

Understanding Water Conflicts in South Asia

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Water has been a cause of conflict since ancient times. One of the earliest water conflicts in the sub-continent is recorded in the famous *Goutama Buddhar Kappiyam*: a conflict over the sharing of Rohini river water between the Sakyan and Koliyan clans, which was, according to Dr. Ambedkar, the cause of the Buddha's leaving home. As the *Kappiyam* describes it,

“When the Sakiyas and Koliyas waged a terrible war
About sharing the river Rohini,
Blood, gushing like a spring, flooded the waters,
The Buddha, coming to know of it,
Did what was needful
To end the long-drawn discord and
To bring both sides together.
All shall be well if good men try.”²

Conflict rages on: replace the river Rohini with any of our rivers in South Asia, and the Sakiyas and Koliyas tribes with the riparian nations, states, groups and users around that river. Except that while the Sakiyas and Koliyas abound, there is no Buddha in our midst. There is much self-interest but little wisdom, very little of Buddha's “self-enlightenment” about either the issue – the enlightenment of the people themselves.

This paper is a preliminary effort to understand the nature of water conflicts in South Asia. It begins with a discussion on the cultural and historical context of water and agriculture in South Asia and then gives a brief description of the status of water resources in the different South Asian countries highlighting the tensions between increasing demands and decreasing availability. The paper also highlights the bio-physical characteristics of water in which these conflicts are embedded and shows that there exists a lack of policy frameworks and institutional

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² As cited in Guhan, S. (1993). *The Cauvery River Dispute: Towards Conciliation*. Madras, Frontline Publication, Kasturi and Sons. P. 47

mechanisms to address water conflicts. There is also a lack of sufficient academic engagement with water conflicts (unlike in the case of land and forests). The third part of this paper examines a few of the important types of water conflicts and provides a chronology of water conflicts in South Asia. The section also discusses trans-boundary conflicts, primarily involving India and Pakistan, and India and Bangladesh, in some detail as the recent initiative of India to interlink rivers has further exacerbated it. Finally the paper examines the possible ways to address and work towards the resolution of these water conflicts.³

Common cultural and agrarian heritage

South Asia, bordered by the Himalayas on the north and the Indian Ocean on the south, includes India, Pakistan, Bangladesh, Nepal, Sri Lanka, Bhutan, the Maldives and Afghanistan. It covers a diversity of ecosystems and agro-climatic conditions that range from tropical and temperate forest to dry deserts and from vast drought prone regions to flood affected plains and areas with the highest rainfall in the world. It is also one of the most populous regions the world. Since it would take another few decades for the population of the region to stabilize, the demand for water – both for domestic water use and for production and processing – is expected to go up significantly in the near future. More than half of the world's poorest people live here and almost 40 per cent of its population falls below the poverty line. It has the lowest average Gross Domestic Product (GDP) compared to any other major geographic region of the world.⁴ It is also one of the most strife-stricken regions in the world – strife between the neighbouring countries and also civil unrest within the countries themselves. The region is also unique in terms of the varied political regimes⁵ and social systems⁶ that exist within the region.

³ The paper draws heavily on the recent work of Forum for Policy Dialogue on Water Conflicts in India and the K. J. Joy, Biksham Gujja, Suhas Paranjape, Vinod Goud and Shruti Vispute ed *Water Conflicts in India: A Million Revolts in the Making*, Routledge, 2007.

⁴ These figures are taken from the *Rural Poverty Report 2001* cited in Kulkarni, Seema and Nagmani Rao. 2002. *Gender and Drought in South Asia: Dominant Constructions and Alternate Propositions*, Jairath, Jasveen and Vishwa Ballabh (ed.) *Droughts and Integrated Water Resource Management In South Asia - Issues, Alternatives, and Futures*. Forthcoming publication from Sage, New Delhi.

⁵ For example countries like India, Pakistan, Bangladesh and Sri Lanka, and recently, Nepal have elected “democratic” governments whereas in Bhutan it is the hereditary “rule” of the Royal family with limited powers to the elected representatives. Afghanistan is a post-war society in transition and the political system is still evolving.

⁶ Broadly, one can characterise the social systems in India, Pakistan, Bangladesh and Sri Lanka are more “modernist” in their outlooks and their social relations are more capitalist in nature as compared to Nepal, Bhutan and Afghanistan where feudal relations and value systems are much stronger Nevertheless there is tremendous

Although diverse in nature, the South Asian continent shares in a common cultural and historical heritage revolving around water and agriculture.⁷ Water is said to be the mainstay of all civilisations until humans learned to bring water to where they lived and tilled. Water is also important for most South Asian countries because they have a short, well defined monsoon in which most of the rainfall occurs and has to provide for the rest of the period, especially the scorching summer which is relieved only in places with thick and perennial cover. Every *nakshatra* has its own expectations and requirements of how, when and how much of rainfall there should be and there actually will be. These things are of deep concern, since the potential joy of good rainfall is always accompanied by the often realised grief of a drought or a famine. These are things deeply embedded in the culture, in the folklore and the practices of the South Asian subcontinent.

The oldest archaeological evidence of settled agriculture in the subcontinent dates back to almost 7000 years ago in the austere North Western passes of the Himalayan and Hindukush ranges.⁸ Settled agriculture slowly spread throughout the subcontinent, spreading not linearly, but spawning centres in favourable locations and spreading outward from those centres. It should be no surprise that the first indications of a prosperous agriculture are linked to water. The Indus valley was the heart of the Bronze Age and encompassed the Harappan civilisation which stretched from the austere North-Western passes in the Himalayas to the south of the banks of the Narmada. The flood plains of the Indus, like those of the Nile were a fertile tract, their fertility annually replenished by the bounty the river regularly brought to her flanks. There is a lot of archaeological evidence to suggest that the Harappans were well versed in the simple technology of managing the annual floods in the flood plains. There is also likely evidence of wells, artesian wells and diversion channels. Water as we receive it is one thing, but water as we

regional and sectional variation in all these societies and caste, ethnicity and religion too play an important role in the social, economic, political and cultural spheres.

⁷ This section on common cultural and historical heritage around water and agriculture is based on an earlier work by the authors and for a detailed discussion see Joy, K. J. and Suhas Paranjape. 2005. *Women and Water: Relationships, Experiences, Approaches*. Ray Bharati (ed.). 2005. *Women in India: Colonial and Post-Colonial Periods*. Vol. IX, Part 3 of History of Science, Philosophy and Culture in Indian Civilisation; General Editor: D. P. Chattopadhyaya. New Delhi/Thousand Oaks/London, Sage.

