

R2-2010

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# NATIONAL CONSULTATION ON WATER CONFLICTS IN INDIA

THE STATE, THE PEOPLE AND THE FUTURE



NATIONAL INSTITUTE OF ADVANCED STUDIES

Bangalore, India





National Consultation on  
**Water Conflicts in India**  
The State, the People and the Future

NIAS WATER PROGRAMME

Edited by

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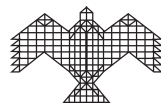
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**NATIONAL INSTITUTE OF ADVANCED STUDIES**  
IISc Campus, Bangalore, India

August 2010

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**Published by**

National Institute of Advanced Studies  
Indian Institute of Science Campus  
Bangalore - 560 012  
Tel: 2218 5000, Fax: 2218 5028  
E-mail: admin@nias.iisc.ernet.in

NIAS Report R2-2010

ISBN 978-81-87663-92-8

Price Rs. 300/-

**Please cite as:** Mohan, Shantha N, Sailen Routray and Kishor G. Bhat. 2010. National Consultation on Water Conflicts in India - The State, the People and the Future, Report of National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore, India.

**This report is electronically available from:** National Institute of Advanced Studies, Bangalore, India, <http://www.nias.res.in>

**Typeset & Printed by**

Aditi Enterprises  
Bangalore - 560 023  
Ph.: 080-2310 7302  
E-mail: aditiprints@gmail.com

# Acknowledgement

We take this opportunity to express our immense gratitude to all those who made this national consultation a great success. We wish to thank all the presenters for contributing papers, chairpersons for moderating the sessions, and the participants for enriching the discussions. We also take this opportunity to thank Dr V. S. Ramamurthy, Director, NIAS, for his support and advice. The NIAS faculty, staff and students have helped us in various capacities for the conduct of this consultation. We are thankful to them for their support.



## Water Conflicts in India - The State, the People and the Future

### Introduction

The last three decades have seen the gradual erosion of the state's perceived role as a promoter of development and as a steward of natural resources, including water. Both communitarians and neo-liberals coming from different theoretical and methodological angles have converged in their critique of the state. While the communitarians argue for supporting, what are perceived as, old traditions of sustainable community-based resource management, the neo-liberals argue for market-based mechanisms for efficient resource allocation and use. Despite these critiques the state remains an important player in the field of resource management, especially that of water, in developing countries such as India.

Whether for the passing of enabling legislation and creating institutions for community-based resource management or for creating a regulatory framework that facilitates use of market based mechanisms, the state has an important role to play; this is in addition to its traditional role as a developer of and investor in water resources. It may be noted that significant models for water sharing, both community and market based, have been developed in many parts of India; this includes the formation of community-

based mechanisms developed by organisations such as the Tarun Bharat Sangh in Rajasthan, and market-based mechanisms in parts of Gujarat for the usage of ground water.

These developments have to be seen in the context of the fact that water is an increasingly scarce resource, and this brings the role of the state in water sharing and mitigating water conflicts arising out of it into sharper focus. Most academic work on water and water conflicts in India has narrow thematic and sectoral foci, and work on water resources has generally followed the disciplinary imperatives of water resources engineering or economics. The Indian federal state structure and the ways in which this shapes and is in turn shaped by water conflicts needs to be studied, as rivers play a central role in imagining Indian States and regionality. This has to be done in a multidisciplinary fashion, and the perspectives from hitherto marginalised disciplines such as political science, legal studies, social anthropology, etc. need to be brought on board to be able to deal with them in an adequate manner. Scholarship also has focussed on the role of communities in managing water resources as well as in conflicts over water. The state is often seen as a neutral and the ultimate arbitrator of natural resource conflicts, without adequately taking into account the fact that, more often than

not, the various arms and agencies of the state themselves are party to these conflicts. Thus communities and civil society initiatives can be as much a part of conflict resolution strategies as the state can be without them being confined solely to the 'management' of water resources.

The themes of conflicts and wars are increasingly used to discuss issues surrounding water usage and sharing. In the context of increasing vulnerabilities being introduced by climate change, and rapid economic and population growth in India, both inter-sectoral and inter-state conflicts need to be looked at together, as they impact each other in terms of the ways water is allocated and shared between the states and various other stakeholders. There are many types of inter-sectoral conflicts possible over water depending upon the way we define sectors; conflicts can arise between industry and agriculture (as is the case in Hirakud, in Odisha), urban and rural/peri-urban areas (as in and around Chennai), and various kinds of water needs such as water for humans and environmental flows (say the case of the Bharatpur lake in Rajasthan), and between power generation and irrigation needs, etc.

In many ways dealing with water scarcity is about dealing with risks that an unreliable future brings with it. In this regard water stress that can be introduced by climate change is of importance. It is important also in this context to not merely understand the trajectories of problems that arise between the states and the various other types of contenders for water use, but also to chart out probable and viable solutions to these conflicts.

In this 'cartographic' exercise technologies, both social and scientific, have important roles to play. In this context, this two day consultation was held at NIAS on 15<sup>th</sup> and 16<sup>th</sup> of March, 2010, as an attempt at bringing together academics and practitioners with varied disciplinary and regional backgrounds to deliberate on the various aspects and entanglements between inter-state and inter-sectoral water sharing and water conflicts in India. The participants were drawn from diverse disciplines and academic backgrounds, and included representatives from Non Governmental Organisations, researchers, academics from various social sciences disciplines, legal experts, and public policy experts.

The main objectives of the consultation were:

- ❑ To understand the issues surrounding inter-sectoral water sharing and conflicts, and the ways these are related to interstate water sharing and conflicts from a multi-disciplinary perspective
- ❑ To look at the relevant drivers of change such as technology and climate change, and the way these relate to questions surrounding water use, conflicts, sharing, and participatory management
- ❑ Generate ideas about the future direction of research and advocacy work of the Water Programme at NIAS
- ❑ To publish the proceedings of the consultation and an edited volume consisting of the papers presented in the consultation



Dr V. S. Ramamurthy, Director, NIAS, welcomed the participants to NIAS and the consultation, and delivered the introductory address. Dr N. Shantha Mohan, Professor, NIAS, provided the participants with the background and the objectives to the national consultation. Mr Suresh Prabhu, Ambassador, Global Water Partnership (GWP) delivered the keynote address for the consultation.

**Introductory Address: Dr V. S. Ramamurthy, Director, NIAS, Bangalore**

In his address, Dr Ramamurthy stated that water is an increasingly scarce resource that lends itself to multiple usages. Issues surrounding water are of an added complexity in a country such as India because of its size, population and diversity. Since different regions in India have different problems that are region and locale specific it is necessary that we adopt a multi-disciplinary approach towards dealing with problems surrounding water. Water problems cannot be seen in isolation to other societal issues. For example, issues surrounding land degradation are integrally linked with water availability and use. Issues in their complexity are not as decoupled as we consider them to be; land, water, air, and oceans are intrinsically linked to each other.

Technology has an important role to play in addressing issues related to water, but technology alone can not help us. For example, when Euro – II norms were forced on the automobile industry in New Delhi, initially there was tremendous resistance on what were construed as ‘technical’ grounds. The industry, however, had to submit to

the directives of the judiciary. It was the same in the case of Compressed Natural Gas (CNG). After the initiative was introduced the same resistance prevailed, but later the benefit of cleaner and non-polluted air in New Delhi has been reaped. In all these initiatives the activism of the judiciary was needed. Therefore, the problems that we face in terms of environment and natural resources such as water are essentially problems that are administrative and political in nature. Technology can facilitate, but only when we have figured out why we need to use a technology and how and when.

All this necessitates informed decision making and evidence-based policies. Conflicts are an inevitable part of life. Any decision that any government or organisation takes will impact some individuals or groups in different ways, often adversely, thus leading to conflicts. These conflicts further need to be addressed rationally, and through the generation of research based information.

As an institution NIAS has always tried to respond to the needs and aspirations of the Indian nation. The recent institutional restructuring that resulted in the creation of thematic programmes including the Water Programme reflects this. The Water Programme has tried to generate data sets in areas where they are scanty, it has undertaken research, provided platforms for sharing research outputs, facilitated dialogues on relevant issues and helped to strengthen networks. This national consultation is an important step in consolidating the important work that this programme has undertaken in understanding and addressing

conflicts surrounding water and mechanisms to resolve these conflicts.

**Background to the consultation by Dr N. Shantha Mohan, Professor, NIAS**

Dr Shantha Mohan presented the historical background of the Water Programme at NIAS. Under the aegis of the programme, NIAS initiated a series of multi-stakeholder consultations in relation to interstate transboundary water sharing in India. With support from Global Water Partnership (GWP) three dialogues have already been organised; the first one titled “National Dialogue on Evolving Parameters for Interstate Transboundary Water Sharing” took place in June 2007 at NIAS, Bangalore which provided conceptual clarity on the various issues that impact transboundary water sharing. The Second meeting was held in November 2007 at Tanjore, Tamil Nadu to identify parameters to help negotiate water sharing and evolve mechanisms for conflict resolution. These parameters were further refined by a group of members. The third dialogue took place on December 27, 2007 at NIAS, Bangalore to present the final outcome of the previous consultations for debate. These dialogues adopted a multi-disciplinary approach, and focussed on inter-state transboundary water sharing and conflict resolution using the Cauvery Basin as a point in case. The same has been published by Routledge titled “River water Sharing: Transboundary Conflict and Cooperation in India” as an academic output of the Water Programme of the institute.

Recognising the limitation of addressing conflicts in relation to inter-state transboundary water in an exclusive manner, the scope of the dialogues has been expanded to include intersectoral conflicts. This is because inter-state transboundary conflicts are, more often than not, complicated by competing claims on limited water resources by various sectors. Instead of looking at the state as the only relevant actor, it has been attempted to involve multiple stakeholders such as farmers, NGOs etc. One of the proposed outcomes of this consultation is to publish an edited volume of the papers presented.

**Keynote Address by Mr Suresh Prabhu, Global Ambassador, Global Water Partnership (GWP)**

In his keynote address, Mr Suresh Prabhu pointed out that while addressing issues relating to water, India, in comparison with other countries, faces maximum problems that are diverse in nature. These issues include issues of availability, quality and usage. India also faces problems with other countries such as China as most of the longer rivers, outside of the peninsula, in our country are international rivers. Much of the water in Indian rivers comes from China as many of our major rivers originate there. Thus, there is an international aspect to India’s water problems. But there are problem within India between the states as well.

One of the biggest problems surrounding water is that when water is available a demand can be created. Increasingly water has become a sensitive issue with increasing politicisation of the

resource, and its sharing and usage. A strategy needs to be created such that conflicts do not arise or even if they arise, they do not spiral out of control. The relationship between land and water has to be centre-staged, and an integrated approach to natural resource management needs to be adopted. The present Minister of Home Affairs, Mr Chidambaram has identified Naxalism as the biggest problem for India, but this problem is essentially a natural resources management problem. Many people advocate a military solution to the Naxal problem whereas others advocate development packages. But what needs to be done is proper natural resource management that looks beyond conventional development packages to be able to tackle Naxalism. Although this might sound like an oversimplification, water remains at the substratum of many conflicts. For example, one of the commanders of the Lashkar-e-Toiba made the statement recently that they want to take over Kashmir to free water that India is taking away.

