

WASSA Project Reports, Volume 3:  
**WATER SHARING CONFLICTS BETWEEN COUNTRIES,  
AND APPROACHES TO RESOLVING THEM**

Coordinating Author: Umesh Parajuli (JVS, Nepal)

Authors:

Maniruzzaman Miah (TWEDS, Bangladesh)

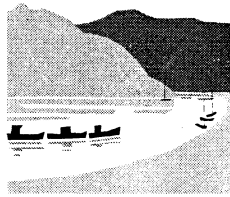
Khalilur Rahman (BUP, Bangladesh)

Shahid Hamid (EDC, Pakistan)

Somnath Mukherjee (WAPCOS, India)

George Verghese (CPR, India)

Project Coordinated by Toufiq A. Siddiqi (GEE-21) and Shirin Tahir-Kheli (SAIS)



**Project on “Water and Security in South Asia” (WASSA)**

*A Project Sponsored by the Carnegie Corporation of New York*

And Implemented by the  
*South Asia Program/FPI, School of Advanced International Studies (SAIS),  
Johns Hopkins University, Washington, D. C.*

And  
*Global Environment and Energy in the 21<sup>st</sup> Century (GEE-21),  
Honolulu, Hawaii*

*Published in Cooperation with the Observer Research Foundation (ORF)  
New Delhi*

## PREFACE

More than 1.3 billion people live in South Asia. Almost half of these depend on river systems for their water needs. Many of these major rivers, some of which are amongst the world's largest, flow across national borders and have been a source of tension in the region. At times, when the snow melts in the Himalayas, or during the monsoon, there is too much water, and frequent floods. At other times, there is too little water available, and intense competition for it arises between countries, and between upstream and downstream provinces or states even within the same country.

In the western part of the sub-continent, the waters of the Indus basin are shared by Pakistan and India. In the North and Northeast, the basins of the Ganges, Brahmaputra, and Meghna are shared by India, Nepal, Bhutan, and Bangladesh, and in some areas by China. Although some arrangements presently exist to share the waters between the respective countries, their implementation has not always been satisfactory, and there is a widespread perception that these arrangements could be inadequate in times of increased water scarcity.

There are also disputes within India and within Pakistan regarding the equitable distribution of water between the states or provinces. As the populations of the countries increase, and water availability declines, tensions over water rights are likely to increase as well.

The project on "Water and Security in South Asia" focuses on the critical issues mentioned above. It has several goals:

- Identification of the key issues regarding water resources in the subcontinent;
- An examination of the provisions of the Indus Water Treaty of 1960 between India and Pakistan, and the other water Treaties or Agreements critical to the region;

- Identifying approaches to water conflict issues within and between the countries of South Asia that could be used throughout the region;
- Examining some of the climate change and investment aspects of water availability that could affect the future availability of water in the region.

The Carnegie Corporation of New York has identified water availability as a priority area for its Program. In his report to the Board of the Corporation, President Vartan Gregorian has pointed out that "Much less heed is being given to the most basic human need — water. In 1996, the United Nations Development Programme reported that there were ten countries in the world, largely in Africa, where more than half the population did not have access to potable water. The sharing of water resources has the potential of bringing rival nations together in common cause, just as the manipulation of the water supply by those who control it can lead to conflict and violence, as we already see in the Middle East and could witness in Asia and Africa". In keeping with this priority, the Carnegie Corporation of New York provided the funding for the WASSA project.

Issues relating to a resource as critical as water can obviously only be negotiated by the various governments themselves. Projects like WASSA could make several important contributions such as:

- Highlight the issues through a regional prism;
- Offer constructive alternatives to conflict in addressing the critical issue of water, whereas governments in the subcontinent have largely tended to focus on these issues in the shadow of conflict;
- « Create a joint stake in the solution of issues relating to water through creative thinking on future actions by experts who understand the political world that shapes decisions;
- Deal with questions of trust which influences the entire range of water as well as other important issues in South Asia;

- » Create conditions for cooperation through the development of a network of technical experts placed to make a difference with their respective governments.

Teams consisting of persons from Bangladesh, India, Nepal, and Pakistan have prepared the reports of the WASSA project. Consultants based in South Asia, Japan and the USA have provided additional input. The participants met several times during the project in working groups as well as in Workshops for the whole team.

The project work has been carried out under the following themes:

- Gaps between water demand and supply;
- Approaches to meeting the gaps;
- Water sharing conflicts within countries and possible solutions;
- Water sharing conflicts between countries and possible solutions;
- Possible impacts of global climate change on water availability;
- Investment requirements for enhancing water supply.

Participants from each of the following organizations (and in one case, two eminent consultants) have taken the lead on one of the above topics, and have provided input in other areas:

- Bangladesh Unnayan Parishad (BLIP);
- Economic Development Consultants (EDC), Pakistan;
- Jalsrot Vikas Sanstha (JVS), Nepal;
- Nepal Water Conservation Foundation (NWCF);
- Pakistan Institute for Environment-Development Action Research (PIEDAR);
- Trust for Water, Environment and Development Studies (TWEDS), Bangladesh;
- Water and Power Consultancy Services (I) (WAPCOS), India;
- Dr. M. S. Reddy and Mr. N. V. V. Char, India.