⁸ Comet Group, *Bharat ki Chhap*, 13-part film serial supported by the National Council for Science and Technology Communication (NCSTC), Department of Science and Technology (DST), Mumbai: Comet Media Foundation 1995. . The oldest evidence of the neolithic and of agriculture in the subcontinent comes from the excavations at Mehargarh in Pakistan on the Afghan-Pakistan border. Much of the account of the ancient period given here relies on the 13-part film serial *Bharat ki Chhap* that was prepared by the Comet Group for the NCSTC, DST.

shape it to our needs is another, and in the Harappan civilisation we see the earliest evidence in the subcontinent of the attempts to harness water to our purposes and needs.⁹

However, by the end of the Harappan period, there is palaeo-biological and palaeo-geological evidence of likely tectonic shifts and environmental changes. The climate over the entire area of the Harappan civilisation seems to have undergone a change becoming more and more arid (Rajasthan, the area with as many more Harappan sites than the Indus valley itself) with the area of extreme impact developing into the Thar desert. There is evidence of now dried up palaeochannels of the earlier Ghaggar system which seemed to have dried up around then.¹⁰ The proverbial last straw to the camel's back was provided by the gradual but steady influx of the Indo-Aryan speakers displaced from the Central Asian plains by the same factors. Their lifestyle was the opposite, a nomadic pastoral way of life in which agriculture was seasonal. For them, water was essentially flowing water in the streams and any attempts to bind it (or damming the river) verged on the sacrilegious.¹¹

State of Water resources in the region

Various studies (WHICH ARE THE OTHER STUDIES FOOTNOTE THEM) indicate that the per capita water availability would decrease and the overall demand for water in most of the South Asian countries would increase keeping in step with the increasing population as well as the increased demand from certain sectors. For example the study by International Water Management Institute (IWMI) has tried to project the scenario of water availability in the year

⁹ 'Irrigation agriculture and proto-Hindu deities were among the attributes of a Harappan world centered on the twin cities of Harappa and Mohenjo daro.' Also, 'The Harappans clearly were master hydraulic engineers and were able thereby to sustain large centers like Mohenjo daro on the Indus flood plain via a system of platforms and drains. They had the shaduf, and possibly the windmill to raise water and had a substantive knowledge of hydrostatic pressure by which water can be raised in a well higher than the water source in which it is based.' From Walter A. Fairservis, Jr, *Review of G. L. Possehl's and M. H. Raval's Harappan Civilization and Rojdi*, Journal of the American Oriental Society, Vol. 111, No. 1. (Jan. - Mar., 1991), p. 110 and 112 respectively Also see Francfort, H.-P., *Evidence for Harappan irrigation system in Haryana and Rajasthan*. Eastern Anthropologist 45: 87-103, 1992

¹⁰ Jayant K. Tripathi, Barbara Bock, V. Rajamani and A. Eisenhauer, *Is River Ghaggar, Saraswati? Geochemical constraints*, Current Science, Vol. 87, No. 8, 25 October 2004 P. 1141-1145

¹¹ There are references in a few places in which a battle is described between Indra and Vritra who had held the waters captive and how Indra smashed the walls and freed the water that probably describes the conflict between the newly arrived pastoral tribes and the already arrived settlers. It would now be quite some time before the re-emergence of any kind of irrigation and settled agriculture in the Indo-Gangetic plains, and similarly a long time later, almost 2500 BC, that we would again find the resurgence of cities, the Iron age cities which were to give us the Buddha and Mahavira, The Lokayats and the Makhali Ghoshals. See Comet Group, *Bharat ki Chhap*, 13-part film serial supported by the NCSTC, DST, Mumbai: Comet Media Foundation 1995.

2025 and has divided the countries into the following four categories as per the relative availability of water.

- Category 1:* These countries face "absolute water scarcity". They will not be able to meet water needs in the year 2025.
- Category 2:* These countries face "economic water scarcity." They must more than double their efforts to extract water to meet 2025 water needs, but they will not have the financial resources available to develop these water supplies.
- Category 3:* These countries have to increase water development between 25 and 100 percent to meet 2025 needs, but have more financial resources to do so.
- Category 4:* These countries will have to increase water development modestly overall - on average, by only five percent - to keep up with 2025 demands.

The first category includes those countries that are most water scarce and in 2025 will not have enough water to maintain 1990 levels of per capita food production from irrigated agriculture and meet industry, household, and environmental needs. The study notes that while India and some of the other South Asian countries will not have major water problems on average, there will be massive regional variations in water availability. Though India is placed in Category 4 (the countries in this category will have to increase water development modestly overall - on average, by only five percent - to keep up with 2025 demands), a sizable portion of its population (280 million people in India in 1990) are placed in Category 1 of absolute water scarcity.¹²

Of course this is not to say that all problems related to water can be reduced only to "scarcity"; the issue of distribution is also equally important. The point is decreasing availability is also real and most of the conflicts around water is because there is a perceived unfairness in the distribution of this "scarce" resource. Take the case of Pakistan. The present population is 130 million which is expected to increase to 175 million by 2010 the population. The yield of food crops would have to be increased by 50 per cent and the cropping intensity would have to be increased to 150 per cent to cope with this rising demand. If this level is to be maintained, an additional area of nearly 2 Million hectares (Mha) has to be brought under fresh irrigation. Thus the demand on water from the agriculture sector would increase in the future. Coupled with this there is salinisation, waterlogging, drought and water scarcity in parts of Sindh and Balochistan. Water use needs to be regulated and equity in distribution of the resource is essential to meet these challenges.¹³

¹² For this point see Seckler, D., U. Amarasinghe, D. Molden, R. de Silva, and Barker, R. 1998. *World Water Demand and Supply, 1990 to 2025: Scenarios and Issues* Research Report No 19. Colombo. International Water Management Institute. Pp 22-23.

¹³ Habib in Molinga edited 2000 as cited in Kulkarni, Seema and Nagmani Rao. 2002. Gender and Drought in South Asia: Dominant Constructions and Alternate Propositions. Jairath, Jasveen and Vishwa Ballabh (ed.) *Droughts and*

The depth of the crisis in the water sector in India is evident from the dwindling water availability and the increasing conflict around it. The country's utilisable fresh water resource is estimated at about 110-112 million ha-m. Of this, little less than half (53 million ha-m) is currently utilised. The renewable water resource in terms of annual rainfall, estimated on the basis of average precipitation, comes to 400 million ha-m. Of this, 185 million ha-m is available as surface storage, 50 million ha-m is stored as underground (groundwater), and 165 million ha-m is stored in the soil as root-zone soil moisture.¹⁴ One third of the country, about 109 Mha mostly in the central and western part of the country, is categorised to be a drought prone area facing a serious drinking water crisis.

Unlike India and Pakistan, Sri Lanka may not face immediate water crisis – both quantity and quality-wise. However, in some of the areas groundwater is depleting, and most of the rivers and reservoirs, which are the source of drinking water, are drying up. All the drinking water supply schemes are operating at very low capacity. Most pipe-borne water supply schemes have less than 50 % of their capacity, creating an immediate problem of shortage of drinking water.¹⁵ Nepal is endowed with abundant water resources, which are regarded as the key strategic resources to bring about all round development and economic growth of the country. Yet, over the last 25 years agricultural production aggregate and yields have declined despite the expansion of area under irrigation. In contrast to other nations in the region Nepal had a per capita availability of 10,000 m³ annually. However, like most averages this average too does not give the true picture of actual access to water for a large part of the population over the large part of the year. The current crisis in Nepal is related to inefficient use of water and lack of equity.¹⁶ The same is the case with Bhutan which is a monarchy with semi-feudal social relations and recently embarking on a gradual route of parliamentary democracy. The old social structure,

Integrated Water Resource Management In South Asia - Issues, Alternatives, and Futures. Forthcoming publication from Sage, New Delhi.

