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**INTER-STATE WATER SHARING:  
CAULDRON OF RIVER MAHADAYI**

**Proceedings of a Panel Discussion on  
Kalasa Banduri Project**

**Compiled by  
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## **Acknowledgement**

A panel discussion on different dimensions of Mahadayi river was organized at CMDR on 16<sup>th</sup> September 2015. It was aimed at to take a holistic view on the use , abuse and position of the river, from geographical, scientific, social, economic, historical and ecological angles.

CMDR sincerely thanks all the Panelists for their valuable views / suggestions on this issue. The panelists were joined by other experts who also participated in the discussion. Faculty members of Karnatak University, Social Activists, Representatives from Print and Electronic Media did share their views during the discussion. We sincerely thank them for their active participation.

Mr.Mukund Kallapur deserves special thanks for reproducing the recorded version of the discussion during the event into a text form. Mr.B.P.Bagalkot and Dr.D.R.Revankar provided useful inputs in collating the stream of thoughts in the right order.

All faculty and staff members of CMDR  
deserve thanks for organizing the event  
successfully.

**Director**

**Panelists :**

**Dr. T.V. Ramachandra** ,Indian Institute of Science, Bangalore;

**Shri Subhash Gumaste**, Ex – Country Director, World Neighbors, USA, Dharwad;

**Shri Hemant Panchal**, Social Activist;

**Dr. Chidananda Reddy S.Patil**, Director of Law School, Karnataka State Law University, Hubli;

**Shri Shankarappa R. Ambali**, Secretary, Raita Sena Karnataka, Narangund;

**Shri A.R.Kusugal**, Executive Engineer, Kalasa Division, Khanapur; **Shri Basavaraj Hongal**, Deputy Chief Reporter, Udayavani, Dharwad

**Other Distinguished Guests :**

**Prof.P.R.Panchamukhi**, Professor Emeritus & Chairman, CMDR

**Dr.G.K.Kadekodi**, Honorary Professor and Member, Governing Council, CMDR

**Prof.T.R.Subramanya**, Vice-Chancellor, Karnataka State Law University, Hubli

# **INTER-STATE WATER SHARING: CAULDRON OF RIVER MAHADAYI**

## **Proceedings of a Panel Discussion on Kalasa Banduri Project**

### **Preamble**

Among the many, the objectives of CMDR have a deep rooted concern for the development issues that have a bearing on the regional economy of North Karnataka. In this background the Institute did respond to the massive agitation spearheaded by the farming community of Naragund and Navalgund region on receiving their legitimate share of water based on riparian rights from Mahadai river. For several years the agitation has been on, and the present round of agitation had entered its decisive phase. People from all over the state representing different walks of life have supported this noble cause. Farmers have been pushing their agitation through road blocks and staging *Dharna* in different pockets of the state. We at CMDR thought that it is the opportune time to discuss different issues thread bear relating to this inter-state water sharing dispute. In this background Scientists, Social Scientists, Government officials, Farmers, Social Activists, Legal experts and other stake holders were invited to participate in the panel discussion on the Kalasa Banduri project which draws water from river Mahadayi. This river flows in three states namely Maharashtra, Karnataka and Goa before running into Arabian sea. The following text has been reproduced based on the views of some experts during a panel discussion that took place on 16th September 2015 in the premises of CMDR.

The panelists were invited to provide their considered views based on their academic discipline or work experience on the management of river water resources in general, and on sharing Mahadayi river between Karnataka, Maharashtra and Goa states, in particular.

**A.R. Kusagal, Superintending Engineer, Kalasa Division, Khanapur**

I would like to provide some technical and hydrological information on this issue under discussion. Everyone is aware of the burning issue of Kalasa-Banduri. I would speak about the diversion of Mahadayi/ Kalasa-Banduri river water to the Malaprabha river. Mahadayi takes its birth in Devgaon village, flows in Karnataka initially and enters Goa and finally joins the sea in Panaji. Catchment area of this river is 375 Sq km in Karnataka, 1580 Sq km in Goa and 77 Sq km in Maharashtra. Kalasa and Banduri are the tributaries of Mahadayi, and there are about 19 tributaries to Mahadayi river. Among them few are born in Karnataka and join Mahadayi and some others do take birth in Karnataka and join Mahadayi in Goa. There are some other tributaries which take birth in Goa and finally join Mahadyee in Goa. Kalasa and Banduri tributaries take birth in Kanakumbi and get separated after some distance.

