# *From Artesian Wells to Saline Wells:*
## Prospects for sustainable water resources management in Pondicherry

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### Historical perspective

Since immemorial times, drinking water management has always been of prime importance for any human community. Even in Nature, animals and plants have always adapted their behaviors to the availability or non-availability of this precious medium.

In ancient times, in the absence of powerful lift mechanism, the developments were always kept near reliable sources of water, whereas springs rivers, lakes etc… and very often, townships where this principle was not respected, just got erased from the maps and are now the subject for archeological research.

Modern days saw a new era with the advent of electricity and also rapid progress in pumping and drilling technology. This opened the field for exploitation of ground water resources, which in many places was plentiful, particularly along the coastal areas where sedimentary formations offer high storage and reasonably good quality of water. This was particularly the case for the Pondicherry region, which was known for the abundance and quality of its ground water. Many places were in artesian condition in Pondicherry.

*Four different types of water sources were in use during the period before Pondicherry's independence. Sub-surface water structures like springs, artesian wells, open wells and surface water structures like lakes and ponds were existent. Certain lands of Saram and Muthirapalayam villages were irrigated from springs and artesian wells were in operation in Ariankuppam and Muthirapalayam villages (Gazetteer, 1982).*

But these days are gone and unfortunately it is very unlikely to see them back. Ironically, those wells in artesian condition are rapidly turning saline at an alarming rate. However, we have a possibility to reestablish a balance in our hydrological system.

Today India uses one-tenth of its annual rainfall. But how to harvest this donation and how to store it is one of the main questions we are faced with. Our ancestors tried to answer it by building earth dams, and we all know these as *Eyries*. They have been very useful until recently, but unfortunately they have been neglected with the advent of ground water exploitation.

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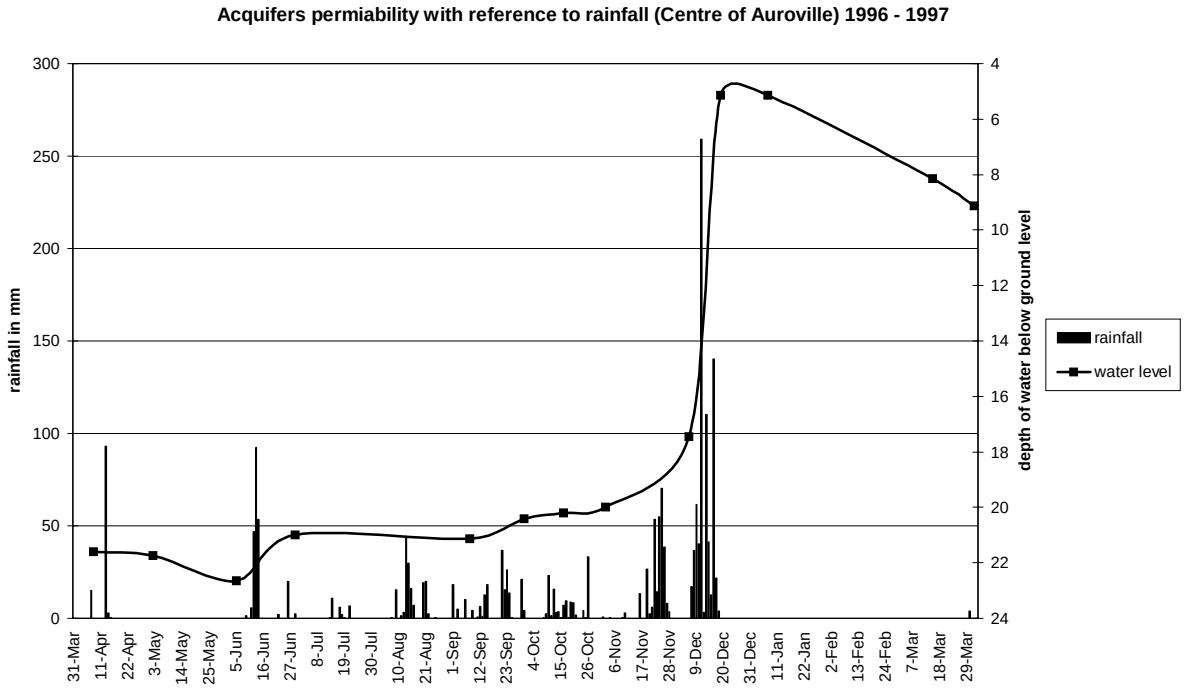
## Water budgeting

Water management like all the forms of management means “budget”--in this case water budget. We all know that the only source of water for our area is rain, from the northeast monsoon mainly. We know also that the rivers flowing nearby will depend on the same rains. This is our income, our yearly grant from heaven.

Another way to harvest the rain is also what is practiced in Auroville, contour bunding, afforestation etc. This technique is now widely used in many areas in India and abroad and it has proven its usefulness. Vegetal cover and a healthy soil texture can increase many folds percolation rates thus decreasing the “run off” (Graph). Even ordinary grass cover can prove a very good ally when the rain has come.




Catchment area treatment or watershed approach is known in many places and is very useful to delay the run off. When we are faced with cyclonic rains of up to 25cms/day it is very interesting to see our soil behave like a sponge and store the water for the benefit of the lower aquifers. Thus our streams and supply channel flow more steadily for a longer period, it reduces erosion and siltation.

The other aspect of the water budget is of course “expenses”.

