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**Minutes of the Ninth Meeting of Western Ghats Ecology Expert Panel (WGEEP)
held at Kerala Forest Research Institute, Peechi on 28 January 2011**

The Western Ghats Ecology Expert Panel met on 28th January 2011 at Kerala Forest Research Institute, Thrissur.

The following members were present:-

Prof. Madhav Gadgil	Chairman
Shri B J Krishnan	Member
Dr. V.S. Vijayan	Member
Dr. R.V.Varma	Member
Dr. Renee Borges	Member
Prof R. Sukumar	Member
Ms. Vidya S. Nayak	Member
Dr. G.V. Subrahmanyam	Member Secretary

Dr. Ligia Noronha, TERI, New Delhi, Dr. R.R. Navalgund, Director, Space Application Centre, Ahmedabad, Prof. S P Gautam, Chairman, Central Pollution Control Board, Dr. D.K. Subramaniam, IISc, Bengaluru, all Members of the Panel could not attend the meeting. Dr. Amit Love (Deputy Director, MoEF) was also present during the meeting.

Special Invitees

Shri Devrat Mehta, Chairman, High Level Monitoring Committee, Mahabaleshwar Panchgani Ecosensitive Area

Dr. S.N. Prasad, Senior Principal Scientist, SACON, Hederabad

Dr. K.A. Subramaniam, ZSI, Pune

2. The Chairman welcomed the Members of the Panel and initiated the discussion on the identification of ecologically sensitive areas in the Western Ghats region. Prof Madhav Gadgil outlined a proposal wherein the whole Western Ghats region could be

classified as Ecological Sensitive/ Significant Area and it could be further classified into different zones with varied degree of regulatory and promotional activities depending upon the ecological sensitivity of each zone. This would be followed by development of detailed guidelines for preparation of development plans for each zone. The Chairman suggested that such guidelines for each of the zones would be developed through a workshop in collaboration with Kerala Institute of Local Administration.

Professor Madhav Gadgil informed the Panel about the resolutions passed by 22 Gramsabhas of Ratnagiri and Sindhudurg districts for declaring their areas as ecologically sensitive areas. Most of these villages are located in the vicinity of mines. He further said that most of the resolutions were in Marathi. Prof Gadgil read out one such resolution, which was translated from Marathi into English. Professor Madhav Gadgil informed the Panel members that most of the other Gramsabha proposals were on similar lines to the one he read out. The Gramsabhas resolutions also included a tentative management plan for the areas under their jurisdiction.

3. Shri Devrat Mehta, Chairman, High Level Monitoring Committee (HLMC), Mahabaleshwar Panchgani Ecosensitive Area gave a talk on the Mahabaleshwar Panchgani Ecosensitive Area and the issues relating to the management of the same. He informed the Panel that the main objective setting up Mahabaleshwar Panchgani Ecosensitive Area was to maintain the green cover of the area. The state government agreed to the proposal of maintaining green cover and declaration of ecologically sensitive area at the outset, but the State Government was not very clear as to what ecosensitive area notification meant. Thus, now the State Government has developed apathy towards the Mahabaleshwar Panchgani Ecosensitive Area.

Shri Mehta gave a brief history of the Mahabaleshwar Panchgani EcoSensitive Area with respect to the notification and the setting up of the High level Monitoring Committee. He informed the Panel that he took over as Chairman in November 2009. Further, Shri Mehta also informed the Panel members that after taking over as Chairman, he has made separate subcommittees and prepared a Draft Regional Plan for the area. The draft

Regional Plan keeps the specific requirements of Ecologically Sensitive area in focus. He highlighted the fact that as per the ESA notifications Regional Plan can be approved when the Tourism Plan of the area is also approved. Shri Mehta suggested that the approval of Regional Plan and the preparation of the tourism plan should be delinked in this particular instant. According to him the framework for activities can be defined in the regional plan and the detailed plan of activities could be given in *subzonal plans* – such as tourism master plan. He informed the Panel members that HLMC has laid down the criteria for development of Tourism Master Plan.

Shri Devrat Mehta informed the Panel that in the absence of concrete guidelines some people have misused schemes for promotion of tourism for illegal construction. He gave example of Bed and Breakfast scheme, which was launched to promote homestead tourism by local people, but was used as guise for illegal construction and running of hotels by non-residents. Shri Mehta read out the draft regional plan of the Mahabaleshwar Panchgani area and informed about the various initiatives launched by the HLMC. Further, he also informed the Panel that HLMC has made a broad framework for development of the Tourism Master Plan for the region which has been sent to the State Government.

Shri Mehta highlighted the fact that under the ESA notification a Monitoring Committee is set up but actually the Monitoring Committee is quite ineffective in carrying out management functions. He said in such a case there should be a provision in the notification which enables the Monitoring Committee to take action against offenders. For this, he said there is a need to earmark offices through which the HLMC will take action. He emphasized that there is no need to earmark any actual staff for this purpose. He also added that powers need to be devolved to HLMC if effective management of ESAs needs to be carried out. He suggested that the composition of the HLMC should not be loaded towards government officials, it would be more meaningful to have subject experts. He also suggested that there should be a buffer zone around an ESA. Further, he said that the MoEF should appoint coordinators for each state for administration of Ecologically Sensitive Areas.

4. Dr. S.N.Prasad, gave presentation on Assessing Levels of Ecological Sensitivity of Western Ghats. Dr Prasad explained the grid size for developing spatially explicit database. He also explained the various parameters used for arriving at ecological sensitivity scores for the grids. He also mentioned the sources of information for each parameter. Dr. Prasad presented the ecological sensitivity scores for grids in the states of Kerala, Tamil Nadu, Karnataka. He explained the various layers which have been developed as overlays on the Google Earth image.

After the presentation, Prof R. Sukumar sought clarifications on the boundaries and delimitation of the Western Ghats. Prof Sukumar also explained the geographical distribution of elephants across the Western Ghats region. He informed the Panel Members that he would pass on the information on boundaries of elephant reserves to Dr. Prasad for incorporation into the geospatial database being developed for the Panel. Shri B. J. Krishnan enquired about the scores allotted to the Nilgiri region. Dr Prasad requested Sri B.J. Krishnan to send material relating to Palni hills for incorporation in the database. Dr. K. A. Subramaniam, ZSI, was also requested to provide the following data for incorporation in the geospatial database (i) invertebrate taxa especially on dragonflies and damsel flies, (ii) dams present in the Western Ghats region, and (iii) watershed boundaries for major rivers.