If India is to achieve a four to six percent growth rate in agriculture, it is possible only with augmenting the country's water resources. Similarly most of our energy problems can be seen as aspects of the water problem. This is because a big part of the electricity generated in India comes from thermal power plants, and these consume huge amounts of water for cooling.

Surface water problems are becoming increasingly complicated and have always been a problem area. But increasingly in recent times groundwater has become a major problem. Till very recently water problems were taken care of

by the adequate availability of groundwater which is becoming increasingly scarce. Questions surrounding ownership and rights of both surface water and ground water are increasingly becoming important, thus making water related issues sites for partisan politics. For example, parties who are always at loggerheads with each other in the state of Tamil Nadu unite to create a front against the demands of farmers from the Karnataka state when the monsoons fail. Often conflicts between the states over water result in violence, resulting in damage to property and lives. The question that arises is whether the Central Government can act rationally in times of acute water stress. Till now there has generally been coordination between the judiciary, the legislature and the executive. But in times of acute water stress can this coordination survive? Therefore consultations such as the present one can provide the platform to address issues surrounding the water crisis in the country, and facilitate the process to deliberate on the possible solutions to this crisis in the future.

In this regard, one of the most important questions to be answered is around the set of issues surrounding ownership. Who owns water? The most sensible answer to this question perhaps is that water, like other natural resources belongs to no one. Till the time water is available in plenty, the question of ownership does not arise; it arises only in a state of relative or absolute scarcity when the resource needs to be shared. Even if the premise that everyone should have equal access to water is accepted, it must be noted that evidence shows that the per capita availability of water has been reducing. This is

due to the fact that while the available quantity of usable water has stayed constant, there has been a tremendous increase in population.

Therefore, it has to be reiterated that the root problems in the water sector have to be addressed. But unfortunately there is generally a lot of chauvinistic politicking which impede attempts at reducing conflicts. Recently there have been demands to abrogate the Indus Water Treaty between India and Pakistan. Such demands are both uninformed and misplaced as they do not provide a solution to India's water problems. Mechanisms that can mediate between countries, states, and sectors are needed. In this context, the initiative taken in NIAS by Prof Shantha Mohan in establishing Zonal Water Partnerships across the country is a step forward to enable informed stakeholder dialogues and networks.

Some of the central issues that are to be researched and debated are: Can there be a centralised quota system for water as in electricity by creating a water grid like the power grid? This again leads to the ownership issue. Who owns the water that passes through the individual Indian states? Can there be sectoral rights, individual water rights, and minimum quantitative water allocations? Can there be transferable rights over water? Should water be treated as a fundamental right or as an economic good? Further, there is the problem of coordination; there are thirteen ministries at the central level dealing with water and seven dealing with energy. An attempt has to be made to bring about integration between the ministries to address water conflicts.

In his final remarks, Mr Prabhu stated that platforms need to be created with the active participation of academics, politicians, policy makers, legal experts, etc. In this regard, he considered that activities undertaken by the Water Programme as an important initiative, and hoped that it will become a centre for excellence for studies on water drawing from expertise across the country. He wished the consultation and the Water Programme all the best and success in their endeavours.

## Session 1: Conflicts, Ownership and the States in India

**Chair: Dr Anil Mohile**

### **Presentation - I**

*Speaker: Dr Vijay Paranjapye, Director, Gomukh, Pune*

*Topic: Ownership of water*

Ownership of water is a difficult subject. Ownership implies that a commodity can be bought or sold. In the case of land it is possible but is very difficult for water. It is possible to ensure access for use and not ownership with respect to water. No country owns the water passing through it. In the case of river water the riparian principle can be adopted where the surface water belongs to the state. The question then arises - does the state own the water? What can be stated is that water-use is monitored by the state without the state owning it, and everyone has the right of access to water without ownership being an issue.

The laws in India are not very clear on some issues related to ownership of water. For example, groundwater rights are generally understood to be coupled with land rights and land owners are generally able to extract as much water as they want from underground aquifers. This *de facto* privatisation of water rights is a peculiarly dangerous situation. Regarding surface water in India, it belongs to the state with the Department of Water Resources exercising effective control over it. What does this mean in practice? Can the state sell this water or transfer a part of the rights? Things are not clear. Strictly speaking, issues surrounding water usage and water sharing are essentially questions about rights rather than a question about ownership. Though customary rights over water have been there in many areas for a long period of time, customary ownership does not seem to be a settled or an acceptable idea. At the same time, experience shows that monetary mechanisms to address questions of scarcity and availability do not seem to be very productive.

Even international mechanisms such as the Dublin Principles have inherent paradoxes about questions surrounding ownership of water. The Dublin Principles characterise water as an economic good; this contradicts the equity principle of water distribution, but if water is not treated as an economic good, there can be no mechanisms for the pricing of water. If water needs to have economic value, it needs to be priced. But, if it is priced, who “pays” the price when it comes to the environmental uses of water? In such a situation how does the state deal with it? In conclusion, Prof Paranjpye suggested that

one has to move past the idea of ownership of water to trusteeship of water, where along a river basin, there can be integration through negotiations.

## Presentation - II

*Speaker: Dr N.C. Narayan, IIT Mumbai*

*Topic: Political Ecology of Pollution in the Periyar River*

The Periyar River basically originates in the Western Ghats at an elevation of about 1830 m. The major portion of the river is located in Kerala between 9° 15' to 10° 20' N latitude, and 76° 08' to 77° 15' E longitude in Idukki and Ernakulam districts. It is 244 km in length. The average rainfall in the basin is 3000-3500 mm.

The land and water use patterns including intensive paddy cultivation, sand mining, etc. have led to landslides, water erosion and destruction of the mid-lands. One of the more destructive uses of the river is for dumping sewage. The Periyar River receives civic effluents from ten townships; namely, Vandiperiyar, Upputhara, Cheruthony, Munnar, Malayattoor, Kalady, Perumbavoor, Neriamangalam, Aluva and Parur. None of these local bodies possess proper sewage treatment facilities while the Cochin Corporation's sewage treatment system is inadequate. Untreated organic and inorganic refuse is discharged into the river and the backwaters of the river.

The state views Periyar as a water channel to be diverted for so-called productive purposes.



Environmental degradation in catchments triggered due to these has affected various stretches of the river. Periyar is the “sink” of urban and industrial effluents.

There is also a lot of pollution associated with cultural activities. Tens of thousands of pilgrims congregate for religious festivals, including Shivarathri in Aluva (one week), pilgrimage to Malayattoor Church (Easter month), and the Sabarimala Pilgrimage (3 lakh pilgrims from Tamil Nadu and Andhra Pradesh stop at the Vandiperiyar bridge).

There is a high amount of industrial pollution in the river as well. Eloor panchayat is an island in Periyar just 17 km north of Kochi city. Initially an industrial cluster, the fertiliser giant FACT was established in 1946. Many ancillary and private sector industries followed with over 50 large and medium industries, and over 2500 small scale industries. The industries discharge about 75 percent of the water that they withdraw from the river that is full of effluents and pollutants without any effective treatment. Types of industries include fertilisers, pesticides, petroleum refining and heavy metal processing, radioactive mineral processing, rubber processing, animal bone processing, battery manufacturers, mercury products, acid manufacturers, pigment and latex production.

Greenpeace conducted two studies (in the years 1999 and 2003) to identify toxic chemicals in the effluents. In 1999, they showed very heavy contamination with a wide variety of organic compounds, including a predominance of chloride

chemicals. Among the organochlorides identified were two isomers of DDT, several DDT metabolites, four isomers of HCH, including the gamma isomer lindane, two isomers of endosulfan and its metabolite endosulfan ether. The second study Greenpeace conducted looked for improvements in the environmental situation and was undertaken with the cooperation of the Periyar Anti pollution Group. Samples were analysed at the Greenpeace Research Laboratories at the University of Exeter, UK. Analysis of samples by gas chromatography-mass spectrometry identified organochlorides and hydrocarbon compounds in all of the sediments. Sediments contained between 20 and 30 identifiable organochlorides as well as numerous hydrocarbons. Also heavy metals such as zinc, mercury, cadmium, copper, lead and chromium were identified in the sediment samples.

In 2005, there was a report (called the Environmental Audit Report – 2005) commissioned by the Supreme Court Monitoring Committee (SCMC) with the assistance of Local Area Environment Committee (LAEC) – with representatives from the judicial system, State Government and civil society. This report exposed blatant violations by industries and the ineffectiveness and inertia of the Pollution Control Board (PCB). Factories were given time to implement the recommendations of the committee, however, most of them have not been implemented.

The lower part of the Periyar River, stretching around fifteen kilometres, supported a rich fishery resource of high economic value earlier, and used

to be a major means of livelihood and nutrient source for thousands of families. Industrial pollution has made this part of the river lifeless. The fishery has been depleted and many traditional fishing gears (Chinese nets, cast nets, dip nets) have disappeared. Surprisingly there is no data on the impact of livelihoods or the number of people affected.

Greenpeace undertook field-based assessment of health in the Periyar basin from April to July 2003. They obtained consent and ensured cooperation from the Gram Panchayats and the local communities. Results evinced poisons in the air and water. The mortality rates due to pollution-related illness such as cancer (2.5 times), birth defects (2.63 times), asthma (2.23 times) and bronchitis (3.35 times) is very high in Eloor as compared to the control population. Despite all these studies and blatant violations by the industries, the PCB has not taken any action. Struggles and demands by a local movement (PMVS) have been falling on deaf ears, and pollution continues almost unchecked.

An analysis using the framework of Political Ecology of Development, developed by Gadgil and Guha shows that the issues of governance are primarily related to the inadequacy of pollution norms and inadequate regulatory mechanisms. However, more studies of a trans-disciplinary nature are needed to understand the relevant institutional mechanisms and dynamics.

Radical geography as an academic field developed in the 1960s (in the environment of the protests against the Vietnam War, the Civil

Rights Movement, etc.) in response to positivist spatial analyses that were coupled with an uncritical social analysis. Increasingly it is understood that “space is political,” and that political and economic processes lead to unequal spatial patterns. Radical geography challenges the ‘productivist’ logic and the expansionary tendencies of capitalism, and questions the ‘treadmill of production’.

Ecological transformations can be understood within the historical-social-political context of local production relations, and in terms of their relationship with wider economic systems. Effects of capitalistic natural resource extraction include logging in the Amazon forests, mining, contract farming, global patterns of dependence and dominance. Ecologically unequal exchanges between nations and extractive economies (for example, the export of primary products) can lead to poverty and environmental degradation at the local level. This analytical framework will be adopted to locate the issues surrounding water usage in Periyar, as it promises to give productive results.