The water quantity in Malaprabha was earlier 44 TMC which has now been reduced to 27 TMC. With this kind of yield it would be difficult to provide drinking water to Hubli-Dharwad and adjoining regions. Now there is a move to meet out this short fall while lifting water from river Mahadayi. In order to do so the state of Karnataka initiated project to draw water from Mahadayi. Central Government also permitted this initiative. However, Govt. of Goa raised objection to this issue and from that point onwards the project has been kept in abeyance, but the order of the Govt. of India still holds good.

With an intention to get water after the judicial process is over, the Govt. of Karnataka initiated the civil works in 2006 which would facilitate joining of water from Mahadayi to Malaprabha. As part of this, canal work of a length 5.1 km was started. Major portion of the work is complete irrespective of the difficulties posed by the local terrain. Initially the local people also resisted on account of evacuation of temples and other structures. After we get green signal from the Central Government in the forest area our real task begins. We would construct the dam at Kalasa and river water from this reservoir would be taken to Malaprabha river. Diversion canal is complete in this regard. Before this, two canals would be constructed at Haldar, which would provide water to Surla Canal and from this, water would be supplied to

Kalasa dam. Presently people of Goa think that such activities from the side of Karnataka would reduce the supply of water to Goa. I would say this is a misconception. This is because Mahadyee has a steep fall (1 : 175). Central Water Commission has opined that Mahadayi yield at 75% dependability would yield 199.6 TMC water. Out of this our legal share would be 44 TMC. Goa has now approached the Court saying that the estimation of Central Water Commission is wrong. They have argued that Karnataka cannot have a share of 44 TMC. It would be much less than this and construction of dam would reduce the water flow to Goa. Our inter connection canal has the steepness of 1 : 2000 which means it is 12 times higher than Mahadayi. Still then, we take just as much water as we need and leave the extra water in the river itself. There is no question of accessing extra water in this regard. The arguments by Goans also say that their Flora and Fauna would be affected on account of our activities. This is not true because we would draw the water during rainy season which should not affect them at all.

Like the Kalasa canal the Banduri canal also joins Mahadayi which has the length of 6 km. No work has been done in Banduri area as the whole area is part of the forest cover. Permission from Ministry of Environment and Forests, Govt. of India is required to initiate work in this region. On account of this we will not be able to get 4 TMC water from this canal. After we complete the Kotni dam we would be able to initiate Mahadayi hydraulic power plant which would also provide 7 TMC water to Ramdurga, Bailhongal and Savadatti. We also need to include these issues to the Tribunal before the verdict is announced. We need to get our due share of 44 TMC from Mahadayi tribunal.

In summary, I would like to stress that Karnataka's share of 44 TMC is legitimate and is feasible to divert part of Mahadayi river to join the Malaprabha river.

**Dr.Chidananda Reddy S.Patil, Director, Law School, Karnataka State Law University, Navanagar, Hubli**

I wish to place some legal views on this river sharing question. We need to make a beginning right from the provisions of our constitution. Out of all the fundamental rights, right to life and right to liberty of individuals are predominant in nature. Next would be right to water, right to decent environment, right to education and right to shelter. Thus all such rights are part and parcel of life and personal liberty. The Supreme Court has pronounced judgements on these issues on several occasions. In this regard, we must take cognizance of the opportunities for individuals to lead life with base level facilities. In this regard, the issue of drinking water has been examined by the Supreme Court on many occasions and it has pronounced directions in this regard as well. In 1996 the Supreme Court has given the following directions to the scientific community.

- How can one convert the salt water of the sea into potable water?
- How can we use the Himalayan Ice for drinking purpose?
- How can we conserve the rain water for the benefit of the people at large?
- How can we effectively use the flood water?
- What are the ideal methods of effective water management?

