

RBO Driven Campaign to Preserve Downstream Ecological Flows of a Western Ghats River

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ABSTRACT

Dams and river diversions have been one of the major factors affecting environmental flows of rivers all over the world. Most of the short rivers originating from the Western side of the Western Ghats, a 'Global Bio Diversity Hot Spot' have been dammed and diverted in several places affecting their downstream social and ecological requirements. Sharp gradient, small catchments, multiple and intensive uses like hydro power, irrigation needs, drinking water needs, fishing, tourism, industries, recreation, sand mining and a high density of population dependence in downstream has increased the pressure on these small rivers. Over the last six years a consistent campaign to save a 130 km small Western Ghats river, the Chalakkudy river in Central Kerala, South India has been ongoing in the context of a seventh large dam (163 MW Athirappilly Hydro Electric project) being proposed across the river. The river has six dams upstream out of which four divert atleast 40% river flow to the neighbouring state under an Inter State Inter Basin Treaty. All the four dammed tributaries have stopped flowing downstream of the dams leading to the drying up and degradation of river ecology. The performance and efficiency of an old Major irrigation project with an ayacut of 18,000 ha has also been severely affected by the dams and diversions upstream. The people driven River Basin Organization (RBO) named 'Chalakudy Puzha Samrakshana Samithi' has been working in the river basin for 15 years on issues concerning river protection and restoration. Continuous discussions and debates initiated by the RBO amongst the different river dependent communities like tribals, Forest protection volunteers, local self governments, schools and colleges, youth clubs, canal farmer groups, women groups etc. on the need for restoring the river and meeting the downstream ecological and social needs have been going on. These focused discussions have been instrumental in a wider understanding of the upstream downstream linkages of the impacts, the need for maintaining the environmental flows in the river to meet the downstream needs and prevent saline intrusion, among the people.

This in turn has led to different communities and local self governments in the river basin to utilise the two Court ordered Public Hearings as platforms to strongly express their opposition to the new dam proposal in the context of the downstream social and ecological impacts. They could point out that the drastic daily fluctuation in river flow due to the new dam along with already existing ones would severely impact upon the downstream ecological and social needs of the river. The Public Hearings were held based on the Environmental Impact Assessments carried out for the project. This public opinion has presently led to the formation of a larger conclave of 30 organisations in the river basin to jointly work towards river restoration.

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Introduction

Dams and river diversions have been one of the major factors affecting environmental flows of rivers all over the world. Major rivers like the Nile, the Ganges, the Amur Dar'ya and Syr Dar'ye, the Huang He are each now so dammed, diverted or over tapped that for parts of the year, little or none of their fresh water reaches the sea. Many rivers now resemble elaborate plumbing works, with the timing and amount of flow completely controlled by planners and engineers so as to maximize the river's benefit to human activity¹.

From the Nile to China's Yellow River, some of the world's great water systems are now under such pressure that they often fail to deposit their water in the ocean or are interrupted in the course to the sea, with grave consequences for the planet. Adding to the disaster, all of the 20 longer rivers are being disrupted by big dams. One-fifth of all freshwater fish species either face extinction or are already extinct. Rivers, such as the Jordan and the Rio Grande on the US-Mexico border, are dry for much of their length².

The damming of rivers has brought a profound change to watersheds. A wild river is dynamic, forever changing- eroding its bed, depositing silt, seeking a new course, bursting its banks, and drying up. It is the most active element in a landscape, being the dominant factor shaping the landforms and livelihoods. The domain of a river is effectively the same as its catchment and any engineering changes in the regime affect the whole catchment. A dam is static- it tries to bring a river under control, to regulate its seasonal pattern of floods and low flows³.

The last century witnessed the largest dam building activity all over the world. To date we have more than 45,000 large dams over most of the major rivers of the world. By building more than 4000 large dams, India is the third largest dam builder on earth after China and the USA. At present India tops the list of countries for dams under construction. As per the World Commission on Dams findings the most important impact of dams is the physical transformation of rivers⁴.