### **Presentation - III**

*Speakers: Mr Tapan K. Padhi, NID, Bhubaneswar and Mr Sailen Routray, NIAS*

*Topic: Conflicts over Hirakud: Technology, Politics and Management*

The Mahanadi is the largest river in Odisha and it is the 6<sup>th</sup> largest river in India. The drainage area is mostly in Chhatisgarh and Odisha, and

its total length stands at 851 km out of which 494 km passes through the state of Odisha. Odisha accounts for 65,628 sq. km (46.5 percent) out of its total catchment area of over 1,41,134 sq. km, and it drains 42.15 percent of the total geographical area (1,55,707 sq. km) of the state.

Hirakund is located at Latitude 21° 31' N and Longitude 83° and 52' E across River Mahanadi about 15 km upstream of Sambalpur town. The construction was completed in 1953, and was formally inaugurated on 13th January 1957. The total cost of the project was Rs.100.02 crores in 1957. Power generation along with irrigation started in 1956, achieving full potential only in 1966. It is 4.8 km long and along with the dykes, the dam totals 25.8 km of length. It has submerged 1, 23,303 acres of cultivable land. The live storage capacity of Hirakud reservoir at full reservoir level (FRL) is 3.90 Million Acre Feet (MAF). The reservoir has two power houses at Burla and Chipilima with installed capacities of 259.5 MW and 72 MW respectively, totaling 331.5 MW.

The Hirakud reservoir regulates 83,400 sq. km of Mahanadi's drainage area. The project provides 1,556,00 ha of kharif and 1,084 sq. km of rabi irrigation in the districts of Sambalpur, Bargarh, Bolangir, and Subarnpur. The water released by the power house irrigates another 4,360,00 ha of CCA in Mahanadi delta. The dam has the potential to generate up to 307.5 MW of electrical power. In addition, the project provides flood protection to 9500 sq km of delta area in the undivided districts of Cuttack and Puri.

In agriculture, there was an overall reduction of 15.17 percent of the command area compared to the plan. A study conducted for the Planning Commission in 2003 found that 80 percent of the tail-end area in the Hirakud command system did not get water for irrigation. In 2006, the state government signed memorandums of understanding with 17 companies to provide them water from the reservoir. This provides the background to the increasing conflict between demands by industrial houses for water and water for irrigation in Western Odisha. The key actors in this drama are farmers' organisations such as the *Pashchima Orissa Krushak Mahasangha*, and *Orissa Krushak Mahasangha*, government organisations such as the Department of Water Resources, and the industrial houses.

A brief history of the events shows that in June 2006, 25,000 farmers formed an 18 km long human chain near Sambalpur. In November 2007 thirty thousand farmers gathered at the reservoir to protest who were then lathi-charged by the police. Chief Minister Navin Patnaik announced in a rally in Bargarh on the 9<sup>th</sup> of March, 2008 that 'not a drop of water meant for farmers will go to industries'. The party-based political divisions map onto regional divisions in Odisha in the history of the peasant movement against the Hirakud dam. The heavy-industry/resource intensive industrialisation thrust of the industrial policy of the Government of Odisha, water-intensive rice cultivation in the command area of the Hirakud dam, huge data gaps, are all important factors in this conflict.

There are concerns over water allocation and water usage, management of the command area,



and the lack of institutional mechanisms to handle such conflicts. Debates have been polarised into an agriculture versus industry debate and questions surrounding water pollution have been sidelined. There is a lack of focus on urbanisation and the growing need for drinking water, and the conflicts between power generation and irrigation. Concerns surrounding equity (head-enders vs. tail-enders, small farmers vs. large farmers) no longer foreground debates surrounding water usage in Odisha, and environmental concerns have taken a back seat. By focusing on allocation and not usage, the effects of such a debate naturalise the perceived need for large dams.

In terms of research gaps, there is little understanding of allocation and usage of water, which requires an understanding of the command area. A nuanced understanding of the political strategies followed by key individuals and groups in the debate is needed. The role of the mass media and the increased mediatisation of such debates needs to be examined. There needs to be case studies of villages, WUAs, and organisations to address issues and concerns raised by the various actors. As a solution a judicious mix of technology, management, and politics is to be considered.

### **Summary of Discussions:**

During the discussions, it was remarked that in terms of the award of the Krishna Tribunal, the report of 1974 took a clear position regarding the ownership of water. It was also observed that it is internationally accepted that water is not owned by any one. It is a commons, but a negative

commons wherein there is a right to use, but no one can use it to the peril of others; so there exists no ownership, but only a right to water usage. If water is allocated to someone, it is only for limited use. It was also remarked that the Dublin Principles are no longer being followed, and have been rejected by the developing world.

It was also pointed out that the Dublin principles are often quoted out of context. These principles also state about basic human rights to water. In this context, the question arose as to whether River Basin Organisations (RBOs) should be seen as alternative institutions for efficient and equitable water management. It was pointed out that if the RBOs can ensure a multi-level, multi-objective, iterative decision-making process then it may be a worthwhile institutional innovation. The question as to why RBOs have not been set up despite laws at the central level allowing for them to be established was raised. It was pointed out that there are genuine concerns surrounding the autonomy of states and the federal structure involved, and hence the RBOs have not been set up because of the resistance of the states. The need for integration as part of the solution at the basin level was commented upon.

Economic approaches are only a part of the problem, and, therefore, it can only be a part of the solution. It was observed that the pricing of water need not only focus on cost recovery. The more fundamental question is whether by pricing water services of various kinds properly, we can ensure equitable outcomes that include equitable distribution of costs, benefits, scarcities and

surpluses. Pricing must not be of water but of services which must be equitably provided.

It was also pointed out that support or opposition towards water pricing as a tool must not be based on ideological orientations, but must be context specific. While cost-based pricing should be adopted in charging the urban middle and upper classes for the water they consume, the same logic cannot be applied to charging farmers for irrigation water. Even if food security and equity concerns were to be discounted, experience of irrigation water pricing in some states in India reveals that increases in irrigation rates do not have the desired impact on water use efficiency.

Teleological notions of development was questioned, and it was suggested that the water consumption and demand patterns of India in the future need not follow those adopted by the developed nations. There needs to be more demand-side management rather than supply-side management in the water sector in India in the future.

The comment that Hirakud had helped in reducing floods in Odisha, and that industry's needs must be respected because the future has to be industrial was widely contested. Questions surrounding the high siltation rates and lack of flood cushions of Hirakud dam, the wanton disregard for pollution by industries in India were raised. It was also pointed out that despite the increasing pace of industrialisation 60 percent of the population is still involved in agriculture. In this context it was observed that industrialisation is important, but the fact that food security is of paramount importance can not be lost sight of. It

is also important to ensure a level playing field between industry and agriculture.

Another concern brought out was that of class wherein negotiations seem to be between rural and the urban elites at the cost of the marginalised sections of society. While there are laws, certain political processes seem to impede their effective implementation. While reducing the debate surrounding water equity to urban versus rural or industry versus agriculture, the equity and class dimensions of these issues are generally lost sight of. There is a need to understand the dynamics of rural to urban migration, and to base the debate surrounding competing demands of water from different sectors and areas on these dynamics.

It was also observed that water laws in India are land-centric, and do not take into account the dynamic nature of water as a resource. For example, there is no law for the spread of a water body, and a water body is only defined in terms of the land allotted to it. In fact, laws governing water bodies are in effect laws governing the land that they occupy.

Another important issue raised was that of *de facto* privatisation of drinking water. It was observed that influential people are buying up land in many states, for example in Himachal Pradesh, so as to be able to have access to the water underneath the land. Even many companies trading in bottled water and soft drinks etc., have started resorting to similar tactics.

Questions were also raised about the applicability of the approach of multi-stakeholder negotiation,

and the status of the various committees that have been set up to deal with these and related matters, and their efficacy. It was observed that while the multi-stakeholder negotiation approach has failed at the level of large river basins, it seems to have worked at the level of micro-basins. There are examples at the micro-basin level where one can list many organisations that have grown beyond being mere stakeholder groups. The example of the Bhima basin was given to illustrate the point. In the case of the Wainganga River the people in the basin cutting across the administrative boundaries of Madhya Pradesh and Maharashtra have taken matters into their own hands, and have tried to resolve matters dealing with water sharing with some degree of success. It was also pointed out that in Rajasthan the Tarun Bharat Sangh has facilitated the management of river parliaments. However, the processes put in place by these groups do not have legal validity. Where mechanisms of the state and legal frameworks are not working civil society organisations and citizens' initiatives are needed, and they should be strengthened. Thus the need for commons arises out of the failure of the state and the market.

## Session 2: Sectoral Water Conflicts: State and the People

**Chair: Dr Jasveen Jairath**

### **Presentation - I**

*Speaker: Ms Arati Gupta*

*Topic: Competing claims and potentials of water resources for energy, biodiversity and productive capacities*

The Beas River forms the central axis and focus of the Kulu Valley. The mountainous area surrounding the valley has a fragile ecosystem. Over time, the people in the area have developed a sustainable way of life with a rich cultural heritage. In recent times, it has become a popular tourist destination. The population has grown, and nearly eighty percent of the population is still engaged in subsistence agriculture with an increase in demand for fodder, fuel, and construction. Deforestation is on the rise, and there has been a concomitant loss of biodiversity. There have also been a number of hydropower projects and cement plants built in the area that have contributed to negative ecological consequences.

In the dry season, the river flow is low with increased water runoff, land instability, flood, and erosion. Changes in the river flow regime and high sediment yields have led to river bed deposition and increased siltation of reservoirs. There has been an increase of siltation in the Beas catchment with the average annual silt production at 19.35 million tonnes.

There are many causes of concern. Terraces that form the present agricultural land base are getting disturbed by debris flow and flood deposits. Forests are being depleted because of cutting or conversion into agriculture land (apple orchards), and this in turn is leading to the erosion of agricultural land through the creation of gullies. The application of chemical pesticides in the agricultural lands is an increasing cause of pollution of the river water. Tourism is the second major industry that is growing rapidly as a result of the decline of tourism in Kashmir. This rush of

tourists coupled with highway building has resulted in excessive development of hotels in the fragile zone. With the pressure of constant population growth, there is a large stress on the region's ecology.

There is an immense potential for hydro-electric power development in the river valley, and the Beas River has been dammed in Pandoh. While there are obvious benefits of hydro-electric power development, there has been a great loss of biodiversity, and the drying of river channels has affected the surrounding aquatic habitats.

More causes of concern include the loss of habitats, and the extinction of some rare endangered species of plants. There is poor regeneration due to change in the climate, and construction of projects that have led to landslides. There is an increasingly high incidence of dumping of the tunnel waste in the river bed, and damage to forests on which locals depend for their daily needs. There are the pressures of natural factors, such as weak lithology, heavy rainfall, and seismic sensitivity as well. The increase in population and unplanned developmental activities around the main roads has increased the pressure on the water resources of this vulnerable area. Another cause of concern is the increase in the number of cement plants and mining that are means of additional revenue generation to the state but also constitute a major environmental hazard. There is no check on these activities as the state pollution control board is virtually nonfunctional. Further, companies are complacent and fail to even reply to notices issued to them.

