variability is as high as 30%. in surface water and in groundwater storages, the variability is as high as 80%. Therefore, managing groundwater has to be very carefully addressed. Part of variability has been addressed in Krishna award scheme B. Though the commission has been the same for Krishna and Godavari, the awards have been different;

An even more creditable award is *The Godavari Award.* It is a brief document, and it is actually a *compilation of negotiated settlements that were brought about between sub basins in the five states*. There was nothing that tribunal could add to this. He said that we have to thank Mr. Padhye, who was instrumental in these negotiated settlements. At the end of the award, tribunals normally avoid making judgment, but the last paragraph of the Godavari Award is interesting.

The tribunal has requested the attention to the role of the citizen, or 'the inhabitants of the Godavari basin. The award ends with the following statement" we wish all happiness and prosperity but it is our earnest hope that while making its use, they will take all possible steps to prevent wastage and pollution of water of this holy river". This attachment to the river, a scared feeling is important to water discourses. We should foster the *psychological* involvement of the stakeholders. We have failed to psychologically involve stakeholders in management of the valley.

The point is that the focus for management and development of different river basin is different, as per the geo hydrology and its users. Thus, hoping to keep this diversity in mind we should learn to accommodate and negotiate, as it is a part of our culture and also we have to learn from these awards.

The Kaveri Award should also receive our attention. One of the missing things from the award is the hydropower potential of the Kaveri basin. Southern part of the Kaveri basin is opportune in view of hydropower generation. Why is a negotiated settlement between the different states in the Kaveri not addressed? I hope that through workshops like these, these issues can also be highlighted. Hydropower development will be a crucial element of basin management. In the Krishna award, we have followed the geo hydrological terrain rather than the fluid character of water. We are losing the peak power potential. Malaprabha and Ghatprabha projects were planned without looking at storage opportunities upstream as the Krishna award was not formulated that time. He commented on the absence of the members of the National Water Academy, the main training wing of CWC.

Conclusion:

He concluded his keynotes by saying that many countries have worked on IRBM and we can learn from these countries.

He presented the examples of the;

- Development of Ruhr basin, in Germany,
- French model of River Parliaments,

- Water sector Annual Report in Australia is based on the responses from on the basis on 292 water authorities within the catchments,
- *He mentioned that the Swadhyay Parivar* has done remarkable work in Saurasthra.
- Chikotra Basin Management of Equitable Water Distribution in Kolhapur District of Maharashtra.
- Happenings in the Nile basin.

Let us learn from the wealth of existing experiences in India and the world over.

Prof. Paranjpye thanked Dr. Chitale for this thought-provoking session and said that, when negotiations between local stake-holders, were to be treated as the basic building blocks, development would be a sure success.

The discussions were followed by a question answer session; the report for the same is attached at the end of this report as annexure.
The thematic sessions are also reported verbatim.

Theme A: *Water Laws in India: Implications for Statutory and community-based river basin management initiatives*

Chairman: Dr. Madhavrao Chitale, Water Resources Expert
Co Chair: Shri. Ajit Nimbalkar, Chairperson, MWRRA
Initiator: Shri. Bhavanishanker Benkipur, Sahaoyoga, Bangalore.
Rapporteur: Shri. C.T. Pandit, Yashawantrao Chavan Pratishthan.

The Chairman requested Shri. Ajit Nimbalkar to introduce the subject of water laws.

Mr. Bhavanishankar initiated the discussion and according to him policies are more important than the actual laws. He opened his address with a *sukta* from the Upanishads about well being of the community.

Issue 1:Representative of G.S.D.A. contributed by saying that there are some contradiction in the Ground Water Act 1993 and MWRRA Act. It was given to understand that

new GSDA Act is under finalization at the Govt. level. It is hoped that the new bill will reconcile contradiction. It was the view of the participants that the bill should be widely circulated, for the reactions of public and for necessary correction.

Issue 2: Some participants raised Issues about the equitable allocation of water, its costing and pricing. To this Mr. Limaye added the fourth dimension of watershed works. However it was made clear that the role of the Authority is limited to command area and does not cover this wider canvas, including the rain fed area.It was felt that ultimate goal should be to cover the entire population, in the long run for an equitable allocation of water in its real sense.

Issue 3: As regards the third issue, it was said that the laws related to IWRM have not been brought through the intervention of the aid agencies.

The Chairman MWRRA had already clarified in the earlier session that the participatory management now introduced is not necessarily a product of World Bank pressure, but this concept was already taken, from other countries, while formulating Water Policy of Maharashtra State.