Starting from just 346 large dams in 1950s, India has built over 4600 dams to date. At least 80% of water sector budgets in the country is still earmarked for big projects. The evolutionary purpose of a river, that includes delivering nutrients to the sea, with their complex food webs; sustaining economically and culturally important fisheries; protecting wetland, with their capacity to filter out pollutants; providing habitat for a rich diversity of aquatic life; safeguarding fertile deltas; protecting water qualities; maintaining salt and sediment balances; and offering some of the most inspirational beauty of the planet seems to have been always overlooked.¹

The nation wide campaign to save the Silent Valley forests in the Western Ghats in late 1970s, the Narmada valley struggle since 1985 and the Tehri dam struggle in the Himalayas to name a few and the basic questions related to river basin development these issues and struggles have raised perhaps has contributed to the evolution of the thought process for the need for a comprehensive environmental impact assessment (EIA) of such high investment projects all over India for safeguarding our rivers. In spite of the EIA Notification 1994 and its amendments and its latest alterations in 2006, dams building still continue. Over years the impact of dams and diversions on the downstream flows and population needs has emerged as a source of conflict among upstream downstream communities even leading to legal struggles across India. With the increasing pressure on rivers for various needs, the need to address water management at a river basin level without compromising the survival needs of a river is emerging.

Problems are complex, so the decisions have to be often contextual. Unfortunately, decisions on how and what of river basin management are often taken without consultation with the primary river dependents. The ongoing struggle against a seventh dam across a small Western Ghats River in Kerala led by a citizen led RBO have triggered the need to re look at our rivers, river rights, the need for rivers to flow vis a vis cater to human needs alone and the need for consultations with all river dependents and agencies while taking decisions affecting river flow.

Western Ghats – An Over view

Arising abruptly from the narrow Konkan and Malabar coasts, the Western Ghats run 1600 km north-south between the river Tapti in Gujarat and Kanyakumari in Tamilnadu covering an area approximately equal to 160,000 sqkm. In the east, they slope gently towards the Deccan Plateau. Towards the south, the hill chain is divided into two by the 30 km Palghat Gap rendering a physically homogeneous high altitude plateau into two rather distinct bio geographic units viz., the Nilgiris complex in the north and the Anaimalai-Palnis complex in the south⁵. About five million scheduled tribes and scheduled caste people not only live in the Western Ghats Forests, their very survival depends on the natural resources of this tract. Indirectly this mountain range influences the well being of the entire population of the five southern states through modulating climate, river water flow, ground water recharge, adding fertility to river valley and delta soils, providing a wide range of natural produce for the really impoverished population. A large quantum of raw materials for industries such as rayon, newsprint, wood etc. is also obtained. A large proportion of hydel energy in Peninsular India is also generated in the Ghats⁶.

The entire cash crop cultivation (specifically humid tropical crops of a wide range including coffee, tea, cardamom, pepper, rubber, ginger, cocoa, cloves, turmeric etc.) in Peninsular India is grown in this mountain range. All coastal fisheries in the west coast depend on the nutrient discharge into the coastal seas and the subsequent marine productivity. The nutrients originate and are transported by the rivers from the Western Ghats⁶.

The Western Ghats mediates the rainfall regime of Peninsular India by intercepting the southwestern monsoon winds. The western slopes of

the mountains experience heavy annual rainfall, while the eastern slopes are drier; rainfall also decreases from south to north. The wide variation of rainfall patterns in the Western Ghats coupled with the region's complex geography, produces a great variety of vegetation types. These include scrub forests in the low-lying rain shadow areas and the plains, deciduous and tropical rainforests up to about 1,500 meters, and a unique mosaic of montane forests and rolling grasslands above 1,500 meters⁵.

A unique repository of high floral and faunal biodiversity with high degree of endemism and restricted range species, the need for preserving this Global Biodiversity Hot Spot has been reiterated in all concerned regional, national and international forums.

The Western Ghats is the main watershed in Peninsular India giving birth to the three principal rivers namely, *Krishna*, *Godavari* and *Kaveri* flowing east to the Bay of Bengal. A very large number of short, perennial, torrential west flowing rivers originate from the western side of the Western Ghats and join the Arabian Sea (Lakshadweep Sea).