¹⁴ Paranjape, Suhas and K. J. Joy. 2002. An Alternative Approach to Drought and Drought Proofing. Jairath, Jasveen and Vishwa Ballabh (ed.) *Droughts and Integrated Water Resource Management In South Asia - Issues, Alternatives, and Futures.* Forthcoming publication from Sage, New Delhi.

¹⁵ ICID, 1999 as cited in Kulkarni and Rao, 2002. Gender and Drought in South Asia: Dominant Constructions and Alternate Propositions. Jairath, Jasveen and Vishwa Ballabh (ed.) *Droughts and Integrated Water Resource Management In South Asia - Issues, Alternatives, and Futures.* Forthcoming publication from Sage, New Delhi.

¹⁶ (Dixit, in Molinga Ed., 2000 as cited in Kulkarni and Rao 2002)

however, remains very much part of agrarian dynamics. Apparently the per capita availability of water per annum is around 75,000 m³, the highest in the region, though the availability varies according to regions and seasons. Nearly 73 per cent of the country is under forest and only about 8 per cent of total land area is under cultivation. Of the arable land only about 12.5 per cent of the arable land is irrigated and the irrigation is primarily dependent on natural streams and canals fed by these streams. The country is confronted with localized and seasonal water shortages for drinking and agricultural purposes. Today only 78 per cent of the population has access to safe drinking water. The pressure on the water resources is mounting due to competing demands from different users. In the past, water was mainly used for domestic and agricultural purposes. The domestic water demand is increasing due to changing lifestyles caused by socio-economic development. The water use for agriculture is expected to increase due to its intensification to keep pace with food demand of a growing population. New demands are emerging from other sub-sectors such as hydropower and other industries. Urbanisation has become a key issue that has serious impact on both water demand and quality.¹⁷ The sector is also constrained by pre-capitalist social relations that continue to be very central to agrarian relations and access to water, especially irrigation water, is determined mostly according to customary rights.¹⁸

Bangladesh is a deltaic country inhabited by 120 million people and is one of the poorest in the world. In Bangladesh, 10 per cent of the households own about 60 per cent of the land. Most of the country is located within the flood plains of the three great river basins - the Ganges, the Brahmaputra and the Meghna- and is prone to periodic natural disasters like floods, droughts and cyclones. Because of this it is under a constant threat due to river-bank erosion, migration of river-banks and meandering river channels leading to considerable loss of land. The southwest of

¹⁷ (Bhutan Water Policy 2003) Gender and Drought in South Asia: Dominant Constructions and Alternate Propositions. Jairath, Jasveen and Vishwa Ballabh (ed.) *Droughts and Integrated Water Resource Management In South Asia - Issues, Alternatives, and Futures*. Forthcoming publication from Sage, New Delhi Bhutan Water Policy 2003 also available at <http://www.moa.gov.bt/moa/acts/acts/WATER%20POLICY%5B1%5D.pdf>

¹⁸ Menon, Ajit and K. J. Joy. 2006. Community Based Natural Resource Management in Bhutan: The Case of Lingmteychhu Watershed. Menon *et al* (ed.). *Community-based Natural Resource Management in South Asia: Discourse and Practice*, CISED, Bangalore, India. pp. 96 – 117. Forthcoming Publication from Sage.

Bangladesh is a drought prone area where the water shortage problem during the dry season continues to destroy the livelihoods of the poor.¹⁹

The forgoing discussion shows, the present situation in the South Asian countries with regard to water availability, future demands, rules and norms of access, institutional set up for management, etc. are quite diverse. Though most of these countries are bound, to a great extent, by a common cultural and historical heritage around water and agriculture and also physically linked by some of the great Himalayan rivers, water has become a source of tension and conflict amongst some of these countries. South Asia is a region with the largest amount of untouched freshwater resources. These resources flow from the shared Himalayas in China, Nepal, Bhutan, India and Pakistan. As a result, the continent has many transboundary rivers among these riparian countries.

Biophysical embeddedness and institutional context of water conflicts

Though water conflicts are seen as negative occurrences, they are logical developments in the absence of proper democratic, legal and administrative mechanisms which are the root cause of these conflicts. Part of the problem stems from the specific characteristics of water as a resource some of which are: (i) water is divisible and amenable to sharing; (ii) it is a common pool resource so that a unit of water used by someone is a unit denied to others; (iii) it has multiple uses and users and involves resultant tradeoffs; (iv) excludability is an inherent problem and exclusion costs involved are often very high; (v) it requires a consideration and understanding of nested expanding scales and boundaries from the local watershed to inter-basin transfers; and (vi) the way water is planned, used and managed causes externalities – both positive and negative, and many of them are unidirectional and asymmetric.²⁰ These characteristics have a bearing on water related institutions²¹ and have the potential not only to trigger contention and conflict and

¹⁹ (Government of Bangladesh, Ministry of Water Resources, 1998 as cited in Kulkarni and Rao, 2002). Gender and Drought in South Asia: Dominant Constructions and Alternate Propositions. Jairath, Jasveen and Vishwa Ballabh (ed.) *Droughts and Integrated Water Resource Management In South Asia - Issues, Alternatives, and Futures*. Forthcoming publication from Sage, New Delhi.

²⁰ Joy, K. J., Biksham Gujja, Suhas Paranjape, Vinod Goud and Shruti Vispute. 2007. A Million Revolts in the Making: Understanding Water Conflicts in India. Joy K. J. et al (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. pp xvii-xxxii

²¹ There is considerable amount of literature available on some of these, especially about common pool resources, their defining characteristics and the 'fit' between these characteristics and the institutions to manage them. Lele

become an instrument of polarisation and exclusion, but also to become an instrument of equitable and sustainable prosperity for all those who directly or indirectly depend on them for their livelihoods.

In this context it is pertinent to note that water conflicts in India have encompassed every segment of the society be it political parties, states, regions, sub-regions within states, or castes and groups and individual farmers. In contrast other South Asian countries have not faced the same intensity of water conflicts, either because of their particular political systems which do not give space for the expression of discontent or because the availability of water has not decreased beyond the critical level. In other regions and developing countries however, water conflicts are taking a serious turn even though the 'water wars', a chance remark by the then UN Secretary General, have not materialised. Though most of the wars in the developing countries have taken place over oil and not water, some of the literature available globally, especially on the Middle East, sees water conflicts more in terms of war, peace and survival²². This indicates that water is radically altering and affecting political boundaries all over the world, between as well as within countries. In India, water conflicts are likely to get worse before they begin to be resolved. Till then they pose a significant threat to economic growth, social stability, security and ecosystem health. And under threat are the poorest of the poor as well as the very sources of our water – our rivers, wetlands and aquifers.

One of the factors that frame the nature of water conflicts is the relative paucity of frameworks, policies and mechanisms that deal with water resources. In contrast, policies, frameworks, legal set-ups and administrative mechanisms to deal with immobile natural resources have greater visibility and have a greater body of experience backing them, however contested they may be.