In the present day context, we can observe agitations for water sharing; and Supreme Court has clearly indicated that some people are facing acute water shortage which is a cause of concern. The shortage of water would definitely affect the standard of living of the people. At the very basic level, the primary purpose of water is to serve the drinking needs of the population. If anybody says that water of a river is not available for drinking for any set of population, then it is to be considered as a very strange fact. The Supreme Court has expressed its view that we are facing a situation where we are denying legitimate access to water for some sections of the society. Thus, shortage of water is now affecting the living standards of our people. The National Water Policy also says that drinking should get the top priority. It also says that right to life includes provision of source of water where there is no such source. The people who framed constitution for our federal state created Inter-State River Water Tribunal



to avoid disputes among states for distribution of water resources. Interstate River Water Distribution Act 1956 was passed by the Parliament to address inter-state river water sharing issues. This act has provisions for water usage, distribution and regulation whenever such issues are not settled by the states themselves. The disputes would appear before the tribunal whose decision would be binding on the parties concerned. There is also a provision for creating River Board under the River Board Act of 1956. Union Government can create this board with or without the request of the states. Such Boards can oversee and advise the government with regard to regulation or development of rivers flowing across different states or river valleys. Unfortunately, till today no such river boards are created in our country. This only shows that though there are useful provisions in the Constitution, we have not used them for solving real world problems.

If we now come to the Mahadayi issue, we need to understand the issues with regard to interstate river disputes. For example, the states of Tamil Nadu, Kerala and Karnataka have been fighting over the Kaveri water for a long time. In the past there were agreements among different kings of the states and there are refinements in such agreements in the present day context as well. Whenever the issue of water sharing arises we need to honor such agreements. If a new government in any state does not recognize the agreement made by the previous government, then the issue becomes much more complicated. In 1989, Goa and Karnataka agreed and signed an MoU which states that a dam be constructed on river Mahadayi and Goa will get the electricity and Karnataka will get 44 TMC water. But the things did not go according to this MoU and Goa started raising its objections. Then, the state of Karnataka requested for 9 or 7.5 TMC of water which was supported by Central Water Commission as well. The Union Government asked the Karnataka State to get clearance from Ministry of Environment and Forests to initiate this construction work relating to this project. In order to speed up the dam construction, Karnataka State started civil works in the non-forest area and has completed about 75% of the work.

Actually, what is required in this project is joining of tributaries of Mahadayi, and this is not an issue of Inter-State River Water Sharing at all. These tributaries are born in Karnataka and join

Mahadayi in Karnataka itself and we are constructing a canal to fetch water from such tributaries. So there is no question of inter-state water sharing in this regard. But on account of objections raised by Goa, the water tribunal has been constituted now. If one looks at the usage of water from this river in Karnataka and Goa, one understands that Goans use this for transportation while Karnataka uses the water for drinking. In this background, we need to account region wise priorities. For this it is necessary to bring all such stake holders in one place and hold constructed discussions.

**Prof. Gumaste, former Director, World Neighbors, USA**

After the reorganization of Karnataka state there seems to be a benefit as far as language and culture of the state are concerned. However, our fight for land and water is unabated. As per my information collected from different sources, about 52% of the water from the river is located in Karnataka but still we do not get drinking water from the same. The same information also tells us that we require about 7 TMC of water for drinking but at the same time about 200 TMC of water enters into the sea through Goa. Though there is an argument that provision of water for Karnataka may affect eco system, I do not find any steam in such arguments. As an Ecologist, I have moved around different countries wherein I have examined such issues in countries like Nepal, Kenya, Uganda, Philippines, Indonesia and Latin America. Diversion of such 7 TMC of water to Karnataka may not have any effect on the ecological balance.

The Inter-State Water Distribution Act was passed in 1956 that means 60 years have passed in this regard. There are lots of changes which have occurred from that point of time. The population in India has increased from 40 crores to 120 crores. In Karnataka also both human and animal population have increased significantly. On account of sub division and fragmentation, the size of land holdings has decreased considerably and we find lot many marginal and small farmers in the present day context, who are the main affected people. This forces agriculturists to opt for intensive cultivation. Mahadayi water would be useful both for

intensive agriculture and for drinking purpose. In the background of lot many farmers committing suicides, the Mahadayi water may prove to be a boon for the farming community.

We need to address paucity of water on the one hand and frequent floods occurring on account of certain rivers on the other. Joining of rivers would prove to be a via-media which can solve both these problems in country. In any case, diverting just about 7 TMC out of 200 TMC of water that runs in to the sea is not any major question.