In conclusion, mountain ecosystems such as the basin of the River Beas are vulnerable and fragile ecosystems. Large scale projects may result in economic growth of the Kullu region, but this process has also resulted in a process of fast depletion of natural resources. There is no public involvement in Environmental Impact Assessments because there is a lack of education and environmental awareness. Locals need to be engaged in decision making more effectively. To paraphrase Rhoades, policy makers in the mountain areas need to start thinking like a mountain.

## Presentation II

*Speaker: Dr S. Janakarajan, MIDS, Chennai*

*Topic: Conflicts, contradictions and competition: the urban and peri-urban inter-phase in Chennai*

Water being distributed from a truck is quite a regular scene in the city of Chennai, but where is this water coming from and at what/whose cost? In most of the situations, with a view to reducing stress surrounding critical resources such as water, metropolitan cities eat into resources available in peri-urban areas by way of:

- ❑ Dumping solid waste
- ❑ Dumping urban sewage
- ❑ Transporting groundwater
- ❑ Encroaching upon land
- ❑ Encroaching upon surface water bodies such as tanks

This builds up enormous pressure, and often results in conflicting interests between urban and

peri-urban areas. Transport of water from peri-urban villages into cities has affected rural livelihoods due to declining agricultural activities, and a consequent decline in incomes. This phenomenon gives rise to several questions: Are these resource transfers to urban areas adequately compensated by the creation of non-farm jobs? To what extent urbanisation affects local resources and contributes to local ecological stress? To what extent the conventional notion that cities and urban expansions are engines of growth hold true?

These are some of the important questions that cannot be ignored. Since urbanisation is an inevitable process, should the peri-urban population and the peri-urban areas be allowed to suffer, or is there a way in which the spread of urbanisation could be used for the best use and advantage of people in both urban and peri-urban areas? In the urbanisation process conflicts are bound to occur, but the question is how to anticipate conflicts and pick-up early warnings of conflicts so that the emerging issues could be addressed more effectively and pragmatically.

In the case of Chennai the groundwater table has dropped to a significantly low level, and in many peri-urban areas groundwater has completely dried up or has reached a dead-end with hard-rocks. As such, many farmers have become heavily indebted due to large investments on wells. Further, the existing surface water bodies are completely neglected or encroached upon. All these have adversely affected agricultural activities resulting in shrinkage in agricultural

incomes. Employment opportunities have also reduced quite considerably. In turn, unemployment has emerged as a serious problem in these peri-urban villages. Landless agricultural labourers and marginal farmers have started migrating to other villages, towns, and cities creating pressure on the already stressed urban infrastructure. Whatever non-farm job opportunities that have emerged in the peri-urban villages are only incidental and unplanned.

In this context the question of conflicts between urban and peri-urban areas surrounding water arises. The last few years have seen increasing incidence of such conflicts in and around Chennai that were triggered by the following factors.

- ❑ Power (social, political and economic) – the ability to control and participation in key decision-making processes
- ❑ Legitimacy – providing justification or rationale for claim-making
- ❑ Identity - concerning the cultural, social and political communities to which people are tied to
- ❑ Status - social position that people believe they hold, and the respect and dignity that is associated with it
- ❑ Values - particularly those embodied in systems of government, religion, or ideology
- ❑ Threats to livelihood options

During the 1983 drought, farmers in the peri-urban areas of Chennai were expanding the area under groundwater irrigation. This disturbed the Water



Board of the city as the water pumped from the common lands of the villages would adversely affect the water supplies of the city. An ordinance, passed in 2003, prohibited the pumping of groundwater for irrigation, and insisted on a licensing procedure for pumping water for the same. But this ordinance was challenged by farmers, and was later stayed by the judiciary. Since then, farmers have gone for a massive expansion of groundwater resource usage and exploitation, but in the process tanks have been completely neglected, and ecological degradation has begun in this region.

Ten wells were dug by the Madras Water Board for supplying water to the city in the year 1969. Continuous pumping of groundwater over a period of four decades has reduced the groundwater availability considerably in the villages even for drinking. Agriculture has been seriously affected due to water scarcity. Water sales from thirty three wells have forced labourers to migrate in search of jobs. Sand mining has reduced water yields in the Kosathalaiyar riverbed aquifer. All these factors have had a combined effect in triggering off conflicts.

There have been many responses to water scarcity. Water sellers in peri-urban villages sell water to urban users for a profit. Water users in the city of Chennai try to get water at any cost. Many players make use of the scarcity and crisis situation and sell water, build desalination plants, and lead privatisation efforts for a profit, but there have been no ventures in wastewater treatment for recycling. There have been a proliferation of laws with very little commitment to enforcement and monitoring mechanisms. On the one hand, civil

society organisations have organised protests, carried out advocacy efforts, and mobilised the affected people. On the other hand, the affected peri-urban population has protested and struggled against the loss of their livelihood options while trying to cope and try new adaptive strategies.

Four sets of stakeholders can be identified surrounding this issue and these conflicts: a) state (all official agencies and political leaders) and other urban stakeholders, b) the peri-urban agricultural population, c) tankers-truck operators/water traders, and, d) civil society. The urban and the peri-urban populations have diagonally opposite interests.

The state in this context consists of Metro Water Supply and Drainage Board, Tamil Nadu Water Supply and Drainage Board, Chennai Metropolitan Development Authority, Village Administrative Officers (VAO), Block Development Officers (BDO), Tahsildars (the Revenue Department taluk-level head), District Collectors, Public Works Department (water resources), State and Central Groundwater Boards, Chennai City Municipal Corporation, Departments of Agriculture, Revenue, Forest, and a few others organisations that are concerned with water, including the Tamil Nadu Pollution Control Board, Members of Legislative Assembly (MLA), and Members of Parliament (MP).

The peri-urban population is represented by farmers (as a broad category) who live in peri-urban villages, land and well owners, water sellers, non-water sellers, land owners but non-well owners, tenant cultivators, landless

agricultural labourers, women's Self Help Groups, village panchayats, village level informal institutions, and non-agricultural population groups who live in peri-urban villages including traders, and those employed in the other non-agricultural sectors.

In addition, a third set of stakeholders consists of tanker-truck operators and their associations, water companies who sell purified drinking water, big hospitals and hotels, educational institutions, commercial enterprises and industries, flat promoters, residents' welfare associations, and other urban water users.

The last group of stakeholders consists of civil society organisations such as, Non-Governmental Organisations (NGOs), activists, researchers, and the media.

Is there a way out of the conflicts surrounding peri-urban water resources?

The prevailing conditions in Chennai city is such that one cannot take extreme positions. An ideal situation is one in which both the Chennai city and peri-urban villages co-exist in a conflict-free state, cooperating with each other for each other's benefit; a state where one can anticipate a win-win situation, and move from conflicts towards cooperation.

### **Presentation III**

*Speaker: Prof Anil Mohile*

*Topic: Legal aspects regarding water sharing, in relation to climate change concerns*

The Central Government, in the late 1990s, took an initiative in formulating a draft policy for sharing of waters of an inter-state basin amongst the basin states. The main contents of the Draft Report prepared for the National Water Mission were:

- ❑ Background
- ❑ The Current Situation
- ❑ Adoptive and Mitigative Measures: The New Strategies
- ❑ Changes in Acceptability Criteria of Water Projects
- ❑ Programmes to Mitigate Effects of Climate Change
- ❑ Preliminary Plan of Action
- ❑ Policy Modifications in View of Climate Change Concerns

For adoptive and mitigative measures, the report recommended an increase in the quantum of usable water, and improvements in water use efficiency. It recommended that the issue of canal seepage should be managed with a participatory management approach by users. There should be a focus on basin efficiency, but there are obvious limits of efficiency improvements. The report also recommended strategies for the management of glaciated and snow bound areas, and of high altitude lakes. There needs to be an increase in storage and carry-over storage by rising dam heights, and through gated spillways in small dams. This can also be achieved by restoring tanks and water bodies, and by inducing ground water recharge. The report called for strategies for management of evaporation, droughts, wetlands, and coastal and estuarine

areas. There is a dearth of hydraulic information on coastal and estuarine areas; this state of affairs needs to be rectified. Tidal embankments, management of mangroves, commercial brackish water fisheries, and use of deltaic channels for seasonal storage are also needed.

The document focused on safety against floods, and the consideration of floods was to be used for deciding the spillway capacities of the dams, and for planning flood control structures. Other strategies that the document stressed were on multipurpose water projects, erosion control, river management, and water quality management. The report also recommended that disaster management strategies should include dam-break analysis (as a routine), empowered dam safety services, and that conflict management strategies should include managing conflicts within India, within a basin, with regard to inter-basin transfers, and international water conflicts.

Programmes to mitigate effects of climate change were directed towards researchable issues in water sector relating to climate change, data collection and analysis of programmes, improving modelling and analytic capacities, and eventual implementation. In this context a question arises - can climate change be used as a basis for reworking water sharing agreements and treaties? It would require reworking the inter-State agreements, international treaties, and awards of the various tribunals.

The Indian Constitution does not provide for any special status to such agreements. Therefore,

the agreements are contracts under the Indian Contracts Act. This Act provides that a contingent contract cannot be enforced if the event on which it is contingent, does not take place, but hardly any water agreements are of this type. The Act also provides that after the contract, if its execution becomes impossible, or unlawful, the contract becomes void. This can perhaps be cleverly used, by linking the impossibility of execution, because of climate change.

On tribunal awards, there is nothing in the Interstate Water Dispute Act which allows the reopening of a settled and gazetted award. Some awards, however, provide for a review after a specified date. Treaties, contracts or agreements are an important part of a civilised society, and promises should be kept. However, if it could be demonstrated that only one or some parties have suffered disproportionately due to climate change related hydrological changes, then there could be a stronger case for renegotiation. Coping with possible hydrologic changes attributable to climate change would require more data, policy adjustments, better technologies, more trained personnel, etc. If efforts are initiated in time, this can be achieved. However, climate change is only one amongst the many drivers in this dynamic situation. Also, there is little information on the facets of the likely climate change. If climate change does occur, then water plans, as well as the water allocation provisions, would come under a stress. Ways of possible reopening of the arrangements need to be discussed while discouraging such reopening unless unavoidable.



**Summary of Discussions:**

It was pointed out during the discussions that conflicts need not always be problematised as they are a part of life, and, more often than not, they alert the people to the inefficiencies and inequities in the system. It was also pointed out that the state has been a silent spectator of violations of regulations surrounding the water sector, and in some cases the state even seemed to be encouraging illegal activities.