Dr. James E. Nickum (TJK College, Japan), Dr. Murari Lal (India), Dr. Amir Muhammed (Pakistan), Mr. P. B. Shrestha and Dr. H. M. Shrestha (Nepal), and Mr. George Verghese (India) have made valuable contributions to individual volumes.

Although we have listed the participating organizations above, the views expressed in this and other reports of the WASSA project are those of the individual authors, and not necessarily those of their organizations. In most cases, the views expressed in the Reports reflect those of all the authors of that Report. In a few cases, the authors had differing opinions that have been identified as such.

Distinguished persons with close links to policymakers in the four countries are serving as Policy Advisors for the project. They are:

- Major-General Mahmud Durrani (Pakistan), former Chairman, Pakistan Ordnance Factories Board;
- Mr. Salman Haidar (India), former Foreign Secretary, Government of India;
- Mr. Farooq Sobhan (Bangladesh), former Foreign Secretary, Bangladesh;
- Ambassador Bhekh Thapa (Nepal), Ambassador of Nepal to India.

The Policy Advisors have given generously of their time and provided valuable input. The authors of the project reports have incorporated this input in the Final Reports, which have been printed in three volumes, covering the following major themes:

1. Water Demand-Supply Gaps and Approaches to Closing the Gaps;
2. Water Conflicts *within* Countries, and Approaches to resolving them;
3. Water Conflicts *between* Countries, and Approaches to resolving them;

The Final Drafts of the volumes were reviewed by water resource specialists not associated with the WASSA project. Input received from them, as well as from the project Conferences held in Islamabad in February 2003 and in New Delhi in September 2003, has been incorporated in the Final Reports. In addition, a comprehensive Executive Summary has been prepared. Some of the individual reports can be downloaded from the GEE-21 web site ([www.gee-21.org](http://www.gee-21.org)).

## CONTENTS

|   |           |
|---|-----------|
| <b>PREFACE.....</b>   | <b>i</b>  |
| <b>Acknowledgements.....</b>  | <b>vi</b> |
| <b>1.0 Introduction.....</b>  | <b>1</b>  |
| <b>2.0 Overview of South Asian river basins.....</b>                          | <b>3</b>  |
| <b>3.0 The water sharing treaty between India and Bangladesh.....</b>         | <b>7</b>  |
| 3.1 <i>The treaty.....</i>  | <i>7</i>  |
| 3.2 <i>History and factors leading to the treaty.....</i>                     | <i>10</i> |
| 3.3 <i>Institutional arrangements for implementing the treaty.....</i>        | <i>15</i> |
| <b>4.0 Treaties between Nepal and India.....</b>                              | <b>19</b> |
| 4.1 <i>The Treaties.....</i>  | <i>19</i> |
| 4.2 <i>History and factors leading to the treaties.....</i>                   | <i>26</i> |
| 4.3 <i>Institutional arrangements for implementing the treaties.....</i>      | <i>36</i> |
| <b>5.0 Water sharing treaty between India and Pakistan.....</b>               | <b>41</b> |
| 5.1 <i>The treaty.....</i>  | <i>41</i> |
| 5.2 <i>History and factors leading to the treaty.....</i>                     | <i>44</i> |
| 5.3 <i>Institutional arrangements for implementing the treaty.....</i>        | <i>50</i> |
| <b>6.0 Conflicts related to the Implementation of the Treaties.....</b>       | <b>53</b> |
| 6.1 <i>Actualization of the water sharing provisions of the Treaties.....</i> | <i>53</i> |
| 6.2 <i>Implementation of the treaty provisions.....</i>                       | <i>60</i> |
| <b>7.0 Water sharing issues in South Asia.....</b>                            | <b>81</b> |
| 7.1 <i>Public perceptions.....</i>  | <i>81</i> |
| 7.2 <i>Institutional Aspects.....</i>   | <i>88</i> |
| 7.3 <i>Water security.....</i>  | <i>90</i> |

|  |            |
|--|------------|
| 7.4 International principles for utilizing international waters..... | 94         |
| 7.5 Factors contributing to the success of the Indus Treaty.....     | 95         |
| <b>8.0 Summary and Conclusions.....</b>                              | <b>98</b>  |
| <b>REFERENCES.....</b>   | <b>106</b> |
| <b>APPENDICES.....</b>   | <b>110</b> |
| Appendix 1. The Indus Waters Treaty 1960.....                        | 111        |
| Appendix 2. Treaty on Sharing of the Ganges/Ganga Waters, 1996.....  | 131        |
| Appendix 3. Mahakali Integrated Development Treaty of 1996.....      | 738        |