**Shri Shankarappa R.Ambali, Secretary, Karnataka Raita Sena**

First of all, I very much appreciate CMDR for organizing this event which focuses on Mahadayi water sharing between Karnataka and Goa. Our organization has initiated the fight for Mahadayi water from July 16, 2015. This fight has spread across the state and various organizations have supported this noble cause. From 2002 onwards, Kalasa Banduri project has been initiated in the state. Prior to this, it was known as Mahadayi project which was first discussed in the Karnataka Legislature Assembly on 16.2.1996 by Shri P.M.Horakeri, the then MLA of Guledgud. He also mentioned during that time that the capacity of the Malaprabha reservoir should be 42 TMC. The actual capacity of the Malaprabha Dam when completed in 1972-73 was 37.22 TMC. But in actual practice, the real storage capacity is 22 TMC. The judges from the Mahadayi Tribunal who visited the site did raise this issue to the experts. They were curious to know why such a short fall in storage capacity occurred was it because of mis-management? There is no satisfactory reply to such an issue. Judges visited all three states and met at Bangalore to discuss the same issue. I have a note which was prepared as proceeding of the said meeting.

With regard to ecological protection, I raise a fundamental issue and that is the survival of humans on this earth. If people survive then they can think of environment. If the environmentalists say that let people die and we will protect trees and animals it may not augur well for us. The state of Goa argues that in the downstream area, wild life, eco system may suffer on account of diversion of water to Malaprabha. We feel this is a wrong assumption

because we are not diverting all the water. We would be using a very minute portion of the total which would serve the cause of social justice as well. We must also take note of the CWC awards to the extent of 45 TMC. We cannot fully utilize this and divert such huge quantity of water to Malaprabha because the height of the Mahadayi River is lower than the height of Malaprabha river. This is a major hurdle in diverting such huge water and may not be possible as well. At present, Government of Karnataka has placed a demand for 36.55 TMC of water and it may require about 30 years to actually utilize such a quantity.

Kalasa Banduri project was initiated in 2002 and at that time Central Government gave its clearance in principle. But after that many bottlenecks appeared on the scene and the case has been pending in Supreme Court as well in the Tribunal. The long legal battle has occurred on account of many reasons. This long drawn fight has its negative externalities on the farming community as well as on the regional economy. I kindly request the legal experts and technocrats to find a long lasting solution to this issue. Farmers have been fighting for this in a legal framework and within the boundaries of the Constitution. In many cases, there are examples of mediation by the President to solve such conflicts. In this background, I feel that there is a need for strong political will to have lasting solutions for such issues.

As the demand is for drinking water and there is a lot of stock of water in Mahadayi, one of the Judges who visited the area felt that the issue needs to be settled at the earliest. If the technocrats of the region suggest us a suitable way out, farmers are ready to contribute for the effective completion of the project. One should appreciate farmers who are fighting for the constitutional rights.

Judges who visited the area felt that there is a stock of 10 TMC water as against the request of 7 TMC. For the Hubli-Dharwad twin city the drinking water requirement is 0.216TMC. Now we need to settle such issues by bifurcating the water requirements for agriculture and drinking separately. According to the water policy, first priority has to be given to requirements of drinking water followed by agriculture. The Government has asked 7.50TMC water for drinking out of 20 TMC, the rest would be for Hydro Power Project. This only means that Government has not demanded any water for agriculture. In this way Government is lying

as well as hiding the truth in front of the farming community. Laws of this country have provisions for supply of water for agriculture as well. So the argument that the water cannot be provided to agriculture does not carry any weight.

Till today within the Kalasa Banduri Project only the Kalasa canal has been taken up and Banduri still needs attention. From the Kalasa canal about 3.56TMC of water can be obtained and length of the canal is 5.1km. In the year 2006 the work relating to Kalasa canal was initiated and was completed in 2015. That means Government has taken nearly 10 years to construct a canal of 5.1 km. This has implications for cost of construction. Out of the total works under Kalasa Banduri only 5% is completed and rest is not completed. We request Irrigation Department to give explanation for the same.

Government of Karnataka has not seriously taken up the legal battle with Government of Goa in this regard. There are many conflicts within the state which need to be settled for the effective realization of water supply from Mahadayi river. The Raita Sena is fighting all these issues. Though Tribunal was established in 2010 there was no effective transaction on the issue up to 2012. In the year 2013 a PIL was also submitted in the Supreme Court on the issue by the Raita Sena. This aspect has pushed the functioning of the Tribunal and on account of this they have withdrawn PIL. Till now the Tribunal has discussed 77 subjects relating to the claims by the three states. All the states have submitted their objections and now is the time to produce evidence. We need to examine whether Govt. of Karnataka should submit an interim application or not before the Tribunal by the end of September 2016. We need to investigate advantages and disadvantages on account of this. Raita Sena members are discussing such issues with people's representatives and ministers. The need of the hour is to take a holistic view about the water of Mahadayi river and the Kalasa Banduri is a small fraction of the whole issue.