With regard to conflicts between urban and peri-urban areas over water, it was observed that there is a need to recognise the water needs of the peri-urban areas, there is a need to bring about coordination between the relevant actors (especially the various arms of the state) on these sets of issues, and there is also a need for a people-centered approach to urbanisation. The fact that migrants to urban areas are primarily male raises an important question regarding who bears the brunt of the change in terms of availability and access of water and other resources. Further, in the peri-urban case there is a clear occupation structure that seems to be persisting. Agricultural activity and the absolute number of people dependent upon agriculture have gone up even if the percentage of labour engaged in it has gone down. It does not seem likely that this position will substantively change in the coming decades. It seems that the key to dealing with the peri-urban issue is the articulation of the village voice, by providing the space for them, without giving in to vested interests. Settled urban areas are spreading, and consequently natural resources are getting

destroyed. Therefore, there is a need for an urban land use policy, and a mechanism of negotiation between institutions of urban and peri-urban areas.

There have been sporadic movements for more equitable water usage in urban and peri-urban areas, but they have been suppressed. People have been arrested by the police for protesting against pumping water out. Urban institutions form a power center. Though the village gram sabha's resolutions are supposed to be sacrosanct in terms of the resources under its commands, more often than not, in the case of conflicts between urban and peri-urban areas over water, the resolutions passed by gram sabhas have been bypassed. The law has no effective enforcement or monitoring mechanisms.

Regarding the case of urban and peri-urban water bodies questions were raised regarding their public nature. It was opined that in rapidly urbanising regions catchment areas cannot be conserved, and therefore, it makes sense to fill up urban water bodies. It was pointed out that urban water bodies such as tanks effectively moderate the micro-climate, and help in dealing with floods. This latter point assumes salience in view of the fact that the rate of flow of flood water has been calculated in the urban areas to be around four to nine times the rate of flow of flood water in rural areas. Examples of Scandinavian countries were given in which the planning of many cities has been as much around water bodies as it has been around land usage. The ecological and sociological specificities of urban tanks need to be taken into account. It was also

pointed out that while preserving urban tanks the possibility of groundwater contamination from the polluted water held in these tanks is a serious concern, and this needs to be taken into account.

It was pointed out that not all Indian states were urbanising at the same rate; special consideration should be given to states such as Himachal Pradesh and Orissa where the population is still primarily rural, and the trends show that this will continue to be so for a long period of time.

It was also observed that in many readings of climate change there is a tendency to glorify the pre-climate change situation, as if the situation in terms of water usage was characterised by efficient and equitable water use earlier. An observation was made that policy change needs to respond to the changes in the levels of water availability. The climate change discourse is now based on limited data, which affects decision-making. There has been no robust test yet to show the effect of climate change on the hydrological cycle. In the case of India, there is a consensus on probable temperature rise, and increased rainfall, but some studies also predict less amount of usable water availability due to loss to evaporation and the variability of rainfall. It was observed that this will result in the need for higher dams for greater impoundage of water for carryover storage to deal with this variability. We need big dams as small storage dams lose fifty percent of impounded water due to evaporation. In this context, dam safety becomes an important issue as dams may burst due to heavy, sudden and unpredictable inflows of water. An observation was made that the dam burst curve has been

mandatory in Maharashtra, a state that has forty percent of all the large and medium dams in India; but this was before climate change became a concern.

Farmers in India have started getting affected due to climate change. Regardless of whether climate change is happening or not, increasing water scarcity and water stress is a reality in many regions of the country, and in this regard the water security plan being formulated and advocated by the government can be a key to resolve this problem. There was some consensus on the fact that there is indeed quite a bit of evidence for the existence of climate change, and that extreme climatic events are already becoming more frequent, but even if there were to be no significant changes in the climatic patterns, there needs to be protection from the vulnerabilities regarding water availability by building water literacy and institutional strength.

It was also pointed out that 65 percent of the water used in India is ground water, and there is a need to focus on groundwater rather than surface water. Evidence reveals that the total number of rainfall days seems to be going down, and this has resulted in the groundwater levels going down too.

It was suggested that ecological concerns are important, but these concerns are, more often than not, culturally mediated. Thus, while dealing with ecological issues, especially those surrounding water, people's cultural sensitivities need to be taken into account. Giving the

example of a valley in Himachal Pradesh, the point was made that when there was no snowfall people felt it was because of the fact that the presiding deity of the valley was not propitiated with a sacrifice.

Increasing the volume of impounded water has been the policy response in the water sector for the last sixty years. The question is: Will this kind of response change due to climate change? This is an important point as the policy makers and various governments seem to be concerned only with increasing the volume of water stored. Other important concerns such as flood-zoning have been more visible in terms of their violation and not their implementation. An example was cited of a court where the judge passing a judgment for clearing tank beds from encroachments was sitting in a court that had been constructed in an irregular fashion on a tank bed!

### Session 3: Futures: I

**Chair: Dr S. Janakarajan**

#### **Presentation I**

*Speaker: Mr S. V. Viswanath*

*Topic: Technologies for the resolution of water conflicts*

Technology is the use and knowledge of tools, techniques, crafts, and is at the same time a system or method of organisation, and a material product. Regarding technology and water, some questions that require answers in the context of water conflicts are: Is technology a cause of

conflicts? Is it value-neutral? Is technology part of the solution?

Water technologies are as old as human civilisation. The open-well, as a technology, liberated the farmers from the tyranny of the river banks. Tanks have been used for storage for a very long period of time. Despite the importance of the open-well for agriculture, the Persian wheel was self-limiting as it did not draw from more than forty feet of depth.

It is generally said that 'science' and a 'scientific understanding' can result in better allocation efficiency, and hence can help in distributive 'justice', ensuring 'fairness,' bringing 'development,' allowing growth and eliminating conflicts. In such a framework, the all-important question then becomes one about the ways of making scientific information available to decision makers. In this context a six-pronged approach known as STIFLE is suggested, where one tries to address issues under the following headings:

- ❑ Social
- ❑ Technical
- ❑ Institutional/Governance
- ❑ Financial/Economical
- ❑ Legal
- ❑ Ecological

The social head can be tackled by an emphasis on mediation. More farmer-to-farmer dialogues need to be facilitated, and evaluation systems such as citizen report cards need to be developed. This must be planned using surveys and other forms of data.

The technical issues can be addressed by modeling (using systems such as WEAP, and modern forms of climate modeling) for water availability, use and demand. For this, better understanding of groundwater is required. This can be accomplished through projects, be they engineering (such as dams, canals, inter-basin transfer /water grids, leak reduction in canals and pipes, waste water treatment and reuse, recycling, and desalination etc), agricultural (such as drip irrigation, precision irrigation, drought proof crops, genetically altered crops, watershed management, and tank rehabilitation) and those related to weather modification (such as cloud seeding, hydro-fracturing).

Institutional issues can be handled using the framework of Integrated Water Resources Management. There is a need to create 'nested' and decentralised institutions (on the lines of the 73rd and 74th amendments). River Basin Institutions/Authorities and Catchment Management Authorities can be developed, and Water Users Associations, Tank User Groups, and the tools of Participatory Irrigation Management etc can be used for such a purpose.

Financial issues require the realisation of the economic value of water, and pro-poor pricing strategies. The goal should be full cost recovery, and market-based trading of water rights and entitlements can be used to achieve such a goal.

On the legal side, a legal framework for stewardship of water needs to be evolved. There is also the need for adequate groundwater laws. The legal framework should also encompass

ecological dimensions, and require payment for ecological services.

Technology has addressed the demand needs of society over time. Technology for conflict resolution is premised on the production of detailed data, and hence the arrival of an objective conclusion. Technology can also produce a resource substitution, temporarily deferring a conflict.

## **Presentation II**

*Speaker: Dr Anjal Prakash and Dr Jasveen Jairath*

*Topic: Water Conflict and the Creation of a New Telangana State in India*

Andhra Pradesh is the fifth largest state of India with a population of more than 80 million. The three major regions are Rayalaseema, Andhra, and Telangana. Telangana covers 41.47 percent of Andhra Pradesh's geographical area, and has 40.54 percent of its population (30 million). Telangana and Rayalseema are relatively dry regions, but are rich in mineral wealth.

In British India, Andhra and Rayalaseema belonged to Madras Presidency while Telangana was part of the Hyderabad state that was an independent kingdom ruled by a Muslim dynasty called Qutub Shahi with hereditary rulers with the title of Nizam. The Nizam surrendered both coastal and Rayalaseema districts to the British as part of settling debts with the colonial rulers in 1788 and 1800 respectively. The then Hyderabad state consisted of Telangana of the present

Andhra Pradesh state, along with five districts of Marathwada in the present day Maharashtra, and three districts of Karnataka. After independence, Andhra and Rayalaseema were separated from Madras due to the agitation led by Potti Sriramulu in 1953 and became Andhra. In 1956, Andhra was merged with Telangana, based on linguistic affinity, and the state of Andhra Pradesh was formed with Hyderabad as the capital city.

Hyderabad state being part of the British capitalist system exported groundnut and castor grown in Telangana. Economic depression led to fall in prices; farmers became indebted, and lost lands due to non-payment of taxes. Between 1930 and 1939, indebtedness increased by 89 percent in Telangana, and people were exploited and suppressed by the feudal regime of the Nizam. The surplus was transferred from peasants to landlords (deshmukhs), and then to the Nizam. The appropriation of surplus made Nizam's state the wealthiest amongst the princely states in India. The seeds of uneven development and regional difference were implanted much before the transfer of power in 1947.

The newly formed state of Andhra was virtually bankrupt, and needed resources to carry on with public investment, whereas Telangana had surplus revenues due to prior investments made by the Nizams. While industrialisation was more advanced in Telangana, agriculture was advanced in coastal Andhra due to British investments in irrigation. Hyderabad was already a developed city suitable for becoming the capital of a large state; it was also centrally located. The merger strengthened the Congress against the Communist Party of India

(CPI) that had a stronghold in the region. With the infusion of revenues and industrial resources from Telangana, the readymade capital of Hyderabad, and the surplus food of the coastal region, the new state of Andhra Pradesh was ready to move forward.

The Congress became a Reddy-dominated party with its bases largely in Rayalaseema and Telangana. The party maintained power by forming alliances with the other dominant castes and with the scheduled castes (Reddy – SC combine). However, it didn't pay attention to development needs of Telangana, and ignored the rich and powerful Kamma community of coastal Andhra. In 1986, the Kamma dominated Telugu Desam Party (TDP) took over with the issue of Telugu pride, breaking the Reddy-Brahmin-Dalit alliance.