Sharachandra, 2004, "Beyond State-Community and Bogus "joint"ness: Crafting Institutional Solutions for Resource Management in Max Spoor, ed. *Globalisation, Poverty and Conflict: A Critical "Development" Reader*, Kluwer Academic Publishers, Dordrecht and Boston, pp. 283-303, summarises some of these discussions and debates.

²² For example see some of the representative titles like Bulloch, John and Darwish Adel, 1993, *Water Wars: Coming Conflicts in the Middle East*, London, Gollancz; Murakami, Masahiro, 1995, *Managing Water for Peace in the Middle East: Alternative Strategies*, New York, United Nations University Press; Starr, Joyce Shira, 1995, *Covenant Over Middle Eastern Waters: Key to World Survival*, New York, H. Holt; Allan J. A., (edited), 1996, *Water, Peace and the Middle East: Negotiating Resources in the Jordan Basin*, New York, St. Martin's; Myles, James R., 1996, *U. S. Global Leadership: the U.S. Role in Resolving Middle East Water Issues*, Carlisle Barracks, PA, US Army War College. Periodicals like *Studies in Conflict and Terrorism* have published articles on water conflicts more or less from the same standpoint. Peter Gleick, 1993, *Water and Conflict: Fresh Water Resources and International Security*, **International Security**, 18:79-112, discusses the history of water-related disputes and water resources systems as offensive and defensive weapons.

The case of land and land reforms is illustrative of this and many reformist as well as revolutionary movements are rooted in issues related to land. Several political and legal interventions have addressed the issue of equity and social justice in respect of land. Most countries have gone through land reforms of one type or the other. Similarly, there is comprehensive literature on forest resources and rights. This is not to say that conflicts over them have necessarily been effectively or adequately resolved, but they have received much more serious attention, have been studied in their own right and practical as well as theoretical means of dealing with them have been sought. In contrast, water conflicts have not received the same kind of attention.

This is not to say that there has not been any attempt to academically engage with water conflicts. Meredith Giordano, Mark Giordano, Aaron Wolf seek to investigate the dynamics of water interactions across geographic scale and their relationship to broader international affairs. The research approach involves the creation of an analytical framework for assessing possible linkages between external and internal interactions over freshwater resources. The framework is applied to three case studies and one is from South Asia. The highlights, at least in terms of the specific case studies selected, the disparate water dynamics across geographic regions and the importance of considering water events, both national and international, within larger political and historical contexts.²³

Vandana Shiva is another major scholar of water conflicts deals with sub-themes like conflicts over river waters, large dams and conflicts in the Krishna basin, mining and water conflicts, and fisheries and conflicts at sea in her book *Ecology and the Politics of Survival*..²⁴ The book also has a small section on people's alternatives in the context of water scarcity. In another book, she takes a historical global perspective and analyses issues like international water trade, damming, mining, and aquafarming, historical erosion of communal water rights, and shows how 'water privatization is threatening cultures and livelihoods worldwide'.²⁵ She also calls for 'a movement to preserve water access for all, and offers a blueprint for global resistance based on examples of

²³ Giordano Meredith, Mark Giordano, Aaron Wolf (2002), The geography of water conflict and cooperation: internal pressures and international manifestations. *The Geographical Journal* 168 (4), 293–312.

²⁴ Vandana Shiva, *Ecology and the Politics of Survival*, Sage, New Delhi, in 1991.

²⁵ Vandana Shiva, *Water Wars: Privatization, Pollution, and Profit*, South End Press in 2002.

successful campaigns like the one in Cochabamba, Bolivia, where citizens fought for and retained their water rights’.

Another important contribution to the academic discourse on water conflicts in India is the book edited by A. Vaidyanathan and H. M. Oudshoorn which discusses the sources and nature of water scarcity and conflicts and also the mechanisms used to address them.²⁶ The book strongly argues for a ‘transdisciplinary’ dialogue as water and water conflicts cannot be fully understood and mechanisms to resolve them cannot be designed within disciplinary boundaries and a ‘coherent, multi-pronged action on several inter-related fronts like technological, legal, institutional and economic’. In another work Ashok Swain takes the position that ‘water scarcity and the use of international river system resources can not only cause international conflict but can also bring about peace and co-operation.’²⁷

Typology of water conflicts in South Asia

Some important themes of water conflicts like contending water uses, equitable access and allocation, water quality and pollution, and dams and displacement can be found anywhere in the world especially in the developing countries. These conflicts are not very sharp in the developed countries of the Europe or the USA because these countries have evolved certain “social” consensus around a minimum set of benchmarks and norms. A certain institutional and legal space has also been provided for settlement of water conflicts in these countries through negotiations and increasing presence of multi stakeholder platforms and processes. Recently privatization of water in various forms has become another arena of conflict and contestation in the context of South Asian countries as there is a growing rethinking about the role of state in the provision of water. Of course developing a typology is not an easy task as very often the conflicts may fit into more than one theme. Since water conflicts are often a multi-faceted microcosm of wider conflicts it is rather difficult to identify any one aspect as the dominant one and thus it is not possible to make the themes mutually exclusive.

John Briscoe and R. P. S. Malik have organised the water conflicts under the following themes: conflicts at international level, conflicts at the inter-state level, conflicts between upstream and

²⁶ A Vaidyanathan and H.M. Oudshoorn *Managing Water Scarcity: Experiences and Prospects*, Manohar, Delhi 2004.

²⁷ Ashok Swain, 2004 *Managing Water Conflict: Asia, Africa and the Middle East*, Routledge UK

downstream riparians in intra-state rivers, conflicts between communities and the state, conflicts between farmers and the environment and conflicts within irrigation projects.²⁸ In another analysis Peter Gleick of Pacific Institute for Studies in Development, Environment, and Security (Oakland, CA, USA) states that these conflicts ‘stem from the drive to possess or control another nation’s water resources, thus making water systems and resources a *political or military goal*. Inequitable distribution and use of water resources, sometimes arising from a water development, may lead to *development disputes*, heighten the importance of water as a strategic goal or may lead to a degradation of another’s source of water. Conflicts may also arise when water systems are used as instruments of war, either as *targets* or *tools*’.²⁹ The Pacific Institute for Studies in Development, Environment, and Security has developed a global water conflict chronology starting from 3000 BC to October 2006. The Chronology indicates that, compared to other parts of the world, incidents of water conflicts seem to be more of a twentieth century phenomenon in South Asia. The first mention of a South Asian water conflict in this chronology is that of the Farakka case between India-Bangladesh (1947) even though the first incident of water conflict in the Indian Subcontinent is dated back to the times of Buddha by this essay. Also the Chronology does not capture all different types of water conflicts in South Asia; for example many of the important conflicts in India are not covered in this chronology as shown in annexure one. In order to capture the whole complexity of water conflicts within the region the major themes are elaborated upon in the rest of this section.