Kerala Rivers in the Western Ghats – Present Status

The State of Kerala, bound by the Western Ghats along its Eastern border is believed to be one of the richest states in India in terms of rainfall and water resources. The presence of the Western Ghats, one of the most biodiversity rich regions of the world has indeed contributed to this status. Atleast 44 perennial, short torrential rivers originate in the Kerala part of the Western Ghats out of which 41 flow west to join the Arabian Sea. Three rivers namely *Pambar*, *Bhavani* and *Kabani* flow east and form the tributaries of the east flowing *Kaveri* River.

The rivers of Kerala are very short with very small catchments when compared to other Peninsular Indian rivers. The total catchment of all the 44 rivers amounts to about 43,000 sq.km, less than half of that of *Kaveri*, a single east flowing river. In other words, none of the rivers of Kerala fall under major rivers category. An undulating topography coupled with a steep gradient from East to West, the abundant but intensive seasonal rainfall and the forests in the Western Ghats have provided the canvas for the origin of these short rivers.

These perennial rivers though small are the most important source of freshwater for Kerala. The seasonal burst of rainfall, the steep and hilly terrain causing rapid run off of the rainfall and the very fragile and thin layer of tropical top soil does not offer conditions for significant amount of groundwater storage. Hence rivers and related water resources have provided the rich backdrop for the more than 3 crore population to live off the land and agriculture to flourish. The other surface water resources have been developed by the people based on the river flows and the drainage they provided.

The catchments of Kerala rivers of the Western Ghats has a long history of deforestation for several purposes that took place in several phases over the last two centuries; massive deforestation of the rich climax evergreen forests above 900 m MSL for cash crops of coffee followed by tea and cardamom starting from the early 19th century initiated by the British, deforestation of lowland forests and midland hillock forests for cultivation, submergence and cutting down of forests for dams and river diversions and State induced deforestation for raising forest plantations. Over the last 60 years, the small state of Kerala has built around 60 dams with *Periyar*, *Bharathapuzha*, *Chalakkudy* and *Pamba* being the heavily dammed and diverted rivers. While most of the irrigation projects came up in the foothills, the hydro power projects were mostly replacing the evergreen tracts.

Heavy sand mining of river beds, encroachment into river catchments for cultivation, massive reclamation of wetlands and paddy lands, pollution of rivers from industries, urban bodies and *grama panchayaths* (local self governments), destruction of midland hills and hillocks along with deforestation have left their trail of impact affecting the river flow, river ecology, water table and water quality across the length and breadth of all the rivers in the State.

Chalakkudy River Basin - An Overview

The 144 km long Chalakkudy River the fifth largest river in Kerala is an Inter State river that drains the runoff from a 1,704 sq.km catchment. Out of the four main tributaries, its northern tributaries originate from the *Nelliampathy* hills and its southeastern tributaries originate from the *Anamalai* Hills of Western Ghats. Total utilisable yield of the river basin is estimated at 2,033 MCum out of which 494 Mcum is expected

from Tamil Nadu⁷. This is also one of the better studied and unique river basins in India. The very high variation in rainfall pattern and distribution across different locations within the river basin ranging from Parambikulam a low rainfall area to Valparai a very heavy rainfall area has allowed niches for different vegetation patterns to evolve in the valleys over time. Hence the Chalakkudy river basin is known for its rich floral and faunal diversity, riparian species diversity and fish diversity. The sustenance of this richness is in turn dependent on the wellbeing of the river.

The Anamalais and Nelliampathies

The Anamalais (also known as Elephant Hills) located in the Southern Western Ghats are Precambrian high plateau land forms like the Nilgiris, Palni Hills and the High Ranges. These ancient mature land forms play a decisive role in regulating Central Kerala's climate, water and land use. The Anamalais probably had the largest extent of rainforests in the entire Western Ghats 200 years back. This region also harbours a number of protected areas and several reserved forests. It is also the source of origin of three most important west flowing and heavily utilized rivers in Kerala – *Periyar, Bharathapuzha, and Chalakkudy*. The Nelliampathies starting from the southern and south western margin of the Palghat gap are connected to the Anamalai through the lower elevation Parambikulam Valley presently a protected area. Large areas in the Anamalais and Nelliampathies have been cleared for forest plantations, reservoirs, and coffee, tea and cardamom estates over the last 150 years. The long term conservation value of the Nelliampathy- Anamalai region has been pointed out by many experts working on Western Ghats.