The rivers Krishna and the Godavari are the two major river systems in Andhra Pradesh. The Godavari is the biggest and the broadest river in South India. 68.5 percent of catchment area of River Krishna, and 69 percent of catchment area of River Godavari are in the Telangana region. The benefit of irrigation through the canal system under major irrigation projects are as follows: coastal Andhra gets 74.25 percent, while Telangana's share is 18.20 percent, and Rayalaseema gets the remaining 7.55 percent. The state's average expenditure on Telangana's major irrigation projects is just 18.20 percent of the total expenditure. Telangana waters have been diverted to irrigation projects in the Andhra region. Successive governments have blatantly violated the water-sharing agreements between

the two regions resulting in a rise in groundwater irrigation in a majority of Telangana areas. With changes in agricultural technology, Telangana's peasantry moved from rain-fed to irrigated agriculture based on groundwater. Between 1985 and 2001, irrigated area grew from 23 percent to 38 percent of the Net Cropped Area in Telangana entirely due to the proliferation of tube-wells. Today, irrigation is estimated to consist of as much as 40 percent of the state's entire energy consumption, and is a major component of the state's budget deficit. Due to increased groundwater-based irrigation, wells started to dry up in the 1990s leading farmers to make heavy capital investments, thus making agriculture increasingly unviable in the region.

In a water-starved region, river water disputes will escalate, and the sharing of Krishna and Godavari waters will become increasingly problematic if Telangana becomes a separate state. The proposed Polavaram project that is intended to supply irrigation water to Andhra will engulf thirteen mandals of Telangana with adivasi inhabitants being displaced. Apart from the other grounds of objection, the regional angle is a major part of the critique of the project where Telangana is bearing the cost for the development of irrigation in Andhra. There is also a possibility that if a separate state of Telangana comes into existence, the Pothireddypadu project that plans to divert water to Rayalseema will be stopped.

Historically, feudal relations that existed in Telangana reinforced the class and caste hierarchies imposed by the Nizam rulers. Different developmental trajectories of the three regions

of Andhra Pradesh came in contact with each other under a unified administration, and had to compromise with each other. In the absence of surface irrigation projects, groundwater-based irrigation became popular. With decline of groundwater resources in Telangana, the rural neo-elite seek newer aspirations through government jobs as agriculture becomes unviable. The prospects for a better life are seen to lie only by gaining a bargaining position in the federal structure.

### **Presentation III**

*Speaker: Dr Smita Mishra-Panda, Human Development Foundation, Odisha*

*Topic: Water Conflicts and Gender*

A lot has been said on linkages between gender and water. Women and men experience water conflicts differently as their lived experiences, needs, rights and the options available differ according to socio-culturally defined gender roles. Women's voices get subsumed in the name of community participation. Women are not seen as being part of the productive use of water, but are seen as collectors of drinking water, particularly facing problems during scarcity. In conflict areas, water conflicts escalate further.

Gender and equity concerns have often been discussed as integral component of water management (Dublin 1992, Rio 1992, BPFA 1995, World Summit on SD 2002, UN inter-agency network on women and gender equality, the UN task force on water and sanitation, and the Millennium Development Goals).



Several networks such as Global Water Alliance, Global Water Partnership, CapNet, Women and Water Network and some country level networks have, to a great extent, become exclusive clubs. The question to raise in such a context is whether they have come up with any implementable actions and changed people's/women's lives. Manuals developed end up in libraries, and most discussions/claims end up only as rhetoric.

In the context of water conflicts, Multi-Stakeholder Dialogues (MSDs) seem to be a step forward where gender and other equity concerns can be addressed. Poor women and men are disadvantaged to participate in MSDs as their voices are often dictated by social class, geographic location and market forces. In river basin level MSDs women farmers and rural women are hardly represented among the stakeholder groups consulted. While SHGs (women's groups) have the potential to articulate the voice of women, the question is how to make their voice effective in the MSD process.

Gender mainstreaming in the water sector is increasingly becoming popular. There has been a certain amount of integration of gender equality concerns into the analysis, and in the formulation of policies and programmes/projects on water. There have also been initiatives to enable women and men to formulate and express their views and participate in decision making across all issues surrounding water usage. What is the outcome of gender mainstreaming? Implementers are not able to grasp gender mainstreaming, as a result, therefore, gender remains *sidestreamed*. Gender mainstreaming has become just another way to

create women-focused activities. The shift from 'Women and Water' to 'Gender and Water' has not really happened, as power relations/gender relations are not understood by many, and remain unchanged. Disparity in female/male socio-economic status leads to unequal divisions of burdens, decisions and benefits with respect to water. Women lose out on voice and choice in spite of their presence in water users' committees. The marginal role of women in decision making is due to lack of sensitivity of implementing agencies and society, and lack of capacity building for poor/rural women in terms of training and finance.

In such a context we must distinguish between collective empowerment and individual empowerment. For individual empowerment, it is very important to bring about long term changes at the household level and gender relations. This brings scope for transformation of structures, processes, cultural values and norms. Ensuring inalienable property rights for women is certainly a step forward. Apart from social action, there could be a regulatory framework that can establish equitable resource rights of all stakeholders, and also accord legitimacy to river basin organisations or other agencies dealing with conflicts.

### **Summary of Discussions:**

During the discussions it was observed that generalisations can not be drawn while addressing technology, its usage and its effects. Distinctions were made between 'hard' and 'soft' technology that map onto the scientific and social domains; the need for adequate 'social technologies' for conflict resolution surrounding

water usage and for ensuring water equity was emphasised. In this respect the importance of dialogue and mediation was stressed. It was also pointed out that different levels of issues and needs in the water sector need appropriately nuanced technical responses. It was also observed that technology is not something that is created by experts and then applied in the field. People who deal with resources such as water themselves create both soft and hard technologies. As such, technology is both created and mediated through communities; this needs to be factored in discussions surrounding technology.

Regarding the issues surrounding gender it was pointed out that one needs to go beyond characterising existing initiatives as mere rhetoric and offer concrete ways of negotiating through real life situations. One cannot merely stop at providing broad-stroke critiques. Recent amendments to the relevant laws in India give land rights to women. It was also pointed out that the separation of land and water rights in a formal sense might not only help address concerns of class, it might also help in dealing with the questions surrounding gender, since most women farmers do not have the land in their own name. The need for adequate data and information on different institutional mechanisms was also expressed. The main objective is to facilitate women from being invisible to being visible, and from being passive to being active. For this, plans need to be evolved, and capacities need to be built, so that women in the panchayats can assert themselves politically and centre stage gender concerns in debates. Questions were also raised

regarding the level at which women's empowerment is envisaged, and about the efficacy and possibility of formal mechanisms, such as land or water rights for women, in leading to empowerment of women.

Regarding issues surrounding water sharing in the eventuality of the creation of Telengana it was pointed out that an award by a Tribunal for sharing river waters is not time bound and is perpetual. If Telengana is formed, then all preexisting agreements on water sharing that the state of Andhra Pradesh is a party to would have to be retained, and the water allotted to Andhra Pradesh will now need to be shared between all the successor states. Hypothetically speaking if Telengana is formed before an award comes into effect, then the case can be reopened.

It was pointed out that given the fact that the terrain of Telengana is not conducive for irrigated agriculture there is a need to go beyond the paradigm of water resources development and canal based irrigation to be able to address the developmental needs of the Telengana region. Watershed management and dryland agriculture may have more to offer to the region compared to the exploitation of the scant water resources for irrigated agriculture. Telengana should try and use its comparative advantages. Another view was that this argument cannot be used as an excuse to deny Telengana its legitimate share of water. It was also stressed that comparative advantages and core competence are not natural and static facts; they are socially created and are dynamic in nature. Hence, simply because the Andhra region in the state of Andhra Pradesh has



historically utilised a greater portion of the water resources of the state, and has the argument of historical precedence, does not automatically ensure that it can continue to enjoy these advantages at the cost of other regions/units such as Telengana. Therefore, need for political debate and struggles over resource equity, especially those surrounding water, need to be foregrounded in the demands for statehood for Telengana.

## Session 3: Futures: Part 2

**Chair: Dr Vijay Praranjapye**

### **Presentation I**

*Speaker: Ms Geeta Devi*

*Topic: Legal Frame Work for Resolution of Water Disputes*

The causes for conflict can be understood to arise from issues surrounding quantity and quality of water, floods, hydroelectricity, ecology, ownership, expanding urban areas, and lack of proper management. Water is “blue gold,” and will become an increasingly scarce resource as demand for it increases. Conflict arises due to the fact that water needs to be shared as various sectors and groups of users exist with competing claims on water. Further, water utilisation is increasingly exceeding the potential availability.

Conflict is a fundamental disagreement between two parties, of which a dispute is one possible outcome while conciliation and conflict avoidance are others. People who have opposing interests,

values, or needs are in a state of conflict, which may manifest in a dispute. Dispute is a process wherein an unresolved conflict does not find resolution. People invoke the law at this stage. There have been legislations relating to interstate river water sharing such as the Inter-State Water Disputes Act, 1956, the River Boards Act, 1956 etc. These Acts provides for the creation of River Boards for regulation and development of interstate rivers and river valleys. There also exist the national and various states’ policies on water.

The water sharing principles have been based on the doctrine of riparian rights, the doctrine of territorial sovereignty, the doctrine of natural flow or the territorial integrity theory, the doctrine of prior appropriation, the doctrine of community of interest, the doctrine of equitable apportionment, and the Helsinki Rules (which provide for equitable sharing for beneficial use, equitable and reasonable utilisation and participation in the use, development and protection of an international water course in an equitable and reasonable manner).

With regards to inter-sectoral claims, we have to consider how water is prioritised and allocated. For prioritisation of sectors, there are water policies and river dispute awards. Drinking water gets the first priority, then irrigation, industries, and the environment. In terms of allocation of water, agriculture sector gets the major share, then industries and drinking water. The question is whether the prioritisation / allocation of water amongst various sectors is to be based on availability or on needs. There is no formal basis for water sharing between various segments of

users. There are no laws, no norms, and no principles that govern inter-sectoral allocation of water in India, and it has been left to the discretion of the state, political considerations, and lobbying.

With increasing water scarcity and conflicts between various competing sectors, formal water rights as a mechanism for water allocations and accountability has gained importance. In the absence of formal declaration of rights in the Constitution, the courts have expanded Article 21 of the Constitution. Inter-sectoral disputes involve multiple parties, conflicting claims and rights, and multiple issues viz., issues of development rights of displaced people, water rights linked with land rights as in ground water, urban versus rural users, etc.

In India there is a multiplicity of principles, rules, and instruments surrounding water usage and allocation, but a lack of an overall framework. Currently, water rights are governed by the Water Policy and Irrigation Acts of the respective states. There is no clear legal framework specifying water rights, even though various Acts have some basis for defining some form of rights. Responsibilities of water management are fragmented between government departments without any formal mechanism to ensure coordination. The remedies to violations of water rights are available in statutory as well as common law. The remedies are punitive in nature, come into play when the violation has occurred, and preventive actions are limited in number. Many a times disputes surrounding water sharing are politicised, and are not based on needs or availability. There are no institutional arrangements at the state level to consider

sectoral water demands to plan and manage water resources effectively.