1. Contending Water Uses

Contending water uses or contention between *different* kinds of uses is one of the important, emerging types of water conflicts in South Asia. Water, as noted earlier, is a common pool resource and hence when the same unit is demanded for different kinds of uses we have a contestation and a potential conflict. The Keoladeo National Park, Rajasthan, India, is a classic case of contested water use.³⁰ The contestation is between the needs of the Bharatpur wetlands, a spectacular bird sanctuary which is a World Heritage and Ramsar site, and the irrigation needs of

²⁸ For details see John Briscoe and R.P.S. Malik, *India’s Water Economy: Bracing for a Turbulent Future*, New Delhi, Oxford University Press, 2006, pp. 22-26.

²⁹ Peter Gleick, 2006. *Water Conflict Chronology*, Pacific Institute for Studies in Development, Environment, and Security. Available online at www.worldwater.org/conflictchronology.pdf

³⁰ For a detailed discussion of this case see Chauhan, Malavika. 2007. *Biodiversity versus Irrigation: The case of Keoladeo National Park*; Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp 14-20)

the local farmers. The conflict between the needs of the wetlands and irrigation continues to be resolved temporarily every year, in an *ad hoc* manner. There has been an increasing awareness for the need to keep minimum environmental flows within the river systems and this has become an issue of contestation between the environmentalists and water resource engineers. Similarly the increasing demands from industry and urban areas are putting pressure on the available water resources (and with increasing population the per capita availability of water is showing a drastic downward trend) in most parts of South Asia. To quote from the recently published report of the World Commission on Dams, "The unfolding scenario for water use in many parts of the world is one of increasing concern about access, equity and the response to growing needs. This affects relations between: rural and urban populations; upstream and downstream interests; agricultural, industrial and domestic sectors; and human needs and the requirements of a healthy environment".³¹

2. Equity and Access

Another related theme is equity which focuses on issues of distribution and access between different users but *within the same kind of use*, unlike the first theme that deals with *different* contending uses. Equitable access to drinking water or irrigation water is a case in point and cover a wide variety of issues including contestation over and between old and new water rights, old and new projects, tailenders and head-reachers in the designed irrigation commands, dalits and upper castes and different ethnic groups so on. In South Maharashtra the drought affected farmers under the banner of Shetmajoor Kashtakari Shetkari Sanghattana (Organisation of the Agricultural labourers and Toiling Peasants) have been organising various types of agitations to restructure the newly initiated irrigation projects in the area on more equitable lines.³²

Increasingly the different social sections are demanding for their share of water and in countries like India the contestation over equitable access to water has taken a much more organised form. However, in some of the countries like Bhutan where the problem is not one of overall availability of water (for example the per capita availability in Bhutan is a whopping 75,000 m³),

³¹ World Commission on Dams, 2000, *Dams and Development: A New Framework for Decision Making*, London & Sterling: Earthscan. P. xxix.

³² For a detailed discussion on this see Kavade-Datye 2007. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 98-104)

the issue is one of distribution and access. In most parts of Bhutan the water rights are decided on customary lines and there are many who have no water rights. Take the case of Lingmuteychhu watershed in west-central Bhutan. The semi-feudal social relations and old social structure remain very much part of agrarian dynamics and this is most critical in the context of rights to water. In most villages, farmers are divided into three (sometimes four) categories with different entitlements to water: *thruelp*, *chhep* and *chatho*. While a *thruelp* can take half the flow of the water in the canal on his/her rotation day, *chheps* get half of what *thruelp*'s get and *chatho*'s share is half of what *chheps* get. In some of the villages, for example Limbukha, there is also a category of *lhangchu* or 'water beggars' who only get water if others give it to them. They have no customary right over water as the other three categories have. The important point is that rights to water are intricately linked to the social structure 'of the past'. *Thruelp* in Dzonga refers to the original tax payer. What is also relatively clear is that *thruelp* have more land and hence water rights are linked to extent of land owned. There are also cases of people belonging to a higher category moving to a lower category because of division of property. An added dimension is that water rights are linked to contribution to village pujas and labour contributions at the time of canal construction and repairs, again factors that are linked to land and assets more generally.³³ Though this unequal access to water has not given rise to major conflicts in the Bhutanese society yet, and this is mainly because of the political system prevalent there, there is perceptible resentment amongst those who do not get access to adequate amounts of irrigation water. This is not limited to Bhutan alone; it can be seen in most of the societies where social hierarchies exist.

Almost eighty years ago, Dr. Ambedkar launched a Water Satyagraha in Mahad, Maharashtra, India, by marching to the Chavadar Tank to open up all public watering places to the Dalits³⁴. The recent conflicts Mangaon and surrounding villages, very close to Mahad, show how in a drought year centuries of caste-based oppression and prejudice, deep rooted cultures and

³³ Menon, Ajit and K. J. Joy. 2006. Community Based Natural Resource Management in Bhutan: The Case of Lingmuteychhu Watershed. Menon *et al* (ed.). *Community-based Natural Resource Management in South Asia: Discourse and Practice*, CISED, Bangalore, India. pp 96 – 117. Forthcoming Publication from Sage.

³⁴ Dalits are also called the Scheduled Castes and were "Untouchables" under the caste system.

traditions, rear their head once again to deny water to the Dalits.³⁵ The core issue in equity related conflicts is the absence of clear-cut norms of equitable water allocation and distribution. Allocation norms have evolved according to local situations, size and nature of project and historical socio-political relations. We need a better concept of a right or an entitlement to water to tackle the conflicts over allocations and access. How much water a person, a household should be entitled to as a right? Here we need a livelihood needs framework that sees assurance of minimum livelihood needs and the corresponding water requirement as an associated right. Associated with this is the need to share shortages and surpluses in a principled manner. It also entails doing away with the obstacles that deny the disadvantaged sections of our society their rights.

3. Pollution Induced Conflicts

Water quality, or pollution, is fast emerging as another arena of conflict. Earlier these issues were treated as inevitable consequences of growth and industrial development, therefore, largely ignored. Also non point source pollution due to increased use of pesticides and fertilizers is also posing a major threat to the ecosystem and the livelihoods of those dependent on these water sources. However, growing scale, increased awareness and active civil society engagement has brought water quality conflicts more and more to the forefront. The main issue here is how and in what form do users return water to the ecosystem. Polluted water returned by users causes problems to 'downstream users,' and decreased freshwater availability causes economic loss, social distress and ill health. Sadly, deterioration in quality becomes apparent only after adverse impact becomes large enough, and in the last instance ecosystems are the major losers. In almost all South Asian countries this is becoming a major area of contestation and conflict: of course the degrees vary as in a country like India pollution levels are pretty high where as in a country like Bhutan it may not be much of an issue yet. The Noyal³⁶ and Palar³⁷ basins in Tamil Nadu, India,

³⁵ For a detailed discussion see Paranjape, Suhas, Raju Adagale and Ravi Pomane. 2007. Mahad to Mangaon: Eighty Years of Caste Discrimination: What Caste is Water?. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 111-115)

³⁶ For details see Jayakumar, N. and A. Rajagopal. 2007. Noyyal River Basin: Water, Water Everywhere, Not a Drop to Drink. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 158-162)

are classic cases of industry-induced pollution and multi stakeholder processes seem to have led to some concrete measures to check pollution caused mainly by the booming textile and leather industries. The important point here is that water pollution impacts both the ecosystems and the peoples' lives and livelihoods. The corollary is that any possible solution to conflicts related to water quality needs to address both the ecosystem needs as well as people's livelihoods. Very often these conflicts are complex because there is only a thin line separating the victims and the beneficiaries.³⁸