### **Shri Basavaraj Hongal, Journalist**

I have been writing on this issue in Kannada Daily 'Udayavani' for the past 18 days. I visited select villages and discussed with farmers on this burning issue of Kalasa Banduri and my experience was an eye opener not only for me but for the larger society as well. I did try to address 3 questions in this regard.

- What is the nature of the problem ?
- What is the root cause of the problem ?
- What could be the possible solution ?

A farmer near Ron informed that though canal has arrived in this village river Malaprabha is still evading and probably he feels that his grandson may receive the water from the river. This only brings out the fact that Government has been lying and promising wrong picture to the farmers. Another farmer in a different village informed me that people who constructed the canal are no more alive but we are patiently waiting to see the water in the canal. In other villages which are to be benefitted by this project, farmers are waiting and waiting to see water flow into their villages which still has remained a dream.

Some of the progressive farmers did talk about an agreement between Sri Pratap Sing Rane the then Chief Minister of Maharashtra and Sri S.R. Bommai, the then Chief Minister of Karnataka in 1989. As per this agreement electricity was to be taken up by Maharashtra and water for Karnataka. Farmers ask the question as to why this agreement was not implemented for the benefit of farming community. Nobody knows the reasons for this. I feel that politicians for their vested interest are using this opportunity for their political mileage.

Most of the canals constructed have become useless today and if at all the project enters the state in reality we need to reconstruct the canals. We also need to look for alternatives with regard to water. A rivulet (Benni Halla) flowing in the region of North Karnataka carries 22TMC of water. There is a need to plan and utilize such water resources instead of fighting for a mirage. Check dams across such rivulet can supply water to agricultural fields through jack wells. This would reduce the burden on Malaprabha water. Thus there is a

need to tap and conserve locally available water resources which can contribute a lot for the agriculture of this region. Educating farming community is also important in this regard.

**Shri Hemant Panchal, Social Activist, Nargund**

Being involved in the agitation and PIL activities on the Kalasa Banduri water sharing issues let me say that we have reached an important and crucial stage. Most part of the agitation is taken over by local political leaders who are busy in the blame game. History of Malaprabha region should be understood first. We need to learn a lot from Chalukya and Belavadi dynasties which ruled for more than 1200 years. The focus of their administration was to provide funding for land developing, water supply, forest, religious places and the like. Most of the provincial kings of this region have also provided civic amenities in the same passion.

The present agitation has a long history and we were all part of such agitation and we have been jailed for participating in such activities. Right from the beginning Government is making false promises to the farmers. Accordingly farmers thought that all their problems would be over and they need not have to face the difficulty of migrating to other places once water would flow into their villages. After collecting the necessary facts I had approached the High Court on this issue. The High Court placed the matter under the Green Bench. The court examined the issue and I was astonished to know that such a long time has lapsed in settling this issue. In this regard they also appointed a Committee to look into the matter. The Committee visited the area and discussed with farmers the possible breadth and length of irrigation area on account of this project. Taking into account all permutations and combinations the High Court passed a judgment stating that both Ghataprabha and Malaprabha projects need to be re-hauled and re-modified according to the wishes of the farmers. The High Court also made subsequent judgment which calls for improvements in administrative capacities.

We have done some homework with regard to augmenting water resources in the region and the ways and means of doing it. The scientific data and information should be visited again and again. We feel that instead of canals it would be better to supply water by pipes. Similarly there is a need to conserve waters from different rivulets which can enhance the water base. Major irrigation projects should be revisited and be fully discussed and reheard from the farmers.

As far as Mahadayi and Malaprabha water sharing is concerned the Government should establish a High Power Commission consisting of 8 experts. This is because we need to keep alive the Mahadayi river, the Malaprabha river as well as the eco system of Goa. Such experts may include ecologists, people well versed with forest protection and environmentalists. Looking to the unique terrain of the region we need to involve Geologists also in conserving the water effectively.