Dr. S.N. Prasad informed the Panel Members that no weights have been attached to the parameters used for arriving at ecological sensitivity scores. Further, the issue of correlation between the variables could be examined at a later date using available statistical tools.

5. Representatives from Cauvery Sene (a citizens group), Madikeri, Kodagu presented proposal to declare Kodagu as an ecologically sensitive area ([Annexure 1](#)). They requested the Panel members to recommend imposition of moratorium till the proposal of Kodagu is examined by the Ministry for declaring it as an ecologically sensitive area. After the presentation, Dr. V.S. Vijayan enquired from the Kodagu team

whether the local panchayats have been consulted on the proposal for making Kodagu an ecologically sensitive area. Prof R. Sukumar sought clarifications on the land rights of the local community and the legal problems which could be involved with issuing moratorium on development activity in the region.

6. Ms. Prakruti Srivastava, DIG (WL), Ministry of Environment and Forests, gave a presentation on the notification of ecologically sensitive area around National Parks and Wildlife Sanctuaries spread across the country. She explained in detail the genesis of the proposal and chronology of events. She informed the Panel Members that of the 619 PAs present in the country, the Ministry had received only 5 proposals as on date and only 1 notification has taken place. She informed the Panel Members that Wildlife Division of the Ministry is preparing guidelines to be followed for notification of the ecologically sensitive areas around Protected Areas.

She explained the draft guidelines to the Panel members. It was suggested by the Panel that it would be meaningful to have public consultation with the local bodies such as Panchayats before making the ESA proposals. The Panel also suggested that a representative from the Panchayat/Biodiversity Management Committee/Village Forest Committee should be member of the Committee, which will be set up for each PA to decide on the extent ecologically sensitive area around that PA as suggested in the draft guidelines ([Annexure 2a](#) and [Annexure 2b](#)).

7. The Chairman initiated the discussion on the time line for submission of the report to the Ministry. The Chairman suggested that he would develop an outline and the broad contents of the report by early February which would then be sent to all the Panel Members for comments. After receiving the comments and suggestions on the draft outline, Chairman will incorporate the views and suggestion of the members and prepare a draft report by March 2011.

Dr. V.S. Vijayan sought clarification on what is the view of the panel on the concept ecologically sensitive area in the Western Ghats and the methodology for development of

concrete proposals for ecologically sensitive areas. The Chairman suggested that ESA rankings for the grids would be made available in the coming 15 days. After that each of the Panel Members can study the grid based sensitivity rankings for entire Western Ghats. This would be followed by meeting of the Panel in early March to finalize the proposals regarding ESAs.

Prof R. Sukumar suggested that after preparation of draft report it could be uploaded on the Ministry's web site for public comments. These comments can then be considered by Panel and the final report be prepared for submission to the Ministry. Dr. Renee Borges suggested that if all the members are coming to IISc Bengaluru in early March then the brainstorming session on land use planning could be organized during that period also.

Professor Madhav Gadgil suggested that during the March meeting of the Panel the proposals for ecological sensitive area would be finalized. The Chairman proposed that based upon the ecological sensitivity scores, the Western Ghats region could be categorized into 5 zones. This zonation of the Western Ghats would then be put on the web for public comments. Of the five zones, zone 5 may be treated as the most sensitive zone which needs to be highly protected. The Chairman proposed that the detailed guidelines for the management of each zone could be developed in collaboration with the Kerala Institute of Local Administration. For this a workshop may be organized in May where experts from different areas could be called.

Prof Sukumar said that the proposed zonation should be based upon the ecological sensitivity scores and grid analysis and it should not be limited to political state or legislative boundaries. Dr. Vijayan said that ground truthing should be carried out to check the reliability of the ecological sensitivity scores for each grid. Dr.R.V.Varma said that sites which have small area but high conservation value and are outside the typical PA network can be protected with the approval of State Government as Community Reserve under the Wildlife Protection Act. Following this a discussion ensued with respect to notification of areas under Wildlife Protection Act or Environment (Protection) Act.

Finally, the WGEEP visualized the following timeline for concluding its activities:

- i) An interim report outlining the ecological sensitivity scores for the entire Western Ghats will be prepared by 1/3/11.
- ii) This report would be discussed at the next meeting of WGEEP scheduled to be held in Bengaluru from 3rd to 5th March 2011.
- iii) Based on the discussions a revised report will be prepared and discussed at the Panel meeting proposed to be held around 23/3/2011 in Delhi with the Hon'ble Minister for Environment & Forests.
- iv) The Draft report prepared after deliberations will be uploaded on the Ministry of Environment & Forests website for public comments.
- v) A 4-day workshop will be held at Kerala Institute of Local Administration, Thrissur in early may 2011 to suggest guidelines for development planning for different regions of Western Ghats taking into account their level of ecological sensitivity.
- vi) A final report based upon the inputs received from this workshop, and from the public will be submitted by 30 June 2011.

8. Dr. G.V. Subrahmanyam enquired that what is the view of the Panel on the issue of declaration of ecologically sensitive areas around the National Parks and Wildlife Sanctuaries. Professor Madhav Gadgil clarified that the Panel has unanimously recommended to the Wildlife Division of the Ministry that a component of public consultation should be added in the guidelines for declaration of ecologically sensitive zone around protected areas. Further, a representative of local bodies should be member of the Committee to be set up for each Protected Area which will decide on the extent of ecological sensitive zone around the PA. He said that till such time that the draft guidelines are finalized the proposals for ESAs may be put on hold.

Shri B.J. Krishnan said that management plans needs to be developed for ecologically sensitive areas and clear administrative mechanism also needs to be worked out. Dr. R.V. Varma suggested that the Biodiversity Monitoring Committees set up Biological Diversity Act can be provide a focal point for administration of ecologically sensitive areas. Ms Vidiya Nayak and Shri B.J. Krishnan commented that BMCs are not effectively functioning in Karnataka and Tamil Nadu. Hence, the use of BMCs as focal point for administering ESAs needs to be revisited. This was followed by detailed discussions on the governance mechanisms for ESAs and the regulatory powers Western Ghats Ecology Authority under section 5 of EP Act.