One of the most unique features of this inter state river basin that distinguishes it from other river basins in Kerala and even perhaps India is the fact that more than two third catchment of the river basin; 1200 sq.km is still within the jurisdiction of the Forest Department. Presently, the river basin has three Forest Divisions and a Wild Life Sanctuary (Parambikulam Wild Life Division) within Kerala. The Chalakkudy River basin has more than 150-year-old history of human induced deforestation for cash crop plantations of tea, coffee, forest plantations of teak by the British, clear felling and selection felling by the Forest Department, leasing out prime forest areas to dams, reservoirs and other related infrastructures, human settlements, public limited corporation etc.

The Forests of Chalakudy river basin are well known for their exceptionally high biodiversity. Three Important Bird Areas (IBAs) namely, Vazhachal Forest Division, Parambikulam Wild Life Sanctuary and Nelliampathy Forest Range have been identified by Bird Life International within a single river basin with A1 (Red Data Book sps.), A2 (Restricted Range sps.) and A3 (Biome Restricted Assemblages), bird species being found here⁸. The Vazhachal Forest Division within the river basin is also an exceptionally high elephant habitat area. Asian Elephant Research and Conservation Centre (AERCC) even recommended the upgradation of the Vazhachal Forest Division within the river basin to a National Park or Wild Life Sanctuary due to the very good elephant habitat in its 1993 census (947 elephants)⁹.

Tribes in the river basin

The *Kadas* are one among the three essentially non-sedentary, non-agricultural tribal communities inhabiting the Western Ghat rainforests in Kerala. They are almost exclusively restricted to the Chalakkudy River Basin. Just around 1500 in number these negrito communities have been living in this river basin since time immemorial fishing in the river, hunting small wildlife and collecting roots, tubers, honey and other non forest wood products from the forests of the river basin. Other important tribal communities include *Muthuvas*, *Malayas*, *Mala Malasars* and *Mannans*. Muthuvas are agriculturalists. The other four tribal groups find their home in other river basins as well. There are atleast 21 *Kada* settlements in the river basin. After one and a half centuries of constant forced translocation across this terrain due to clearance of forests for plantations and submersion of their settlements due to dam reservoirs, they are currently getting stabilised along the main valley of the river¹⁰.

Fish Diversity of Chalakudy River

Chalakudy River has an exceptionally high fish diversity and abundance unique to India. Of the 104 species of fish reported from this 144 km small river, 5 species are new to Science (*Horabagrus nigricollaris*, *Travancorea elongata*, *Osteochelichthys longidorsalis*, *Puntius chalakkudiensis* and *Garra surendranathanii*), 9 sp. are critically endangered, 22 sp. are endangered and 11 sp. are vulnerable as per the IUCN norms. Even Periyar, the 244 km longest river in

Kerala, only has 77 species recorded and its threatened status is lower than that in Chalakudy River¹¹. Endemic fishes in Chalakudy River are as high as 54.3%, the highest among all the rivers in Kerala and it is a declared 'Mahseer Bank'. The National Bureau of Fish Genetic Resources (NBFGR) has recommended the declaration of the upstream areas of Chalakudy River as potential fish sanctuary taking into consideration the endemic and endangered fish populations inhabiting there.¹²

Wild and Scenic Places

The Chalakudy River has two famous waterfalls namely Athirappilly and Vazhachal which attract lakhs of tourists to the river every year apart from Nelliampathy and Parambikulam Wild Life Sanctuary. The 45 m high Athirappilly waterfalls alone were visited by around 7 lakh tourists in 2006. The river and the waterfalls have entered the world tourism web sites due to these waterfalls. Parambikulam Wild Life sanctuary is a good wild life habitat. Elephants, gaurs, tigers, leopards, spotted deer, Nilgiri Langur, Lion Tailed Macaque, sloth near etc. are seen in the forests of the river basin.

