

The evolution of valuing and collecting water data at Keystone was a years long process that involved many projects. Data while understood as important was not institutionalized or utilized for proactive management until recently.

Keystone Foundation is best known for its work on honey, natural resources and issues of indigenous people in the Nilgiri Biosphere Reserve. Slightly lesser known but informing the organizational vision is the work on water and related issues in the NBR. This is an overview of Keystone's motivation to work on water issues and the activities that have been undertaken over the last 18 years.

We look at the work in terms of different projects that have been implemented over time in the Nilgiris.

### Starting small in one village in 1995

Kilcoupe, an Irula hamlet in the Nilgiris was where it all began. Kilcoupe is a small village of nine families who had been settled in the area to work on the forest coupes. As such the boundaries of the village were a river on one side and thick forests on the other. Wild animals like elephants and gaur often crossed paths with the village community.



Our first project was on appropriate technology in beekeeping. Taking off from this, we started talking about their agriculture and other related issues of living in/close to the forests. During this we started talking to the women and found that in Kilcoupe, the women went out with their pots into the forest to spring holes in search of water. There was quite a large chance that they would encounter either a gaur or an elephant, sometimes even a leopard. There was quite a bit of risk involved in this activity. Sometimes women with children or an elderly woman would be out in the forests for half an hour or 45 minutes. They did not have electricity in the village and there was no piped water supply. So while we realized that bees and beekeeping were a source of interesting conversation for them, if we did

something with water that would be quite valuable for them immediately. We thought we would look at their traditional sources of water.

Being a forest settlement, the revenue department had no control or power over this village. Sometime in the past a government scheme had established a water supply system to Kilcoupe. We came to understand that springs had been tapped for water that would flow into constructed tanks through gravity and then be supplied to both the upstream settlement of Melcoupe and the downstream settlement of Kilcoupe. It was only a matter of time before inter-village tensions over water sharing broke out and the flows to the Kilcoupe were stopped by Melcoupe. An incident of elephant rampage also destroyed the pipes going down. Since then Kilcoupe had been dependant on collection of water from the forests.

There was a river that flows down from Kotagiri to Kilcoupe and Melcoupe. They used to go for bathing to the stream but their drinking water supply was always from protected springs. We made a small filtration system next to the river, tapped the water from the stream and installed a pipeline of more than 3 km that carried water all the way to the village. "I still remember that day when we worked till



late to complete the work and when we walked down to the settlement there was this joy at seeing water right inside the village", recounts Pratim Roy, Director, Keystone.

But this excited the Forest Department and inspired them to build a large checkdam to supply water for irrigation to the settlement. At that time, the village had only 9 families – in 1995 – and each family owned two acres of land and the water helped them do agriculture. So the water brought agriculture and agriculture led to the first demonstration of electric fencing in the region.

Another realization during this time was that health issues like diarrhea peaked during monsoon and this we connected to the water. So we had a small water testing lab to spot coliform. So basic messages of



boiling drinking water were shared. We also realized that there were no toilets in these villages – so a lot of human solid waste and night soil found its way into the water. Also the water was carrying quite a bit of pesticides from the tea and vegetable cultivation upstream. So this small implementation project in Kilcoupe led us to understand what happens in the Nilgiris landscape with respect to water.

### Looking at the bigger picture

In order to better understand the situation of water resources in the district including the kinds of water sources, the kinds of community based water management systems



– if there were and how they had changed, how these have eroded or been ruptured, what the issues were at various elevations and the importance of springs in this area, a primary survey was conducted in 2001. This has been documented earlier in the posts Hill Waters and Livelihoods [Part I](#) and [Part II](#).

### Improving access to water in Sigur

Following up our work on the status of water resources in the Nilgiris, we realised the need to develop models in the field to demonstrate alternate approaches to tackle the water situation. We decided to focus on the Sigur plateau area which is a complex landscape of indigenous people, protected area and high tourist presence. Indigenous habitations being part of large non-tribal dominated panchayats were traditionally neglected in the development interventions. The project had the following components,

- To trace the history and use of water and analyze reasons for the breakdown of community based water management systems.
- To arrive at a Water Resources Audit.

