drawn after studying the Indian perspective on water is that it is very internally focused. National legislation and several coordinating committees exist. Legislation wherein the transboundary nature of several Indian rivers is taken in to account is hardly in use. This is restricted to the three existing treaties; the Indus Waters Treaty signed with Pakistan, the Mahakali Treaty signed with Nepal and the Ganges Water Sharing Treaty signed with Bangladesh.

After scrutinizing the findings with Ostroms theory it can be said that the Indian perspective is based on their internal world of choice. Only taking account of their own internal norms, expected benefits and expected costs for their choice of strategies. Not taking in to account the external world, in this case Pakistan, Nepal and Bangladesh.

When looking at the one on one relationships with the neighbouring countries several conflicts can be identified opposed to a limited level of cooperation.

India is able to maintain their dominant position mostly due to its geographical position and size. But also due to instability in the region putting a strain on the relationships. Tensions, mainly between India and Pakistan, make it difficult for the few cooperative initiatives that do exist to fully develop.

Because of this India is able to maintain their tradition of bilateral cooperation. Even though in some cases multilateral cooperation would be more sensible. Because the rivers are not only shared by two countries but several countries.

The second subquestion was: *“Which international cooperation concerning water in the region of South Asia already exists?”*

The answer for this subquestion is also found in chapter four as it is connected to the relationships that India has with neighbouring countries.

Little international cooperation is to be found as almost all existing cooperation is bilateral. The main supranational initiatives that have been found are the SAARC and the GWPSA. Which are both aiming at a regional approach to several problems.

In the case of SAARC unfortunately up till now India has been able to keep water as a topic of the agenda. As for GWPSA this partnership is specifically aimed at water. Both initiatives hold the potential to develop and influence the region positively. In order for their role to develop however a high level of trust is needed. Mutual benefits have to be perceived in order to enhance the willingness to cooperate.

The third subquestion was: *“Is there any direct or indirect cooperation between India and the Dutch Government in the area of integrated water resources management?”*

This answer is to be found in chapter six wherein their relationship is set out.

The bilateral relationship between India and the Netherlands has been good for decades in several areas and on several levels. As for cooperation in the area of integrated water resources management since 2003 things changed. As the Indian Government took the unilateral decision to stop receiving development aid from a number of smaller donor countries. Also including the Netherlands, which before 2003 had several developmental projects in India related to integrated water resources management. At the moment there is no cooperation in the area of integrated water resources management on a Government to Government level. Relations between the Dutch and Indian Government are however still good in several fields. To be able to cooperate with India in the area of integrated water resources management therefore a different approach should be taken.

7.2

OPPORTUNITIES FOR THE DUTCH GOVERNMENT

Even though after 2003 there has not been scope for Government to Government cooperation between India and the Netherlands on developmental issues, due to the change in attitude in India, several opportunities for contributing to the water issues in South Asia by the Dutch Government can be identified.

In relation to Ostroms theory on Governing the Commons these can be said to be two fold, influencing India’s internal world of individual choice and influencing the operational rules for transboundary water resources currently in use.

Ostrom strives for a CPRS wherein durable cooperative institutions exist that are organized and governed by the resource users themselves. In this specific case, South Asia region, at the moment achieving a CPRS might be a bridge too far as a high level of trust and a strong sense of mutual interdependency is needed.

As shown in chapter five India’s decisions can be said to be based on the internal world of individual choice as defined by Ostrom. They form their strategy towards water on the basis of their internal world and do not take external factors into account. As water is a highly politicized topic it should be possible for the Dutch Government to influence India’s perception but through a depoliticized entry point. This could be the exchange of technical knowledge and information on a national level. By sharing their knowledge in specific sectors that could provide mutual benefits for India and neighbouring countries, tourism, recreation, industry and transport and navigation, more zest for cooperation could be stimulated.

Through the sharing of information and knowledge a level of education can be obtained. Possibly creating more awareness on the importance of the environment and health related to water and the interconnectedness of river systems and thus the

mutual regional interdependency. Eventually this might trigger more multilateral cooperation opposed to the current bilateral tradition of governing water and the downplaying of regional problems. The rise of multilateral agreements and treaties possibly sustained by international legislation would be the ultimate outcome. This will however remain difficult to obtain as long as interstate disputes prevail next to tensions in the inter regional relations between India, Pakistan, Nepal and Bangladesh.

Expected costs also influence the strategy that individuals, in this case India, take. It is shown by the example in the build up towards the Indus Treaty that money can really be an issue. In the Indus case the World Bank pitched in and thus the Indus treaty could be signed. The Dutch Government could consider allocating funds to specific NGO's in India when actively participating or setting up transboundary water projects.

In order to enhance the scope for the Dutch Government showing understanding for the existing issues and not only focussing on the benefits of cooperation for the Dutch Government can positively influence the climate. Taking another approach by defining and creating a new instrument that holds the balance between development aid and economic investments could also prove fruitful.

In general it can be said that for rules to be followed they should be formulated together by the concerned and relevant actors.

As for the existing rules in India on transboundary water management there is a lack of mutual formulated collective and constitutional rules. As these kind of rules are closer related to the central governments functioning it will be difficult for the Dutch government to take part in the development or reform of these.

Operational rules in use however come in to being through formal collective-choice arenas and informal collective-choice arenas. For this research these were set out in chapter five, being part of the arena means being able to influence the operational rules.

Influencing formal collective-choice arenas will prove to be rather challenging to tackle as they are already developed. The Dutch Government could however provide India with advice on formal monitoring and enforcement activities. As the Netherlands has experience in this area related to their own water governance system. On the short term this technical expertise can form an entry point.

The informal collective-choice arenas are really interesting for the Dutch Government. Firstly because India prefers and stimulates development cooperation through their NGO platforms. And secondly because the informal collective-choice arenas are more accessible. These arenas are formed by NGO platforms, universities, local environmental lobbyists, press and media etc. As such they hold a lot of potential for cooperation, based on knowledge and information exchange.

It is striking that when problems occur solution are mostly sought at the highest level. This can be seen in this research with the treaties forming the most relevant example underlining this tendency.

Approaching a problem bottom up, through these informal collective-choice arenas, might hold much more potential for success and eventually a solution. And there lies a great opportunity for the Dutch Government. By for example supporting specific NGOs the Dutch Government could obtain more influence in these arenas. By approaching the water issues bottom up the Dutch Government will also be perceived as less intimidating. Which is very important, as water is such a sensitive topic in the region.

The water crisis in the region seems to be one of management and lack of political will to manage this natural source in a sensible way. The development of political and

administrative awareness of sustainable use and management of water resources is needed to change the atmosphere and will be essential to the future.

Sharing knowledge and influencing the choice of strategy India makes through their internal world of choice and influencing operational rules in use will probably not be enough to change the situation in South Asia. This is mostly due to the complexity of the region and the water issues, the high level of politicization of the issues, the existing tensions and the predominance of India that is thus able to maintain a bilateral tradition and downplay regional problems.

Getting the issues on the international political agenda could trigger the processes and development of a more integrated approach to water issues and management. Important actors herein are the World Bank, the UN and the Asian Development Bank. If these organizations were to be lobbied this might be achieved.

For the Dutch Government in relation to this the GWPSA forms a good platform as it was set up by the WB and the UNDP. Next to this it is a hybrid organization that upholds good relations with the Netherlands and also receives financial support from the Dutch Government.

An even more interesting platform for the Dutch Government to lobby would be the EU. The EU already has a strategic partnership with India. India recently also showed interest to the Troika in sharing EU expertise and joining a working group on water (Ministry of Foreign Affairs 2006). By taking up a proactive attitude towards water issues in South Asia The Dutch Government could take the leading lobbying role through the EU platform.

This research studied the water issues from the view point of India thus giving insight in the Indian perspective. Alternatively the Dutch Government could consider approaching the transboundary water issues from other countries that might be more favourably disposed to cooperation and multilateral agreements. Following on the short description, in the previous chapter, of the partnership that the Dutch Government upholds with the country Bangladesh, this might prove to be a very good opportunity also.

7.3 REFLECTION ON THE PROJECT

While setting up the research a very broad scope was chosen integrating several issues and thus resulting in a relevant overview.

The overview is however largely based on literature review, conducting field research in India and/or neighbouring countries would provide relevant supplementary information.

Through the transboundary treaties commissions are constituted. More research on the workings of these specific commissions especially in the field of monitoring and enforcement would add an extra dimension to the studying of the treaties. By this is not meant only the monitoring and enforcement by the Commissions but also monitoring and enforcement of the Commissions. Does this exist and by whom is this conducted.

The informal collective-choice arenas seem like an interesting platform for contribution to the operational rules as they would appear to be easily accessed. During the research however little information is found on the composition of the informal collective-choice arenas some additional research could provide very specific opportunities for the Dutch Government.

In order to be able to contribute to water issues benchmarking should also be done, for example studying the Nile Basin project that was set up by the WB could provide valuable information on how to approach the issues in the South Asian region.

Extensive research on the specific knowledge in the Dutch water sector related to transboundary water issues could add to the effective exploitation of identified opportunities.

- Answers.com – World’s greatest encyclopedic dictionary (2006). From <http://www.answers.com>.
- Ast, J.A. (2000). *Interactief watermanagement in grensoverschrijdende riviersystemen*. Delft, Eburon.
- Bajpae, C. (2006). *Asia’s coming water wars*. From http://www.pinr.com/report.php?ac=view_report&report_id=545&language_id=1.
- Barrett, S. (1994). *Conflict and cooperation in managing international water resources*. Washington, The World Bank.
- Bieckmann, F., and Conradi, P. (2000). *Water naar de Zee. Vice Versa*, 1e kwartaal 2000, p. 6-13.
- Bilaterals.org (2006). From <http://www.bilaterals.org>.
- Blavin, J. (2000). *Coping with tragedies of the commons: local lessons, global challenges – a summary of a workshop by professor E. Ostrom*. From <http://ceip.org/programs/global/semostrom.htm>.
- Bogardi, J., and Castelein, S. (2002). *From conflict to co-operation in international water resources management: challenges and opportunities*. Delft, UNESCO – IHE.
- Both Ends (2006). From <http://www.bothends.org>.
- Bourne, C.B. (1997). *International Water Law*. London, Kluwer Law International Ltd.
- Chadda, S. (2005). *Kishanganga Hydro Power Project creates major disagreement between India and Pakistan – talks to continue with little hope*. From <http://www.indiadaily.com/editorial/1623.asp>.
- Cobb Jr., J.B., and Daly, H.E. (1989). *For the common good – Redirecting the economy toward community, the environment and a sustainable future*. Boston, Beacon Press.
- Coppes, H. (1994). *Twee Aziatische Veiligheidscomplexen; een veiligheidspolitieke vergelijking tussen de Association of South-East Asian Nations en de South Asian Association for Regional Cooperation*. Leiden, Juridisch Politiekwetenschappelijke opleiding – Rijksuniversiteit Leiden.
- Crow, B., Lindquist, A., and Wilson, D. (1995). *Sharing the Ganges: The politics and technology of river development*. Chapter 8, Table 18.
- Crow, B., and Singh, N. (2000). *Impediments and Innovation in International Rivers: The Waters of South Asia*. World Development, Vol. 28, No. 11, p. 1907-1925.
- Daily Star (2006). *BEN Newsletter*. Vol.2 No. 26, 2-06-06.
- Deccan Herald (2005). *Wullar Barrage: Indo-Pak dialogue tomorrow*. From <http://www.deccanherald.com/deccanherald/jun272005/national2130512005626.asp>.
- Development Alternatives (2001). From <http://www.devalt.org/water/WaterinIndia/characteristics.htm>.
- DGPZ (2003). *Watermanagement: River Linking Project/Aftakking Brahmaputra rivier*. From: BZ archives.
- Directory of Indian Government websites (2006). From <http://www.goidirectory.nic.in>.
- Doraiswamy, R., and Gujja, B. (2004). *Understanding Water conflicts – Case studies from South India*. Bangalore, Pragathi – Farmers’ Society for Rural Studies & Development.

- Escher, A. (1995). *Worldbank withdraws from ARUN III project at inspection panel's recommendation*. From <http://www.wcl.american.edu/hrbrief/v3i1/wldbnk31.htm>.
- Farouque, C.M. (2006). *Trans-boundary Catchments Conflicts and Resolutions: Bangladesh Perspective*. From <http://www.riversymposium.com>.
- Feddes, R.A. (2004). *Onzichtbaar water*. Wageningen, Wageningen Universiteit.
- Fourth World Water Forum , Regional Document, Asia – Pacific (2006). *Local Actions for a Local Challenge*, Comisión Nacional del Agua, Mexico.
- Gaastra, R., en Giezeman, I. (2000). *Kennis over water*. Apeldoorn, Reint Gaastra Producties BV.
- Gazdar, H. (2005). *Baglihar and Politics of Water – A historical perspective from Pakistan*. Economic and Political Weekly, 26 February, p. 813-817.
- Giordano, M.A., and Wolf A.T. (2003). *Sharing waters: Post-Rio international water management*. Natural Resources Forum 27, p. 163-171.
- Global Policy Forum (2006). *Water in conflict*. From <http://www.globalpolicy.org/security/natres/waterindex.htm>.
- Global Water Partnership (2006). From <http://www.gwpforum.org>.
- Goldstein, J.S., (2004). *International Relations*. New York, Longman.
- Government of India directory n.d. From <http://www.goidirectory.nic.in>.
- Government of India, (2002). *National Water Policy*. New Delhi, Ministry of Water Resources.
- Government of India, (1956). *The Inter-State Waterdisputes Act*. New Delhi, Ministry of Law, Justice and Company Affairs.
- Government of Nepal (2006). Ministry of Water Resources. From <http://www.doi.gov.np/id.php>.
- Gujja, B., Joy, K.J., Paranjape, S., Goud, V., and Vispute, S. (2006). *'Million Revolts' in the Making*. Economic and Political Weekly, 18 February, p. 570-574.
- Gupta, S. (1995). *India redefines its role – An analysis of India's changing internal dynamics and their impact on foreign relations*. Oxford, Oxford University Press for the International Institute for Strategic Studies.
- Gyawali, D., and Dixit, A. (1999). *Mahakali Impasse and Indo-Nepal Water Conflict*. Economic and Political Weekly, 27 February, p. 553-564.
- Gyawali, D., and Dixit, A. (2001). *How not to do a South Asian Treaty*. From <http://www.himalmag.com/apr2001/essay1.html>.
- Hali, S.M. (2004). *The Baglihar imbroglio*. From <http://www.infopak.gov.pk>.
- Hardin, G. (1968). *The Tragedy of the Commons*. p. 16-30.
- Harshe, R. (1999). *South Asian Regional Co-operation, Problems and Prospects*. Economic and Political Weekly, 8 May, p. 1100-1105.
- Hawken, P. (1993). *The ecology of commerce*. London, Weidenfeld and Nicolson.
- Hazarika, S. (2001). *GANGA Water sharing treaty – South Asia: sharing the giants – water sharing of Indus, Ganges and Brahmaputra Rivers*. UNESCO Courier, 21 October. From http://www.unesco.org/courier/2001_10/uk/index.htm.
- Hildering, P.A. (2004). *International law, sustainable development and water management*. Delft, Eburon Academic Publishers.
- Hindustan times (2005). *Baglihar report: Pak Commissioner alleges violations*. From <http://www.hindustantimes.com>.
- Hindustan times (2005). *India to go ahead with Baglihar dam*. From <http://www.hindustantimes.com>.
- Hindustan times (2006). *Baglihar verdict expected in November*. From <http://www.hindustantimes.com>.