The Chalakudy River Basin – Utilization

Dams and Diversions and their impacts

Chalakudy River is one of the heavily utilized rivers in Kerala. Six dams have been constructed across the tributaries and the main River since 1940s out of which four are part of an Inter State Inter Basin River Diversion Treaty (Parambikulam Aliyar treaty) signed between Kerala and Tamil Nadu since 1958. Around 40% of river water is diverted by this Treaty. The drainage map of the river with the dams is presented in Fig.1. The Treaty and its implementation are ridden with violations. Apart from that, due to the massive diversions from four dams of the Parambikulam- Aliyar Project, the natural behavior of the river has been completely disrupted. The three tributaries namely *Parambikulam*, *Thunacadavu* and *Peruvarippallam* have completely stopped flowing below the dams due to the complete diversion of water from these tributaries affecting the ecology of these streams. Minimum flow to maintain the life of the tributaries has not been ensured. The complete diversion of three tributaries has been blatant violation of the

riparian rights of the lower riparian Kerala State. The major portion of the *Sholayar* tributary has been transformed into a chain of reservoirs. There is a huge variation in the river flow, sediment load transport, water quality etc. in the monsoon and non-monsoon period due to these diversions in the Chalakudy River. The details of the dams are provided in Table 1.

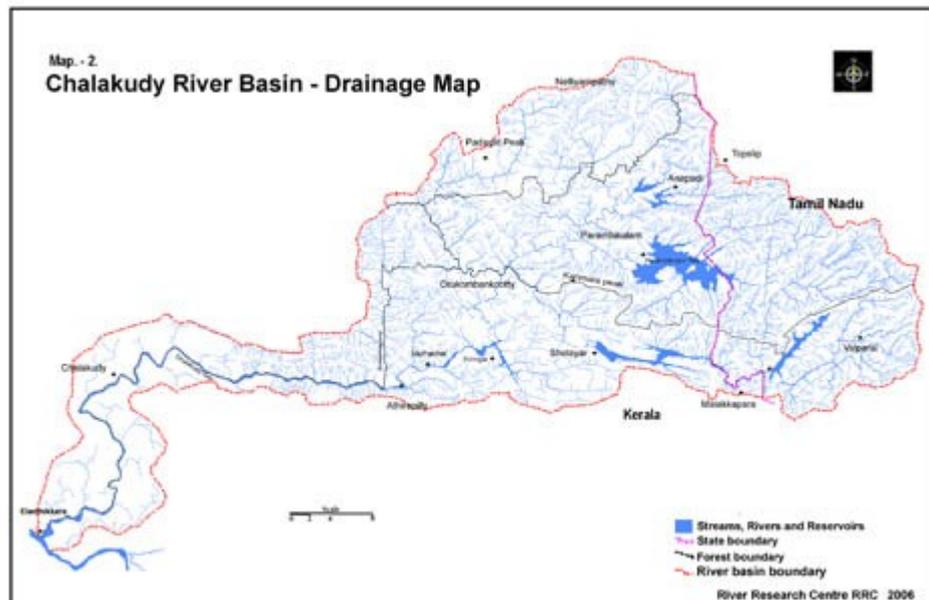
Table.1 Dams in the Chalakudy River Basin

No	Name of the Dam	Purpose ¹	Year of construction	Height of the dam (m)	FRL ³ (m)	WSA ⁴ (sq. km)	Catchment area (sq.km.)
1	Poringlkuthu	P	1949-57	26.21	423.98	2.84	1000.00
2	TN Sholayar*	P, D	1961-71	105.16	1002.79	5.26	121.73
3	Kerala Sholayar	P	1964-66	57.60	811.68	8.70	186.45
4	Parambikulam*	D	1959-67	73.15	556.26	20.72	228.41
5	Thunacadavu*	D	1963-65	25.91	539.50	4.32	43.25
6	Peruvarippallam*	D	1965-71	27.74	539.50	2.90	15.80
	Total					44.74	

¹ P- Power Generation, D- Diversion, ² FRL - Full Reservoir Level, ⁴ WSA- Water spread area
Source: Irrigation reservoirs in TN, 2002. Irrigation Management and Training Institute. Trichy.
Water Resources of Kerala.1974.PWD, Kerala.

* Dams under the Parambikulam Aliyar treaty

Fig.1. Drainage map of Chalakudy River Basin



Since 1992, another inter basin diversion from one of the existing dams Poringalkuthu HEP to the adjacent Periyar river basin is being carried out to augment the hydro power production and improve downstream flows of that river. This has led to further reduction in monsoon flow into the river.