Issue 4: It was made clear that MWRRA Act was enacted after having regional discussion with various stakeholders. The formulation of Water distribution/Users Association are expected to initiate the process of participation by the community in the decision making of equitable distribution, its economic use etc. The group agreed to the suggestions made by Shri. R.K. Patil in reply to his felicitation, emphasizing taking further items like cropping pattern, pre and post harvest activities, in co-ordination with Panchayat and Co-operatives.

Issue 5: The example of Kolvan Khore by Gomukh is a similar process initiated in Kolhapur district i.e. the Chikotra Project and similar other initiatives would help in a long way as a experience for up-scaling management pattern for river basin plans.

Issue 6: regarding area irrigated under command through surface irrigation and well irrigation were also raised, to which Shri. Sodal replied that irrigation by wells is also included in the command area.

Conclusion:

While summing up, the Chairman explained that the efforts of all these regulatory functions regarding social and economic activities including equitable distribution will ultimately lead us to the goal of formulation of an all-encompassing Water Code.

***Theme B*: Resolving water conflicts in river basin management**

Chairperson: Shri. Janakarajan, MIDS.

Initiator: Dr. K.J. Joy, Soppecom.

Rapporteur: Shri. Sudhir Bhogale.

Initiator: Shri. Joy presented his views elaborately.

Almost all participants expressed their views, comments, observations in Marathi, Hindi & English (this group had a major rural participation) important points that emerged during the two and half hour session are as below.

Issue1: Water Conflicts – It is an issue that has assumed importance in last 20-25 years, though, the history dates back to Gautam Buddha's time.

Increasing population, urbanization, declining per capita availability, competing uses of water in various sectors like agriculture, Industrial, domestic etc were discussed.

The following typical characteristics of water, which give rise to conflicts, were discussed.

- Bio physical
- Social
- Psychological aspects of water
- Water being an ecosystem resource
- It is common pool resource,
- Individual rationality Vs community rationality
- Water as a state subject and not on concurrent or Union Govt. list.
- Surface water is under Govt. or public domain
- Percentage or quantum of water used by the industries is comparatively small but their effluents damage the water quality substantially and hardly any regulatory mechanism is defacto functional.
- Within agriculture sector the tail Enders problems like poor management of distinct dams, displacement, privatization and tradable water rights were discussed and it was agreed by all that when a basic bottom line principal get violated conflict emerge.

How to resolve these Conflicts?

It was agreed upon by the participants:

- Accept conflicts with a positive mindset and as a challenge,
- More conflicts more discussion,
- More discussions more deliberations,

- More deliberations more clarity.

- Water literacy must increase at all levels right from politicians up to school children
- Equity and rightful share of water are the concepts that need to be defined sharply & scientifically.
- Should water be a subject on concurrent list is a debate and need to discuss is necessary.
- Stakeholders' involvement is essential to develop or evolve a mechanism; also legal position should be given to them.
- Access to reliable data for all stakeholders is required.
- Differential or graded tariff system for water.
- Guidance cell for WUA's started by WRD needs to be strengthened.
- There is total ignorance of water laws, among LAW practitioners; awareness should be increased among this fraternity.
- In case of International level water disputes, how will be the participatory approach work and what should be the modality
- Punishment for the water polluters through strict enforcement mechanism is necessary.

Theme C: Managing Floods through IRBM

Chairperson: Dr. S. Bhingare, Ex Director, WALMI.

Initiator: Shri. R.S. Gaikwad, Engineer MKVDC.

Rapporteur: Shri. Vinod Bodhankar, Jal Dindi.

Observations and recommendations made by the group:

- Level of preparedness regarding floods was very low.
- There was no master plan.
- No adequate warning system or drills.
- Dam discharges were not coordinated, or transparent within the public domain.

- The integrated monitoring of all reservoirs of the river basin must be done using latest IT and satellite imaging technologies.
- There should be models, which develop a range of contingency plans for a range of anticipated flooding scenarios.
- There should be an appropriate training to civic authorities so that the needed civic support is quickly forthcoming before, during and after floods.
- All agencies dealing with floods should have a common overview, which is updated at short intervals during and just before the time of flooding.
- The above changes/ responses should be initiated and institutionalized.
- Distinct and visible blue and red lines should physically mark the riverbed and flood levels.
- There should be a constant review and a monitoring of land use and watershed development patterns.
- There should be a strict monitoring of encroachments that block the river flow and which defy the DP.
- Action against an encroacher must be prompt and must make an example of the defaulter who encroaches into the riverbed limits, even if the encroacher is the government department itself.
- There must be a *suo motto* declaration and disclosure of the chain of events leading to a flooding where public interest is endangered. Else, we must use the right to information act to find the truth and to hold the persons accountable.
- Weirs and their seasonal planning of raising/ lowering their gates must be planned in integration and not case by case.
- Codes and guidelines for catchments area management and drainage related rules must be prepared under detailed consultation with stakeholders.
- For deciding accountability in the case of breach of law, the principle of subsidiary will guide which agency or department holds the culprit accountable and enforces the penalty or punishment.
- Assessment of modified reservoir capacity must be done at fixed periods.
- The reservoir operation schedule must be in public domain linked to other reservoir operation schedules in the basin.
- This should be developed on sound, objective principles discussed with stakeholders.
- There should be a control room for inter-departmental networking so that warning systems are in place and flood warnings are relayed to the population and to the rescue and response agencies in advance.