- Husain, S.S. (2005). *Pakistan's perspective: The Baglihar Project*. From http://www.southasianmedia.net/magazine/journal/8_baglihar_project.htm.
- International Environmental Law Research Center n.d. *Indo – Swiss Research partnership on legal issues related to watersector restructuring: human rights, environment, agriculture and socio-economic aspects*. From http://www.ielrc.org/water/about_project.htm.
- Islam, N. (2006). *IRLP or the Ecological Approach to Rivers?* Economic and Political Weekly, 29 April, p. 1693-1700.
- Islam, M.R. (1987). *International legal aspects – The Ganges water dispute*. Dhaka, The University Press Limited.
- Iyer, R.R. (1999). *Conflict-Resolution: Three River Treaties*. Economic and Political Weekly, 12 June, p. 1509-1518.
- Iyer, R.R. (2001). *World Commission on Dams and India – Analysis of a relationship*. Economic and Political Weekly, 23 June, p. 2275-2281.
- Iyer, R.R. (2002). *The New National Water Policy*. Economic and Political Weekly, 4 May, p. 1701-1705.
- Iyer, R.R. (2000). *Baglihar, Neutral Expert and 'differences'*. From <http://www.hinduonnet.com/thehindu>.
- Jaspers, F.G.W. (2002). *Water allocation from international rivers*. Delft, International Institute for Infrastructural, Hydraulic and Environmental Engineering.
- Johnson, T. (2001). *Protecting the Global commons*. Environment matters, june, p. 18-21.
- Khalequzzaman, M. (2003). *Historic Perspectives of the Indian Riverlinking project*. From <http://www.e-mela.com>.
- Khurana, I. (2006). *Politics and litigation play havoc – Sutlej Yamuna Link Canal*. Economic and Political Weekly, 18 February, p. 608-611.
- Koppenjan, J., Klijn, E. (2004). *Managing uncertainties in networks*. Londen, Routledge.
- Kumar, A. (2006). *Khaleda's visit to India: Laying ground for new relationship*. South Asia Analysis Group. From <http://www.saag.org/papers18/paper1752.html>.
- Lee van der, H. (2003). *Feiten uit het eerste World Water Development Report*. VN Forum 2003 – 3, blz. 25-29.
- Letsch, M. (2001). *Geen water, geen fanfare*. India Nu, sept-okt 2001, p. 14-16.
- McCaffrey, S.C. (2003). *The need for flexibility in freshwater treaty regimes*. Natural Resources Forum 27, p. 156-162.
- McLoughlin, P. (2004). *Scientists say risk of water wars rising*. From <http://www.planetark.com/dailynewsstory.cfm/newsid/26728/story.htm>.
- Ministry of Water Resources – Government of India (2006). From <http://wrmin.nic.in>.
- Ministry of Water Resources – Government of India (2002). *National Water Policy*.
- Ministry of Foreign Affairs – Government of the Kingdom of the Netherlands (2006). *Archives of the Regional Directorate Asia and Oceania*. Den Haag.
- Ministry of Foreign Affairs – Government of the Kingdom of the Netherlands (2006). *Policy memorandum on India – Shaping a relationship for bilateral cooperation with India for the period 2006-2010*. Den Haag.
- Ministry of Foreign Affairs – Government of the Kingdom of the Netherlands (n.d.). From <http://www.bz.nl>.
- Ministry of Foreign Affairs – Government of the Kingdom of the Netherlands (2006). *Jaarplan 2006 DAO*. From <http://bznet>.

- Moigne le, G., Barghouti, S., Feder, G., Garbus, L., Xie, M. (1992). *Country experiences with water resources management – Economic, Institutional, Technological and Environmental issues*. Washington, The World Bank.
- Mollinga, P.P. (1998). *On the Waterfront – Water distribution, technology and agrarian change in a South Indian canal irrigation system*. Wageningen, Ponsen en Looijen.
- National encyclopedia of Bangladesh (2006). From <http://banglapedia.search.com.bd>.
- National portal of India (2005). From <http://www.india.gov.in>.
- National Water Development Agency (2006). From <http://nwda.gov.in>.
- OECD report. (2003). *Improving water management – Recent OECD experience*. Paris, OECD.
- Onta, I.R. (2006). *Large Dams and alternatives in Nepal: Experiences and lessons learnt*. From <http://www.dams.org/kbase/submissions/showsub.php?rec=opt024>.
- Ostrom, E. (1990). *Governing the commons – The evolution of institutions for collective action*. Cambridge, Cambridge University Press.
- Peace Palace Library (2006). From <http://www.ppl.nl/bibliographies/all/?bibliography=water>.
- Pearce, F. (1992). *The Dammed – Rivers, dams, and the coming world water crisis*. Londen, The Bodley Head.
- Policy and Operations Evaluation Department (IOB), the Ministry of Foreign Affairs of the Netherlands (2000). *IOB-evaluations # 284 –Institutional development; Netherlands support to the watersector 1988-1998*. Schiedam, TDS drukwerken.
- Rediff (2005). *Baglihar verdict to be binding on Pak, India: Swiss Expert*. From <http://www.rediff.com/news/2005/oct/04baglihar.htm>.
- Robson, C. (2002). *Real world Research*. Malden, Blackwell Publishing.
- Roul, A. (2006). *India's water future – Are interbasin water transfers a solution?* From: <http://www.ecoworld.com>.
- Sengupta, N. (1991). *Managing Common Property – Irrigation in India and the Philippines*. New Delhi, Sage Publications.
- Sharma, S.P. (2006). *Indo-Pak pact on waters hurdle in power projects*. Tribune News Service. From <http://www.tribuneindia.com/2005/20051008/j&k.htm#1>.
- Sharma, V. (2006). *Pakistan's broken promises*. From <http://www.hindustantimes.com>.
- Singh, A.K. (2006). *The Sharing of Mahakali River water – India and Nepal*. From <http://www.dams.org/kbase/submissions/showsub.php?rec=INS026>.
- Sinha, R. (2006). *Two Neighbours and a treaty – Baglihar Project in hot waters*. Economic and Political Weekly, 18 February, p. 606-608.
- Sobhan, R. (1998). *Regional Cooperation in South Asia: A Quest for Identity*. South Asian Survey, Vol. 5 nr. 1, p.3-26.
- South Asia Analysis Group (2006). From <http://www.saag.org>.
- South Asian Association for Regional Cooperation (2006). From <http://www.saarc-sec.org>.
- South Asia Co-operative Environment programme (nd). From <http://www.sacep.org>.
- Soussan, J. (2000). *Netherlands support to the drinking water sector in India: Impacts on Institutional development and change*. Leeds, Policy and Operations Evaluation Department (IOB), The Ministry of Foreign Affairs of the Netherlands.

- Subedi, S.P. (2005). *International Watercourses law for the 21st century – The case of the river Ganges basin*. Hampshire, Ashgate Publishing Limited.
- Thapa, A. (2006). *Himalayan Study and Water Resources*. From <http://nepal-environment.blogspot.com/2006/05/himalayan-study-and-water-resources.html>.
- The Asian Development Bank (2006). From <http://www.adb.org>.
- The Indian Embassy (2006). From <http://www.indianembassy.org>
- The International Water Law Project (2006). *The Convention on the Law of the Non-navigational Uses of International Water courses*. From <http://www.internationalwaterlaw.org>.
- The United Nations Economic Commission for Europe (2006). *The Convention on the Protection and Use of Transboundary Watercourses and International Lakes*. From <http://www.unece.org/env/water/pdf/watercon.pdf>.
- The United Nations (2005). *The UN Millenium Development Goals*. From <http://www.un.org/millenniumgoals>.
- The United Nations (2006). From <http://untreaty.un.org>.
- The United Nations (2003). *First UN World Water Development Report: Water for people, water for life*. From <http://www.unesco.org/water/wwap>.
- The United Nations world water development report 2 (2006). *Water a shared responsibility*.
- The World Bank (2006). From <http://www.worldbank.com>.
- The World Bank (2005). *India faces severe water crisis in 20 years*. Newsletter, 6-10-05.
- The World Bank (2006). From <http://www.web.worldbank.org>.
- The World Commission on Dams (2006). From <http://www.dams.org>.
- The World Water Council (2006). From <http://www.worldwatercouncil.org>.
- The World Water Institute (2006). *Policy dialogue on water conflicts in India*. From <http://www.worldwaterinstitute.org>.
- Thiel van, S (2005). Bestuurskundig onderzoek college sheets.
- Tiwary, R. (2006). *Conflicts over International Waters*. Economic and Political Weekly, 29 April, p. 1684-1692.
- Tiwary, R. (2000). *The Dynamics of conflicts over transboundary waters: analyzing the Indo-Bangladesh Case*. From <http://www.iwmi.org/iwmi-tata>.
- Toolbox Integrated Water Resources Management (2004). CD-ROM, *Sharing knowledge for equitable, efficient and sustainable water resources management*, Netherlands Water Partnership, Delft.
- Transboundary Freshwater Dispute Database (2005). From <http://www.transboundarywaters.orst.edu>.
- Transboundary Rivers Group, Bangladesh Poribesh Andolon (2006). *The Indian River Linking Project*. From <http://www.bapa.info>.
- Udall, L. (1995). *Arun III Hydroelectric Project in Nepal: Another World Bank Debacle?* From <http://www.hartford-hwp.com/archives/52/054.html>.
- Water wat en hoe n.d. From http://www.minbuza.nl/default.asp?CMS_ITEM=45EAF116CB2640BEB1F4B96000504DDDX3X40358X22.
- Warikoo, K. (2006). *Indus Waters Treaty: View from Kashmir*. From <http://www.jammu-kashmir.com/insights>.
- Weilou, W. (2006). *Water resources and the Sino-Indian strategic partnership*. Big Country, small world – China rights forum, No. 1 2006, p. 44-46.
- Westing, A.H. (1986). *Global resources and international conflict*. Oxford/New York, Oxford University Press.

- Wikipedia (2006). *The free encyclopedia*. From <http://www.en.wikipedia.org/wiki>.
- Wolf, A.T. (1999). *Criteria for equitable allocations: the heart of international water conflict*. *Natural Resources Forum* 23, p. 3-30.
- Wouters, P. (1997). *International Water Law – Selected Writings of Professor Charles B. Bourne*, London, Kluwer Law International.
- Yin, R.K. (1994). *Case study research – design and methods*. Thousand Oaks, Sage Publications, Inc.

9 ANNEXES

9.1 THE NATIONAL WATER POLICY

Government of India, Ministry of Water Resources, New Delhi, April 2002.

Need for a National Water Policy

1.1 Water is a prime natural resource, a basic human need and a precious national asset. Planning, development and management of water resources need to be governed by national perspectives.

1.2 As per the latest assessment (1993), out of the total precipitation, including snowfall, of around 4000 billion cubic metre in the country, the availability from surface water and replenish able ground water is put at 1869 billion cubic metre. Because of topographical and other constraints, about 60% of this i.e. 690 billion cubic metre from surface water and 432 billion cubic metre from ground water, can be put to beneficial use. Availability of water is highly uneven in both space and time. Precipitation is confined to only about three or four months in a year and varies from 100 mm in the western parts of Rajasthan to over 10000 mm at Cherrapunji in Meghalaya. Rivers and under ground aquifers often cut across state boundaries. Water, as a resource is one and indivisible: rainfall, river waters, surface ponds and lakes and ground water are all part of one system.

1.3 Water is part of a larger ecological system. Realising the importance and scarcity attached to the fresh water, it has to be treated as an essential environment for sustaining all life forms.

1.4 Water is a scarce and precious national resource to be planned, developed, conserved and managed as such, and on an integrated and environmentally sound basis, keeping in view the socio-economic aspects and needs of the States. It is one of the most crucial elements in developmental planning. As the country has entered the 21st century, efforts to develop, conserve, utilise and manage this important resource in a sustainable manner, have to be guided by the national perspective.

1.5 Floods and droughts affect vast areas of the country, transcending state boundaries. One-sixth area of the country is drought-prone. Out of 40 million hectare of the flood prone area in the country, on an average, floods affect an area of around 7.5 million hectare per year. Approach to management of droughts and floods have to be co-ordinated and guided at the national level.

1.6 Planning and implementation of water resources projects involve a number of socio-economic aspects and issues such as environmental sustainability, appropriate resettlement and rehabilitation of project-affected people and livestock, public health concerns of water impoundment, dam safety etc. Common approaches and guidelines are necessary on these matters. Moreover, certain problems and weaknesses have affected a large number of water resources projects all over the country. There have been substantial time and cost overruns on projects. Problems of water logging and soil salinity have emerged in some irrigation commands, leading to the degradation of agricultural land. Complex issues of equity and social justice in regard to water distribution are required to be addressed. The development and overexploitation of groundwater resources in certain parts of the country have raised the concern and

need for judicious and scientific resource management and conservation. All these concerns need to be addressed on the basis of common policies and strategies.

1.7 Growth process and the expansion of economic activities inevitably lead to increasing demands for water for diverse purposes: domestic, industrial, agricultural, hydro-power, thermal-power, navigation, recreation, etc. So far, the major consumptive use of water has been for irrigation. While the gross irrigation potential is estimated to have increased from 19.5 million hectare at the time of independence to about 95 million hectare by the end of the Year 1999-2000, further development of a substantial order is necessary if the food and fiber needs of our growing population are to be met with. The country's population which is over 1027 million (2001 AD) at present is expected to reach a level of around 1390 million by 2025 AD.