Next steps

The Panel decided to have the next meeting of the Panel in Bengaluru from 3rd to 5th of March 2011 at Indian institute of Science. It was also decided to have brainstorming session on land use planning in Western Ghats on 3rd March 2011.

The meeting ended with vote of thanks to the Chair.

Summary Record of the Brainstorming Session on Water Resources Planning in Western Ghats held at Kerala Forest Research Institute (KFRI), Peechi on 27 January 2011

Dr. K.V. Sankaran, Director, KFRI welcomed the WGEEP members and the participants of the brainstorming session. He also said that it was privilege of KFRI to host WGEEP meeting at KFRI. He requested the Panel members to visit the various Divisions of the Institute to familiarize themselves with work carried out by the Institute in the area of tropical forest ecology.

Professor Madhav Gadgil, Chairman, WGEEP, thanked Dr. K.V. Sankaran for hosting the meeting of WGEEP at KFRI. He informed the participants that he has been associated with KFRI in various ways in the past. This was followed by a round of introductions. The list of participants is given at [Annexure 3](#).

Prof Gadgil welcomed the participants to the brainstorming session on Water Resources Planning in Western Ghats organized by WGEEP. He informed the house that WGEEP has been organizing brainstorming sessions on important themes related to Western Ghats. Further, he said that earlier brainstorming sessions have been held on (i) organic agriculture in Kerala, (ii) iron ore mining at Goa, (iii) Pressures of urbanization in Western Ghats at Pune, (iv) Role of power sector and Role of Joint Forest Management in Western Ghats at Bangalore.

Professor Gadgil recollected his recent experiences with respect to how water resources are impacted with development activities and how these are reported in EIA reports. He gave the example of a specific case in Goa where a mine was located inside a sacred grove and was damaging many springs which are present in the area. The EIA report stated that there were no water courses in the area. The environmental clearance mentioned that natural water courses should not be tampered with. Professor Madhav Gadgil informed the participants that according to the interpretation of the mine Manager EIA notification specified water courses as nullahs and not springs. Further, the toposheet

did not have any blue line. Through this example he highlighted the facts that there is inadequate information on water resources in upper reaches of Western Ghats.

Prof Gadgil gave another example of the forest area in Ratnagiri District. He said that Zoning Atlas for Siting of industries mentions there is 2.5 % forest area in the district, whereas the satellite imagery shows around 42 % forest area, since most of the forest area in Ratnagiri is private forest area. However, prescriptions for siting of industries takes into account only 2.5 % forest area. The Zoning Atlas for Siting of industries also gives consideration to major rivers only and not other natural water sources.

Shri Samir Mehta, South Asia Programme Director, International Rivers, gave a presentation on Water and Natural Resources Governance within ESAs – the Challenges in Implementation. He informed the participants that he was associated with the planning process of Matheran and Mahabaleshwar-Panchgani ecologically sensitive areas and was also involved in the visioning document for the Mt Abu notification.

Shri Samir Mehta said that the procedure followed for the development of regional plan of ecologically sensitive areas is laid down by the Town Planning Act. Generally, the Town Planning Acts are not amenable to ESA planning, as they are related more to regulation of land use. Every state government have their own methodology and procedures for town planning. He said that regional planning process has worked for town planning and transport but not in the matter of natural resource management in the case of ecologically sensitive areas.

He explained the process followed in the preparation of regional plan with respect to the ecologically sensitive areas in Maharashtra. After the Gazette notification of Ecologically Sensitive Area, the Government of Maharashtra set up a regional planning board which included elected representatives of the Government and two members of civil society. The regional planning board had three subcommittees under it, one subcommittee each on tourism, environment and land use. He said that the Land Use committee which is chaired by the Collector compiles recommendations of the Environment and Tourism

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Subcommittee. Shri Mehta said that none of the members of the regional planning board talk about issues related with environment and ecology. The regional plan so developed is biased towards development and lays down land use zoning only.

He highlighted the fact that all through the planning process no line organizations are identified for implementation of policies and programmes. Further, there is no integration and coordination between different government departments. He gave example of the Western Ghats Development Programme which was started in 1974 -1975 by the Government of Maharashtra in this regard.

Shri Samir Mehta stressed on the need for following the precautionary principle in ecologically sensitive areas. He suggested that in the process for planning for ecologically sensitive areas, should be from the perspective of effective management of natural resources. He highlighted the case of Matheran Ecological Sensitive area where even after 7 years the Master Plan has not been developed. According to him the major concern is the process of how to engage the state government in the process of planning for ecologically sensitive areas meaningfully

Shri Samir Mehta proposed that the Ministry should identify Line Departments and spell out workplans for each of them in an accompanying document and not in the main notification itself, as is done many conventional Ministries of the Government. He suggested that the Panel should lay down the process for development of Master Plan including identification of stakeholders. This process should also facilitate out of the box thinking in the government.

According to Shri S. Mehta, Western Ghats Ecology Authority (WGEA) for the whole Western Ghats will not work smoothly as the requirements for each of the Western Ghats states may be different. He suggested that WGEA should have sub panels for each of the Western Ghats states with a common Chairman for the whole Authority. Further, Ministry of Environment & Forests can set up a Western Ghats Regional Office of the MoEF for the purpose of administration of Western Ghats. He added that the WGEA

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should have a conflict resolution expert who engages the different parties on interest based negotiations rather than position based negotiations

Shri S. Mehta also commented on the functioning of the WGEEP. He said that WGEEP has undertaken the process of public consultation but the interest groups have not been given adequate time to participate in the public consultation. He commended the WGEEP on the brilliant work which has been carried out developing geospatial database where in geographical grids have been assigned ecological sensitivity scores.

On the issue of construction of dams on the rivers in Western Ghats region, Shri Sameer Mehta said that no big dams should be allowed in Western Ghats. He emphasized that even run of the river projects are not good in the case of west flowing rivers of the Western Ghats region. The down-stream effects of dams needs to be studied for the complete river till the river meets the sea. He highlighted the concept of environment flows of the river. He mentioned according to stipulations there should be 15 % environmental flow in the river but this is not followed in the process of dam design.