Though our region is considered to be the third as far as rain fall in the country is concerned we have not been utilizing the full potential for the benefit of the people. Many Governments have ruled for the past 40 years but no one has paid serious attention to this issue. It is not proper to concentrate only on Kalasa Banduri but a larger view of Malaprabha and Mahadayi needs to be taken up for the benefit of the region. This can happen only if a High Power Commission is created. It could consist of experts from ecology, environment, meteorology, irrigation, geology, remote sensing, agriculture and socio-economics. Gauging of water in river is difficult task which needs to be addressed systematically. Such scientific gauging would be the basis for the decision of the tribunal. Thus this issue needs to be taken up with involvement of technocrats. We may also use GPRS technology in this regard.



**Dr. T.V. Ramachandra, Faculty, Environmental Sciences, Indian Institute of Science (IISc), Bengaluru**

I want to speak about the scientific approach to the river water resource management. We at IISc have been working on the issue of interstate water sharing for the past twenty five years especially in the districts of Uttara Kannada and Dakshina Kannada. I would like to share our experiences in this regard. Everybody is now concerned with protection of environment. There is an argument which proposes that we need to retain part of the basin water in the river which is required to protect the environment and we can use the surplus water for human needs. How and in what manner this proportion be arrived needs to be worked out, as been attempted by us on several occasions. Our results have shown that wherever there is a good green cover in the catchment area the stream network is healthy and abundant. The same stream network is spoiled wherever we have destroyed the forests. This only brings out the positive correlation between forest cover and healthy stream network, and this relationship has been proved in many of our studies.

Take the case of Sharavati river, which is 128 Kms long. and we divided the land across the river as belonging to East and West sides. In the east side the forest cover is about 45 % and the rainfall is about 1700mm to 1800 mm. About 100 years back in the same region, the rainfall was 3500 to 4500mm. On the west side the forest cover is about 65 % and the resultant rainfall is between 4500 to 4600 mm. Thus our study has established the strong link between forests and quantum of water in the rivers. We have also studied the flow and presence of water in the rivulets. If the water is available in all the 12 months, that would fall under 'A' category, category 'B' will have water for 9 months, 'C' 6 months and in 'D' category one can find water during rainy season only. Our investigation for 18 months in the region has revealed that where there is water for 12 months there the forest is healthy and green. This also supports the argument that we can find perennial water in the river if there is thick cover of forest around. Our study has also proved the relationship between micro climate and forests which in turn influences the availability of water. Wherever there is forest cover, the amount of silt

formation is also low and the absence of this has led to formation of silt as in the case of the Malaprabha region. This has reduced the storage capacity of the reservoir in this basin.

We have also studied the accumulation of water on account of rains. How much rain occurs in a region and in what spots water gets accumulation has also been examined by us in Uttara Kannada district. In turn, we have also examined how much water flows in rivulets in different months of the year and what is the demand for water for drinking, agriculture and animals. Such demand estimation has been made for each village. Thus, the demand and supply of water across villages have been attempted by our study. The hydrological status when examined revealed again that wherever there is thick forest cover the water availability is plenty and vice versa.

Now there is a move to join river Mahadayi to river Malaprabha so that drinking water needs of Hubli-Dharwad, Belgaum and other adjoining regions can be met. Malaprabha project got completed in 1974. From that time onwards there is considerable change in the catchment area of the river. The obvious fact is that green cover has declined, which has resulted in reduction of rains and ultimately availability of water in the river.

The mistake that was committed after the completion of this project was that farmers resorted to wrong cropping patterns. They started growing commercial crops, especially sugarcane which increased the demand for water. Formation of silt on account of scanty forest cover also reduced the storage capacity of the reservoir. As the supply has drastically decreased we are now talking about diversion of water from Mahadayi to Malaprabha river. But I feel this would not help us in the long run unless we take up initiatives such as enlarging the forest cover, watershed management and the like. I am really surprised why government is not improving the conditions of catchment areas.

Likewise, instead of seeking water to Kolar and Chikkaballpur from Yettinahole project it would be better to enhance water availability locally through improving the ponds and other water conservation measures. In the past 30-35 years, most of the ponds were destroyed in Kolar which has resulted in the current crises there. This has been accentuated by destruction of forests and floriculture. As this region is dry land one can grow Jawar, Millet and Navane.

Instead, the demand for water in agriculture has increased in this region because farmers are growing sugarcane and cut flowers. Incidentally the supply of water has not increased in tune with increased demand. Coupled with this, formation of silt in the ponds has also reduced the storage capacity of these ponds. In this region there is a problem of fluoride in pond water. Unless and until there are efforts to increase the water table and manage ponds scientifically we cannot do away with problems of water shortage. One can deal with problems of fluoride and arsenic elements by effective management of catchment areas. Thus, our study also shows that whenever farmers take up commercial crops the risk of suicides is high on account of such inherent water related problems.