- There should be a partial utilization of floodwaters wherever possible by the use of gravity, sending excess water to dry regions.
- Coastal flooding is an issue accepted as one, which needs a deeper study to be made so that it is properly addressed.
- Management of solid waste disposal in the city should be enhanced, so that the area downstream is not polluted and weirs are not choked with plastics and papers.
- To prevent urban flooding, there should be strictly no encroachments on the river flow area or on natural drainage channels in the city.
- Adequate training in rescue work during floods must be imparted to specifically identified rescue agencies- whether government, NGO, or locals.
- This training should be renewed in annual workshops where different departments, NGOs, and citizens get trained through mock-ups of flood situations.
- The best life saving equipments must be made available and kept in a state of readiness.
- Community leaders who have established networks of communication with people/masses must be networked into the flood warning system to ensure a quick mass-alertness to all kinds of emergencies during floods.
- Such community leaders are likely to keep trained volunteers ready for responding to floods with rescue efforts as well as providing shelter and food to affected population to supplement government efforts.

Conclusions:

On the whole, Government, NGOs, and citizens in the river basin should respond as though they are an organism where the parts are in a *Sarva Anga Sahayog*- a comprehensively sensitive, alert and convergent response, which we may then rightly say is- utilizing integrated river basin management for managing floods and flood situations.

Day II-11 April 2007

The day started with the summing up of the previous day's thematic sessions. It was done by the rapporteurs of the respective sessions.

This was followed by a brief presentation of the Kolvan valley watershed management and Bhima Basin Integrated Management Plan by Gomukh Trust. Shri. Sunil Waman, Executive Director, Gomukh Trust. He elaborated the process and also talked about the benefits of integrated river basin management at Kolvan valley in Pune. On the lines of the Kolvan valley experience, Gomukh Trust has prepared Bhima Basin Management Plan through participation of various stakeholders in that basin.

For this a series of basin level multi stakeholder conferences were organized which fed into the process of plan preparation.

After this session, a short presentation for flood management and mitigation for the Pune city was made Shri. Vijay Kumar Ghogare, Executive/ Chief engineer, Irrigation Department, Pune. The main target areas were conservation of the river channel and respecting the right of way of the river. In light of the recent developments of the PMC, wherein a road is planned in the riverbed, this was an important presentation and a stand taken by the Irrigation Department.

The conference was divided again into thematic discussions for the day.

Theme D: Ground Water Management in IRBM

Chairperson: Dr. Mukundrao Ghare, AFARM.

Initiator: Dr. Himanshu Kulkarni, AQWADAM.

Rapporteur: Dr. Shashank Deshpande, GSDA.

Observations and recommendations made by the group:

Mr.Kulkarni initiated the session with a presentation on the issues concerning ground water management. Later, the various issues outlined in the workshop were discussed.

- The group unanimously agreed that an integrated method of monitoring and enforcement should be developed for the management of ground water resources that involved both law enforcement and community measures.
- It was recommended that stringent rules should be developed to guard against misuse of ground water.
- However, due to the difficulty of measuring ground water availability, community managed systems may be difficult to implement.
- For community-managed systems to be efficient, it must be acknowledged that surface and ground water is a single entity. Such examples are existing, e.g. the *phad* system.
- These need to be institutionalized and legal status should be given to such unwritten rules.
- It is essential to acquire sufficient data on the capacity and status of each aquifer.
- If data of the 2, 00,000+ bore wells in Maharashtra is gathered, then a fairly accurate picture of the rock strata and water availability can be generated.
- Guidelines are available for the estimation of ground water resources.
- Information will empower the community to make decisions on issues that involve them e.g. the people's uprising against Coca Cola in Kerala.
- According to government, users are industry, agriculture and domestic sectors.
- However, stakeholders recognize various classes of users such as landless, subsistence farmers, cash croppers, various industries, etc.
- This reflects a disparity in views and needs to be addressed.
- Climate change is bringing about several changes in the environment.
- However, our policies do not acknowledge even 'normal' climactic variability.
- Norms for water consumption have been established, but are often controversial. The MWRRA places no restrictions on the excavation of wells.
- Thus, the user is only charged for the water supplied through canals, etc and not for the water used.
- This is a serious shortcoming of the existing laws. As of now, there is no sufficient legal backing to monitor groundwater, as it is considered a private issue.
- If ground water is the private asset of the landowner, then why is it not applicable to other assets such as oil and minerals?
- Soil moisture might be the private asset of the landholder, but this should not apply to water in aquifers.
- Ground water should be recognized as a common property resource.
- If ground water can be quantified, then are water entitlements also applicable to ground water? If so, water entitlements are irrespective of ownership of bores.