After the talk, Dr. Renee Borges commented that it was not good that the committees involved in the planning process of Ecological Sensitive Areas work independently. Shri Devrat Mehta said that in the case of Mahabaleshwar-Panchgani the High Level Monitoring Committee set up by MoEF has given the overall guidelines to the different committees involved in the preparation of the regional plan due to which the regional plan of Mahabaleshwar-Panchgani could be salvaged. He brought up the issue of what should form part of the zonal plan or and what should be included in the subzonal plans. He informed the members that the Mahabaleshwar-Panchgani notification is 10 years old. Dr VS Vijayan said that public consultation should be undertaken after the draft plan is ready.

Dr K.J. Joy, National Convener, Forum for Policy Dialogue on Water Conflicts in India, gave a presentation on Water resources planning and people's livelihoods in the Northern part of the Western Ghats: The Case of Warana Basin. He said that the work presented

was carried out under the Live Diverse project undertaken in the Warana basin of Maharashtra. He informed the participants that the people of the study area have suffered double displacement, first when the Warana Dam was constructed and then when the Chandoli National park was created. Dr Joy gave a brief profile of area which included watershed details. He informed the members that Warana river is a tributary of Krishna river and formed part of the larger Krishna Basin. He also presented the water use profile of the area.

He highlighted the relationship between livelihood and biomass resources. The local people generated their livelihood from direct use of biomass, by modifying the biomass, or by selling the biomass. He also brought out the intricate linkage between biomass generation and availability of water resources. Further, he mentioned that social arrangements can modify biomass use. Hence, these social arrangements should be considered in the planning process.

He said that under the programme the basin was categorized into three different zones. Zone 1 was the upper part of the basin. The area in Zone I had steep slopes and the area for undertaking agriculture was very limited. The economy of Zone I could be called as money order economy. Zone I was surplus water/biomass zone after taking into consideration biomass requirement for livelihood, the water resources required to raise the biomass, and water requirement for domestic use. This surplus water/biomass could be used for development of ecotourism in the area.

Zone 2 was a transitional zone. Zone 2 was mainly rainfed with some irrigation facility. This zone was deficient in water and biomass requirement. Efficient use of water is the key issue for this zone. Efficient use of water resources could be achieved by equitable access to water resources and better choice of crops and better agronomic practices. It was suggested that biomass processing for income generation through non-agricultural pathway should be the key activity.

Zone 3 was heavily irrigated zone and was dominated heavily by sugarcane cultivation. Recommendations for the zone included promotion of water saving techniques so that excess water can be used in Zone 2. Further, broad basing of cropping pattern and processing of biomass was also recommended ([Annexure 4](#)).

Prof Janakrajan, Madras Institute of Development Studies, gave a presentation on Vulnerabilities of East Flowing Rivers: Some Issues and Concerns. Prof Janakrajan said that Western Ghats are the foundation for south India in terms of the water resources and biodiversity. The major east flowing rivers, which originated in the Western Ghats are Krishna, Godavari, Pennar and Cauvery. Prof Jankarajan gave basic details of the east flowing rivers which included catchment area, average annual potential and utilizable surface water potential. He highlighted the inter-state nature of these rivers. He stressed upon the critical issues, which concern the entire east flowing rivers of Western Ghats. These include upstream development, increasing pollution load, delta vulnerability and water conflicts.

Prof Jankarajan also highlighted the following issues which need contextualization in terms of water resources (i) unsustainable development, (ii) persistent poverty, (iii) uncontrolled urbanization, (iv) myopic sectoral approach for growth and development. Following which he gave a brief overview of the pressures on the river Krishna including high pollution load. He explained in detail the disturbing features of the River Cauvery basin. Some of them were: (i) highly used, urbanized and water deficit basin, (ii) high level of pollution, (iii) environmental flow in river is negligible except during the monsoons, (iv) saline ingress in the delta region. He covered the delta vulnerabilities of the Cauvery Delta. Further, Prof Jayaraman also outlined the impact of climate change on coastal ecosystems and coastal agriculture.

He summed up by saying that east flowing rivers and their river basins are food basket of India. This region has become increasingly vulnerable due to high level of pollution and rapid urbanization. As a way forward he suggested that pollution of the rivers should be reduced, the intimate link between delta region and the upper reaches of the river needs to

be recognized and there should be a comprehensive policy backed by legislation for better river basin management and better enforcement and monitoring mechanism for pollution control ([Annexure 5](#)).

After the presentation, Prof Sukumar enquired about the reduced flow in the Cauvery river. Dr. R.V. Varma asked about the effect of seawater ingress on well water quality.

Shree Padre, Water Journalist, spoke on Water Conservation in Lateritic Zone of Western Ghats – Lessons from Experience. Shri Padre informed the participants that the history of open wells went back to 4500 years. He said that if an open well cannot yield water in Western Ghats then it cannot yield water anywhere. He said the local people in Western Ghats have developed ingenious methods for rainwater harvesting and augmentation of their local water supply. Shri Padre stressed on the important role of media in highlighting these local innovations for water conservation, which have not been documented as yet. He said that now people have started to recognize the importance of local rainwater harvesting techniques. The concept of recharge wells is becoming popular in Bengauru.

Shri Padre gave examples of water conservation and augmentation measures on lateritic hill tops. He elaborated the cases of *Johars* and *Madakas or nullah-bunds* where the local people make a temporary check dam along drainage lines of a depression on lateritic hill tops. In this method advantage is taken of depression shape wherein the depression has a bottleneck like feature on the main drainage line, which is plugged to retain water at a minimal cost. Shri Padre suggested that such areas on lateritic hill tops where *Madakas* can be made should be reserved for public purpose. According to him this will bring down the charges of water shed development.

He also suggested that the laterite quarries should also be left untouched so that they can also act as points for water recharge. Shri Padre also elaborated upon the following examples of local innovations for water conservation and augmentation (i) *Kutta* - temporary check dam, (ii) *Surangas*-gravity irrigation, (iii) use of abandoned termite

mounds as water recharge points and (iv) creation of percolation pond in 5 % area of a rice fields. Shri Padre stressed upon the importance of vegetation in recharge of ground water and the fact that ground water recharge can be enhanced by protection of natural vegetation in an area ([Annexure 6](#)).

Dr. Renee Borges sought clarification on how abandoned termite mounds act as recharge points for ground water. The participants appreciated the illustrated presentation of Shri Padre for documenting the local techniques of water conservation in Western Ghats.