4. Dams and Displacement

Conflicts over dams and displacements are relatively well publicised and better documented. For example the case of Sardar Sarovar Project in India³⁹ has become the rallying point for all those who are against large dams globally. Struggles against dams have basically posed the question as to large dams are required or not and very often it has led to polarised positions – large vs. small, or pro-dam and anti-dam. Since most of the South Asian countries have a short, well defined monsoon in which most of the rainfall occurs and has to provide for the rest of the period, probably certain amount of storage by way of dams to meet the requirements of the non-monsoon months become a necessity. In the drought prone regions exogenous water from large and medium dams may be needed to supplement and strengthen local water harvesting and that their integration is the way to avoid dividing the poor and pitting them against each other as the drought affected beneficiaries versus the displaced victims.⁴⁰ The issue is whether we can utilise water from larger sources with out

³⁷ For details see Janakarajan, S. 2007. Conflict over Water Pollution in the Palar Basin: The Need for New Institutions. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 163-170)

³⁸ For a detailed discussion as how to tackle the issue of water quality/pollution induced conflicts see Appasamy, Paul. 2007. Water Quality Conflicts: A Review. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 137-144)

³⁹ For a detailed discussion on the conflict over Sardar Sarovar Project see Sangvai 2007, People's Struggle in the Narmada Valley: Quest for Just and Sustainable Development, pp. 333-339, and Paranjape and Joy 2007, Alternative Restructuring of the Sardar Sarovar Project: Breaking the Deadlock, in Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge

⁴⁰ This is important in the context of the polarised debate on 'large vs. small' or the 'no dam' stand of some of the environmental movements. "In some drought prone areas, for example, in many areas in Maharashtra, millions of people are also uprooted due to drought and the lack of supplementary irrigation from dams. They migrate to large cities like Mumbai and live in slums in the most degraded conditions. Secondly an extreme assumption that people would never want to move and should always stay where they have their roots also contradicts historical experience" For this see Patankar, Bharat and Anant Phadke. 2007. *Dams and Displacement: A Review*; Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 309-313)

creating disruptive submergence and displacement and whether we can rehabilitate the people who get displaced as part of an area development plan.⁴¹ There are also examples, may be very few, that shows that with the organised strength of the project affected persons and a creative leadership probably they can come up with innovative options for development-oriented rehabilitation of the project affected persons. An interesting example of this is the case of Tawa Fishing Cooperative Society in Madhya Pradesh.⁴²

5. Water Privatisation

Privatisation of water is an important upcoming arena of conflict in many countries in Asia, Latin America and Africa. The present discourse on water privatisation calls for a nuanced understanding of the issue of water privatisation – source privatisation and privatisation of service delivery cannot be equated – and also brings to the forefront the underlying issues of equity and assurance that are most threatened by privatisation or what goes on under the rubric of public-private partnerships, the latest buzzword in water management. The current debate about water privatisation is highly polarised between two well entrenched positions of for and against and there seems to be very little attempt to explore the middle ground of seeing water as both a social and economic good⁴³. This has implications for issues like ownership, rights and allocations, pricing and cost recovery and the regulatory framework. “The (water) issue is not about privatisation. It is about the governance and regulatory framework to secure the rights and access of all to clean water. It is about the right to life. It is also about the rights to water for all”.⁴⁴ The famous Plachimada case⁴⁵ in Kerala, India, where the Coca Cola bottling plant got

⁴¹ For a detailed discussion on the question of how this is possible see Paranjape, Suhas and K. J. Joy. 1995. *Sustainable Technology: making the Sardar Sarovar Project Viable*. Ahmedabad: Centre for Environment Education.

⁴² For a detailed discussion see Singh, Vikas. 2007. Struggle over Reservoir Rights in Madhya Pradesh: The Tawa Fishing Cooperative and the State. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 350-354)

⁴³ For a detailed discussion on this see, Peter Gleick, 2002, *The New Economy of Water: The Risks and Benefits of globalisation and Privatisation of Fresh Water*, Pacific Institute for Studies in Development, Environment and Security, Oakland, California.

⁴⁴ Narain, Sunita. 2007. Privatisation: A Review. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge.

permission to use groundwater irrespective of the opposition from the local Gram Panchayat and involving Coca Cola and the Sheonath river⁴⁶ in Chattisgarh, India, show the extent of privatisation of water in India. They also raise the questions about the nature of the impact of water privatisation and examine whether or not privatisation of rights and entitlements takes place under the garb of privatising services.

6. Transboundary water conflicts: A major cause of regional tension

Conflicts between countries are generally classed as transboundary conflicts. However, in India, and also in some of the South Asian countries, water is a state subject and constituent states enjoy considerable autonomy in deciding on issues related to water. In India almost all inter-state rivers have become arenas of contestation and conflicts amongst the riparian states. The conflict between Karnataka and Tamil Nadu over the sharing of the Cauvery waters is the most intense of all. The recent verdict of the Cauvery Tribunal apportioning the river water amongst the riparian states has only added further fuel to the issue. Though conflicts amongst the riparian states is a major issue in most of the South Asian countries, more so in India, in this paper we would restrict the discussion on transboundary water conflicts to only conflicts between nations over sharing international river waters. In the South Asian context the Indus river system and the Ganga have become increasingly contentious and transboundary conflicts have become another major cause for regional tension in South Asia. The inter-country case sparked by the Baghlihar project, extends to the Indus Treaty between India and Pakistan. Another important case – sharing the Ganga -- is that of inter-basin diversions of the Himalayan rivers and their implications for Indo-Bangladesh relations.

The Baghlihar Hydropower Project (BHP)⁴⁷ is located on the River Chenab in Ramban Tehsil of Doda district, Jammu and Kashmir (J&K) and the construction began in 1999. The BHP has an installed capacity of 450 MW during Phase I and 900 MW during Phase II. It is a 4,000 crore-

⁴⁵ For details on Plachimada see Surendranath, C. 2007. Coke Versus the People at Plachimada: The Struggle over Water Continues. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp 419-424)

⁴⁶ For details on Sheonath river see Das, Binayak and Ganesh Pangare. 2007. A River becomes Private Property: The Role of the Chhattisgarh Government. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 431-434)

⁴⁷ This brief write up on the Baghlihar Hydropower Project is based on Sinha, Rajesh. 2007. Two Neighbours and a Treaty: Baglihar Project in Hot Waters. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 396-402)

rupee venture of the government of Jammu and Kashmir and about 2500 crore has already been spent on it. The project expects to be completed by 2007. In fact the present conflict dates back to partition when the boundary between India and Pakistan was drawn right across the Indus basin, with Pakistan in the lower riparian region and the two important irrigation headworks – Madhopur on Ravi and Ferozepur on Sutlej – of the irrigation canals of Pakistan's Punjab were in Indian territory. The dispute reached the World Bank and the negotiations between the two countries facilitated by the World Bank resulted in the Indus Water Treaty (IWT) of 1960 that lays down the rights and obligations of India and Pakistan for the use of waters of the Indus system of rivers. The main contention of Pakistan over BHP is that it violates IWT where as India claims it does not. Once again the conflict reached the World Bank and it brokered the IWT to appoint a neutral expert to resolve the differences.