In an interstate dispute, the decision of a Tribunal is final and binding on all the parties to the dispute. Are these mechanisms working as envisaged? Seven tribunals have been established till now, but their outcome has not been satisfactory. The awards of these tribunals have been challenged in Courts under Articles 226 and 32 of the Constitution, and the courts are entertaining the disputes. Is there a finality to the decision of the tribunals, can they be made binding? How to give effect to awards? Does this mechanism effectively redress interests of multi-sectoral users, and multi-dimensional issues?

On redress, one can submit a PIL (Writ petition under Article 226 of the Constitution to the High Court and under Article 32 to the Supreme Court of India). There are common law remedies: Tort remedy-prevention in form of injunction/restraints order and punitive in form of levy of fine/ compensation. In case of water the cases fall within the category of nuisance, negligence, and strict liability. Environmental law is found on the concept of nuisance. Civil remedies are codified to certain extent in the Easement Act, 1832, and there are quasi-judicial bodies under various statutes.

Resolution can come about by force, adjudication (by an authority, state, institution, Courts of Law), arbitration (adjudication by a neutral party), negotiation (facilitated by third parties), and by interest-based mediation (facilitated by third parties).

The judicial process is generally costly, in terms of time and money, and does not always provide an adequate answer to the special needs of the parties / society. The courts usually focus on procedural issues rather than the substantive issues that are the basis for dispute. They also do not interfere on policy issues of the Government. Further, the judge may lack the knowledge and ability to consider technical issues or may have certain personal predilections. The judicial process is an adversarial process, and damages the relationship between the disputants. One or more parties may be dissatisfied with the result of adjudication. Judgments and awards can be ignored, and as such there is an absence of finality.

In today's scenario, the public have become active, and are demanding an active role in the dispute resolution process and a say in the outcome with which they will have to live. The adjudication process has many limitations and hardly provides space or a platform for hearing stakeholders or for public participation. Processes such as negotiation, mediation, or consensus building can help to resolve the conflict, and parties can try to "enlarge the pie" rather than acting as adversaries and aggravating the situation.

The Inter State Water Dispute Act provides for negotiation as the first attempt and adjudication only on the failure of the negotiation. Perhaps this has been tried in many interstate disputes, but has it been effective? If not, then why? State parties may not be willing to participate in the negotiation as seen in Cauvery water dispute.

Absence of information dissemination, lack of public debates involving all the stakeholders, lack of awareness and knowledge amongst all stakeholders can lead to mistrust and inaccurate information. There is a lack of integration and coordination amongst various government agencies / departments, and the role of various stakeholders in negotiation often goes missing.

Mediation is a process that employs a neutral and impartial person or persons to facilitate negotiations between the parties to a dispute in an effort to reach a mutually accepted resolution. The mediators should have no direct interest in the conflict and its outcome, and they should have no power to render a decision. Mediators have control over the process, but not over its outcome. Power is vested in the parties, who have control over the outcome, and they are the architects of the solution.

In disputes, mediators create a ceasefire between the parties, and open up communication channels. Mediators can gain the confidence and trust of the parties, and gather information and identify obstacles. Mediators allow the parties to express feelings and vent emotions, and help them to identify and understand their interests and priorities. They can help the parties with brainstorming creative options and solutions, and help them define acceptable objective criteria. They can also help the parties understand the limitations of their demands through what is known as "a reality test," and assist them to evolve creative options and evaluate alternatives. Mediators allow the process to move forward according to the needs and pace of the parties,

and help in crafting the agreement. They can also help in validating the agreement by the courts (if there is a court /tribunal that has jurisdiction).

The advantages of mediation are flexibility and informality of the process, the advantage of multi-disciplinary perspectives in mediators (such as engineers, sociologists, economists, hydrologists, water management experts), confidentiality, savings on resources, maintenance and improvement of relationships, and in ensuring a final and mutually beneficial outcome.

Mediation has many positive effects. It facilitates the identification and understanding of the central issues of the dispute, and the resolution of some or all of the issues. Agreement can be reached on all or part of the issues of the dispute, and the needs and interests of the parties can be met. Mediation also provides the possibility of preserving the relationship. An improved relationship may result from the process of mediation.

Mediation has had many successes internationally. In 1952, the World Bank acted as a mediator with power, and managed to influence the parties, India and Pakistan, who then started negotiation over the allocation of water of the Indus River. In the Zambezi River dispute, where eleven countries were involved, they reached an agreement to manage and develop the Zambezi's water resources jointly. The Vatican played the role of the mediator/facilitator, and used its authority to influence the parties and promote an agreement.

The most effective way to manage water in a sustainable manner is for all the stakeholders of a

common water resource to cooperate in jointly managing, protecting, and developing it. Stakeholders should agree and put in place mechanisms and modalities for resolving water disputes as and when they arise. This underlying philosophy creates a challenge to seek ways of avoiding conflicts, and of resolving them amicably and effectively when they do arise. This process necessitates good preparation and clarity in terms of information on problems, issues, concerns, ground reality, law, policy and alternative options if any. An effective dispute resolution mechanism requires good laws and policies on water that address all issues/ concerns, including social and human rights concerns. Laws and policies have to be implemented effectively, monitored and reviewed periodically, and amended by suitable impact analysis. It should provide for participatory processes involving all stakeholders in the management of water resources, and also in dispute resolution. Finally, dispute resolution mechanisms should incorporate the alternative methods of mediation and consensus building.

## **Presentation II**

*Speaker: Dr Anil Abbi, Tropical Research and Development Centre (TRDC), Bangalore*

*Topic: Sustainable River Basin Development through First Order Stream Management – A Case Study*

The Varada River is located between latitude 14° to 15° 15' North and longitudes 74° to 75° 45' East. The average annual rainfall varies from 775 to 2,070 mm across the basin, and the drainage

area is about 5,020 square kms. The river flows for about 220 kms, and joins the Tungabhadra River, therefore forming a part of the Krishna River basin. In Karnataka the Varada River flows in eleven Taluks of three districts of the state that have a population of around thirteen lakhs. Thirty thousand people in twenty-five villages are at risk from floods every year, and thousands of acres of paddy fields come under annual floods.

There are periodic floods, droughts, and flow problems (high and low flows, and depleted groundwater due to over-abstraction). There are severe water shortages during summer both for drinking water supply and for agriculture. The impact of climate change on hydrological cycle is that of delayed monsoons, extended winters, and prolonged summers.

As a possible adaptation measure, water harvesting could arrest rainfall runoff to render first order streams perennial. A river basin development authority can ensure equitable distribution of water resources, improve water management practices with incentive for farmers, and restore wetlands and water bodies on first order streams with proper policies and programmes. National Rural Employment Guarantee Act (NREGA) schemes should be oriented towards development of public water bodies as a priority rather than investing on private lands. There has to be effective monitoring of river water abstraction and river water flow. A Varada Development Authority can be authorised to protect precious habitats such as wetlands, to advise, manage and properly treat the catchment, and to equip local panchyats with regional information in relation to the larger river basin.

It is important to recognise the considerable growth in freshwater conflicts in the case of rivers basins involving transboundary water management. There needs to be efficient management of major tributaries within a river basin, and in this particular case the establishment of a Varada River Basin Authority. There should be transboundary community water management with Panchayati Raj Institutions as key actors with mechanisms and instruments to support the use of water as a catalyst for regional cooperation rather than as a source of potential conflict.

### **Presentation III**

*Speaker: Dr K. N. Joshi*

*Topic: On the Indira Gandhi canal and access to water*

Rajasthan has ten percent of the land, and around five and half percent of the population, of India; yet it is endowed with only one percent of the water resources of the country. Mountains divide the state into two distinct zones: the South-West and the North-East. The south-west section is around sixty percent desert with rainfall ranging from 100 to 400 mm, and the north-east region is mostly uneven plateau. The rainfall in the state is 525 mm on an average with 100-1000 mm as a range. There are only two perennial rivers in the state; the Chambal and the Mahi. Around fifty percent of the water used is imported from Punjab, Uttar Pradesh and Madhya Pradesh through canals.

Ninety percent of the water is used for agriculture, eight percent is utilised for domestic consumption, and two percent of the water is consumed for



industrial purposes. Groundwater is available at a range of 1 meter to 150 meters. The deeper levels correspond with the desert. All of drinking water is allocated based on schemes. The ground water of the state is increasingly turning unusable. In 1984, 181 blocks out of 236 blocks contained safe water, of which 22 were being over exploited. In 2004, 32 blocks out of 236 blocks contained safe water, of which 40 were being over exploited. This is caused by pollution of rivers and ground water fluoride.

The drinking water allocations from the waters of the Indira Gandhi canal are eating into the water allotted for agriculture. In 1990, 5.23 cusecs of water was available for 1000 acres. In 1998 this dropped to 2.50 cusecs for the same area. There is an increase in the command area, but a decrease in the availability of water. The causes of this are:

- ❑ Illegal Irrigation
- ❑ Widening of canals
- ❑ Untimely supply leading to crop failure
- ❑ Lack of information leading to crop failure and low incomes

In 2004, there was an agitation by both business people and farmers. People agitated for three months demanding adequate and timely release of water that led to police firings. There is an urgent need to resolve these problems in a timely fashion through the institution of equitable mechanisms.

### **Summary of the Discussions:**

In the discussions following the presentations it was pointed out that while discussing matters

surrounding water sharing, there is a tendency to be unduly pessimistic. Tribunals might have failed in resolving water disputes, but there are more than two hundred treaties surrounding water that govern water usage very successfully in India. We need to learn from this experience in successful resolution of conflicts, and the way all these treaties have stood the test of time. It was observed that the water policies of the various Indian states have varied foci and orientations. The implications of this diversity for possible efforts at mediation and conciliation need to be worked out. It was also pointed out that many problems are structural in nature, and legal measures such as the ISWD Act do not seem to have helped. In this regard mediation can help if all legal/statutory provisions can be bracketed out; then the issue at hand can be focussed on by foregrounding the actual needs and apprehensions of the parties involved.

In this context, questions surrounding the ownership of water were again raised and discussed. It was said that a farmer can use the water that falls on her field by stopping its flow, but she cannot sell it for commercial purposes. It was pointed out that water is a fluid and not a static resource, and one cannot claim a right to stop the rain merely because it falls on one's land; then one forfeits the right to drain the water away when so needed as well.

The importance of studying first order streams such as Varada was commented upon, but it was observed that it might be better to call the proposed civil society initiative for Varada as an 'institution' and not an 'authority' as the term

authority has some specific administrative and legal connotations in the context of river basins. The possible roles of such institutions were also asked to be specified. Can such an institution grow beyond having a mere information-dissemination role? Can it have statutory powers and federate the relevant panchayats? Can the term basin be used in the context of a stream as basin is a technical term? Concerns were also raised about the fact that if the catchment of all first order streams were to be treated, and water were to be retained within their boundaries, then second order streams will have less flow.

It was also observed that any civil society initiative such as the one on Varada has to take into account and on board the Panchayats, as these are key players. It was also pointed out that River Basin Authorities have always been conceptualised as a body appointed and instituted by the state and by the law. Here in the case of the Varada river we have an example of one that has been created by a civil society initiative. The issues raised were about the legitimacy of such an initiative; however it was acknowledged that initiatives such as this are steps in the right direction.