Dr. A. Latha, River Research Centre, gave a presentation on Decentralized River Basin Planning for West Flowing Rivers. She stressed upon the fact that rivers and landscapes are intricately connected. Hence, river basin planning was a must. She highlighted the wrong approaches which have been adopted in the past with reference to forests and rivers. Some of them are (i) building more and more water storage structures ignoring the need to maintain environmental flow in the river, (ii) considering river as conduits of pollution, (iii) neglecting the importance of river in riparian ecology, (iv) delinking land use and river's ecology, (v) keeping primary users away from planning process, (vi) reclaiming wetlands.

Dr. Latha stressed on the importance of maintaining environmental flow in the river. She said that in case of Western Ghats we are dealing with a highly fragile landscape. She highlighted the facts that (i) Western Ghat rivers originate at high elevations in the Ghats and reach the sea in less 50 km of travel, and (ii) nearly 1/3rd portion of their river basin in the Western Ghats. Thus there is an intricate link between ecology of the Western Ghats and the river flows. Dr. Latha informed the participants that due to faulty planning rivers are not reaching the sea in the summer season, there are unnatural flow fluctuations, fisheries are being adversely affected.

According to her, it is imperative now to undertake catchment level planning and management. The suggestions given by Dr. Latha included basin level impact study of large dam project should be done, origin of rivers to be declared as no go areas, declare

free flowing biodiversity rich stretches of rivers as ESAs, no environmental clearance should be given to new dams in overdeveloped and closing basins. She said that there is an urgent need for government Departments, local bodies and river basin communities to understand ecology of the rivers. Further, if any meaningful solution has to be developed involvement of local communities in implementation, planning and management of river basins is a must. She listed the enabling steps which should be taken up by the government in this regard. The major one being creating institutional environment for participatory decentralized river basin management. Dr. A. Latha also detailed activities to be undertaken as part of a river basin plan ([Annexure 7](#)).

Dr. K. A. Subramaniam, ZSI, Pune gave a presentation on Biodiversity and Status of Riverine Ecosystems of the Western Ghats. Dr. Subramaniam showed the different river basins present in the Western Ghats. He also showed the different ecological zones of a typical river viz. (i) headwater zone, (ii) mid reach and (iii) floodplains. Dr. Subramaniam showed the different types of stream habitats found in the Western Ghats. He also showed the different types of wetlands habitats found in Western Ghats which include *Myristica* swamps, high altitude stream and bogs. Dr. Subramaniam gave a brief overview of the floral and faunal diversity of the riverine ecosystems in the Western Ghats. He highlighted the unique species of aquatic macroinvertebrates, odonates, fishes, amphibians and reptiles found in Western Ghats. Dr Subramaniam stressed on the high degree of endemism in various taxa. He focused on distribution of endemic Odonates and Amphibia in Western Ghats which were clustered in southern Western Ghats.

After giving a brief overview of the biodiversity associated with riverine ecosystems of Western Ghats, Dr. Subramaniam listed the major threats associated with the rivers in Western Ghats. One of the major threat being dams and hydroelectric power projects. Dr Subramaniam presented the various dammed river basins and sub-basins in the Western Ghats. He highlighted an important fact that there are very few river basins in Western Ghats which do not have any dams. He also showed the other threats associated with riverine ecosystems of Western Ghats which include mining, deforestation, development of road infrastructure, sand mining, plantation development, unplanned tourism, pollution

and biological invasions. Finally, he suggested measures of biological conservation in the Western Ghats ([Annexure 8](#)).

Shri Sudhidhendra Sharma, Director, Ecological Foundation, gave a talk on Integrating Ecosystem Services in Water Resources Planning for the Western Ghats. He started his talk by saying that during the deliberations the participants have only stated the obvious and not focusing upon what needs to be done. He commented upon the tasks which the proposed Western Ghats Ecology Authority has to perform and the fact that the Western Ghats are spread across many states.

Shri Sharma gave the example of New York City where the local government decided to invest in the protection of upland areas to improve the quality water rather than setting up of conventional water treatment plant. The people residing in the upland areas were given monetary incentives for maintaining the catchment areas. Through this case study Shri Sharma made out a case for payment of ecosystem services to the local communities. He gave another example of one such case in Assam wherein downstream communities pay for ecosystem services to the upstream communities. He said that this system has been in operation successfully and the local communities have worked a mutually agreed compensation mechanism.

Shri Sharma said that difficult part in payment for ecosystem services is how to compute value for ecosystem services. He added that there are many case studies where payment for ecosystem services has been undertaken as a mode for environmental protection. He gave examples of China and Australia where payment for ecosystems services has been adopted. He commented in the case of environmental protection market is the problem and solution also.

Following the presentation of Shri Sharma a discussion ensued on the importance and relevance of ecological economics in solving environmental problems.

Shri Devrat Mehta, Chairman, High Level Monitoring Committee, Panchgani-Mahabaleshwar, spoke about Management of Rivers and Lakes of the Western Ghats. He gave examples where planning processes were undertaken with a well meaning objective of environmental protection. He talked about the planning process which was undertaken for lake districts in Maharashtra with purpose of promoting tourism in early 80s. According to the plan, no development was allowed in the 100m zone around the lake and the FSI was regulated in the zone between 100m - 500m of the lake. Any construction activity has to be merged with the landscape and felling of trees was completely banned. This plan was not approved by the then government due to political interests. He also gave example of Waghora river and Ajanta and Ellora caves. Shri Mehta said that under the Ajanta and Ellora development plan, land was bought along the river to protect Ajanta and Ellora cave and the riverine ecology.

He stressed on the need for development of regulations for areas adjacent to rivers and lakes and hilltop areas. He pointed due to the CRZ notification private developers have moved away from the coast and started developing on hill tops adjacent to the coastal zone. Further he informed the participants that developer becomes the planning authority when townships occupy more than 100 acre area. He discussed the cases of Ambi valley and Lavasa.

Dr. S. N Prasad, SACON and Dr. K.A. Subramaniam, ZSI, spoke on Conservation of Aquatic Ecosystems of the Western Ghats. Dr Prasad gave a talk on the geospatial database being developed for WGEEP and how the information on endemic fish species would be introduced as an overlay on the Google earth map. He also informed the participants that seven parameters have been used to reach at the ESA rankings. He also informed the members that as all the information has not been incorporated in the database, some of the grids which had low ecological sensitivity rankings had endemic species in them.