1.8 Production of food grains has increased from around 50 million tonnes in the fifties to about 208 million tonnes in the Year 1999-2000. This will have to be raised to around 350 million tonnes by the year 2025 AD. The drinking water needs of people and livestock have also to be met. Domestic and industrial water needs have largely been concentrated in or near major cities. However, the demand in rural areas is expected to increase sharply as the development programmes improve economic conditions of the rural masses. Demand for water for hydro and thermal power generation and for other industrial uses is also increasing substantially. As a result, water, which is already a scarce resource, will become even scarcer in future. This underscores the need for the utmost efficiency in water utilisation and a public awareness of the importance of its conservation.

1.9 Another important aspect is water quality. Improvements in existing strategies, innovation of new techniques resting on a strong science and technology base are needed to eliminate the pollution of surface and ground water resources, to improve water quality. Science and technology and training have to play important roles in water resources development and management in general.

1.10 National Water Policy was adopted in September, 1987. Since then, a number of issues and challenges have emerged in the development and management of the water resources. Therefore, the National Water Policy (1987) has been reviewed and updated.

Information System

2.1 A well developed information system, for water related data in its entirety, at the national / state level, is a prime requisite for resource planning. A standardised national information system should be established with a network of data banks and data bases, integrating and strengthening the existing Central and State level agencies and improving the quality of data and the processing capabilities.

2.2 Standards for coding, classification, processing of data and methods / procedures for its collection should be adopted. Advances in information technology must be introduced to create a modern information system promoting free exchange of data among various agencies. Special efforts should be made to develop and continuously upgrade technological capability to collect, process and disseminate reliable data in the desired time frame.

2.3 Apart from the data regarding water availability and actual water use, the system should also include comprehensive and reliable projections of future demands of water for diverse purposes.

Water Resources Planning

3.1 Water resources available to the country should be brought within the category of utilisable resources to the maximum possible extent.

3.2 Non-conventional methods for utilisation of water such as through inter-basin transfers, artificial recharge of ground water and desalination of brackish or sea water as well as traditional water conservation practices like rainwater harvesting, including roof-top rainwater harvesting, need to be practiced to further increase the utilisable water resources. Promotion of frontier research and development, in a focused manner, for these techniques is necessary.

3.3 Water resources development and management will have to be planned for a hydrological unit such as drainage basin as a whole or for a sub-basin, multi-sectorally, taking into account surface and ground water for sustainable use incorporating quantity and quality aspects as well as environmental considerations. All individual developmental projects and proposals should be formulated and considered within the framework of such an overall plan keeping in view the existing agreements / awards for a basin or a sub basin so that the best possible combination of options can be selected and sustained.

3.4 Watershed management through extensive soil conservation, catchment-area treatment, preservation of forests and increasing the forest cover and the construction of check-dams should be promoted. Efforts shall be to conserve the water in the catchment.

3.5 Water should be made available to water short areas by transfer from other areas including transfers from one river basin to another, based on a national perspective, after taking into account the requirements of the areas / basins.

Institutional Mechanism

4.1 With a view to give effect to the planning, development and management of the water resources on a hydrological unit basis, along with a multi-sectoral, multi-disciplinary and participatory approach as well as integrating quality, quantity and the environmental aspects, the existing institutions at various levels under the water resources sector will have to be appropriately reoriented / reorganised and even created, wherever necessary. As maintenance of water resource schemes is under non-plan budget, it is generally being neglected. The institutional arrangements should be such that this vital aspect is given importance equal or even more than that of new constructions.

4.2 Appropriate river basin organisations should be established for the planned development and management of a river basin as a whole or sub-basins, wherever necessary. Special multi disciplinary units should be set up to prepare comprehensive plans taking into account not only the needs of irrigation but also harmonising various other water uses, so that the available water resources are determined and put to optimum use having regard to existing agreements or awards of Tribunals under the relevant laws. The scope and powers of the river basin organisations shall be decided by the basin states themselves.

Water Allocation Priorities

5. In the planning and operation of systems, water allocation priorities should be broadly as follows:

- Drinking water
- Irrigation
- Hydro-power
- Ecology
- Agro-industries and non-agricultural industries
- Navigation and other uses.

However, the priorities could be modified or added if warranted by the area / region specific considerations.

Project Planning

6.1 Water resource development projects should as far as possible be planned and developed as multipurpose projects. Provision for drinking water should be a primary consideration.

6.2 The study of the likely impact of a project during construction and later on human lives, settlements, occupations, socio-economic, environment and other aspects shall form an essential component of project planning.

6.3 In the planning, implementation and operation of a project, the preservation of the quality of environment and the ecological balance should be a primary consideration. The adverse impact on the environment, if any, should be minimised and should be offset by adequate compensatory measures. The project should, nevertheless, be sustainable.

6.4 There should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment area treatment and management, environmental and ecological aspects, the rehabilitation of affected people and command area development. The planning of projects in hilly areas should take into account the need to provide assured drinking water, possibilities of hydro-power development and the proper approach to irrigation in such areas, in the context of physical features and constraints of the basin such as steep slopes, rapid run-off and the incidence of soil erosion. The economic evaluation of projects in such areas should also take these factors into account.

6.5 Special efforts should be made to investigate and formulate projects either in, or for the benefit of, areas inhabited by tribal or other specially disadvantaged groups such as socially weak, scheduled castes and scheduled tribes. In other areas also, project planning should pay special attention to the needs of scheduled castes and scheduled tribes and other weaker sections of the society. The economic evaluation of projects benefiting such disadvantaged sections should also take these factors into account.

6.6 The drainage system should form an integral part of any irrigation project right from the planning stage.

6.7 Time and cost overruns and deficient realisation of benefits characterising most water related projects should be overcome by upgrading the quality of project preparation and management. The inadequate funding of projects should be obviated by an optimal allocation of resources on the basis of prioritisation, having regard to the early completion of on-going projects as well as the need to reduce regional imbalances.

6.8 The involvement and participation of beneficiaries and other stakeholders should be encouraged right from the project planning stage itself.

Ground Water Development

7.1 There should be a periodical reassessment of the ground water potential on a scientific basis, taking into consideration the quality of the water available and economic viability of its extraction.

7.2 Exploitation of ground water resources should be so regulated as not to exceed the recharging possibilities, as also to ensure social equity. The detrimental environmental consequences of overexploitation of ground water need to be effectively prevented by the Central and State Governments. Ground water recharge projects should be developed and implemented for improving both the quality and availability of ground water resource.

7.3 Integrated and coordinated development of surface water and ground water resources and their conjunctive use, should be envisaged right from the project planning stage and should form an integral part of the project implementation.

7.4 Over exploitation of ground water should be avoided especially near the coast to prevent ingress of seawater into sweet water aquifers.

Drinking Water

8. Adequate safe drinking water facilities should be provided to the entire population both in urban and in rural areas. Irrigation and multipurpose projects should invariably include a drinking water component, wherever there is no alternative source of drinking water. Drinking water needs of human beings and animals should be the first charge on any available water.

Irrigation

9.1 Irrigation planning either in an individual project or in a basin as a whole should take into account the irrigability of land, cost-effective irrigation options possible from all available sources of water and appropriate irrigation techniques for optimising water use efficiency. Irrigation intensity should be such as to extend the benefits of irrigation to as large a number of farm families as possible, keeping in view the need to maximise production.

9.2 There should be a close integration of water-use and land-use policies.

9.3 Water allocation in an irrigation system should be done with due regard to equity and social justice. Disparities in the availability of water between head-reach and tail-end farms and between large and small farms should be obviated by adoption of a rotational water distribution system and supply of water on a volumetric basis subject to certain ceilings and rational pricing.

9.4 Concerted efforts should be made to ensure that the irrigation potential created is fully utilised. For this purpose, the command area development approach should be adopted in all irrigation projects.

9.5 Irrigation being the largest consumer of fresh water, the aim should be to get optimal productivity per unit of water. Scientific water management, farm practices and sprinkler and drip system of irrigation should be adopted wherever feasible.

9.6 Reclamation of water logged / saline affected land by scientific and cost-effective methods should form a part of command area development programme.

Resettlement and Rehabilitation

10. Optimal use of water resources necessitates construction of storages and the consequent resettlement and rehabilitation of population. A skeletal national policy in this regard needs to be formulated so that the project affected persons share the benefits through proper rehabilitation. States should accordingly evolve their own detailed resettlement and rehabilitation policies for the sector, taking into account the local conditions. Careful planning is necessary to ensure that the construction and rehabilitation activities proceed simultaneously and smoothly.

Financial and Physical Sustainability

11. Besides creating additional water resources facilities for various uses, adequate emphasis needs to be given to the physical and financial sustainability of existing facilities. There is, therefore, a need to ensure that the water charges for various uses should be fixed in such a way that they cover at least the operation and maintenance charges of providing the service initially and a part of the capital costs subsequently. These rates should be linked directly to the quality of service provided. The subsidy on water rates to the disadvantaged and poorer sections of the society should be well targeted and transparent.

Participatory Approach to Water Resources Management

12. Management of the water resources for diverse uses should incorporate a participatory approach; by involving not only the various governmental agencies but also the users and other stakeholders, in an effective and decisive manner, in various aspects of planning, design, development and management of the water resources schemes. Necessary legal and institutional changes should be made at various levels for the purpose, duly ensuring appropriate role for women. Water Users' Associations and the local bodies such as municipalities and *gram panchayats* should particularly be involved in the operation, maintenance and management of water infrastructures / facilities at appropriate levels progressively, with a view to eventually transfer the management of such facilities to the user groups / local bodies.

Private Sector Participation

13. Private sector participation should be encouraged in planning, development and management of water resources projects for diverse uses, wherever feasible. Private sector participation may help in introducing innovative ideas, generating financial resources and introducing corporate management and improving service efficiency and accountability to users. Depending upon the specific situations, various combinations of private sector participation, in building, owning, operating, leasing and transferring of water resources facilities, may be considered.

Water Quality

14.1 Both surface water and ground water should be regularly monitored for quality. A phased programme should be undertaken for improvements in water quality.

14.2 Effluents should be treated to acceptable levels and standards before discharging them into natural streams.

14.3 Minimum flow should be ensured in the perennial streams for maintaining ecology and social considerations.

14.4 Principle of 'polluter pays' should be followed in management of polluted water.

14.5 Necessary legislation is to be made for preservation of existing water bodies by preventing encroachment and deterioration of water quality.

Water Zoning

15. Economic development and activities including agricultural, industrial and urban development, should be planned with due regard to the constraints imposed by the configuration of water availability. There should be water zoning of the country and the economic activities should be guided and regulated in accordance with such zoning.

Conservation of Water

16.1 Efficiency of utilisation in all the diverse uses of water should be optimised and an awareness of water as a scarce resource should be fostered. Conservation consciousness should be promoted through education, regulation, incentives and disincentives.

16.2 The resources should be conserved and the availability augmented by maximising retention, eliminating pollution and minimising losses. For this, measures like selective linings in the conveyance system, modernisation and rehabilitation of existing systems including tanks, recycling and re-use of treated effluents and adoption of traditional techniques like mulching or pitcher irrigation and new techniques like drip and sprinkler may be promoted, wherever feasible.

Flood Control and Management

17.1 There should be a master plan for flood control and management for each flood prone basin.

17.2 Adequate flood-cushion should be provided in water storage projects, wherever feasible, to facilitate better flood management. In highly flood prone areas, flood control should be given overriding consideration in reservoir regulation policy even at the cost of sacrificing some irrigation or power benefits.

17.3 While physical flood protection works like embankments and dykes will continue to be necessary, increased emphasis should be laid on non-structural measures such as flood forecasting and warning, flood plain zoning and flood proofing for the minimisation of losses and to reduce the recurring expenditure on flood relief.

17.4 There should be strict regulation of settlements and economic activity in the flood plain zones along with flood proofing, to minimise the loss of life and property on account of floods.

17.5 The flood forecasting activities should be modernised, value added and extended to other uncovered areas. Inflow forecasting to reservoirs should be instituted for their effective regulation.

Land Erosion by Sea or River

18.1 The erosion of land, whether by the sea in coastal areas or by river waters inland, should be minimised by suitable cost-effective measures. The States and Union Territories should also undertake all requisite steps to ensure that indiscriminate occupation and exploitation of coastal strips of land are discouraged and that the location of economic activities in areas adjacent to the sea is regulated.

18.2 Each coastal State should prepare a comprehensive coastal land management plan, keeping in view the environmental and ecological impacts, and regulate the developmental activities accordingly.

Drought-prone Area Development

19.1 Drought-prone areas should be made less vulnerable to drought-associated problems through soilmoisture conservation measures, water harvesting practices, minimisation of evaporation losses, development of the ground water potential including recharging and the transfer of surface water from surplus areas where feasible and appropriate. Pastures, forestry or other modes of development which are relatively less water demanding should be encouraged. In planning water resource development projects, the needs of drought-prone areas should be given priority.

19.2 Relief works undertaken for providing employment to drought-stricken population should preferably be for drought proofing.

Monitoring of Projects

20.1 A close monitoring of projects to identify bottlenecks and to adopt timely measures to obviate time and cost overrun should form part of project planning and execution.

20.2 There should be a system to monitor and evaluate the performance and socio-economic impact of the project.

Water Sharing / Distribution amongst the States

21.1 The water sharing / distribution amongst the states should be guided by a national perspective with due regard to water resources availability and needs within the river basin. Necessary guidelines, including for water short states even outside the basin, need to be evolved for facilitating future agreements amongst the basin states.

21.2 The Inter-State Water Disputes Act of 1956 may be suitably reviewed and amended for timely adjudication of water disputes referred to the Tribunal.

Performance Improvement

22. There is an urgent need of paradigm shift in the emphasis in the management of water resources sector. From the present emphasis on the creation and expansion of water resources infrastructures for diverse uses, there is now a need to give greater emphasis on the improvement of the performance of the existing water resources facilities. Therefore, allocation of funds under the water resources sector should be

re-prioritised to ensure that the needs for development as well as operation and maintenance of the facilities are met.

Maintenance and Modernisation

23.1 Structures and systems created through massive investments should be properly maintained in good health. Appropriate annual provisions should be made for this purpose in the budgets.

23.2 There should be a regular monitoring of structures and systems and necessary rehabilitation and modernisation programmes should be undertaken.

23.3 Formation of Water Users' Association with authority and responsibility should be encouraged to facilitate the management including maintenance of irrigation system in a time bound manner.

Safety of Structures

24. There should be proper organisational arrangements at the national and state levels for ensuring the safety of storage dams and other water-related structures consisting of specialists in investigation, design, construction, hydrology, geology, etc. A dam safety legislation may be enacted to ensure proper inspection, maintenance and surveillance of existing dams and also to ensure proper planning, investigation, design and construction for safety of new dams. The Guidelines on the subject should be periodically updated and reformulated. There should be a system of continuous surveillance and regular visits by experts.