In summary, I can say that scientific approach to protect catchment areas, increasing forest and grassland covers, adopting appropriate cropping pattern consistent with soil characteristics and finally, opting for systematic silt management in the reservoirs and ponds can provide some good sensible solutions to water scarcity problems, and not simply harping on river diversions as the ultimate solution.

**Prof.T.R.Subramanya, Vice-Chancellor, Karnataka State Law University, Hubli**

Whenever an issue of Inter-state water sharing is at stake, there is a need for prognostic or futuristic studies need to act as a base for arriving at a amicable settlement. In order to do so, there is a need to have a scientifically evolved database on various parameters relating to inter-state disputes of water sharing. With changing population scenario, referring to agriculture, we have neither surplus lands nor institutions to manage them better.

Inter-linking of rivers is the only solution at this stage. International Court of Justice has dealt with such issues in the past, as in the case of river Danube.

In this background the projected populations over the next fifty years would be wise to be considered as to protect the interest of concerned states. In all such interstate or interregional disputes, most important it to recognize the principles of natural justice with equitable sharing for both upstream and downstream populations that need to be built into the

framework. The basic fact of right to drinking water must be honoured. Efficiency of water use is also an important parameter, which deserves attention for optimal use of this scarce resource.

**Dr. Lohit D. Naikar, Professor of Law**

River Boards Act was passed in the year 1956, but it seems no such attempt has been experimented till today. That there is a need to utilize provisions of such acts for settlement of trans-boundary river issues. The Riparian rights have not been brought forward at all and one needs to use such provisions in the law to settle inter-state water disputes.

Four decades of struggle has not reached a logical conclusion, which has culminated in the present agitation by farmers and people at large, for availing water from Mahadayi River. False promises have really shattered the dreams of farming community as well as that of the common man. Thus, the need has come to set a deadline for availing water from this river.

**Prof.P.R.Panchamukhi, Professor Emeritus & Chairman, CMDR**

Making his observations on the panel discussion, he reminded the role of institutional mechanisms such as community participation in decision making on such contextual issues. He pointed out that there is a need to have farmer to farmer contacts and people to people contacts in this regard. Such meetings would be really productive and can be useful in settling such disputes more amicably than placing the issues in courts of law.

He also described river Mahadayi as *Mahaatai* (the mother of all) *Jeeanam* in Sanskrit means that such rivers are - life line for all living beings, humans, animals and plants etc. Hence there is a need to have a holistic view while discussing the issue of water and water disputes.

**Dr.G.K.Kadekodi, Honorary Professor and Member, Governing Council, CMDR**

Let me begin my observations on this issue, widely referring to river water disputes and arriving at amicable solutions in the context of water resource development in general. Also, I would like to remember and pay tributes to Dr. Ramaswamy R Iyer, Padmashree, doyen of Indian River water systems, who died in September 2015, just few days ago. Had he been alive today, he would have been the most knowledgeable person to guide, as he had done with Satlaj river dispute settlement via Simla Agreement and so on.

To begin with, I would say that the need to protect the eco system in both the states is a must, as the river runs through the rich western ghats, one of the 34 biodiversity hot spots of the world. This also demands to have a systematic and evidence based data base to arrive at conclusions for the benefit of flora and fauna of the concerned states. This exercise needs to be repeated from time to time. If the ecosystem is well protected, it in turn protects human and animal lives; but not necessarily the other way round.

I am of the opinion that it is our first responsibility to protect and improve the catchment area through forestation. This would substantially enhance the quantity and quality of water in the river basin. This was found out based on empirical studies which have shown that wherever the forest cover is high, stream network is also good and healthy. High sedimentation would result on account of lack of forest cover. This would aggravate the supply of water against the ever increasing demand for it. Thus, the need for basin level studies was also recommended in this regard.

Second, it is necessary to prioritise drinking water requirement as a priority. National Water Policy of the Government of India recognizes water for drinking and sanitation as the pre-emptive needs. In that context, the demands on Kalasa-Banduri canals to link Mahadayi to Malaprabha river is legitimate.

