

Annexure II

A Narrative about the best practice of Siruthuli (In 2000 words)

Artificial Groundwater Recharge through Roadside and Open space Rain Water Harvesting Structures in Coimbatore city

India is a land where rivers form the veins of the country and is blessed with adequate rainfall as a whole. Yet there are large swathes of dry, drought prone area. In many other places the quality of groundwater is not good. In such places rainwater harvesting can provide lifeline water for survival. But this water is often left waste and is little harvested. The rain water falling on roads, private/government vacant places and play grounds etc straight away reach to the nearby drainages and ultimately mixes with sewage water. As a result of this, the entire rain water becomes polluted and eventually it contaminates the ground water. Hence, rainwater harvesting from roads and vacant places becomes essential in order to recharge the ground water. The Central and State Governments are taking all possible steps for harvesting rainwater throughout India.

The city of Coimbatore grew along the banks of River Noyyal that consists of a system of canals, channels, anicuts and lakes. But negligence and pollution due to the rapid growth of industries clubbed with population growth and urbanization, resulted in depletion of ground water beyond economical pumping state. The UNDP studies in 1980s, declared Coimbatore drought-prone, with the fastest depletion of ground water level in the whole world.

The year 2003 witnessed Coimbatore in its worst, with ground water table levels as low as 1000 feet deep and the green cover of Mother Nature getting depleted. Even drinking water started to become a very scarce commodity at alarming levels. Coimbatore became a hot plate, emanating heat with little water and green cover to support. People were reminded of the warning – a third world war for water?! Citizens' response was positive; their needs roped them in to do something for their city, and thus was formed Siruthuli, meaning 'a little drop' (in Tamil) in June 2003.

Much has been done since its inception to improve the level of underground water table and to nurture nature, by desiltation/standardization of tanks and anicuts, creation of new water bodies, river restoration, restoration of the green cover of this region through massive afforestation, solid waste management and spreading and inculcating the message of an eco-friendly and water-wise life among the citizens.

Actions taken to restore the River Noyyal have been borne fruit and soon it should become the perennial river as it was once, through the efforts of Siruthuli.

Decentralized water harvesting and ground water recharging is a striking response to the water scarcity and ecological crisis perpetuated by the growing problems of ground water depletion and quality deterioration in Coimbatore City. A Geo-hydrological study was carried out in the year 2004 to assess the feasibility of construction of rainwater harvesting structures towards enabling the recharge of groundwater table with the available run-off water that flows on the roads/streets of Coimbatore city. The end result of the study recommended to have a minimum of 600 nos. of RWH structures across the city.

The objectives of constructing recharge structures on roadsides and open spaces are:

- To harvest the run-off rainwater falling on the roads and open spaces of the city.
- To utilize the rain water to recharge the underground aquifers
- To prevent water stagnation on roads, thus helping to ease traffic and avoid accidents
- To prevent flooding on roads and open spaces.
- To improve the quality of underground water in this region.

Strategies adopted

To address this problem, Siruthuli decided to take up this project and to accomplish it in a phased manner. Considering the hard rock strata of the Coimbatore region, two different types of structures have been constructed for road side and open space rainwater harvesting. Each structure consists of a deep bore well, recharge pit, percolation/filter chamber filled with filter materials and concrete slabs.

Phase I : In Phase I, Siruthuli constructed 154 Nos of rainwater harvesting structures (RWHS) during 2004-2005 and 2005-2006 with the financial assistance from the Coimbatore Corporation, utilizing 0.09 Million USD. The structures have been constructed in areas where water logging was observed in four zones of the city.

The Rainwater Harvesting Structures proved efficient in recharging the groundwater table and hence from 2005 onwards it was observed that the water levels of Coimbatore city have risen in all zones. The present static water levels are between 15 ft to 60 ft depth in all the zones. The failed bore wells and open wells started yielding enough water for the farmers and the citizens. This shows the efficacy of the rainwater harvesting structures constructed during 2004-06.

Siruthuli's efforts to revive the water resources further got strengthened by the innovative idea to harvest the rain water falling on roads and open spaces of the city, which otherwise would have gone wasted. This novel project was able to bring out substantial changes in the quality as well as quantity of ground water in this region. The data collected from a locally established drilling company reveals the following facts, which prove the worthiness of the project implemented. The average static water

level, yield and cost of drilling in Coimbatore city for 3 years are given in the following table:

Year	4½ inches Borewell			6½ inches Borewell		
	Static water level in ft	Yield in inches	Cost of drilling in USD	Static water level in ft	Yield in inches	Cost of drilling in USD
2003	90	1.5	189.92	90	1.5	372.60
2004	122	1.3	246.17	131	1.3	508.14
2005	63	1.97	137.53	63	2.0	309.98

The average static water level of Coimbatore city during the year 2003 was about 90' with 1.5" yield and the cost of borewell amounting to 189.92 USD per borewell and for 6½ inch borewell amounts to 372.60 USD. During 2004, due to the monsoon failure in 2003, the average static water level of Coimbatore city went down to 122' – 131' and also the average yield of the borewell reduced to 1.3". The average drilling cost per borewell went up to 246.17 USD for 4½ inch borewell and 508.14 USD for 6½ inch borewell. The average static level in 2005 in the city has risen to 63' with an average yield of 2" and the cost of drilling for 4½ " and 6½ " borewells have come down to 137.53 USD and 309.98 USD respectively.