Open Discussion

The brainstorming session on Water Resources Planning was followed by an open discussion of the participants and WGEEP Panel Members.

Professor Madhav Gadgil, Chariman, WGEEP, outlined the major tasks which the Panel will undertake viz. (i) assignment of sensitivity scores to all parts of Western Ghats, (ii) preparation of guidelines for regulation and promotion of activities under various sectors for areas in relation their sensitivity scores, (iii) designing a participatory process for preparation of environmentally and socially sustainable development plans for the Western Ghats region. He informed the participants about the time line which the WGEEP is envisaging for submission of the report. Further, he told the participants that the draft report of the Panel would be uploaded on the Ministry's web site for comments from the public. Prof Gadgil stressed upon the need for effective water resources planning in Ecologically Sensitive Areas.

Dr. Joy highlighted the issue of how the Western Ghats Ecology Authority will relate to other regulatory authorities such as Maharashtra Water Regulatory Authority (MWRA). The MWRA has the authority to settle entitlements and inter-sectoral use of water resources. He also pointed that there are various government regulations on water related issues. The Panel will have to consider them while defining the authority of WGEA.

Dr. Joy also pointed out that there is no need for any large water impoundments in the head water zone of the rivers in Maharashtra. He informed the members that even with many large dams the irrigated area in Maharashtra is only 17 %. According to him it would be more meaningful to have local water harvesting structures in the villages so that water can be made available locally for irrigation and other uses. Dr. Joy also commented on the regulation of mining activity in the Western Ghats region. He said that mining should be regulated by a two pronged approaches viz (i) mining companies should be

made to strictly adhere to the environmental clearance conditions and (ii) undertake ecorestoration of mined out areas.

Dr. Vijayan said that the Panel should clearly demarcate No-go areas in the Western Ghats and the Panel should make a clear recommendation for adoption of green technologies and organic agriculture in the Western Ghats. On the issue of dams, Dr Vijayan said that no large dams should be allowed to come in the Western Ghats. He also said that the whole Western Ghats should be declared as ecosensitive area having different zones of varying ecological sensitivity.

Prof Madhav Gadgil commented that will the Panel be able to make a case for declaring the whole Western Ghats as Ecologically Sensitive/ Significant area.

Ms. Vidiya Nayak said that subsidy to the fertilizer companies should be stopped and the money could be directly transferred to the farmers for promotion of organic agriculture. Prof Madhav Gadgil commented different alternatives have to be explored for this. Dr. V.S. Vijayan said that the amount given in subsidies should be made explicit. Prof Sukumar said that organic agriculture in Western Ghats should be encouraged. He also commented that farmers have to be economic incentives such as tax breaks for promotion of organic agriculture. Dr Vijayan commented that use of pesticides has been promoted by marketing activities of shopkeepers.

Shri B.J. Krishnan said that the concept of declaring the whole Western Ghats as Ecologically Sensitive Area with zones of varied degree of ecological sensitivity was commendable. Further, he said that organic agriculture can be implemented in the Western Ghats in phased manner. Dr. R.V. Varma suggested that Panel should recommend that Western Ghats should be made a pesticide free zone. He invited the attention of the Panel to the endosulfan problem in Kerala.

Dr. Latha said that plantations in Western Ghats should be made pesticide free in a phased manner. She said the cost of plantation is increasing and to make plantations

pesticide free, planters should be involved in the process. She also suggested that planters should be involved in the process of ecorestoration of old plantations and they should be bring in welfare schemes in their areas.

Dr. Varma also opined that conservation of forests of Western Ghats is important for water security of the region. Further, he said that the Panel should declare overexploited regions of rivers in Western Ghats as ecologically sensitive. Shri Sameer Mehta was of the opinion that no dams should be allowed in the Western Ghats region. He suggested that if any water regulation has to be considered it should be for the purpose of irrigation only not for power generation. He also said that there should be provision of decommissioning of existing dams on Western Ghats rivers and these dams should not be replaced by new dams.

Shri Padre highlighted the issue that the traditional knowledge related to water conservation is not taken into account. Dr. Latha added that riparian river basin restoration activities should be taken up through involvement of local self governments. Dr. Vidiya Nayak suggested schools should also be involved the movement of environment.

Dr. Renee Borges raised the issue of use ground water in Western Ghats and the regulations which govern such use. It was suggested that there is an urgent need for study of catchment hydrology and movement of water in laterites.

Dr. Latha stressed on the following non-negotiables which should be kept in mind while planning for ESAs (i) no interlinking of rivers, (ii) no pesticide use in plantations, (iii) no plantation activity in the Shola region of the Western Ghats, (iv) down stream impacts of water regulation structures to be studied.

Prof Sukumar suggested that special schemes should have to be developed for Ecologically Sensitive Areas. Regarding regulation of rivers in the Western Ghats, Prof Sukumar suggested that the concept of environmental flows should be central to planning

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process. Prof Sukumar sought clarification on the issue of private developers becoming planner in Western Ghats region with respect to specific instances of Lavasa and Amby Valley. He also highlighted the fact that government funds are not utilized in a proper manner. He suggested that the government should use CAMPA funds for payment for ecological services programme in Western Ghats states. Under such programmes local people having private forests could be remunerated for protection of forests. Similarly, incentives should be provided to planters who undertake ecorestoration programmes.

Summary Record of the Brainstorming Session on Decentralized Planning in Western Ghats held at Kerala Forest Research Institute (KFRI), Peechi on 28 January 2011

Professor Madhav Gadgil, Chairman, Western Ghats Ecology Expert Panel, welcomed the participants to the brainstorming session on Devolution of Powers to Local Self Governments in relation to environment. He thanked Shri S.M. Vijayanand, Special Chief Secretary, Department of Local Self Government, Government of Kerala and Prof M.K. Prasad, Chief, Information Kerala Mission. Prof Gadgil recollected the exceptional work carried out by Kerala Shatiya Parishad in the area of environment.

He said that through the brainstorming session the Panel wants to understand how to administer the whole of Western Ghats if it is declared as an ecologically sensitive area, and what are the options. The list of participants is given at [Annexure 9](#).