Schemes such as the Indira Gandhi Canal were observed to be slightly misplaced in the first place as more water is needed per unit area and unit yield under arid conditions such as those prevailing in Rajasthan. It was pointed out that the government had other considerations apart from the efficient and economic use of water for the construction of the Indira Gandhi Canal in

the deserts of Rajasthan; defense considerations played an important role as canals can halt the passage of tanks in the case of conflicts with neighbouring powers.

Farmers cannot be solely blamed for making breaches in the canal, and for stealing water for 'illegal' irrigation of crops. Water was initially provided in large quantities as the command area was smaller due to the absence of the canal system. With more area coming under irrigation, the per acre availability of water has decreased, but farmers after getting used to particular kinds of cropping patterns will now find it difficult to make the switch to less water-intensive crops. This is a classic case of supply creating its own demand. Questions were raised about the possible institutional solutions to resolve issues surrounding water distribution in the command area of the Indira Gandhi Canal. It was also pointed out that the problem is not only about lack of institutions or information, but of law makers themselves becoming law breakers in this instance.

Finally it was affirmed that court appointed mediators and civil society networks can facilitate equitable and efficient water management and conflict resolution in India. Expert committees are, more often than not, a delaying tactic. If the intra-basin allocation of water resources needs to be challenged and changed to reflect concerns of equity, then mediation has a big role to play. No single legal innovation can help to deal with these issues. Research and advocacy also have important roles to play.

**Additional Paper Submitted:**

*Authors: Ms Sreeja K.G. and Dr P.K. Shetty*

*Topic: Migrant labourers in the context of River Basin Planning*

The shift from agriculture and related use of natural resources has changed the patterns and processes of resource mobilisation bringing in its wake issues rarely addressed in existing river basin planning frameworks. Often the natural resource use of a basin is viewed within the limited purview of an agrarian dependence which fails to capture the multitude of non-agrarian relations to the basin resources.

In the Chalakudy river basin in Central Kerala, where the present study was undertaken, these emergent non-agrarian relations to basin resources strongly influence the trajectory of basin development, and would be significant in river basin level planning for management of the natural resources such as land and water. In this context, the issue of migrant labour in relation to resource mobilisation in the lowland zone of Chalakudy river basin was pursued.

Though there are numerous studies on migration and its effect on the resources of a region through labour loss and capital gain through remittances, in-migration into the rural spaces and the resultant resource linkages are inadequately addressed. In the study region, the extraction and conversion of natural resources of a river basin is found to be predominantly mediated by a migrant population absolutely invisible in the existing river basin planning perspectives. The

manifold consequences of in-migration on the basin resource use, demand and conservation, and its implications for river basin management were explored.

In the beginning of the last century the lowland agroecological zone of Chalakudy River Basin was predominantly a rice-based agroecosystem following the traditional village settlement pattern of Central Kerala. Wetland agriculture was the main livelihood means of the people. The agricultural labourers, cultivators and traders in the agricultural commodities made up the bulk of the labour force. As a complex result of remittances flowing in from the Middle East, the increased level of education and resultant capabilities and aspirations of the in-basin population, increased scarcity of labour for manual work was experienced from the 1970's. In a decade's time, the changes brought about in labour, capital and resources employed in agriculture heralded both a shift in the cropping pattern as well as the emergence of a strong non-agrarian sector catering to the deployment of remittance capital from the Middle East. Clay brick and tile manufacturing industries in the locality using the fertile clay base of the paddy fields of the Chalakudy river basin came up during this period of time. Mining of river sand from the Chalakudy River to unprecedented extent and depths also started during this time. The construction sector established itself, giving opportunities of unskilled labour to women and men moving out of agricultural labour.

By the 1990s Kerala started experiencing an influx of migrants from the neighboring state of



Tamil Nadu, mainly to work in the ever-expanding construction industry, and in the related manufacturing units of clay tile and brick kilns. Since then various non-farm sectors have emerged as a major means of livelihood in the study region, so much so that by the Census of 2001 only less than 20 percent of the working population were engaged in agriculture as the main livelihood activity. These non-farm livelihood options have in turn brought in their own patterns of labour movements, and resultant resource use in the basin over time, linking the basin with the non-basin areas, and redefining linkages to the resources of land and water within the basin.

Around 15 years back when migrant labour first started making its presence felt, they were mostly from Tamil Nadu. The nature of migration of these labourers was circular in that these were mostly single men of 20-30 years of age, with their families back in their villages. In the last decade, migration of unskilled workers from states in the North and North-East of India was initiated, and these workers started replacing the Tamil workforce mainly due to lower wages demanded by them. Again, these migrants from the states of West Bengal, Orissa and Assam were single men in the age group of 17-28. After their initial phase of migration and establishment, large scale migration followed in the past 3 years through the network of friends and relatives. These young migrants, completely ignorant of the nature of work here, spend the initial year or so in learning at a lower wage by attaching themselves to a contractor or a veteran migrant. After gaining acquaintance with the work and the place, they

become highly transient for higher wages, and earn between Rs. 120-300 per day based on the nature of work and experience.

The status-quo of a win-win situation, where the local economy is prospering due to the presence of migrants both as labourers and consumers, while the migrants are benefiting by higher wage rates, is transforming to acquire new dimensions in the face of shortage of resources and the impacts on living conditions. The unabated consumption of these resources for the past 30 years has resulted in closure conditions of river sand and clay for bricks. The annual extraction of sand after the 1970s, was almost 31 times more than the annual sand replenishment rate. This, in turn, is lowering the river bed by 5 to 18 cm/yr (CESS, 2006).

At the same time, the adverse impacts of heavy mining for these resources initiated public opposition and nebulous government restrictions against mining of these resources. In the low land zone of the Chalakudy River Basin, clay mining for brick kilns and sand mining from the river were temporarily prohibited by the district administration recently. This has resulted in illegal sand and clay mining activities as well as replacement of river sand with quarry sand and clay bricks with cement bricks (using quarry sand). Stone quarrying operation intensified with a diversified product range of building stone, broken stone, crushed metal and quarry sand, bringing in more migrant work force. In such a situation, a complex set of processes that reflect power relations between the migrants and the locals are set in motion.

The environmental impacts of these activities, now much more evident and recognized by the public, are leading to confrontations with the migrant labour force. For example, in the Erayamkudy paddy fields of Annamanada village in the Chalakudy River Basin, migrant labourers were the first to bear the brunt of a public protest against brick kilns in the area. This necessitates the inclusion of this in-migrant working population in river basin planning approaches, since at present this workforce is directly involved in the mobilisation of the natural resources of the river basin. It is estimated that there are around 100 million circular migrants in India today. These workers have played a large role in sustaining and building India's economy, but their contribution remains unrecognised because of their lack of stake in the resources of the region that they work in. Moreover there is a dearth of data regarding these migrants. Migrants remain on the periphery of society, with few citizen rights and no political voice in shaping decisions that impact their lives. Exclusion of these important actors can, in future, lead to manifold issues with increased pressure over the basin resources related to demand, utilisation and conservation. In the context of the prevalence of transient migrant labour forces in the mobilisation of natural resources, the stewardship possibilities in a river basin becomes complex and requires serious attention.

### Concluding Session

In the concluding session, discussions took place about the future direction of the work of the Water Programme at NIAS. It was suggested that water

balance studies and the exploration of use of mediation as a tool of conflict resolution can be useful activities that can be undertaken in the future. Conflicts surrounding groundwater and inter-sectoral conflicts were observed as under-researched areas that need further study. It was also observed that the new heavy/mineral industry based industrialisation drive of the various states in peninsular India in the past decade or so, and its implications for the water scenario also need to be studied. Public information campaigns are yet another area that the Water Programme can undertake. However, reservations were raised about the feasibility and desirability of an academic institution carrying out such tasks. The implications of Special Economic Zones (SEZs) for water resources of the country, water balance studies, and groundwater were identified as three possible areas of study for future research and advocacy work at the Water Programme at NIAS.

### Conclusion

The presenters in the consultation focused on sectoral conflicts surrounding water that impinge upon the lives and livelihoods of various peoples by picking up relevant case studies; these included and focussed on:

- The Hirakud dam on River Mahanadi in Odisha (that has seen extensive agitations by farmers because of the Government of Odisha's decision to provide water to new industries in the area from the dam), and the linkages between neo-liberal globalisation and inter-sectoral water conflicts

- ❑ The agitation for Telengana, and the ways in which perceived water inequities spark off and feed into regionalist agitations
  - ❑ Persistence of the tail-ender problems that seem to persist in canal systems such as the Indira Gandhi Canal system in Rajasthan
  - ❑ The manner in which gender mainstreaming in water is being perceived and implemented
  - ❑ The need for environmental flows in heavily exploited rivers such as the Periyar, and the way the political ecology approach can help us to locate such problems productively within wider political economic processes
  - ❑ Questions surrounding biodiversity and cultural loss with water resource development
  - ❑ Questions surrounding ownership of water
  - ❑ Conflicts between urban and peri-urban populations/sectors due to rampant, unplanned/unregulated urbanisation in the Chennai urban conglomeration
  - ❑ Legal aspects of possible impact of climate change on water resources in India, and the role of social and scientific technologies for the resolution of inter-sectoral and inter-state water conflicts
  - ❑ Mediation as a possible innovation in the legal framework for water sharing and resolving water conflicts
  - ❑ Successful management of the water resources of the first order stream of Varada in the Krishna River basin
- After each session, wide-ranging discussions took place about the papers presented as well as general issues raised by these papers. Enlightening discussions took place about the following issues:
- ❑ Ownership of water
  - ❑ Competing claims of rapid economic growth, and sustainable and equitable water sharing
  - ❑ The definitions and possible impacts of climate change
  - ❑ The definitions, types, possible usages and impacts of technology with respect to water sharing and conflicts
  - ❑ The inadequacy of extant institutional and legal frameworks for equitable and sustainable water sharing
  - ❑ The nature of urbanisation in India and the implications for water resources
  - ❑ The implications of diversity in institutional and policy mechanisms meant for governing water resources in the country
  - ❑ The need to challenge historical advantages in using water resources

- ❑ The need to bring in class and caste into debates surrounding water sharing
- ❑ The comparative advantages and disadvantages of mediation and arbitration for dealing with water sharing and water conflicts
- ❑ The need to develop water resources to deal with future climatic uncertainties without buying into the conventional water resources development paradigm
- ❑ The possible ways out of the current impasse in thinking about gender and water
- ❑ The relevance of international frameworks such as Dublin Principles for India
- ❑ The need to think beyond the statist framework for dealing with water related issues

Discussions also took place regarding the future direction for the work of the Water Centre at NIAS, and three possible directions for future research and advocacy were identified; a) implications of SEZs for water resources, b) water balance studies, and c) groundwater.

## ANNEXURE I: List of Participants

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