A Major Irrigation project (Chalaky River Diversion Scheme) commissioned in the 1950s downstream of the six dams has been diverting water from the river to cater to the drinking and irrigation needs of population living in 18,000 ha. ayacut area. Since the commissioning of the dams and diversions upstream (five of the dams were constructed after this project was implemented) the efficiency of this irrigation project has been severely disrupted leading to head and tail ender conflicts and fluctuations in water release especially during lean summer months when irrigation and drinking water needs are high. The entire project operation has become dependent on the tail water release of the upstream dams leading to upstream downstream conflicts.

Sand Mining

Sand mining from the river bed by atleast eight river side grama panchayaths has lowered the river bed even below sea level in many places and altered the river flow and water quality downstream. Though it provides daily employment to thousands, sand mining has affected the fish breeding and feeding, fishing activities and livelihood of traditional inland fishing communities and mussel collectors. Though the sand mining Grama panchayaths (local self governments) are bound to pay a fixed percent of income generated from sand mining towards River Management Fund as per the the *Kerala River Banks Protection and Regulation of Sand mining Act, 2001*, which in turn has to be utilized for river protection activities, no concrete action has been taken so far. Trade unionism and political protection of sand mining contractors and labourers is making regulation of sand mining almost practically impossible.

Lift Irrigation and Drinking Water Schemes

At least 615 minor lift irrigation schemes (below 25 HP) and 85 major lift irrigation schemes (above 25 HP) pump water from this river operated by the Government and the river basin local self governments apart from the innumerable private lift irrigation projects (5 HP types) installed by landowners living along the river banks. Water for 30 odd drinking water supply schemes and four industries is also pumped from this river. There are two recently installed water theme parks for recreation in the upstream that heavily draw upon the water from the river. New schemes are being planned and implemented at an alarming rate without giving any concern to the river's health and carrying capacity. Around 5 lakh people depend on this river for various needs. Over the past few years, the water level in the river is gradually receding especially in summer months when the water demand is highest forcing the farmers to sink the foot valves deeper to pump more water.

Pollution

Pollution of the river and river banks in the tourism zone in upstream forests with plastics and other waste generated by the tourists poses severe health problems to the river life, the *Kada* tribals living on the river banks, the people living outside the forest area and the wild life. The *Kada* tribals and non tribals living in the fringe areas of the forest have formed *Vana Samrakshana Samithi* (Forest Protection Committees) in association with the Forest Department for protection from forest fires, impact of tourism and afforestation.

Apart from these, sewage from the townships and municipalities along the river banks, pesticides and fertilizers applied in the plantations of tea, cardamom etc. in the upstream areas and paddy lands and other agricultural lands in the mid lands, saline ingress due to reduction in stream flow downstream are all problems which permanently threaten the river ecosystem and river health. Traditional inland fishing communities who have been exclusively living off fishing for several centuries are losing their livelihoods due to the cumulative effect of all the above mentioned threats.

The past few years has also witnessed worsening drinking water scarcity in the midlands and plains of the river basin in the form of lowering water table, saline ingress moving upwards indicating that the river flow has reduced drastically.

The “Chalakydy Puzha Samrakshana Samithi”

The rapidly deteriorating health of the Chalakydy River and the threat of further degradation due to new river basin development projects was a cause of great concern for the people in the Chalakydy River Basin. Some ecologically sensitive and socially conscious people often shared this concern when they gathered together. Gradually the *Chalakydy Puzha Samrakshana Samithi* (CPSS) was born in 1986 from this mutually shared concern. Initially, the major activities of the Samithi included carrying out field visits and treks along the various tributaries of the river basin and boat rides to the downstream side for better understanding of the river basin, sharing the information with the public, holding nature camps and treks in the forests in the river basin, campaign against newly proposed projects like the Athirappilly Hydro Electric Project, the Karappara- Kuriarkutty multipurpose project, etc which were believed would further impair the flow and health of the river. The activities gained momentum since 2001 when the Kerala Government decided to construct the 163 MW Athirappilly Hydro Electric Project, a seventh large dam across the river. More and more local voluntary and political groups and some of the local self governments (grama panchayths) started taking active interest in CPSS activities.