Shri S. M. Vijayanand, Special Chief Secretary, Government of Kerala, gave a presentation on Decentralization – Learning from Kerala Experience with special reference to environment ([Annexure 10](#)). Shri Vijayanand informed the participants there was no organized self governance in Kerala till 1995. The devolution of power to in Kerala was done with a big bang approach. The power from the state was transferred to Panchayats in one go and the mechanisms for implementation were built afterwards. The responsibilities were given first and the capacities were built at a later stage. The core of the Local Self Government Model is that the elected Panchayat is the executive authority and the government servant is the ex-officio Secretary to the Panchayat. The peoples group and volunteer groups provide the technical core of the local government. The initial focus of the Local governments was on the planning process which then went on to management of natural resources. Ecodevelopment of the area was a natural corollary to the decentralization.

Shri Vijayanand gave a brief profile of the Panchayati Raj institutions in Kerala. Following which he explained the various *F*s involved in the decentralization process.

These were (i) functions, (ii) functionaries, (iii) finances, (iv) framework, (v) freedom, (vi) fraternity, (v) functionings. Shri Vijayanand said that there is clear division of responsibility between the Local Governments and the state governments. This is important because accountability mechanisms work effectively if the power to implement is clear. The Local Self Government have an important role with respect to development of infrastructure and provision of services, human development functions in their areas. In other matters there is overlap with state government functions which is also clearly decided. He said that in Kerala state government has no executive control over Local governments.

Shri Vijayanand informed the participants that work and workers go together. He said that along with devolution of work, the staff from various department have been transferred to Local Governments. The Local governments have the power to assign and review work, have disciplinary and fiscal control over the staff. The issues such as recruitment are handled by the state government. Within this model there is a concept of ex-officio secretary to the local government. There is a code of conduct for the officers and Local Self Government which is enforceable.

Shri Vijayanand said that the fiscal decentralization has been carried out in a transparent manner. No discretion is allowed for allocation of funds to the Local Governments. It is done through a fixed worked out formula. This is done keeping in view the works carried out by Local Governments and the State Finance Commission recommendations. Majority of the Centrally sponsored schemes of Ministry of rural Development are implemented through Local Governments including the MGNREGS. Shri Vijayanand outlined the major parameters which define the quality of funds transferred to local governments.

He also explained the framework developed within which the local governments functions in Kerala in detail. He elaborated that there is a strong legal framework which is provided by Panchayati Raj Act and other such acts. The accountability system developed is very robust and the administrative systems are in the process of being

institutionalized. Further, local self governance is based upon rigorous participatory planning methodology. There are working groups which deal with separate sectors including environment and natural resource management. There is also a provision of an Ombudsman and an Appellate Authority.

In the Kerala model of decentralization high degree autonomy has been given to Local governments in use of available resources and in taking decisions. There is freedom from executive interference. The Local Self Governments in Kerala function along with a host of related institutions which act in complementary and enabling way to the Local Governments. Some of the institutions are (i) State Development Council, (ii) Kerala Institute of Local Administration, (iii) Information Kerala Mission. Shri Vijayanand highlighted the significant achievements of the decentralization process. According to him, decentralization has resulted in (i) diffused development stimulus which has an impact on reduction of intra-state inequality, (ii) strong pro-poor expenditure, (iii) improvement in service delivery and infrastructure, (iv) transparency in administration and better peoples participation. He also highlighted his concerns with respect to decentralization. They related to weakening in the administrative capacities of the officials, planning based on negotiated priorities not data analysis, resources being thinly spread out.

Shri Vijayanand explained in detail the role of Local Self Governments in activities related with environment. These activities included Resource Mapping, preparation of Watershed Status Report, Master Plans, Biodiversity Registers, State of Environment Reports. He also informed the participants that local governments are also involved in energy planning. Finally, he said that in the future the Local Self Governance will have to focus on (i) good governance, (ii) natural resource management, (iii) improved planning techniques and (iv) new measures of accountability.

After the presentation there was an open discussion various aspects related with decentralization. Prof Madhav Gadgil said that the Kerala model for decentralization will provide key inputs into the recommendations of the Panel relating to administration of

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ecologically sensitive areas. He also commented that MNREGS is an important tool which could be used for ecorestoration of degraded Lands.

Shri Vijayanand pointed out that the activities undertaken in the MNREGS should be done with participation of the local people. He gave examples of the failed experiences in the early phases of its implementation in Kerala.

Shri Devrat Mehta sought clarifications on how exactly the system of Ombudsman work with special reference to the Local Self Governments. Shri Vijayanand explained the constitution of the Ombudsman which had members from the civil society, judiciary and the government.

Dr. R.V. Varma informed the members that preparation of PBR is mandatory for Local Self Governments and for which money is provided by the State Biodiversity Board. The Biodiversity Board also provided money for organizing awareness programme for school children.

Dr. Vijayan said that the whole Western Ghats should be declared as ecosensitive area and then zones of varying ecological sensitivity should be defined as in the case of CRZ. He said that planning for ESAs should be based on ground truthing at the village level and the livelihood issues of the people should be addressed. Shri B.J. Krishnan commented that development plan for ESA should be loosely structured by listing down the activities which can be undertaken in the zone. Dr. Vijayan said that the notification should have certain restrictive activities, banned activities and certain activities which should be promoted.

Prof Madhav Gadgil said that he is in favour of people based planning for ESAs rather than a centralized planning. He said that detailed guidelines for each zone in the Western Ghats ESA can be made with the involvement of Kerala Institute of Local Administration.

Summary record of the Public Consultation at Athirappally on 29 January 2011

List of participants at Public Consultation at Athirappally on 29 January 2011 is at [Annexure 11](#).

Field Visit

The six-member panel headed by Prof.Madhav Gadgil reached Athirappally by 7 a.m. They visited the riparian forest within the project area and also the tribal hamlet at Vazhachal. They also visited the submergible areas and the Athirappally waterfalls. On their return they met Ms.V.K.Geetha, a member of the Kadar community who has gone to court against the Athirappally Hydro Electric Project and listened to her. She explained that the livelihood of the Kadar tribes solely depends on the forests and the river and they should not be displaced. During the discussions with the tribal representatives it was mentioned that the community rights of the tribals as per the Forest Rights Act were not recognised. The forest officials present at the site were also not able to clarify the points raised by the committee.