- If the water availability of a particular reservoir is known, then the water available for use is constant irrespective of the number of wells in that aquifer.
- A specific discussion needs to be held around the draft bill for ground water management.
- With volumetric management of water, a tax may be levied for excessive use, the proceeds of which can be used for recharge of aquifers through watershed management.

<u>Theme E:</u> Allocating Water for Nature through IRBM

Chairperson: Dr. Prakash Gole, Ecological Society
Initiator: Ms. Parineeta Dandekar, Gomukh Trust
Rapporteur: Mr. Pramod Pokharkar, Gomukh Trust
Observations and recommendations made by the group:

The session was opened by Dr. Gole wherein he stated a *sukta* from Upanishad which says: Water falls in 12 parts, 6 should go back to the sea, 4 should be kept aside for animals and 2 should be used by human beings. Thus he introduced the house to the concept of strong sustainability. He further stated that technological measures like sewage treatment; flow monitoring and release from dams, etc are an example of weak sustainability. Are we ready to accept strong sustainability?

Ms. Parineeta Dandekar initiated the session with an introduction to the current problem of closing basins, water conflicts and degrading environment.

- The discussion then went on to the term water for nature as against environmental flows. It was felt and accepted that environmental flow was a more apt word as it emphasizes the 'flow'.

- Discussions then went on to perennial and seasonal rivers.
- Some believed that most of the peninsular rivers are seasonal, while some participants felt that most of the rivers were originally perennial, but were made seasonal through human interference.
- It was felt by some that the current socio economic model is the culprit and the problems can be solved, only through a non-consumerist society.
- Dr. Bhingare stated that the main problem was the low dependability of dams because which dams hardly overflow, this has affected the life downstream.
- Dr. Gole said that there are problem with dams releases too, that water released is poor in oxygen content and will not be able to support life.
- Ms. Mrinalinee Vanarase introduced the *Nirmal Ganga Abhiyan,* which involved rejuvenation of streams in villages through people's active participation.
- Ms. Parineeta Dandekar put forth the report on water allocation for Indian River systems, which states that if we want to maintain Krishna in Class A category, we will have to allocate 60% of the MAR (mean annual runoff) in the river. (For Class B: 40% of the MAR and so on).
- The discussion then went on to the practical measures that can be taken to manage watershed and rivers.
- The basic point here was to start from the origin of the river and to protect the origins through catchment's management, stream rejuvenation, corridor management, etc.
- This should be followed by urban water management efforts like wise water use, recycling and reuse of water, etc
- Dr. Chitale commented that we should learn from the river systems themselves and also look at the effluent or the influent character of the river basin to allocate environmental flows.

Conclusions;

It was proposed and accepted that the house will lobby for definite entitlements for environmental flows through the MWRRA

<u>Theme F</u>: Urban Issues in River Basin Management

Chairperson: Shri. Vivek Kharwadkar, Pune Municipal Corporation.

Initiator: Shri. Vishwanath, Arghyam, Banglore.

Rapporteur: Shri. Vinod Bodhankar, Jal Dindi, Pune.

Observations and recommendations made by the group:

Mainly two major stakeholders rural and urban were considered here.

1. In case of the urban stakeholders:
    - Adopting the Chennai pattern of roof water harvesting and such varied initiatives was suggested.

- In case of Bangalore to empower the poor section and give them access to fair share of water a connection is given to each family, which applies (irrespective of whether in authorized housing) thereby creating a just demand from a usually neglected section of the population.
- The significance of water meters and 100 percent installation of these were considered a reason for Bangalore equitable water distribution success
- Preserving the historical heritage tanks, bunds, aqueducts, lakes will alone show us that we are reversing the results of urbanization and winning the struggle to get back a Healthy Water Balance

2. In case of the rural stakeholders:
   - They have the least water supply
   - They are at the downstream and receiving end of pollution too often
   - They have no vocal representatives or pressure groups
   - It becomes the task of those who want to pioneer Dynamic Water Balancing in the River Basin Region to make sure that the Rural Stakeholder is educated and mentored about his rights and responsibilities.