The RBO led Campaign for river protection

Athirappilly HEP – A seventh dam proposal

Based on the series of field level studies and data base gathered on the river basin, the CPSS was convinced that given the highly fragile condition of the Chalakydy River one more dam would mean total impairment of the downstream flows and degradation of the river ecology. The 23 m high Athirappilly Hydro Electric Project proposed upstream of the two famous waterfalls and downstream of the already existing six dams would entail the destruction of around 140 ha of tropical riparian forests and forest plantations, severely affect the flow, beauty and magnificence of the two water falls, lead to forced displacement of around 300 *Kada* tribals (already dam displaced and disrupted),submerge the best stretch of remaining low elevation riparian forests in Kerala Western Ghats, submerge the most frequently used elephant movement route from Parambikulam Wild Life Sanctuary in the north east to the Pooyamkutty Forests in the south

east, submerge the nesting and breeding sites of globally threatened Malabar Pied Hornbills, to name a few. Moreover, the new project proposed as a 'peak load station' will severely alter the operation of the downstream Major Irrigation Project and hundreds of lift irrigation schemes and drinking water schemes.

Campaign against new dam sets off RBO dialogues

The citizen led RBO gradually initiated discussions with the 22 river basin grama panchayaths, *Kada* tribes, *Vana Samrakshana Samithis*, local groups, youth clubs, women groups, schools and colleges, tourists visiting the waterfalls etc. Actually, the environmental clearance granted to the project in 1998 triggered the river basin level dialogues. The CPSS filed Public Interest Litigations in the High Court of Kerala, challenging the Environmental Clearance Notification (1994) under the Environmental Protection Act (1986) of the Government of India and the Environment Impact Assessment carried out for the project itself.

The campaign against the new dam became the starting point for initiating river basin dialogues. Using the proposed project as a backdrop, the present status of the river, the upstream downstream linkages, the need for review of the Inter State Diversions, the impact of the new dam on the tribal and *Vana Samrakshana Samithi* livelihoods, on the waterfalls and eco - tourism activities, the impact of flow fluctuations once the project is implemented on the downstream water availability for irrigation and drinking needs, etc. became discussion topics in several platforms. Various means were used to reach out to the communities as elucidated below.

1. Three workshops were organized by the CPSS for the members of all the 22 river basin grama panchayaths and municipalities in 2002 and 2003 to create awareness on the need for looking at their river basin differently, trying to understand the upstream - downstream linkages of the problems raised by sand mining, dams and diversions, etc. Consequently, seven local self governments passed 'resolutions' to protect their drinking and irrigation water needs from a seventh dam. Most of the panchayaths pointed out the need for review of the Parambikulam Aliyar Agreement and release of due share of water for fulfilling downstream needs and submitted a memorandum to the Chief Minister demanding the same. The

CPSS made several submissions to the CM and other concerned authorities pointing out the need for reviewing the Agreement.

2. Continuous Small group meetings are being held with the different river basin communities like tribals, women, grama panchayaths, fishing communities etc. Subjects like what is a river , what ails the Chalakudy river, what are the issues raised by the new dam, the violations in the Environmental Impact Assessment Process carried out for the proposed dam project, the possible impacts of the dam on the river etc. are deliberated upon. These informal interactions have led to the development of good rapport and mutual trust between the communities and the CPSS and deepened their understanding of the need for looking at the river holistically.
3. Through nature camps, exhibitions, films and lectures, students and youth in the river basin are being sensitized towards the dismal status of their river and the impact of new development projects that would degrade the environment further and consequently affect the river flow. This is an ongoing process.
4. A River walk organized during November 2005 from the river mouth to the dam site followed by a 'Water Rights Convention' to enable people to understand their river on-field was attended by farmers, political organizations, kids and youth and women in large numbers.
5. Several student groups from within and outside the state and even the country have visited and traveled the river with CPSS members to understand the basics of a Western Ghats River ecology and flow. They have also interacted and learnt from the tribal and VSS communities on their river dependence.
6. Poster exhibitions and sign on campaigns have been held several times at Athirappilly waterfalls to create awareness among tourists on the need for river protection.
7. Two 'Kids for rivers' groups have been formed in the upstream and downstream sections of the river for sensitizing younger generation towards river protection and restoration.
8. Constant interaction with the visual and print media has been maintained. They have supported the CPSS for highlighting and

generating debates among the public on the problems faced by the river through features and public debates.