Hearing at Panchayat Office

Shri. B.D. Devassy, MLA, Chalakkudy argued in favour of the project and pleaded before the committee not to oppose it. The Panchayat President of Athirappally Mr.Baby K.Thomas and the Ward Member, Mr.Mulari Chakkathara strongly opposed the proposal for the construction of the hydroelectric dam. The Block Panchayat President, Mrs.Leena mentioned that she is a local person who has analysed the various pros and cons of the proposed project. She indicated that agencies like Pollution Control Board and Kerala State Electricity Board gave wrong information on many issues. She said she has lot of interest in protecting the river basin and also the rights of the Kadar community and was against the proposal for the hydroelectric project. The Vice President of the Athirappally Panchayat Mrs. Devi also argued against the project. Mr.K.S.Sathish Kumar pleaded for the project and informed that permission was already obtained in the past. He also said

that the project would be beneficial for the tribals and also suggested that the waterfall be retained. The Panchayat Members Ms. Sicily Antony and Ms. Jaya Thampi spoke in favour of the project. The Ward Member Ms. Sandhya Unnikrishnan, who is also a tribal argued in favour of the project and also suggested that the waterfall be maintained intact and also the livelihood of the tribals in the area be protected.

Hearing at Aroormuzhi Community Hall

At the public consultation meeting at Aroormuzhi Community Hall, 27 people spoke. All those who spoke feared that the project will adversely affect the drinking and irrigation water needs of the people and also the current tourism activities on which hundreds of local people depend on for their livelihood. Smt. Ammini Amma leader of the Athirapally struggle opined that there had been a steady decrease in the river flow during the last 45 years. She also submitted photographs of the Athirapally water fall taken during monsoon and summer. Shri. T.N. Radhakrishnan Ex. MLA warned that people living in the constituencies of Kodagara, Chalakudi, Kodungallor, Vadakekara and Angamali would face untold sufferings if the project is implemented, as the diminishing water levels in the Chalakudi river will reduce water flow in the canals of the river leading to severe drought in the above constituencies. Chalakkudy River Protection Forum Chairman Shri.K.K.Shelley also feared that the proposed dam will lead to destruction of 1400 ha. of agricultural land. According to Dr.P.M.Joy implementation of the Athirapally dam will affect river Periyar too. He further stated that water flow from Poringalkuthu to Edamalayar will result decreased production of electricity in Edamalayar and lowering of water level in Periyar. Construction of the dam at huge costs to produce very little electricity is a waste. The same view was also expressed by Shri.Shilu Chali of Forest Protection Samithi and added that the proposed project would also lead to destruction of the natural riparian forest and displacement of more than 200 odd families of Schedule Castes and Schedule Tribes. Shri.Gopala Krishnan representative of the N.S.S. Karayogam also vehemently opposed the proposed project. According to Shri. Shajan Puthenvelikara and Shri.Antony Putharipal another adverse impact of the proposed project on the river and downstream population was that when

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water flow is the Chalakudy river decreases seepage of saline water will destroy cultivation and also result in shortage of drinking water. Former Panchayat Presidents Shri.N.R.Satheesan and Shri.Muhammed mentioned about the chances of earthquakes occurring in the area, if the dam is constructed. Others who spoke against the project included Mr.M.V.Gangadharan, Mr.K.Rajan, Mr.V.T.Balaram, Mr.Dilik Divakaran, Paulson Kodiyan, Chandra Sekharan, Sivankutty, E.M.George, Shakeer, Janaki, Geetha and Jesna Alfus. All of them expressed their concern and opposed the proposal for the construction of the dam.

Public Consultation of technical group

At the beginning itself, Prof.Madhav Gadgil, Chairman, WGEEP explained the mandate and of the Panel also mentioned that the strategy would be the overall development of the Western Ghats with due consideration for conservation of biodiversity. The panel is also trying to identify ecologically significant areas based on scientific data base. The various technical groups present were the Kerala State Electricity Board (KSEB), Irrigation Department, Tribal Welfare Department, Tropical Botanical Research Institute, Kerala Forest Research Institute, Kerala State Biodiversity Board and two NGOs – River Research Centre and Kerala Sasthra Sahithya Parishad.

The KSEB placed before the committee their arguments in favour of the project with a power point presentation ([Annexure 12](#)). They also explained the past issues related to the project. The Irrigation Department mentioned that there won't be any problem, if the project comes through. The Tourism Department was of the view that, if the project comes though more tourists will visit the area.

The Forest Department took a neutral stand and did not specifically mention anything for or against the project. They also mentioned that the earlier decision to go in favour of the project has not been changed and also reported that the Forest Rights Act came into force later. The tribal welfare department informed that the issues related to title deeds of the tribals are in its final stage. They also wanted that the interests of the tribals be protected.

The TBGRI, which has done an EIA at the instance of KSEB, supported the project. The KFRI which did a study of the High value biodiversity of Vazhachal highlighted the biodiversity richness of the area and also on the unique riparian forest ecosystem. The Kerala State Biodiversity Board also highlighted the importance of biodiversity in the area, especially the rich and endemic fish fauna and also of several unique invertebrates and microbes which have not been studied in detail. The Board in fact wanted a multi institutional team to conduct an in-depth study on the biodiversity of the area.

The River Research Centre made a detailed presentation (with 4 experts in different fields) and questioned the reliability of facts provided by KSEB and others who supported the project ([Annexures 13,14,15](#)). Clarifications on many technical issues were not readily available and Prof. Gadgil suggested KSEB to provide the details by mail. He said the MoEF will also put these clarifications on the website of WGEEP for the people to see and they can also react. The Sasthra Sahithya Parishad suggested that as per the EIA alternatives have to be suggested. According to them a hydroelectric project with reduced power generation than the 163 mega watts as originally proposed may be thought of.

Prof. Madhav Gadgil assured that the various issues raised will be considered and the report will be handed over to MoEF by March 2011. The final decision will be taken by the MoEF.

After the Technical Consultations on the Athirapally Hydroelectric project, Citizens groups from Goa and Mangalore gave detailed presentations on the Shayadri Ecologically Sensitive Area and Kodachadri Ecologically Sensitive Area, respectively, to the WGEEP.