Science and Technology

25. For effective and economical management of our water resources, the frontiers of knowledge need to be pushed forward in several directions by intensifying research efforts in various areas, including the following:

- hydrometeorology;
- snow and lake hydrology;
- surface and ground water hydrology;
- river morphology and hydraulics;
- assessment of water resources;
- water harvesting and ground water recharge;
- water quality;
- water conservation;
- evaporation and seepage losses;
- recycling and re-use;
- better water management practices and improvements in operational technology;
- crops and cropping systems;
- soils and material research;
- new construction materials and technology (with particular reference to roller compacted concrete, fiber reinforced concrete, new methodologies in tunneling technologies, instrumentation, advanced numerical analysis in structures and back analysis);
- seismology and seismic design of structures;
- the safety and longevity of water-related structures;
- economical designs for water resource projects;

- risk analysis and disaster management;
- use of remote sensing techniques in development and management;
- use of static ground water resource as a crisis management measure;
- sedimentation of reservoirs;
- use of sea water resources;
- prevention of salinity ingress;
- prevention of water logging and soil salinity;
- reclamation of water logged and saline lands;
- environmental impact;
- regional equity.

Training

26. A perspective plan for standardised training should be an integral part of water resource development. It should cover training in information systems, sectoral planning, project planning and formulation, project management, operation of projects and their physical structures and systems and the management of the water distribution systems. The training should extend to all the categories of personnel involved in these activities as also the farmers.

Conclusion

27. In view of the vital importance of water for human and animal life, for maintaining ecological balance and for economic and developmental activities of all kinds, and considering its increasing scarcity, the planning and management of this resource and its optimal, economical and equitable use has become a matter of the utmost urgency. Concerns of the community needs to be taken into account for water resources development and management. The success of the National Water Policy will depend entirely on evolving and maintaining a national consensus and commitment to its underlying principles and objectives. To achieve the desired objectives, State Water Policy backed with an operational action plan shall be formulated in a time bound manner say in two years. National Water Policy may be revised periodically as and when need arises.

GOVERNMENT OF INDIA
LAW, JUSTICE AND COMPANY AFFAIRS (MINISTRY OF.....)
THE INTER-STATE WATER DISPUTES ACT, 1956



33 OF 1956¹

[As Modified up to the 31st December, 1980]

[28th August, 1956.]

An Act to provide for the adjudication of disputes relating to waters of inter-State rivers and river valleys.

BE it enacted by Parliament in the Seventh Year of the Republic of India as follows:—

1. (1) This Act may be called the Inter-State Water Disputes Act, 1956.

Short title and extent.

(2) It extends to the whole of India.

2. In this Act, unless the context otherwise requires:—

Definitions.

(a) "prescribed" means prescribed by rules made under this Act;

(b) "Tribunal" means a Water Disputes Tribunal constituted under section 4;

(c) "water dispute" means any dispute or difference between two or more State Governments with respect to—

(i) the use, distribution or control of the waters of, or in, any inter-State river or river valley; or

(ii) the interpretation of the terms of any agreement relating to the use, distribution or control of such waters or the implementation of such agreement; or

(iii) the levy of any water rate in contravention of the prohibition contained in section 7.

3. If it appears to the Government of any State that a water dispute with the Government of another State has arisen or is likely to arise by reason of the fact that the interests of the State, or of any of the inhabitants thereof, in the waters of an inter-State river or river valley have been, or are likely to be, affected prejudicially by—

Complaints by State Governments as to water disputes.

(a) any executive action or legislation taken or passed, or proposed to be taken or passed, by the other State; or

(b) the failure of the other State or any authority therein to exercise any of their powers with respect to the use, distribution or control of such waters; or

(c) the failure of the other State to implement the terms of any agreement relating to the use, distribution or control of such waters;

the State Government may, in such form and manner as may be prescribed, request the Central Government to refer the water dispute to a Tribunal for adjudication.

¹Extended to Dadra and Nagar Haveli by Regulation 6 of 1963, section 2 and Schedule 1 and to Pondicherry by Regulation 7 of 1963, section 3 and Schedule I.

Price : (Inland) Rs. 0.85 (Foreign) £ 0.10 or 31 Cents.

Constitution
of Tribunal.

4. (1) When any request under section 3 is received from any State Government in respect of any water dispute and the Central Government is of opinion that the water dispute cannot be settled by negotiations, the Central Government shall, by notification in the Official Gazette, constitute a Water Disputes Tribunal for the adjudication of the water dispute.

¹[(2) The Tribunal shall consist of a Chairman and two other members nominated in this behalf by the Chief Justice of India from among persons who at the time of such nomination are Judges of the Supreme Court or of a High Court.]

(3) The Tribunal may appoint two or more persons as assessors to advise it in the proceeding before it.

Adjudica-
tion of
water dis-
putes.

5. (1) When a Tribunal has been constituted under section 4, the Central Government shall, subject to the prohibition contained in section 8, refer the water dispute and any matter appearing to be connected with, or relevant to, the water dispute to the Tribunal for adjudication.

²(2) The Tribunal shall investigate the matters referred to it and forward to the Central Government a report setting out the facts as found by it and giving its decision on the matters referred to it.

(3) If, upon consideration of the decision of the Tribunal, the Central Government or any State Government is of opinion that anything therein contained requires explanation or that guidance is needed upon any point not originally referred to the Tribunal, the Central Government or the State Government, as the case may be, may, within three months from the date of the decision, again refer the matter to the Tribunal for further consideration, and on such reference, the Tribunal may forward to the Central Government a further report giving such explanation or guidance as it deems fit and in such a case, the decision of the Tribunal shall be deemed to be modified accordingly.

³[(4) If the members of the Tribunal differ in opinion on any point, the point shall be decided according to the opinion of the majority.]

Filling of
vacancies.

⁴[5A. If, for any reason a vacancy (other than a temporary absence) occurs in the office of the Chairman or any other member of a Tribunal, such vacancy shall be filled by a person to be nominated in this behalf by the Chief Justice of India in accordance with the provisions of sub-section (2) of section 4, and the investigation of the matter referred to the Tribunal may be continued by the Tribunal after the vacancy is filled and from the stage at which the vacancy occurred.]

Publication
of decision
of Tribunal.

6. The Central Government shall publish the decision of the Tribunal in the Official Gazette and the decision shall be final and binding on the parties to the dispute and shall be given effect to by them.

Power
to make
schemes
to imple-
ment
decision
of Tri-
bunal.

⁵[6A. (1) Without prejudice to the provisions of section 6, the Central Government may, by notification in the Official Gazette, frame a scheme or schemes whereby provision may be made for all matters necessary to give effect to the decision of a Tribunal.

(2) A scheme framed under sub-section (1) may provide for—

(a) the establishment of any authority (whether described as such or as a committee or other body) for the implementation of the decision or directions of the Tribunal;

¹Substituted by Act 35 of 1968, section 2, for the previous sub-section.

²Inserted by section 3, *ibid*.

³Inserted by section 4, *ibid*.

⁴Inserted by Act 45 of 1980, section 2 (with effect from 27-8-1980)

(b) the composition, jurisdiction, powers and functions of the authority, term of office and other conditions of service of, the procedure to be followed by, and the manner of filling vacancies among, the members of the authority;

(c) the holding of a minimum number of meetings of the authority every year, the quorum for such meetings and the procedure thereat;

(d) the appointment of any standing, *ad hoc* or other committees by the authority;

(e) the employment of a Secretary and other staff by the authority, the pay and allowances and other conditions of service of such staff;

(f) the constitution of a fund by the authority, the amounts that may be credited to such fund and the expenses to which the fund may be applied;

(g) the form and the manner in which accounts shall be kept by the authority;

(h) the submission of an annual report by the authority of its activities;

(i) the decisions of the authority which shall be subject to review;

(j) the constitution of a committee for making such review and the procedure to be followed by such committee; and

(k) any other matter which may be necessary or proper for the effective implementation of the decision or directions of the Tribunal.

(3) In making provision in any scheme framed under sub-section (1) for the establishment of an authority for giving effect to the decision of a Tribunal; the Central Government may, having regard to the nature of the jurisdiction, powers and functions required to be vested in such authority in accordance with such decision and all other relevant circumstances, declare in the said scheme that such authority shall, under the name specified in the said scheme, have capacity to acquire, hold and dispose of property, enter into contracts, sue and be sued and do all such acts as may be necessary for the proper exercise and discharge of its jurisdiction, powers and functions.

(4) A scheme may empower the authority to make, with the previous approval of the Central Government, regulations for giving effect to the purposes of the scheme.

(5) The Central Government may, by notification in the Official Gazette, add to, amend, or vary, any scheme framed under sub-section (1).

(6) Every scheme framed under this section shall have effect notwithstanding anything contained in any law for the time being in force (other than this Act) or any instrument having effect by virtue of any law other than this Act.

(7) Every scheme and every regulation made under a scheme shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the scheme or the regulation or both Houses agree that the scheme or the regulation should not be made, the scheme or the regulation shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that scheme or regulation.]

Prohibition of levy of seigniorage, etc.

7, (1) No State Government shall, by reason only of the fact that any works for the conservation, regulation or utilisation of water resources of an inter-State river have been constructed within the limits of the State, impose, or authorise the imposition of, any seigniorage or additional rate or fee (by whatever name called) in respect of the use of such water by any other State or the inhabitants thereof.

(2) Any dispute or difference between two or more State Governments with respect to the levy of any water rate in contravention of the prohibition contained in sub-section (1) shall be deemed to be a water dispute.

Bar of reference of certain disputes to Tribunal.

8. Notwithstanding anything contained in section 3 or section 5, no reference shall be made to a Tribunal of any dispute that may arise regarding any matter which may be referred to arbitration under the River Boards Act, ¹[1956]. 49 of 1956.

Powers of Tribunal.

9. (1) The Tribunal shall have the same powers as are vested in a civil court under the Code of Civil Procedure, 1908, in respect of the following matters, 5 of 1908, namely:—

(a) summoning and enforcing the attendance of any person and examining him on oath;

(b) requiring the discovery and production of documents and material objects;

(c) issuing commissions for the examination of witnesses or for local investigation;

(d) any other matter which may be prescribed.

(2) The Tribunal may require any State Government to carry out, or permit to be carried out, such surveys and investigation as may be considered necessary for the adjudication of any water dispute pending before it.

(3) A decision of the Tribunal may contain directions as to the Government by which the expenses of the Tribunal and any costs incurred by any State Government in appearing before the Tribunal are to be paid, and may fix the amount of any expenses or costs to be so paid, and so far as it relates to expenses or costs, may be enforced as if it were an order made by the Supreme Court.

(4) ²[Subject to the provisions of this Act and any rules that may be made thereunder] the Tribunal may, by order, regulate its practice and procedure.

¹Substituted by Act 36 of 1957, section 3 and Schedule II, for "1953".

²Substituted by Act 35 of 1968, section 5, for certain words.

14 (1) Notwithstanding anything contained in the foregoing provisions of this Act, the Central Government may, by notification in the Official Gazette constitute a Tribunal under this Act, to be known as the Ravi and Beas Waters Tribunal for the verification and adjudication of the matters referred to in paragraphs 9.1 and 9.2 respectively, of the Punjab Settlement.

Constitution
of Ravi and
Beas Waters
Tribunal.

(2) When a Tribunal has been constituted under sub-section (1), the provisions of sub-sections (2) and (3) of section 4, sub-sections (2), (3) and (4) of section 5 and sections 5A to 13 (both inclusive) of this Act relating to the constitution, jurisdiction, powers, authority and bar of jurisdiction shall so far as may be, but subject to sub-section (3) hereof, apply to the constitution, jurisdiction, powers, authority and bar of jurisdiction in relation to the Tribunal constituted under sub-section (1).

(3) When a Tribunal has been constituted under sub-section (1), the Central Government alone may suo moto or at the request of the concerned State Government refer the matters specified in paragraphs 9.1 and 9.2 of the Punjab settlement to such Tribunal.

Explanation - For the purpose of this section, 'Punjab Settlement' means the Memorandum of Settlement signed at New Delhi on the 24th day of July, 1989.

The Indus Waters Treaty 1960

CONTENTS

	<i>Page</i>
PREAMBLE	1
Article I —DEFINITIONS	1
Article II —PROVISIONS REGARDING EASTERN RIVERS	4
Article III —PROVISIONS REGARDING WESTERN RIVERS	6
Article IV —PROVISIONS REGARDING EASTERN RIVERS AND WESTERN RIVERS	7
Article V —FINANCIAL PROVISIONS	11
Article VI —EXCHANGE OF DATA	13
Article VII —FUTURE CO-OPERATION	14
Article VIII—PERMANENT INDUS COMMISSION	15
Article IX —SETTLEMENT OF DIFFERENCES AND DISPUTES	18
Article X —EMERGENCY PROVISION	19
Article XI —GENERAL PROVISIONS	21
Article XII —FINAL PROVISIONS	21
Annexure A—EXCHANGE OF NOTES BETWEEN GOVERNMENT OF INDIA AND GOVERNMENT OF PAKISTAN	
Annexure B—AGRICULTURAL USE BY PAKISTAN FROM CERTAIN TRIBUTARIES OF THE RAVI	
Annexure C—AGRICULTURAL USE BY INDIA FROM THE WESTERN RIVERS	
Annexure D—GENERATION OF HYDRO-ELECTRIC POWER BY INDIA ON THE WESTERN RIVERS	
Annexure E—STORAGE OF WATERS BY INDIA ON THE WESTERN RIVERS	
Annexure F—NEUTRAL EXPERT	
Annexure G—COURT OF ARBITRATION	
Annexure H—TRANSITIONAL ARRANGEMENTS	

PREAMBLE

The Government of India and the Government of Pakistan, being equally desirous of attaining the most complete and satisfactory utilisation of the waters of the Indus system of rivers and recognising the need, therefore, of fixing and delimiting, in a spirit of goodwill and friendship, the rights and obligations of each in relation to the other concerning the use of these waters and of making provision for the settlement, in a cooperative spirit, of all such questions as may hereafter arise in regard to the interpretation or application of the provisions agreed upon herein, have resolved to conclude a Treaty in furtherance of these objectives, and for this purpose have named as their plenipotentiaries:

THE GOVERNMENT OF INDIA:

Shri Jawaharlal Nehru,
Prime Minister of India,

and

THE GOVERNMENT OF PAKISTAN:

Field Marshal Mohammad Ayub Khan, HP., H.J.,
President of Pakistan;

who, having communicated to each other their respective Full Powers and having found them in good and due form, have agreed upon the following Articles and Annexures:—

ARTICLE I**Definitions**

As used in this Treaty:

(1) The terms "Article" and "Annexure" mean respectively an Article of, and an Annexure to, this Treaty.