9. An indefinite *Satyagraha* (sit in) organized near Athirappilly waterfalls in protest against the dam project during 2005 December to 2006 March turned out to be a learning process for the communities and groups participating in the *Satyagraha*. The communities were able to shed their inhibitions through constant interactions and often heated discussions with the tourists and other visiting groups on the river and the impacts of the dam project.
10. The Environment Impact Assessment carried out for the new dam project was discussed in all available public forums by CPSS members focusing on the need for river basin level EIAs for Dam projects instead of project based EIAs.

Public Hearings become platforms for raising river basin issues

The outcome of the constant RBO level interactions were reflected by the overwhelming public responses at the two Public Hearings held for the proposed Athirappilly project by the Government of Kerala. The two environmental public hearings were held in 2002 and 2006 based on Kerala High Court orders for the two EIA reports prepared for the project. These public hearings were utilized by the different river dependents, scientific community, engineers, ecology experts, hydrology experts, students, tribals, farmer groups, political groups, local self governments, non governmental organisations etc. as platforms for posing queries and raising discussion points on the need to re look at river basin development to the Kerala Government, the State Power Board (Kerala State Electricity Board) and the Ministry of Environment and Forests, Government of India. Many of the issues raised at these public hearings hold relevance for the entire country as well. Some of the important issues raised at the two public hearings are;

1. Need to view the conflicts arising out of the proposal for a seventh dam project in the river against the context of overall water utilization in the river basin, impact on other existing projects and water uses, impact on the river as such as an ecological entity and of the larger issues of how to meet the

increasing demand for water in our river basins without compromising equity, quality and distribution while maintaining the minimum flow and ecological needs of the river.

2. The compartmentalized manner in which 'river basin development' and 'water management' at a river basin level has been dealt with all these years by different government departments, local self governments and agencies utilizing the river without taking care of the upstream downstream linkages and its impact on the primary river dependent communities like tribes, fisher folks and grama panchayaths.
3. The lack of proper hydrological data base for any of the rivers in Kerala for assessing the carrying capacity and environmental flows needed for sustaining the flow of a river till it empties into the ocean.
4. The consistent manipulation of hydrological data base by concerned project authorities for making projects economically and technically viable
5. Presently the Kerala State Electricity Board (KSEB) controls and regulates the river flow. Their dam releases decide the flow pattern. This main contender has to become more responsible to downstream needs of the river. A river basin level committee consisting of other main agencies and people representatives and CPSS to regularly monitor and decide the reservoir releases has been suggested.
6. The KSEB and the river basin local self governments have to take a main role in restoring the degraded catchment
7. Need for carrying out carry out a comprehensive participatory post facto impact assessment of hydro and irrigation dams on selected rivers in Kerala to understand what have been the actual gain and losses.
8. Need for preserving the remaining ecology of Chalakudy River given the unique biodiversity potential of the river basin.
9. Need for settling the existing inter state river diversion disputes (Parambikulam Aliyar Treaty) before embarking on new projects in the river basin.
10. The right of the river to flow has been denied which often missed out in river basin development and management plans.

The Evolution of Chalakudy River Protection Forum (CPF)

The campaign to save the river entered the second phase in 2005 when the MoEF decided to grant clearance to the project for a second time again based on a flawed EIA process and report. The need for

localizing the campaign efforts strongly emerged as a reason for more groups and individuals to actively join CPSS activities. The campaign also spread from a research and advocacy level to a political lobbying level. In June 2005, around 30 local and regional, social and environmental groups, local body members, political groups etc. along with CPSS formed the Chalakudy River Protection Forum (CPF) a strengthened platform for addressing river basin level issues. The CPF has also started involving in other issues facing the river like municipal waste management, sand mining, pollution, etc. The River Research Centre has been consistently supporting the CPSS and now CPF through systematic data collection and documentation, interpretation of technical and scientific documents to communities etc.

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