The genesis of Indo-Bangladesh conflict over Ganga⁴⁸ dates back to the British rule over the sub-continent when ‘successive reports by Sir Arthur Cotton (1853), Harcourt-Vernon (1896), Stevenson-Moor Committee (1916-19), Sir William Wilcocks (1930), Sir Cyril Radcliffe suggested the construction of a 'barrage' across the Ganga to keep the navigation channel of Calcutta port free from silting shoaling and the upland flow into the Bhagirathi-Hooghly would then help maintain adequate water depth. Walter Hensen's report to the Government of India in 1957 also recommended the construction of a barrage across the Ganga to augment the flow of the Hugli-Bhagirathi and save Calcutta Port. The negotiations over sharing of river waters between India and Pakistan, and later Bangladesh, had been going on even before the Farakka Barrage was commissioned in 1974 to augment the waters of the Bhagirathi - Hugli through a 41.5 km long feeder canal. It became operational in 1975. The plan to divert water via the barrage to the Bhagirathi-Hugli became a source of political tension, mistrust and apprehension between Pakistan and India and later Bangladesh and India. Issues such as control of barrage gates, quantity of water to be released, sharing mechanism, augmentation measures, availability of water to etc, became the focal points of tension and conflict between the two nations’. Issues like whether to treat Ganga-Brahmaputra-Meghna basin as a single unit, the feasibility of

⁴⁸ This brief write up on the India – Bangladesh conflict over sharing of the Ganga waters is based Sen, Sumita. 2007. *The Indo-Bangladesh Water Conflict: Sharing the Ganga*. Joy K. J. *et al* (ed.). 2007. *Water Conflicts in India: A Million Revolts in the Making*. London, New York, New Delhi: Routledge. (pp. 403-410)

constructing a reservoir in Nepal to augment the flow, or whether to treat Farakka barrage as a 'barrage' or as a 'dam' have also become contentious.

The Indo-Bangladesh relation has become all the more contentious with the proposed interlinking of rivers' project by India. 'A tussle is simmering in South Asia's Ganges-Brahmaputra Basin, where Bangladesh, India, and Nepal dispute the best uses of water. India and Nepal want to exploit the basin's huge water resources, whereas Bangladesh wants the water managed in such a way as to minimize flooding during monsoon months and water shortages during dry months'. It also appears that Bangladesh is thinking of taking the matter of the interlinking project up to the United Nations.⁴⁹

Towards Conflict Resolution

Water conflicts are symptoms of larger issues in the water resources governance and implicit in these 'million revolts' is a need for a change in the ways we think about water and also in the ways we manage it. In this concluding section we briefly enumerate some of these insights. First of all we need to fight the mindset that sees water flowing into the sea as water being wasted. This thinking, still prevalent in the country has led to a water management strategy centred on dams. It is also important to have a historical perspective and not demonise dams and earlier dam builders. While questioning the wisdom of a technology approach today that was valued and even may have proved necessary in a bygone era, we should not be caught up in a sterile focus on the past; we also need to look ahead. The lesson is that water is a resource embedded within ecosystems; we cannot treat it as a freely manipulable resource. For example, too many of our mega projects, whether big dams, or diversions or interlinking schemes treat water as freely manipulable and do harm to the long term viability and sustainability of the resource itself. Our wetlands and rivers are already in a bad condition. It is time we took them into account on their own, and not simply as a resource to be mined. Further we need to change our perspective in respect of the role of large systems and dams and see local water resources as the mainstay of our water system. It is also important to see large scale irrigation as a stabilising and productivity

⁴⁹ Vidal 2003 as cited in Bandyopadhyay, Jayanta and Shama Perveen. 2002. The Interlinking of Indian Rivers: Some Questions on the Scientific, Economic and Environmental Dimensions of the Proposal. Paper presented at Seminar on Interlinking Indian Rivers: Bane or Boon? at IISWBM, Kolkata on 17 June 2002. Available at <http://www.saciwaters.org/interlinking.htm#> Vidal, J. (2003) 'Troubled waters for Bangladesh as India presses on with plan to divert major rivers: UN urged to act amid warnings of social and ecological disaster' The Guardian (London), 24 July

enhancing *supplement* feeding into small networked structures. For this our systems need to deliver water in a dispersed manner to local systems, rather than in concentrated pockets creating ecosystem islands dependent fully on exogenous water that can only be maintained at great economic and social cost.

Then there is the vexed question of who pays how much for water. We need to first of all realise that so far it is the urban poor, the rural areas and the ecosystems who have paid a much higher cost, directly as well as indirectly for the water that the rich and the middle classes in the country enjoy, especially from public sources. More than anything, we have here a case of reverse subsidy. We need to see to it that full costs are recovered from the rich and the middle classes. They have the capacity to pay, as the super profits to bottled water manufacturers show. Without this it will not be possible for cities to maintain adequate quality for the water they return to downstream ecosystems and communities.

Two of the most important issues that have emerged are those of rehabilitation and pollution. Though some progress has been made in states like Maharashtra, India, in respect of 'rehabilitation with self respect', there is an urgent need for a policy and enactment at the national level for the rehabilitation of all project affected. In respect of pollution, as already discussed above, we need to move to a mix of civil and criminal penalties and introduce environmental mediation as active method of addressing pollution issues.

In the case of transboundary conflicts in South Asia it is important that nested, basin level multi stakeholder processes are initiated so that issues are sorted out in the spirit of negotiation and democratic deliberations. Also, the ideal way to address the development of water resources in an international river basin is to recognise the ecological integrity of the basin, take a basin-wide approach and involve all co-riparian countries in the process of conceptualisation of a project.⁵⁰

What is also evident is the total ineffectivity of the so-called river basin organisations to do anything about water conflicts. What is sorely needed is a system of nested institutions that start from the micro level, may be a village, and proceed upwards to a basin level board or authority.

Water is a highly dispersed and local resource even while it is an interconnected resource.

Centralised basin level authorities alone will never be able to take care of the complex problems

⁵⁰ Bandyopadhyay, Jayanta and Shama Perveen. 2002. The Interlinking of Indian Rivers: Some Questions on the Scientific, Economic and Environmental Dimensions of the Proposal. Paper presented at Seminar on Interlinking Indian Rivers: Bane or Boon? at IISWBM, Kolkata on 17 June 2002. Available at <http://www.saciwaters.org/interlinking.htm#>

that arise at all levels. It is also important that these micro level institutions do not automatically follow the boundaries of a presumed community, since it is clear from many cases that intra-community divisions enter decisively into water conflicts.

This overview clearly brings out the fact that struggles and viewpoints around water issues are highly polarised. The richness and diversity of bio-physical, social, economic as well as political context in South Asia itself creates a tendency of fragmentation and polarisation rather than synthesis leading to long drawn out wars of attrition in which the losers are invariably the vulnerable and weaker sections. It is important in this respect to look at multi stakeholder platforms or similar processes that bring stakeholders together. These case studies show that such processes have resulted in better outcomes for resolving water conflicts.