Except as otherwise indicated, references to Paragraphs are to the paragraphs in the Article or in the Annexure in which the reference is made.

(2) The term "Tributary" of a river means any surface channel, whether in continuous or intermittent flow and by whatever name called, whose waters in the natural course would fall into that river, e.g. a tributary, a torrent, a natural drainage, an artificial drainage, a *nadi*, a *nallah*, a *nai*, a *khad*, a *cho*. The term also includes any sub-tributary or branch or subsidiary channel, by whatever name called, whose waters, in the natural course, would directly or otherwise flow into that surface channel.

(3) The term "The Indus," "The Jhelum," "The Chenab," "The Ravi," "The Beas" or "The Sutlej" means the named river (including Connecting Lakes, if any) and all its Tributaries: Provided however that

- (i) none of the rivers named above shall be deemed to be a Tributary;
- (ii) The Chenab shall be deemed to include the river Panjnad; and
- (iii) the river Chandra and the river Bhaga shall be deemed to be Tributaries of The Chenab.

(4) The term "Main" added after Indus, Jhelum, Chenab, Sutlej, Beas or Ravi means the main stem of the named river excluding its Tributaries, but including all channels and creeks of the main stem of that river and such Connecting Lakes as form part of the main stem itself. The Jhelum Main shall be deemed to extend up to Verinag, and the Chenab Main up to the confluence of the river Chandra and the river Bhaga.

(5) The term "Eastern Rivers" means The Sutlej, The Beas and The Ravi taken together.

(6) The term "Western Rivers" means The Indus, The Jhelum and The Chenab taken together.

(7) The term "the Rivers" means all the rivers, The Sutlej, The Beas, The Ravi, The Indus, The Jhelum and The Chenab.

(8) The term "Connecting Lake" means any lake which receives water from, or yields water to, any of the Rivers; but any lake which occasionally and irregularly receives only the spill of any of the Rivers and returns only the whole or part of that spill is not a Connecting Lake.

(9) The term "Agricultural Use" means the use of water for irrigation, except for irrigation of household gardens and public recreational gardens.

(10) The term "Domestic Use" means the use of water for:

- (a) drinking, washing, bathing, recreation, sanitation (including the conveyance and dilution of sewage and of industrial and other wastes), stock and poultry, and other like purposes;
- (b) household and municipal purposes (including use for household gardens and public recreational gardens); and
- (c) industrial purposes (including mining, milling and other like purposes);

but the term does not include Agricultural Use or use for the generation of hydro-electric power.

(11) The term "Non-Consumptive Use" means any control or use of water for navigation, floating of timber or other property, flood protection or flood control, fishing or fish culture, wild life or other like beneficial purposes, provided that, exclusive of seepage and evaporation of water incidental to the control or use, the water (undiminished in volume within the practical range of measurement) remains in, or is returned to, the same river or its Tributaries; but the term does not include Agricultural Use or use for the generation of hydro-electric power.

(12) The term "Transition Period" means the period beginning and ending as provided in Article II (6).

(13) The term "Bank" means the International Bank for Reconstruction and Development.

(14) The term "Commissioner" means either of the Commissioners appointed under the provisions of Article VIII(1) and the term "Commission" means the Permanent Indus Commission constituted in accordance with Article VIII(3).

(15) The term "interference with the waters" means:

(a) Any act of withdrawal therefrom; or

(b) Any man-made obstruction to their flow which causes a change in the volume (within the practical range of measurement) of the daily flow of the waters: Provided however that an obstruction which involves only an insignificant and incidental change in the volume of the daily flow, for example, fluctuations due to afflux caused by bridge piers or a temporary by-pass, etc., shall not be deemed to be an interference with the waters.

(16) The term "Effective Date" means the date on which this Treaty takes effect in accordance with the provisions of Article XII, that is, the first of April 1960.

ARTICLE II

Provisions Regarding Eastern Rivers

(1) All the waters of the Eastern Rivers shall be available for the unrestricted use of India, except as otherwise expressly provided in this Article.

(2) Except for Domestic Use and Non-Consumptive Use, Pakistan shall be under an obligation to let flow, and shall not permit any interference with, the waters of the Sutlej Main and the Ravi Main in the reaches where these rivers flow in Pakistan and have not yet finally crossed into Pakistan. The points of final crossing are the following: (a)

near the new Hasta Bund upstream of Suleimanke in the case of the Sutlej Main, and (b) about one and a half miles upstream of the syphon for the B-R-B-D Link in the case of the Ravi Main.

(3) Except for Domestic Use, Non-Consumptive Use and Agricultural Use (as specified in Annexure B), Pakistan shall be under an obligation to let flow, and shall not permit any interference with, the waters (while flowing in Pakistan) of any Tributary which in its natural course joins the Sutlej Main or the Ravi Main before these rivers have finally crossed into Pakistan.

(4) All the waters, while flowing in Pakistan, of any Tributary which, in its natural course, joins the Sutlej Main or the Ravi Main after these rivers have finally crossed into Pakistan shall be available for the unrestricted use of Pakistan: Provided however that this provision shall not be construed as giving Pakistan any claim or right to any releases by India in any such Tributary. If Pakistan should deliver any of the waters of any such Tributary, which on the Effective Date joins the Ravi Main after this river has finally crossed into Pakistan, into a reach of the Ravi Main upstream of this crossing, India shall not make use of these waters; each Party agrees to establish such discharge observation stations and make such observations as may be necessary for the determination of the component of water available for the use of Pakistan on account of the aforesaid deliveries by Pakistan, and Pakistan agrees to meet the cost of establishing the aforesaid discharge observation stations and making the aforesaid observations.

(5) There shall be a Transition Period during which, to the extent specified in Annexure H, India shall

- (i) limit its withdrawals for Agricultural Use,
- (ii) limit abstractions for storages, and
- (iii) make deliveries to Pakistan

from the Eastern Rivers.

(6) The Transition Period shall begin on 1st April 1960 and it shall end on 31st March 1970, or, if extended under the provisions of Part 8 of Annexure H, on the date up to which it has been extended. In any event, whether or not the replacement referred to in Article IV(1) has been accomplished, the Transition Period shall end not later than 31st March 1973.

(7) If the Transition Period is extended beyond 31st March 1970, the provisions of Article V(5) shall apply.

(8) If the Transition Period is extended beyond 31st March 1970, the provisions of Paragraph (5) shall apply during the period of extension beyond 31st March 1970.

(9) During the Transition Period, Pakistan shall receive for unrestricted use the waters of the Eastern Rivers which are to be released by India in accordance with the provisions of Annexure H. After the end of the Transition Period, Pakistan shall have no claim or right to releases by India of any of the waters of the Eastern Rivers. In case there are any releases, Pakistan shall enjoy the unrestricted use of the waters so released after they have finally crossed into Pakistan: Provided that in the event that Pakistan makes any use of these waters, Pakistan shall not acquire any right whatsoever, by prescription or otherwise, to a continuance of such releases or such use.

ARTICLE III

Provisions Regarding Western Rivers

(1) Pakistan shall receive for unrestricted use all those waters of the Western Rivers which India is under obligation to let flow under the provisions of Paragraph (2).

(2) India shall be under an obligation to let flow all the waters of the Western Rivers, and shall not permit any interference with these waters, except for the following uses, restricted (except as provided in item (c)(ii) of Paragraph 5 of Annexure C) in the case of each of the rivers, The

Indus, The Jhelum and The Chenab, to the drainage basin thereof:

- (a) Domestic Use;
- (b) Non-Consumptive Use;
- (c) Agricultural Use, as set out in Annexure C; and
- (d) Generation of hydro-electric power, as set out in Annexure D.

(3) Pakistan shall have the unrestricted use of all waters originating from sources other than the Eastern Rivers which are delivered by Pakistan into The Ravi or The Sutlej, and India shall not make use of these waters. Each Party agrees to establish such discharge observation stations and make such observations as may be considered necessary by the Commission for the determination of the component of water available for the use of Pakistan on account of the aforesaid deliveries by Pakistan.

(4) Except as provided in Annexures D and E, India shall not store any water of, or construct any storage works on, the Western Rivers.

ARTICLE IV

Provisions Regarding Eastern Rivers and Western Rivers

(1) Pakistan shall use its best endeavours to construct and bring into operation, with due regard to expedition and economy, that part of a system of works which will accomplish the replacement, from the Western Rivers and other sources, of water supplies for irrigation canals in Pakistan which, on 15th August 1947, were dependent on water supplies from the Eastern Rivers.

(2) Each Party agrees that any Non-Consumptive Use made by it shall be so made as not to materially change, on account of such use, the flow in any channel to the prejudice of the uses on that channel by the other Party under the provisions of this Treaty. In executing any scheme of

flood protection or flood control each Party will avoid, as far as practicable, any material damage to the other Party, and any such scheme carried out by India on the Western Rivers shall not involve any use of water or any storage in addition to that provided under Article III.

(3) Nothing in this Treaty shall be construed as having the effect of preventing either Party from undertaking schemes of drainage, river training, conservation of soil against erosion and dredging, or from removal of stones, gravel or sand from the beds of the Rivers: Provided that

- (a) in executing any of the schemes mentioned above, each Party will avoid, as far as practicable, any material damage to the other Party;
- (b) any such scheme carried out by India on the Western Rivers shall not involve any use of water or any storage in addition to that provided under Article III;
- (c) except as provided in Paragraph (5) and Article VII(1)(b), India shall not take any action to increase the catchment area, beyond the area on the Effective Date, of any natural or artificial drainage or drain which crosses into Pakistan, and shall not undertake such construction or remodelling of any drainage or drain which so crosses or falls into a drainage or drain which so crosses as might cause material damage in Pakistan or entail the construction of a new drain or enlargement of an existing drainage or drain in Pakistan; and
- (d) should Pakistan desire to increase the catchment area, beyond the area on the Effective Date, of any natural or artificial drainage or drain, which receives drainage waters from India, or, except in an emergency, to pour any waters into it in excess of the quantities received by it as on the Effective Date, Pakistan shall, before undertaking any work for

these purposes, increase the capacity of that drainage or drain to the extent necessary so as not to impair its efficacy for dealing with drainage waters received from India as on the Effective Date.

(4) Pakistan shall maintain in good order its portions of the drainages mentioned below with capacities not less than the capacities as on the Effective Date:—

- (i) Hudiyara Drain
- (ii) Kasur Nala
- (iii) Salimshah Drain
- (iv) Fazilka Drain.

(5) If India finds it necessary that any of the drainages mentioned in Paragraph (4) should be deepened or widened in Pakistan, Pakistan agrees to undertake to do so as a work of public interest, provided India agrees to pay the cost of the deepening or widening.

(6) Each Party will use its best endeavours to maintain the natural channels of the Rivers, as on the Effective Date, in such condition as will avoid, as far as practicable, any obstruction to the flow in these channels likely to cause material damage to the other Party.

(7) Neither Party will take any action which would have the effect of diverting the Ravi Main between Madhopur and Lahore, or the Sutlej Main between Harike and Suleimanke, from its natural channel between high banks.

(8) The use of the natural channels of the Rivers for the discharge of flood or other excess waters shall be free and not subject to limitation by either Party, and neither Party shall have any claim against the other in respect of any damage caused by such use. Each Party agrees to communicate to the other Party, as far in advance as practicable, any information it may have in regard to such extraordinary discharges of water from reservoirs and flood flows as may affect the other Party.

(9) Each Party declares its intention to operate its storage dams, barrages and irrigation canals in such manner,

consistent with the normal operations of its hydraulic systems, as to avoid, as far as feasible, material damage to the other Party.

(10) Each Party declares its intention to prevent, as far as practicable, undue pollution of the waters of the Rivers which might affect adversely uses similar in nature to those to which the waters were put on the Effective Date, and agrees to take all reasonable measures to ensure that, before any sewage or industrial waste is allowed to flow into the Rivers, it will be treated, where necessary, in such manner as not materially to affect those uses: Provided that the criterion of reasonableness shall be the customary practice in similar situations on the Rivers.

(11) The Parties agree to adopt, as far as feasible, appropriate measures for the recovery, and restoration to owners, of timber and other property floated or floating down the Rivers, subject to appropriate charges being paid by the owners.

(12) The use of water for industrial purposes under Articles II(2), II(3) and III(2) shall not exceed:

- (a) in the case of an industrial process known on the Effective Date, such quantum of use as was customary in that process on the Effective Date;
- (b) in the case of an industrial process not known on the Effective Date:
 - (i) such quantum of use as was customary on the Effective Date in similar or in any way comparable industrial processes; or
 - (ii) if there was no industrial process on the Effective Date similar or in any way comparable to the new process, such quantum of use as would not have a substantially adverse effect on the other Party.

(13) Such part of any water withdrawn for Domestic Use under the provisions of Articles II (3) and III (2) as

is subsequently applied to Agricultural Use shall be accounted for as part of the Agricultural Use specified in Annexure B and Annexure C respectively; each Party will use its best endeavours to return to the same river (directly or through one of its Tributaries) all water withdrawn therefrom for industrial purposes and not consumed either in the industrial processes for which it was withdrawn or in some other Domestic Use.

(14) In the event that either Party should develop a use of the waters of the Rivers which is not in accordance with the provisions of this Treaty, that Party shall not acquire by reason of such use any right, by prescription or otherwise, to a continuance of such use.

(15) Except as otherwise required by the express provisions of this Treaty, nothing in this Treaty shall be construed as affecting existing territorial rights over the waters of any of the Rivers or the beds or banks thereof, or as affecting existing property rights under municipal law over such waters or beds or banks.

ARTICLE V

Financial Provisions

(1) In consideration of the fact that the purpose of part of the system of works referred to in Article IV(1) is the replacement, from the Western Rivers and other sources, of water supplies for irrigation canals in Pakistan which, on 15th August 1947, were dependent on water supplies from the Eastern Rivers, India agrees to make a fixed contribution of Pounds Sterling 62,060,000 towards the costs of these works. The amount in Pounds Sterling of this contribution shall remain unchanged irrespective of any alteration in the par value of any currency.

(2) The sum of Pounds Sterling 62,060,000 specified in Paragraph (1) shall be paid in ten equal annual instalments on the 1st of November of each year. The first of such annual instalments shall be paid on

1st November 1960, or if the Treaty has not entered into force by that date, then within one month after the Treaty enters into force.