Third, interstate disputes are never easy to resolve. Lack of political will hinders the process. As suggested by Dr. Chidananda Patil, an ombudsman type Board be established for this dispute under the provisions of River Board Act of 1956. Finally, people should be educated

on the use and abuse of water; short of these, all efforts through agitations will go waste in the long run.

## **Outcomes**

The discussion raised both short term and long term issues pertaining to the Mahadayi river. There is no short cut to revisiting the data and information about the carrying capacity of the river- for its irrigation, drinking water, wildlife support and transport uses. Use of modern methods such as GPRS and ground truthing are necessary to apply now. The principle of natural justice should be employed to protect both the upper and lower catchments of the river, while prioritizing drinking water supply as a priority. Finally, the discussion concluded with a hope that the present agitation would come to an end by seeking water from River Mahadayi for the districts of this region both for drinking and agriculture, with a minimal demands of 7.5 TMC, to be diverted to Malaprabha river. For this, linking of rivers within the same basin is not any major ecological threat.

### Few Stylized Facts about Mahadayi river Issue

- WATER does not respect any boundary. Most of the larger rivers in India run through the administrative boundaries of the Indian federal system. Sometimes a river itself is the boundary.
- The Trans boundary Rivers have significant implications for water usage and policy making, especially because India has around 16% of the world population and 2.40% of land area, and it has only 4% of its water resources.
- In gross national terms the availability of water is comfortable.
- But this situation can easily change with increased demand due to changing patterns of economic growth and urbanization.
- The less endowed regions with respect to water are located in arid parts in the states of Rajasthan, Gujarat, Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu that lie in one rain shadow region or the other.
- The issues pertaining to resolution of conflicts surrounding Transboundary Rivers are made especially complex because of a lack of adequate legal and institutional mechanisms.
- The **Interstate River Water Disputes Act, 1956** (IRWD Act) is an Act of the Parliament of India enacted under Article 262 of Constitution of India on the eve of reorganization of states.
- This Act has undergone amendments subsequently and its most recent amendment took place in the year 2002.

## THE CAULDRON

- ⇒ The **Mandovi River/Mahadayi River** is described as the lifeline of the Indian state of Goa.
- ⇒ The river has a length of 77 kilometers, 29 km in Karnataka and 52 kilometers in Goa
- ⇒ The river, has 2032 km<sup>2</sup> catchment area in Karnataka while 1,580 km<sup>2</sup> catchment area in Goa
- ⇒ The **Kalasa-Banduri Nala** is a project undertaken by the Government of Karnataka to improve drinking water supply to the Districts of Belgaum, Dharwad and Gadag .
- ⇒ It involves building across Kalasa and Banduri, two tributaries of the Mahadayi river to divert 200 TMC of water to the Malaprabha River, which supplies the drinking water needs of the said 3 districts.
- ⇒ This project had been on paper for decades and the Karnataka government decided to implement it during 2002.
- ⇒ Clearance for the project was received from the Centre in 2002.
- ⇒ The project however, soon ran into trouble when the Government of Goa raised objections to the project claiming that the project would harm its own flora and fauna.
- ⇒ Karnataka and Goa have since then been at loggerheads over the project.
- ⇒ The project was put in abeyance for some years by subsequent Governments of Karnataka.



- ⇒ Finally, Kalasa-Banduri project was inaugurated at Kanakumbi in Khanapur taluk of Belgaum district.
- ⇒ The Goa government however soon moved the courts and brought a stay on the construction work. The matter is now in the Tribunal.
- ⇒ Major problem with tribunals is that they take time to reach a final settlement.
- ⇒ Though the amended Act of 2002 mandates a time limit of six years, it still is a long period of time.
- ⇒ In this context, mention must be made of several non-official civil society efforts to address the issue of river water sharing.
- ⇒ The Madras Institute of Development Studies (MIDS), Chennai, which is one of the ICSSR Research Institutes, initiated a process of creating a platform to facilitate dialogue between the farmers of Karnataka and Tamil Nadu in the Cauvery basin.
- ⇒ Through the process of dialogue, farmers are developing a better understanding of each other's problems and needs and thus reducing the potential for conflict.
- ⇒ In this background, CMDR, which is also an ICSSR Research Institute, has taken initiative in organizing today's panel discussion which may take both the parties forward in settling the issue amicably.
- ⇒ CMDR looks forward to the suggestions for a way forward from all the stakeholders to strike a deal among the affected parties.