However, there are a few aspects that need urgent attention if multi stakeholder processes are to become meaningful and stable instruments of water governance. Firstly they will need to take into account and give proper attention to the heterogeneity of stakeholders, prior rights of local people and context of multi stake holder participation. But more importantly, they will also have to be informed by an innovative approach to water sector reform that will allow accommodation of different stakeholder interests. This effort will need to be supported by access to reliable data, information and decision support systems and be based on an acceptable normative framework⁵¹. Such a framework, Rogers and Hall points out, needs to be 'an inclusive framework (institutional and administrative) within which strangers or people with different interests can practically discuss and agree to co-operate and co-ordinate their actions'⁵². This is all the more important in the water sector where opinions are sharply divided on crucial issues like whether water is a social good (i.e., part of a human right framework) or an economic good like any other. There is a similarly sharp difference of opinion about source creation, about large vs. small systems, equitable access and entitlements.

The framework of dialogue will have to take these polarised opinions into account. For example, a framework that inherently sees large and small as mutually exclusive and opposed alternatives

⁵¹ The details of this normative framework are discussed in K. J. Joy, Suhas Paranjape and Seema Kulkarni, 2004, Multi-stakeholder participation and water governance: a suggested normative framework, paper presented at the IRMA Silver Jubilee Symposium on *Governance in Development: issues, challenges and strategies*, December 14 to 19, 2004, IRMA, Anand.

⁵² Peter Rogers and Alan W Hall, 2003, "Effective Water Governance", Global Water Partnership Technical Committee (TEC), TEC Background Papers, No. 7.

leaves little scope for dialogue between the dam affected and the drought affected: large dam votaries would tend to either invoke the 'greater common good' to ignore the suffering and displacement of already marginalised communities like the *adivasis* (tribals) and opponents would invoke that very suffering to deny the possibility of reliable water supply to severely drought affected areas. However, if the framework is based on the need to *integrate* the small and the large, several possibilities emerge – destructive centralised submergence behind the dam could be reduced by diverting and storing as much as possible of the water flows in the small systems within the command/service area instead of storing them behind the dam⁵³ – and open up space for a joint exploration by the two important stakeholders, the would be project affected and the beneficiaries. The conventional framework governing water resource planning, source development, norms of access and service delivery is also responsible for many types of conflicts amongst the direct stakeholders and a highly polarised discourse on water. The challenge is to evolve a consensual framework that will be inclusive enough even as it takes into account crucial concerns like equity and sustainability.

⁵³ For details see the case study Alternative Restructuring of the Sardar Sarovar Project: Breaking the deadlock by Suhas Paranjape and K. J. Joy and their book *Sustainable Technology: Making the Sardar Sarovar Project Viable*, Centre for Environment Education, Ahmedabad, 1995.

Annexure One: Chronology of Water Conflicts in South Asia

Date	Parties involved	Basis of conflict	Violent Conflict or In the Context of Violence?	Description
1947 onwards	Bangladesh, India	Development dispute	No	Partition divides the Ganges River between Bangladesh and India; construction of the Farakka barrage by India, beginning in 1962, increases tension; short-term agreements settle dispute in 1977-82, 1982-84, and 1985-88, and thirty-year treaty is signed in 1996.
1947-1960s	India, Pakistan	Development dispute	No	Partition leaves Indus basin divided between India and Pakistan; disputes over irrigation water ensue, during which India stems flow of water into irrigation canals in Pakistan; Indus Waters Agreement reached in 1960 after 12 years of World Bank-led negotiations.
1991-present	Karnataka, Tamil Nadu (India)	Development dispute	Yes	Violence erupts when Karnataka rejects an Interim Order handed down by the Cauvery Waters Tribunal, set up by the Indian Supreme Court. The Tribunal was established in 1990 to settle two decades of dispute between Karnataka and Tamil Nadu over irrigation rights to the Cauvery River.
1999	Bangladesh	Development dispute, Political tool	Yes	50 hurt during strikes called to protest power and water shortages. Protest led by former Prime Minister Begum Khaleda Zia over deterioration of public services and in law and order.
2000	Hazarajat, Afghanistan	Development dispute	Yes	Violent conflicts broke out over water resources in the villages Burna Legan and Taina Legan, and in other parts of the region, as drought depleted local resources.
2000	Gujarat (India)	Development dispute	Yes	Water riots reported in some areas of Gujarat to protest against authority's failure to arrange adequate supply of tanker water. Police are reported to have shot into

				a crowd at Falla village near Jamnagar, resulting in the death of three and injuries to 20 following protests against the diversion of water from the Kankavati dam to Jamnagar town.
2001	Pakistan	Development dispute, Terrorism	Yes	Civil unrest over severe water shortages caused by the long-term drought. Protests began in March and April and continued into summer. Riots, four bombs in Karachi (June 13), one death, 12 injuries, 30 arrests. Ethnic conflicts as some groups "accuse the government of favoring the populous Punjab province [over Sindh province] in water distribution."

2001	Afghanistan	Military target	Yes	U.S. forces bombed the hydroelectric facility at Kajaki Dam in Helmand province of Afghanistan, cutting off electricity for the city of Kandahar. The dam itself was apparently not targeted.
2002	Nepal	Terrorism, Political Tool	Yes	The Khumbuwan Liberation Front (KLF) blew up a hydroelectric powerhouse of 250 kilowatts in Bhojpur District January 26. The power supply to Bhojpur and adjoining areas was cut off. Estimated repair time was 6 months; repair costs were estimated at 10 million Rs. By June 2002, Maoist rebels had destroyed more than seven micro-hydro projects as well as an intake of a drinking water project and pipelines supplying water to Khalanga in western Nepal.
2002	Karnataka, Tamil Nadu (India)	Development dispute	Yes	Continuing violence over the allocation of the Cauvery River between Karnataka and Tamil Nadu. Riots, property destruction, more than 30 injuries, arrests through September and October
2004	Pakistan	Terrorism	Yes	In military action aimed at Islamic terrorists, including Al Qaeda and the Islamic Movement of Uzbekistan, homes, schools, and water wells were damaged and destroyed.

2004	Kashmir India	Terrorism	Yes	Twelve Indian security forces were killed by an IED planted in an underground water pipe during “counter-insurgency operation in Khanabal area in Anantnag district.”
2004	India	Development dispute	Yes	Four people were killed in October and more than 30 injured in November in ongoing protests by farmers over allocations of water from the Indira Ghandi Irrigation Canal in Sriganaganagar district, which borders Pakistan. A curfew was imposed in the towns of Gharsana, Raola and Anoopgarh.
2006	Sri Lanka	Military tool, military target, terrorism	Yes	Tamil Tiger rebels cut the water supply to government-held villages in northeastern Sri Lanka. Sri Lankan government forces then launched attacks on the reservoir, declaring the Tamil actions to be terrorism.

(Source: Adapted from Gleick, 2006, Water Conflict Chronology. Pacific Institute for Studies in Development, Environment, and Security Available online at www.worldwater.org/conflictchronology.pdf · Updated October 12, 2006