(3) Each of the instalments specified in Paragraph (2) shall be paid to the Bank for the credit of the Indus Basin Development Fund to be established and administered by the Bank, and payment shall be made in Pounds Sterling, or in such other currency or currencies as may from time to time be agreed between India and the Bank.

(4) The payments provided for under the provisions of Paragraph (3) shall be made without deduction or set-off on account of any financial claims of India on Pakistan arising otherwise than under the provisions of this Treaty: Provided that this provision shall in no way absolve Pakistan from the necessity of paying in other ways debts to India which may be outstanding against Pakistan.

(5) If, at the request of Pakistan, the Transition Period is extended in accordance with the provisions of Article II (6) and of Part 8 of Annexure H, the Bank shall thereupon pay to India out of the Indus Basin Development Fund the appropriate amount specified in the Table below:—

Table

<i>Period of Aggregate Extension of Transition Period</i>	<i>Payment to India</i>
One year	£ Stg. 3,125,000
Two years	£ Stg. 6,406,250
Three years	£ Stg. 9,850,000

(6) The provisions of Article IV(1) and Article V(1) shall not be construed as conferring upon India any right to participate in the decisions as to the system of works which Pakistan constructs pursuant to Article IV(1) or as constituting an assumption of any responsibility by India or as an agreement by India in regard to such works.

(7) Except for such payments as are specifically provided for in this Treaty, neither Party shall be entitled to claim any payment for observance of the provisions of this Treaty or to make any charge for water received from it by the other Party.

ARTICLE VI

Exchange of Data

(1) The following data with respect to the flow in, and utilisation of the waters of, the Rivers shall be exchanged regularly between the Parties:—

- (a) Daily (or as observed or estimated less frequently) gauge and discharge data relating to flow of the Rivers at all observation sites.
- (b) Daily extractions for or releases from reservoirs.
- (c) Daily withdrawals at the heads of all canals operated by government or by a government agency (hereinafter in this Article called canals), including link canals.
- (d) Daily escapages from all canals, including link canals.
- (e) Daily deliveries from link canals.

These data shall be transmitted monthly by each Party to the other as soon as the data for a calendar month have been collected and tabulated, but not later than three months after the end of the month to which they relate: Provided that such of the data specified above as are considered by either Party to be necessary for operational purposes shall be supplied daily or at less frequent intervals, as may be requested. Should one Party request the supply of any of these data by telegram, telephone, or wireless, it shall reimburse the other Party for the cost of transmission.

(2) If, in addition to the data specified in Paragraph (1) of this Article, either Party requests the supply of any data relating to the hydrology of the Rivers, or to canal or reservoir operation connected with the Rivers, or to any provision of this Treaty, such data shall be supplied by the other Party to the extent that these are available.

ARTICLE VII

Future Co-operation

(1) The two Parties recognize that they have a common interest in the optimum development of the Rivers, and, to that end, they declare their intention to co-operate, by mutual agreement, to the fullest possible extent. In particular:—

- (a) Each Party, to the extent it considers practicable and on agreement by the other Party to pay the costs to be incurred, will, at the request of the other Party, set up or install such hydrologic observation stations within the drainage basins of the Rivers, and set up or install such meteorological observation stations relating thereto and carry out such observations thereat, as may be requested, and will supply the data so obtained.
- (b) Each Party, to the extent it considers practicable and on agreement by the other Party to pay the costs to be incurred, will, at the request of the other Party, carry out such new drainage works as may be required in connection with new drainage works of the other Party.
- (c) At the request of either Party, the two Parties may, by mutual agreement, co-operate in undertaking engineering works on the Rivers.

The formal arrangements, in each case, shall be as agreed upon between the Parties.

(2) If either Party plans to construct any engineering work which would cause interference with the waters of any of the Rivers and which, in its opinion, would affect the other Party materially, it shall notify the other Party of its plans and shall supply such data relating to the work as may be available and as would enable the other Party to inform itself of the nature, magnitude and effect of the work. If a work would cause interference with the waters of any of the Rivers but would not, in the opinion of the Party planning it, affect the other Party materially, nevertheless the Party planning the work shall, on request, supply the other Party with such data regarding the nature, magnitude and effect, if any, of the work as may be available.

ARTICLE VIII

Permanent Indus Commission

(1) India and Pakistan shall each create a permanent post of Commissioner for Indus Waters, and shall appoint to this post, as often as a vacancy occurs, a person who should ordinarily be a high-ranking engineer competent in the field of hydrology and water-use. Unless either Government should decide to take up any particular question directly with the other Government, each Commissioner will be the representative of his Government for all matters arising out of this Treaty, and will serve as the regular channel of communication on all matters relating to the implementation of the Treaty, and, in particular, with respect to

- (a) the furnishing or exchange of information or data provided for in the Treaty; and
- (b) the giving of any notice or response to any notice provided for in the Treaty.

(2) The status of each Commissioner and his duties and responsibilities towards his Government will be determined by that Government.

- (3) The two Commissioners shall together form the Permanent Indus Commission.

(4) The purpose and functions of the Commission shall be to establish and maintain co-operative arrangements for the implementation of this Treaty, to promote co-operation between the Parties in the development of the waters of the Rivers and, in particular,

- (a) to study and report to the two Governments on any problem relating to the development of the waters of the Rivers which may be jointly referred to the Commission by the two Governments: in the event that a reference is made by one Government alone, the Commissioner of the other Government shall obtain the authorization of his Government before he proceeds to act on the reference;
- (b) to make every effort to settle promptly, in accordance with the provisions of Article IX (1), any question arising thereunder;
- (c) to undertake, once in every five years, a general tour of inspection of the Rivers for ascertaining the facts connected with various developments and works on the Rivers;
- (d) to undertake promptly, at the request of either Commissioner, a tour of inspection of such works or sites on the Rivers as may be considered necessary by him for ascertaining the facts connected with those works or sites; and
- (e) to take, during the Transition Period, such steps as may be necessary for the implementation of the provisions of Annexure H.

(5) The Commission shall meet regularly at least once a year, alternately in India and Pakistan. This regular annual meeting shall be held in November or in such other month as may be agreed upon between the Commissioners. The Commission shall also meet when requested by either Commissioner.

(6) To enable the Commissioners to perform their functions in the Commission, each Government agrees to accord to the Commissioner of the other Government the same privileges and immunities as are accorded to representatives of member States to the principal and subsidiary organs of the United Nations under Sections 11, 12 and 13 of Article IV of the Convention on the Privileges and Immunities of the United Nations (dated 13th February, 1946) during the periods specified in those Sections. It is understood and agreed that these privileges and immunities are accorded to the Commissioners not for the personal benefit of the individuals themselves but in order to safeguard the independent exercise of their functions in connection with the Commission; consequently, the Government appointing the Commissioner not only has the right but is under a duty to waive the immunity of its Commissioner in any case where, in the opinion of the appointing Government, the immunity would impede the course of justice and can be waived without prejudice to the purpose for which the immunity is accorded.

(7) For the purposes of the inspections specified in Paragraph (4) (c) and (d), each Commissioner may be accompanied by two advisers or assistants to whom appropriate facilities will be accorded.

(8) The Commission shall submit to the Government of India and to the Government of Pakistan, before the first of June of every year, a report on its work for the year ended on the preceding 31st of March, and may submit to the two Governments other reports at such times as it may think desirable.

(9) Each Government shall bear the expenses of its Commissioner and his ordinary staff. The cost of any special staff required in connection with the work mentioned in Article VII(1) shall be borne as provided therein.

(10) The Commission shall determine its own procedures.

ARTICLE IX**Settlement of Differences and Disputes**

(1) Any question which arises between the Parties concerning the interpretation or application of this Treaty or the existence of any fact which, if established, might constitute a breach of this Treaty shall first be examined by the Commission, which will endeavour to resolve the question by agreement.

(2) If the Commission does not reach agreement on any of the questions mentioned in Paragraph (1), then a difference will be deemed to have arisen, which shall be dealt with as follows:

- (a) Any difference which, in the opinion of either Commissioner, falls within the provisions of Part 1 of Annexure F shall, at the request of either Commissioner, be dealt with by a Neutral Expert in accordance with the provisions of Part 2 of Annexure F;
- (b) If the difference does not come within the provisions of Paragraph (2)(a), or if a Neutral Expert, in accordance with the provisions of Paragraph 7 of Annexure F, has informed the Commission that, in his opinion, the difference, or a part thereof, should be treated as a dispute, then a dispute will be deemed to have arisen which shall be settled in accordance with the provisions of Paragraphs (3), (4) and (5):

Provided that, at the discretion of the Commission, any difference may either be dealt with by a Neutral Expert in accordance with the provisions of Part 2 of Annexure F or be deemed to be a dispute to be settled in accordance with the provisions of Paragraphs (3), (4) and (5), or may be settled in any other way agreed upon by the Commission.

(3) As soon as a dispute to be settled in accordance with this and the succeeding paragraphs of this Article has arisen, the Commission shall, at the request of either Commissioner, report the fact to the two Governments, as early

as practicable, stating in its report the points on which the Commission is in agreement and the issues in dispute, the views of each Commissioner on these issues and his reasons therefor.

(4) Either Government may, following receipt of the report referred to in Paragraph (3), or if it comes to the conclusion that this report is being unduly delayed in the Commission, invite the other Government to resolve the dispute by agreement. In doing so it shall state the names of its negotiators and their readiness to meet with the negotiators to be appointed by the other Government at a time and place to be indicated by the other Government. To assist in these negotiations, the two Governments may agree to enlist the services of one or more mediators acceptable to them.

(5) A Court of Arbitration shall be established to resolve the dispute in the manner provided by Annexure G

- (a) upon agreement between the Parties to do so; or
- (b) at the request of either Party, if, after negotiations have begun pursuant to Paragraph (4), in its opinion the dispute is not likely to be resolved by negotiation or mediation; or
- (c) at the request of either Party, if, after the expiry of one month following receipt by the other Government of the invitation referred to in Paragraph (4), that Party comes to the conclusion that the other Government is unduly delaying the negotiations.

(6) The provisions of Paragraphs (3), (4) and (5) shall not apply to any difference while it is being dealt with by a Neutral Expert.

ARTICLE X

Emergency Provision

If, at any time prior to 31st March 1965, Pakistan should represent to the Bank that, because of the outbreak

of large-scale international hostilities arising out of causes beyond the control of Pakistan, it is unable to obtain from abroad the materials and equipment necessary for the completion, by 31st March 1973, of that part of the system of works referred to in Article IV(1) which relates to the replacement referred to therein, (hereinafter referred to as the "replacement element") and if, after consideration of this representation in consultation with India, the Bank is of the opinion that

- (a) these hostilities are on a scale of which the consequence is that Pakistan is unable to obtain in time such materials and equipment as must be procured from abroad for the completion, by 31st March 1973, of the replacement element, and
- (b) since the Effective Date, Pakistan has taken all reasonable steps to obtain the said materials and equipment and, with such resources of materials and equipment as have been available to Pakistan both from within Pakistan and from abroad, has carried forward the construction of the replacement element with due diligence and all reasonable expedition,

the Bank shall immediately notify each of the Parties accordingly. The Parties undertake, without prejudice to the provisions of Article XII (3) and (4), that, on being so notified, they will forthwith consult together and enlist the good offices of the Bank in their consultation, with a view to reaching mutual agreement as to whether or not, in the light of all the circumstances then prevailing, any modifications of the provisions of this Treaty are appropriate and advisable and, if so, the nature and the extent of the modifications.

ARTICLE XI**General Provisions**

- (1) It is expressly understood that
 - (a) this Treaty governs the rights and obligations of each Party in relation to the other with respect only to the use of the waters of the Rivers and matters incidental thereto; and
 - (b) nothing contained in this Treaty, and nothing arising out of the execution thereof, shall be construed as constituting a recognition or waiver (whether tacit, by implication or otherwise) of any rights or claims whatsoever of either of the Parties other than those rights or claims which are expressly recognized or waived in this Treaty.

Each of the Parties agrees that it will not invoke this Treaty, anything contained therein, or anything arising out of the execution thereof, in support of any of its own rights or claims whatsoever or in disputing any of the rights or claims whatsoever of the other Party, other than those rights or claims which are expressly recognized or waived in this Treaty.

(2) Nothing in this Treaty shall be construed by the Parties as in any way establishing any general principle of law or any precedent.

(3) The rights and obligations of each Party under this Treaty shall remain unaffected by any provisions contained in, or by anything arising out of the execution of, any agreement establishing the Indus Basin Development Fund.

ARTICLE XII**Final Provisions**

(1) This Treaty consists of the Preamble, the Articles hereof and Annexures A to H hereto, and may be cited as "The Indus Waters Treaty 1960".

(2) This Treaty shall be ratified and the ratifications

into force upon the exchange of ratifications, and will then take effect retrospectively from the first of April 1960.

(3) The provisions of this Treaty may from time to time be modified by a duly ratified treaty concluded for that purpose between the two Governments.

(4) The provisions of this Treaty, or the provisions of this Treaty as modified under the provisions of Paragraph (3), shall continue in force until terminated by a duly ratified treaty concluded for that purpose between the two Governments.

IN WITNESS WHEREOF the respective Plenipotentiaries have signed this Treaty and have hereunto affixed their seals.

Done in triplicate in English at Karachi on this Nineteenth day of September 1960.

FOR THE GOVERNMENT OF INDIA :

(Sd) Jawaharlal Nehru

FOR THE GOVERNMENT OF PAKISTAN :

(Sd) Mohammad Ayub Khan
Field Marshal, H.P., H.J.

FOR THE INTERNATIONAL BANK FOR RECONSTRUCTION
AND DEVELOPMENT

for the purposes specified in Articles V and X and Annexures F, G and H:

(Sd) W. A. B. Iliff

THE MAHAKALI TREATY

TREATY—BETWEEN HIS MAJESTY'S GOVERNMENT OF NEPAL AND THE GOVERNMENT OF INDIA CONCERNING THE INTEGRATED DEVELOPMENT OF THE MAHAKALI RIVER INCLUDING SARADA BARRAGE, TANAKPUR BARRAGE AND PANCHESHWAR PROJECT (1996)

His Majesty's Government of NEPAL and the Government of INDIA (hereinafter referred to as the "parties").