- To work at the grassroots level with community institutions and design interventions along with them for sustainable water management, and
- To build a peoples' regional water management plan.



Primary data on a variety of aspects such as socio-economic, water quality, weather, land use etc. Was collected both from secondary sources as well as through primary surveys based on pre-defined formats. This data was analysed in spreadsheets and an analytical report prepared (See attachment). For understanding the land use pattern, cadastral maps were digitised and individual land holdings marked on them. Drainage maps were also derived for watersheds prioritized by the HADP. GPS surveys were used to mark the village boundaries. These were used to derive land use maps. Perennial and seasonal streams were digitised and bore wells, open wells and other structures were geotagged. This enabled us to map the spatial distribution of water resources in the plateau.

At the village level, water user groups were formed to maintain the water infrastructure through their collective savings over time. These groups were also provided with water quality data on a monthly basis so that they could take appropriate measures.

For looking at water issues in an urban setting, Coonoor town was chosen and the streams contributing to the river flowing through the town were surveyed. Water quality data was collected during these river walks and the findings shared with a cross section of stakeholders in a series of public meetings. This helped raise awareness about the status of the Coonoor river and its catchment area.

Wetlands – the neglected ecosystems



When we did the Hill waters and Livelihoods project in 2001-02, we realized that we definitely need to look closely at the wetlands in the Nilgiris. Administratively, wetlands fall under the category of wastelands and do not have any separate category that recognises their significance.



We formulated a project to look at different community management systems for wetlands and different user groups for wetlands. We surveyed 38 wetlands in the Nilgiris and prepared a status report to highlight the plight of these important ecosystems. The data was collected by interdisciplinary teams of Keystone staff who visited each wetland and collected data based on a predefined format. The data was managed in spreadsheets and maps were also prepared based on this data.

Traditionally, the indigenous communities in the Nilgiris were intrinsically linked to the wetlands. For instance, proximity to wetlands was one criterion for establishing of Toda settlements (munds), and the Kotas depended on clayey soil from wetlands for pottery, while Irulas and Kurumbas used to hunt around the wetlands.

However most of the wetlands were facing threats from encroachment, diversion of wetlands for construction, invasive species, drying up due to plantation of exotic trees in upstream areas etc. The lack of legal recognition coupled with pressure for land from various stakeholders has led to a decline in the quality of wetlands.

In order to initiate some remedial



action with regard to

the status of the wetlands, we prepared management plans for five selected wetlands. We shared the plans with the Hill Area Development Plan (HADP), which led them to allocate funds for protection of wetlands. One wetland, that is actually the head of one of the major tributaries of the Coonoor River, and where they were going to a landfill was protected as a result. We also implemented a management plan in partnership with the Town Panchayat in Happy Valley wetland in Kotagiri as a demonstration. These were shared with the various stakeholders in a workshop and a strategy to conserve hill wetlands was evolved. The report of the project and proceedings of the workshop are given as attachments.

Recently a focused study of three wetlands was conducted which reiterated the findings of the earlier project with respect to lack of tenurial security for wetlands. The project involved detailed floral and faunal surveys to assess the biodiversity status and also mapping of the land use of the catchment areas of these wetlands. Water and fish samples were also tested for presence of chemicals that were possible sources of pollution in the water. The reports from the study are attached.

This work was followed up by a recent project on using computer based simulation to understand the status of water resources in the Coonoor region. The details of this work are covered in the post [here](#).

Future





With increasing stress on water resources due to a variety of developments in the Nilgiris, there is an urgent need to work on the various dimensions that affect water resources, namely river catchment protection, springs conservation, solid waste management, recycling and reuse of waste water, sanitation, managing chemical use in farming etc. While Keystone has worked on these issues in pilot scales over the years in different locations, the plan over the coming years is to concentrate in the Coonoor region and demonstrate the impact of integrated and holistic interventions to improve the water resources situation there. Specifically in the town area, work is underway to assess the feasibility of a Payment for Ecosystem Services Model to promote and reward water conservation while addressing the shortage of water supply. Going forward Keystone's data strategy will have to change to meet the growing needs of the community. In the next post we will look at how data and modeling allows Keystone to make proactive efforts at effective water management.