The above data reveals that in spite of cost escalations and higher rate of drilling in 2005, the average yield and Static water level of bore wells increased with very high reduction in average drilling cost of bore wells.

Thus the Rainwater Harvesting Structures proved efficient in recharging the groundwater table. From 2005 onwards it was observed that the water levels of Coimbatore city have risen in all zones significantly. The present static water levels are between 10 ft to 40 ft depth in all the zones.

Zone	Static Water Level (in ft)	
	During May '04	During May '09
West	160	33
South	155	14
East	160	25
North	150	15

The failed bore wells and open wells started yielding enough water mainly for the farmers and also the citizens. The assertion of the farmers of this region, that their wells and borewells started yielding water even in summer, stands as a true testimony to the effectiveness of the projects.

Phase II : Shri Ram Mohan Mishra IAS, Joint Secretary – MoWR visited a few RWHSS constructed by Siruthuli in the Phase I. Seeing the efficacy of these structures, Central Ground Water Board, Ministry of Water Resources(MoWR), Govt. of India has sanctioned 0.22 Million USD to construct 215 more structures within the city to harvest the run-off water from the roads and open spaces. A District Level Technical Coordination Committee (DLTCC) has been formed under the Chairmanship of the

District Collector, Coimbatore for technical guidance for proper implementation of the project and it comprises of The Regional Director - CGWB, Chennai, The City Engineer – Coimbatore Municipal Corporation, The Chief Engineer, Public Works Department, Govt of Tamil Nadu, The Chief Engineer – Tamil Nadu Water Supply and Drainage Board, Coimbatore, Managing Trustee – Siruthuli and Project Coordinator – Siruthuli.

This project got inaugurated on 2nd December 2009, and since then the work is progressing well under the supervision of District Level Technical Coordination Committee. 70% of the work has been completed in all aspects utilizing the 1st installment of 0.15 Million USD received from CGWB. The construction of the remaining 30% will commence as soon as the IIInd installment of 0.07 Million USD is received from CGWB.

The progress of work was verified by the members of DLTCC during the second DLTCC meeting held on 20th February 2010 and expressed their satisfaction in the quality of work carried out by Siruthuli.

Phase III : In Phase III, Siruthuli proposes to take up the construction of 231 Nos of RWHS, thus looking forward to ensure water sustainability in the city of Coimbatore.

Replicability of the best practice

The Regional Director, CGWB, Chennai has informed that this type of Rainwater harvesting has been discussed at high level technical committees in New Delhi and has been recommended to follow in all National Highways and Railway lines for proper recharge of runoff rainwater on the either side of National Highways and Railway lines. It also ensures prevention of damages to the roads and rail lines.

Sustainability of the project

The efficacy of the project has given confidence to many Corporate Houses, Industrial establishments and individuals to come forward and implement structures to recharge the rainwater in their premises.

1. Hindusthan Spinners Pvt Ltd, Narasimhanaickenpalayam, Coimbatore
2. Sreevathsa Residential Enclave, Mettupalayam Road, Coimbatore
3. Sri Ramasamy Naidu Vidhyalayam, Karadivavi, Palladam
4. Sree Senthil Andavar Textiles Pvt Ltd., Chinniyampalayam, Coimbatore
5. ACC Ltd., Madukkarai, Coimbatore
6. Eppinger Tooling Asia Pvt Ltd., Kinathukkadavu, Coimbatore
7. Ranger Cotton Mills Pvt Ltd., Gobichettipalayam, Erode
8. SNS College of Technology, Saravanampatti, Coimbatore
9. Sri Lakshmi Narayananlu Naidu Memorial HSS, Karadivavi, Coimbatore
10. SNMV College of Arts & Science, Malumichampatty, Coimbatore
11. Mayflower Apartments, Nanjundapuram Road, Coimbatore

Siruthuli has provided technical guidance for these nature enthusiasts for implementing the rainwater harvesting structures, thus adding a few more drops to its efforts to create a water-wise world.

Recognitions for Siruthuli:

Siruthuli's services were appreciated by the Tamil Nadu Government in the 2006 budget session. The State Government has also promised to support the revival of River Noyyal and declared Siruthuli as a model project to be replicated elsewhere in the State.

For its meritorious services, Siruthuli is conferred three awards:

- The “**Green Globe Foundation Awards 2010**” by TERI and Wizcraft Foundation, under the category of “Extra Ordinary Work done by an NGO” was honoured to Siruthuli on 5th February 2010.
- The “**Ground Water Augmentation Awards & Bhoomijal Samvardhan Puraskar 2008**” by Ministry of Water Resources, Govt of India was received from Shri P K Bansal on 22nd March 2010.
- “**Shri G. K. Sundaram Award 2010**” by Indian Chamber of Commerce and Industry, Coimbatore region, for the innovative efforts and achievements in the fields of Water Resources Management and Environmental Awareness and protection.
- “**IWWA Award 2011 for solving water and environmental problems through it's core objectives and accomplishment of notable activities**”. The Award was presented to Siruthuli at the Annual Convention of IWWA [Indian Water Works Association] held at the SRM University, Chennai on 11.01.2011.

Restoration of River Noyyal is no longer a distant dream, but a distinct reality – for which Siruthuli works towards bringing together people, the Government and the expert advice of specialists in this field.

As the saying goes - its little drops that make a mighty ocean. Siruthuli is committed and determined to restore nature's bounty for the future generations.