Reaffirming the determination to promote and strengthen their relations of friendship and close neighborliness for the co-operation in the development of water resources;

Recognizing that the Mahakali River is a boundary river on major stretches between the two countries;

Realizing the desirability to enter into a treaty on the basis of equal partnership to define their obligations and corresponding rights and duties thereto in regard to the waters of the Mahakali River and its utilization;

Noting the Exchange of Letters of 1920 through which both the Parties had entered into an arrangement for the construction of the Sarada Barrage in the Mahakali river, whereby Nepal is to receive some waters from the said Barrage;

Recalling the decision taken in the Joint Commission dated 4-5 December, 1991 and the Joint Communique issued during the visit of the Prime Minister of India to Nepal on 21st October, 1992 regarding the Tanakpur Barrage which India has constructed in a course of the Mahakali River with a part of the eastern afflux bund at Jimuwa and the adjoining poundage area of the said Barrage lying in the Nepalese territory;

Noting that both the Parties are jointly preparing a Detailed Project Report of the Pancheshwar Multipurpose project to be implemented in the Mahakali River;

Now, therefore, the Parties hereto hereby have agreed as follows:

Article – 1

1. Nepal shall have right to a supply of 28.35m³/s (1000 cusecs) of water from the Sarada Barrage in the wet season (i.e. from 15th May to 15th October) and 4.25m³/s (150 cusecs) in the dry season (i.e. from 16th October to 14th May).

2. India shall maintain a flow of not less than 10m³/s (350cusecs) downstream of the Sarada Barrage in the Mahakali River to maintain and preserve the river eco-system.

3. In case the Sarada Barrage becomes non-functional due to any cause:
(a) Nepal shall have the right to a supply of water as mentioned in Paragraph 1 of this Article, by using the head regulator(s) mentioned in Paragraph 2 of Article 2 herein. Such a supply of water shall be in addition to the water to be supplied to Nepal pursuant to paragraph 2 of Article 2.

(b) India shall maintain the river flow pursuant to paragraph 2 of this article from the tailrace of the Tanakpur Power Station downstream of the Sarada Barrage.

Article – 2

In continuation of the decisions taken in the Joint Commission dated 4-5 December, 1991 and the Joint Communique issued during the visit of the Prime Minister of India to Nepal on 21st October, 1992, both the Parties agree as follows:

1. For the construction of the eastern afflux bund of the Tanakpur Barrage, at Jimuwa and tying it up to the high ground in the Nepalese territory at EL 250 M,

Nepal gives its consent to use a piece of land of about 577 meters in length (an area of about 2.9 hectares) of the Nepalese territory at the Jimuwa village in Mahendranagar Municipal area and a certain portion of the No-Man's Land on either side of the border. The Nepalese land consented to be so used and the land lying on the west of the said land (about 9 hectares) upto the Nepal-India border which forms a part of the pondage area, including the natural resources endowment lying within that area, remains under the continued sovereignty and control of Nepal and Nepal is free to exercise all attendant rights thereto .

2. In lieu of the eastern afflux bund of the Tanakpur Barrage, at Jimuwa thus constructed, Nepal shall have the right to:

(a) A supply of 28.35m³/s (1000cusecs) of water in the wet season (i.e. from 15th May to 15th October) and 8.50m³/s (300 cusecs) in the dry season (i.e. from 16th October to 14th May) from the date of the entry into force of this Treaty. For this purpose and for the purpose of Article 1 herein, India shall construct the head regulator(s) near the left undersluice of the Tanakpur Barrage and also the waterways of the required capacity upto the Nepal-India border. Such head regulator(s) and waterways shall be operated jointly.

(b) A supply of 70 millions kilowatt-hour (unit) of energy on a continuous basis annually, free of cost, from the date of the entry into force of this Treaty. For this purpose, India shall construct a 132 Kv transmission line upto the Nepal-India border from the Tanakpur Power Station (which has, at present, an installed capacity of 120,000 kilowatt generating 448.4 millions kilowatt-hour of energy annually on 90 percent dependable year flow).

3. Following arrangements shall be made at the Tanakpur Barrage at the time of development of any storage project(s) including Pancheshwar Multipurpose Project upstream of the Tanakpur Barrage:

(a) Additional head regulator and the necessary waterways, as required, up to the Nepal-India border shall be constructed to supply additional water to Nepal. Such head regulator and waterways shall be operated jointly.

(b) Nepal shall have additional energy equal to half of the incremental energy generated from the Tanakpur Power Station, on a continuous basis from the date of augmentation of the flow of the Mahakali River and shall bear half of the additional operation cost and, if required, half of the additional capital cost at the Tanakpur Power Station for the generation of such incremental energy.

Article – 3

Pancheshwar Multipurpose Project (hereinafter referred to as the "Project") is to be constructed on a stretch of the Mahakali River where it forms the boundary between the two countries and hence both the parties agree that they have equal entitlement in the utilization of the waters of the Mahakali River without prejudice to their respective existing consumptive uses of the waters of the Mahakali River. Therefore, both the parties agree to implement the Project in the Mahakali River in accordance with the Detailed Project Report (DPR) being jointly prepared by them. The Project shall be designed and implemented on the basis of the following principles:

1. The Project shall, as would be agreed between the Parties, be designed to produce the maximum total net benefit. All benefits accruing to both the Parties with the development of the Project in the forms of power, irrigation, flood control etc., shall be assessed.

2. The Project shall be implemented or caused to be implemented as an integrated project including power stations of equal capacity on each side of the Mahakali River. The two power stations shall be operated in an integrated manner and the total energy generated shall be shared equally between the Parties.
3. The cost of the Project shall be borne by the parties in proportion to the benefits accruing to them. Both the parties shall jointly endeavor to mobilize the finance required for the implementation of the Project.
4. A portion of Nepal's Share of energy shall be sold to India. The quantum of such energy and its price shall be mutually agreed upon between the Parties.

Article – 4

India shall supply 10 m³/s (350 cusecs) of water for the irrigation of Dodhara Chandani area of Nepalese Territory. The technical and other details will be mutually worked out.

Article – 5

1. Water requirements of Nepal shall be given prime consideration in the utilization of the waters of the Mahakali River.
2. Both the Parties shall be entitled to draw their share of waters of the Mahakali River from the Tanakpur Barrage and/or other mutually agreed points as provided for in this treaty and any subsequent agreement between the Parties.

Article – 6

Any project, other than those mentioned herein, to be developed in the Mahakali River, where it is a boundary river, shall be designed and implemented by an agreement between the parties on the principles established by this Treaty.

Article – 7

In order to maintain the flow and level of the waters of the Mahakali River, each Party undertakes not to use or obstruct or divert the waters of the Mahakali River adversely affecting its natural flow and level except by an agreement between the Parties. Provided, however, this shall not preclude the use of the waters of the Mahakali river by the local communities living along both sides of the Mahakali River, not exceeding five (5) percent of the average annual flow at Pancheshwar.

Article – 8

This Treaty shall not preclude planning, survey, development and operation of any work on the tributaries of the Mahakali River, to be carried out independently by each party in its own territory without adversely affecting the provision of Article 7 of this Treaty.

Article – 9

1. There shall be a Mahakali River Commission (hereinafter referred to as the "Commission"). The Commission shall be guided by the principles of equality, mutual benefit and no harm to either Party.
2. The commission shall be composed of equal number of representatives from both the Parties.
3. The functions of the Commission shall, inter alia, include the following:
 - (a) To seek information on and, if necessary, inspect all structures included in the Treaty and make recommendations to both the parties to take steps

which shall be necessary to implement the provisions of this Treaty.
(b) To make recommendations to both the Parties for the conservation and utilization of the Mahakali River as envisaged and provided for in this Treaty.
(c) To provide expert evaluation of projects and recommendations thereto.
(d) To co-ordinate and monitor plans of actions arising out of the implementation of this Treaty, and
(e) To examine any differences arising between the parties concerning the interpretation and application of this Treaty.

4. The expenses of the Commission shall be borne equally by both the Parties.
5. As soon as the Commission has been constituted pursuant to Paragraphs 1 and 2 of this Article, it shall draft its rules of procedure which shall be submitted to both the Parties for their concurrence.
6. Both the parties shall reserve their rights to deal directly with each other on matters which may be in the competence of the Commission.

Article – 10

Both the parties may form project specific joint entity/ies for the development, execution and operation of new projects including Pancheshwar Multipurpose Project in the Mahakali River for their mutual benefit.

Article – 11

1. If the commission fails under Article 9 of this Treaty to recommend its opinion after examining the differences of the parties within three (3) months of such reference to the Commission or either Party disagrees with the recommendation of the Commission, then a dispute shall be deemed to have been arisen which shall then be submitted to arbitration for decision. In so doing either Party shall give three(3) months prior notice to the other party.

2. Arbitration shall be conducted by a tribunal composed of three arbitrators. One arbitrator shall be nominated by Nepal, one by India, with neither country to nominate its own national and the third arbitrator shall be appointed jointly, who, as a member of the tribunal, shall preside over such tribunal. In the event that the Parties are unable to agree upon the third arbitrator within ninety (90) days after receipt of a proposal, either party may request the Secretary-General of the Permanent Court of Arbitration at the Hague to appoint such arbitrator who shall not be a national of either country.

3. The procedures of the arbitration shall be determined by the arbitration tribunal and the decision of a majority of the arbitrators shall be the decision of the tribunal. The proceedings of the tribunal shall be conducted in English and the decision of such a tribunal shall be in writing. both the parties shall accept the decision as final, definitive and binding.

4. Provision for the venue of arbitration, the administrative support of the arbitration tribunal and the remuneration the expenses of its arbitrators shall be as agreed in an exchange of notes between the Parties. Both the Parties may also agree by such exchange of notes on alternative procedures for setting differences arising under this Treaty.

Article – 12

1. Following the conclusion of this Treaty, the earlier understandings reached between the Parties concerning the utilization of the waters of the Mahakali River

from the Sarada Barrage and the Tanakpur Barrage, which have been incorporated herein, shall be deemed to have been replaced by this Treaty.

2. This Treaty shall be subject to ratification and shall enter into force on the date of exchange of instruments of ratification. It shall remain valid for a period of seventy-five (75) years from the date of its entry into force.

3. This Treaty shall be reviewed by both the parties at ten (10) years interval or earlier as required by either party and make amendments thereto, if necessary.

4. Agreements, as required, shall be entered into by the parties to give effect to the provisions of this Treaty.

IN WITNESS WHEREOF the undersigned being duly authorized thereto by their respective governments have hereto signed this Treaty and affixed thereto their seals in two originals each in Hindi, Nepali and English languages, all the texts being equally authentic. In case of doubt, the English text shall prevail. Done at New Delhi, India on the twelfth day of February of the year one thousand nine hundred and ninety six.

Sd.....
(Sher Bahadur Deuba) Prime Minister
His Majesty's Government of Nepal.

Sd.....
(P.V. Narasimha Rao) Prime Minister
Government of India.

9.5

THE GANGES TREATY

TREATY BETWEEN THE GOVERNMENT OF THE REPUBLIC OF INDIA AND THE GOVERNMENT OF THE PEOPLES REPUBLIC OF BANGLADESH ON SHARING OF THE GANGA / GANGES WATERS AT FARAKKA.

THE GOVERNMENT OF THE REPUBLIC OF INDIA AND THE GOVERNMENT OF THE PEOPLES REPUBLIC OF BANGLADESH, DETERMINED to promote and strengthen their relations of friendship and good neighbourliness,

INSPIRED by the common desire of promoting the well being of their peoples, Being desirous of sharing by mutual agreement the waters of the international rivers flowing through the territories of the two countries and of making the optimum utilisation of the water resources of their region in the fields of flood management, irrigation, river basin development and generation of hydro-power for the mutual benefit of the peoples of the two countries,

RECOGNISING that the need for making an arrangement for sharing of the Ganga / Ganges waters at Farakka in a spirit of mutual accommodation and the need for a solution to the long-term problem of augmenting the flows of the Ganga / Ganges are in the mutual interests of the peoples of the two countries,

BEING desirous of finding a fair and just solution without affecting the rights and entitlements of either country other than those covered by this Treaty or establishing any general principles of law or precedent,

HAVE AGREED AS FOLLOWS:

ARTICLE - I

The quantum of waters agreed to be released by India to Bangladesh will be at Farakka.

ARTICLE - II

(i) The sharing between India and Bangladesh of the Ganga / Ganges water at Farakka by ten day periods from the 1st January to the 31st May every year will be with reference to the formula at Annexure-I and an indicative schedule giving the implication of the sharing arrangement under Annexure-I is at Annexure-II.

(ii) The indicative schedule at Annexure II, as referred to in sub para (i) above, is based on 40 years (1949-1988) 10 day period average availability of water at Farakka. Every effort would be made by the upper riparian to protect flows or water at Farakka as in the 40-years average availability as mentioned above.

(iii) In the event flow at Farakka falls below 50,000 cusecs in any 10-day period, the two governments will enter into immediate consultations to make adjustments on an emergency basis, in accordance with the principles of equity, fair play and no harm to either party.

ARTICLE - III

The water released to Bangladesh at Farakka under Articles I shall not be reduced below Farakka except for reasonable uses of waters, not exceeding 200 cusecs, by India between Farakka and the point on the Ganga / Ganges where both its banks are in Bangladesh.

ARTICLE - IV

A Committee consisting of representatives nominated by the two Governments in equal numbers (hereinafter called the Joint Committee) shall be constituted following the signing of this Treaty. The Joint Committee shall set up suitable teams at Farakka and Hardinge Bridge to observe and record at Farakka the daily flow below Farakka Barrage, in the Feeder Canal, and at the Navigation Lock, as well as at the Hardinge Bridge.

ARTICLE - V

The Joint Committee shall decide its own procedure and method of functioning.

ARTICLE -VI

The Joint Committee shall submit to the two Governments all data collected by it and shall also submit a yearly report to both the Governments. Following submission of the reports the two governments will meet at appropriate levels to decide upon such further actions as may be needed.

ARTICLE - VII

The Joint Committee shall be responsible for implementing the arrangements contained in this Treaty and examining any difficulty arising out of the implementation of the above arrangements and of the operation of Farakka Barrage. Any difference or dispute arising in this regard, if not resolved by the Joint Committee, shall be referred to the Indo-Bangladesh Joint Rivers Commission. If the difference or the dispute still remains unresolved, it shall be referred to the two Governments which shall meet urgently at the appropriate level to resolve it by mutual discussion.

ARTICLE - VIII

The two Governments recognise the need to cooperate with each other in finding a solution to the long-term problem of augmenting the flows of the Ganga / Ganges during the dry season

ARTICLE - IX

Guided by the principles of equity, fairness and no harm to either party, both the Governments agree to conclude water sharing Treaties / Agreements with regard to other common rivers.

ARTICLE - X

The sharing arrangement under this Treaty shall be reviewed by the two governments at five years interval or earlier, as required by either party and needed adjustments, based on principles of equity, fairness and no harm to either party made thereto, if necessary. It would be open to either party to seek the first review after two years to assess the impact and working of the sharing arrangement as contained in this Treaty.

ARTICLE -XI

For the period of this Treaty, in the absence of mutual agreement on adjustments following reviews as mentioned in Article X, India shall release downstream of Farakka Barrage, water at a rate not less than 90 % (ninety per cent) of Bangladesh's share according to the formula referred to in Article II, until such time as mutually agreed flows are decided upon.

ARTICLE - XII

This Treaty shall enter into force upon signatures and shall remain in force for a period of thirty years and it shall be renewable on the basis of mutual consent.

IN WITNESS WHEREOF the undersigned, being duly authorised thereto by the respective Governments, have signed this Treaty.

DONE at New Delhi 12th December, 1996 in Hindi, Bangla and English languages. In the event of any conflict between the texts, the English shall prevail.

Signed	Signed
(HD DEVE GOWDA)	(SHEIKH HASINA)
PRIME MINISTER	PRIME MINISTER,
REPUBLIC OF INDIA	PEOPLE'S REPUBLIC OF BANGLADESH

ANNEXURE-I

Availability at Farakka	Share of India	Share of Bangladesh
70,000 cusecs or less	50%	50%
70,000 -75,000 cusecs	40,000 cusecs	Balance of flow
75,000 cusecs or more	Balance of flow	35,000 cusecs

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.

ANNEXURE II

Schedule (Sharing of waters at Farakka between January 01 and May 31 every year)

If actual availability corresponds to average flows of the period 1949 to 1988 the implication of the formula in Annex-I for the share of each side is

Period	Average	India's Share	BD's Share
	flow	(cusecs)	(cusecs)
	1949-1988		
	(cusecs)		

Jan

1-10	107,516	40,000	67,516
11-20	97,673	40,000	57,673
21-31	90,154	40,000	50,154

Feb

1-10	86,323	40,000	46,323
------	--------	--------	--------

11-20	82,839	40,000	42,839
-------	--------	--------	--------

21-30	79,106	40,000	39,106
-------	--------	--------	--------

March

1-10	74,419	39,419	35,000
------	--------	--------	--------

11-20	68,931	33,931	35,000
-------	--------	--------	--------

21-31	64,688	35,000	29,688
-------	--------	--------	--------

April

1-10	63,180	28,180	35,000
------	--------	--------	--------

11-20	62,633	35,000	27,633
-------	--------	--------	--------

21-30	60,992	25,992	35,000
-------	--------	--------	--------

May

1-10	67,251	35,000	32,351
------	--------	--------	--------

11-20	73,590	38,590	35,000
-------	--------	--------	--------

21-31	81,834	40,000	41,854
-------	--------	--------	--------

9.6

PRESENTATION FOR BRAINSTORM

Slide 1

**Transboundary Water Issues
in South- Asia**

Research for The Dutch Ministry of Foreign Affairs.
By Jessica Keetelaar, The Erasmus University.

Slide 2

The Research:



- Transboundary water-issues in South-Asia viewed from India...
- Actors?
- Conflicts?
- Treaties?
- Solutions?
- Possibilities?

Slide 3

The Research objective:

“ To analyze the transboundary water issues relating to India’s main rivers and thus getting an overview of the current situation as a basis to identify opportunities for support by the Dutch Government”

Slide 4

The main Research Question:

“ Which opportunities can be identified for the Dutch Government to contribute to water issues in South Asia?”

Slide 5

Specific components:

- The relationship between India and its neighbouring countries.
- Issues related to shared water resources.
- Existing international cooperation in South-Asia.
- Cooperation between India and the Dutch Government in the area of integrated water resources.

Slide 6

India and neighbouring countries

- India ↔ Pakistan
- India ↔ Nepal
- India ↔ Bangladesh
- The Indus Waters Treaty
- The Mahakali Treaty
- The Ganges Water sharing Treaty

Slide 7

Controversial water issues

- India ↔ Pakistan
- India ↔ Nepal
- India ↔ Bangladesh
- Baglihar Dam, Mangla Dam, Salal Hydroelectrical project, Dul Hasti Project, Wullur Barrage-Tulbul Navigation Project and Kishangangadam, Indian River Linking Project,....
- ARUN III Hydroelectrical project, Tanakpur Barrage, Kamali and Kosi high Dam Project, IRLP,....
- Farakka Barrage, Gozaldoba Dam, IRLP,....

Slide 8

Existing international cooperation in South- Asia

- The South Asian Association for Regional Cooperation
- The South Asian Free Trade Area
- The Global Water Partnership South Asia
- 'Dialogue on Water, Food and Environment', part of WWF International project

Slide 9

The Indian perspective

- Emphasize on *water as precious national asset governed by national perspectives*
- Central Government delegated powers to State Governments
- Several national water institutions
- The National Water Policy
- The Inter-State Water Disputes Act

Slide 10

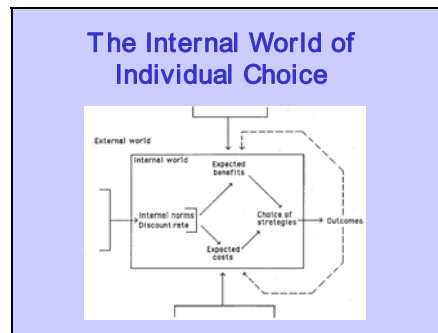
Governing the Commons

- The allocation and division of common pool resources
- Individual rationality → collective irrationality

Ostrom:

- The internal world of individual choice
- The origin of operational rules in use

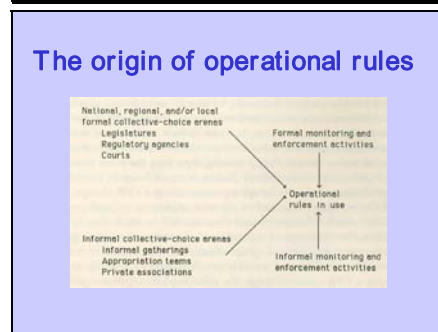
Slide 11



Slide 12

- ### India's internal view
- Bilateral tradition of governing water
 - Water policy aimed at national interests
 - Taking the hegemon position
 - Downplaying regional problems and focus on internal problems
 - No acknowledgement of regional interdependency

Slide 13



Slide 14

- ### Formal National collective choice arenas
- **Legislature:** National Water Policy, The Environmental Protection Act, The River Boards Act, The Inter-State Water Disputes Act.
 - **Regulatory Agencies:** Ministry of Water Resources, National Water Resources Council, National Water Board, River Boards.
 - **Courts:** Tribunals following on Inter-State Disputes Act.

Slide 15

- ### Formal Regional collective choice arenas
- **Legislature:** Indus Waters Treaty, The Mahakali Treaty, Ganges Treaty.
 - **Regulatory Agencies:** Permanent Indus Commission, Mahakali River Commission, Joint Committee for the Ganges, Indo-Bangladesh Joint Rivers Commission.
 - **Courts:** Court of Arbitration for the Indus, Tribunal for the Mahakali.

Slide 16

Informal collective choice arenas

- NGO platforms
- Universities
- Local environmental lobbyists
- Press and media

Slide 17

The relationship between India and the Dutch Government

- Before 2003 strong
- After 2003 downscaled and eventually cooperation ended
- No scope for Government to Government cooperation

Slide 18

Creating opportunities for Cooperation

- Scope for influencing India's internal world of individual choice
- The tradition of bilateral relations should be broken down
- International legislation should be developed
- The water problem in South Asia should be Internationalized

Slide 19

Topics up for debate...

Slide 20

1. Where can the Dutch Government step in?
2. Which specific roles could the Dutch Government play?
3. Which Dutch expertise could be applied?
4. Who are the potential partners for cooperation?
5. What next steps could be taken to initiate cooperation?

Slide 21

Statements...

Slide 22

- India's internal world of individual choice could be influenced
- Formal collective-choice arenas can not be influenced
- Formal monitoring and enforcement activities could be influenced

Slide 23

- Informal collective-choice arenas could be influenced
- Informal monitoring and enforcement activities could be influenced
- The co-funding of transboundary water resources projects is an effective way for regional assistance to South-Asia

Slide 24

- The focus should be on the opportunities for Dutch companies
- Cooperation with knowledge institutions in India should be set up
- A mission to India related to water should be organized in cooperation with the chamber of commerce, businesses and government

Slide 25

- Water issues should not be approached from India
- The Dutch Government should approach the water issues from Bangladesh
- The Dutch Government should take a lobbying position on a supranational level (EU, UN, WB)

22 November 2006, Ministry of Foreign Affairs

Discussion based on the following topics and statements for discussion:

1. Where can the Dutch Government step in?
2. Which specific roles could the Dutch Government play?
3. Which Dutch expertise could be applied?
4. Who are the potential partners for cooperation?
5. What next steps could be taken to initiate cooperation?

Statements:

- India's internal world of individual choice can not be influenced
- Formal collective-choice arenas can not be influenced
- Formal monitoring and enforcement activities could be influenced

- Informal collective-choice arenas could be influenced
- Informal monitoring and enforcement activities could be influenced
- The co-funding of transboundary water resources projects is an effective way for regional assistance to South-Asia

- The focus should be on the opportunities for Dutch companies
- Cooperation with knowledge institutions in India should be set up
- A mission to India related to water should be organized in cooperation with the chamber of commerce, businesses and government

- Water issues should not be approached from India
- The Dutch Government should approach the water issues from Bangladesh
- The Dutch Government should take a lobbying position on a supranational level (EU, UN, WB)

Summary of outcomes and recommendations:

- It should be possible to influence India's internal world of choice but mostly on a national level through the technical exchange of information and cooperation. The entry point should be as depoliticised as possible!
- Because of the negative attitude of the Indian Government towards development assistance and the highly politicized nature of (transboundary) watermanagement, showing understanding and knowledge of the situation and the problems should be first step to approach India (added value of Dutch expertise).
- Not only focus on benefits for the Netherlands but also stressing benefits for India.
- Technical projects/knowledge can form the entry point for eventually influencing the water policy (f.e. Linking River project, projects from Bangladesh). The focus should be on knowledge and technical cooperation.
- Scientists (on both sides) should agree on a method how to assess impact in a neutral and technical way so it is not threatening.

- Another way could be to approach transboundary watermanagement from other policy areas/sectors that are less politicised like health, environment, and hydro-power/energy. If these are really less politicised remains a point for discussion.
- The scope for private sector initiatives is promising in India, although still restricted to less controversial sectors (f.e. drinking water, but also energy).
- A new financial instrument should be developed to support the sector. An instrument that holds the balance between development aid and economic investments.
- Influencing the formal collective choice arenas is not feasible, influencing the informal choice arenas however is. A two-tier approach is needed: technical expertise as entry point on the short term, but also specific attention for the longer term political dimension (f.e. information and exchange between parliamentarians).
- Good models can be taken from the Nile Basin project; here the World Bank set up a secretariat and donors are catalysts. Such a agency could be identified for the transboundary water issues in South-Asia as well, to assist in setting up an institutional setting. However, scope for setting up a multilateral arena is small, a creative approach is needed.
- As an example the MoU set up by the Netherlands with Indonesia was given. Could such a MoU be set up with India as institutional basis/framework for a bilateral water platform? Once this is obtained at a bilateral level it could be lifted to a regional level. Such an MoU should contain concrete activities and funding attached to it.
- The Netherlands could take a leading role in lobbying the EU and multilateral projects. But also the World Bank and the Asian Development Bank are important actors. Also the hydrological project in India set up by the World Bank holds opportunities for the Netherlands to establish a relationship.
- The GWPSA might hold potential as well, especially because it is a hybrid organisation that has good relations with the Netherlands (is financially supported by the Netherlands).

9.8 LIST OF INVITEES

Organisation	Name	Present / Absent	Email	Telephone
Ministry of Foreign Affairs/Head South Asia Division	Harry van Dijk	P	harry-van.dijk@minbuza.nl	070-3486566
Ministry of Foreign Affairs/Deputy Head	Dicky Methorst	P	dicky.methorst@minbuza.nl	070-3485142
Ministry of Foreign Affairs	Wilfred Mohr	A	wt.mohr@minbuza.nl	070-3487218
Ministry of Foreign Affairs/Environment and Water department	Peter de Vries	P	Peter-de.vries@minbuza.nl	070-3486114
Researcher	Jessica Keetelaar	P	jessica_keetelaar@yahoo.com	06-23436292
Ministry of Economic Affairs	Loes Klappe-Linsen	A	L.Klappe@minez.nl	070-3796580/7051
Ministry of Economic Affairs	Marianne Derksen	P	m.derksen@minez.nl	070-3796524
Royal Netherlands Embassy Pakistan	Fred Smiet	A	fred.smiet@minbuza.nl	00 92 51204444
Royal Netherlands Embassy Bangladesh	Niels Veenis	A	niels.veenis@minbuza.nl	00 880 28822715
Royal Netherlands Embassy India	Theo Groothuizen	P	theo.groothuizen@minbuza.nl	+91-11-24197625
Both Ends	Remi Kempers	P	rk@bothends.org	020-5306625
TU Delft	Cees Timmers	P	c.timmers@tudelft.nl	015-2785283
DHV	Bob Bakker	P	bob.bakker@dhv.nl	033-4682511
WL-Delft Hydraulics	Eelco van Beek	P	eelco.vanbeek@widelft.nl	015-2858585
FCCI	Jambagi	P	info@indus-tec.com	06-18845154
	Moharir	P	moharir@planet.nl	079-3211181
Erasmus University	Jacko van Ast	A	vanast@fsw.eur.nl	010-4082000
UNESCO-IHE	Jaspers	A	f.jaspers@unesco-ihe.org	015-2151729
VU / UNESCO	Joyeeta Gupta	A	Joyeeta.gupta@ivm.vu.nl	020-5989548
NWP	Lennart Silvis	A	l.silvis@nwp.nl	015-2151728

9.9

LIST OF INTERVIEWEES

- B. Bhattacharya, UNESCO-IHE.
- J. Gupta, UNESCO-IHE, VU.
- R. Jambagi, Foundation For Critical Choices for India.
- F. Jaspers, UNESCO-IHE.
- R. Kempers, Both Ends.
- Z. Kibria, BanglaPraxis.
- H.U. Qureshi, Foundation For Critical Choices for India.
- L. Silvis, Netherlands Water Partnership.
- F. Smiet, Royal Dutch Embassy Pakistan.