**Managing water capital**

How do we spend our water capital? There the evaluation is simple since the water is either in a tank or in the ground and a rapidly falling water table is a clear sign of poor water management.

Over extraction of ground water is like disbursing more than what you have and we all know that it is very difficult to borrow water. Metrowater in Chennai had to go through a very painful and difficult exercise in borrowing water from Andhra Pradesh's Krishna river. Moreover most of its water is travelling far and has to be pumped over long distances.

In scarcity situations, Pondicherry could envisage a similar approach, but the problem would be to find a location from where to pump. On the west, we are very near to the hard rock formations, and all along the coast, salt intrusion in the sedimentary formations and industrial pollution prevent any long term planning in the absence of proper water management.

The question there is: how can we manage with what we have?

Of course, increasing the recharge is one of the obvious suggestions, but what about reducing our needs, reusing our waste?

Every day, Pondicherry is allowing the totality of its sewage to the sea. Would it be feasible to reuse this "wastewater" and make it available for agriculture and thus removing the load on the ground water? This sewage can be pumped back to Oustery lake, which would be used as a polishing pond, after the raw effluents have been treated. The pumping could be done using the methane generated by the initial fermentation of the raw effluent. This would give an example of how best we could manage water resources.

But another point is: who manages these water resources? How much are the "people" involved in this management?

**The institutional arena in water management**

Pondicherry has a rich legacy of establishing and demonstrating institutional structures for efficient and equitable management of water, which hitherto has been neglected.

*The French administration had nurtured two surface water distribution institutions ("Caisses Communes" and "Syndicats Agricoles") and a groundwater distribution organisation called as "Organisation du service d'irrigation par pompage" for utilization and distribution of sub-surface water.*

The institutional structures were primarily created for distribution of water and the production of water still remained under government control. Moreover the users had to pay tax (called as subscription) for using water. The participation of users in the management of water resources paved the way for sustainable use of water resources, that is lacking in a glaring manner in the present system of water resources management in Pondicherry. The implementation of tank rehabilitation program with EEC assistance should hopefully re-introduce the legacy of participatory management of water resources.

**Involving users in water management**

At the level of the human resources development, the major part of the work needs to be done. The awareness of the people's need has to be aroused through sincere mediatic campaign.

- Programs of natural resource management and environmental protection have to be introduced in the schools and universities to prepare the future generations.
- A political will needs to be created; politicians have to understand the importance of this issue for the sustenance of present and future human communities, unmindful of elections.
- A new type of organization has to be prepared to interface between the existing administration and the end users. This will relieve a bit of the burden of the departments and responsibilize the users.

The new motto should be **"a careful society against a careless society".**

**Conflicting policy measures in managing water**

Similar to electricity subsidy for irrigation, subsidy for extracting groundwater is treated as a tool to appease the farming community. The poor performance of northeast monsoon prompted the state government to increase monetary incentives for deepening the tube wells.

> *Addressing the conference of sugarcane farmers of Tamilnadu and Pondicherry, the Chief Minister of Pondicherry said the subsidy available to farmers in the Union Territory for sinking tube wells has been raised to Rs. 25000 from Rs. 10000 because of the failure of monsoon and fast depletion of groundwater (The Hindu, 1995).*

The logical policy response to failure of monsoon should have been the initiation of conservation measures to arrest the further degradation of the resource, which did not happen, instead, the impending ecological catastrophe was viewed through a "subsidy prism". The policy maker at the helm of affairs was motivated by short-term political gains and chose to accelerate resource degradation, which is a case of blatant violation of externality (Suresh, 1996).

Subsidizing further exploitation when the natural recharge capacity is low, is an indication of policy and institutional failure. The Chief-Minister's decision to increase the subsidy reflects the conflict between politically motivated decisions and the mandate of institutions like State Groundwater Unit, which is supposed to ensure

sustainability of the groundwater resources. The State Groundwater Unit has been formulating and implementing policies to control further degradation, while the policy makers authorize contradictory policies abetting over-exploitation of the resource. Will the government institutions rise to the occasion and guide the administrators in taking the right policy decisions that are not detrimental to protection of water resources?

**Auroville's development initiative**

Faced with similar conditions, Auroville, a new evolving township, has from the start initiated steps to tackle water availability as one of the major agenda for its development.

Rapidly falling water tables indicated an overexploitation of groundwater and a survey (Pougajendy et al, 1997) confirmed that it was originated by neighboring farmers abusing the subsidies given to them by the Tamil Nadu Government. Pumping goes round the clock to irrigate cash crops such as coconut, sugar cane and casuarina, the later taking over rapidly most of the farming space available.

We therefore started a tank rehabilitation program in Vanur taluk, with funds provided through DRDA (District Rural Development Agency) Villupuram.

The main feature of this program is the emphasis put on people's participation. In our concept, not only should they participate actively, but also financially. They organize themselves in a tank water user association, open a bank account, and are involved in the rehabilitation process under the guidance of our development teams (comprising of engineers and sociologists).

This approach is not new and we have been guided so far by PRADAN (Professional Assistance for Development Action) of Madurai who is doing similar work in the south of Tamil Nadu.

However our intention is to bring it one step further and to complement this grass root organization with a federation level (20 tanks) and a watershed level (192 tanks). This form of organization will enable the users to acquire managerial potential over their resources, with a parity of competence with the existing administration, thus creating ample scope for a better partnership and a better implementation of the programs.

Moreover at the watershed organization level, a committee composed of the users, the elected bodies, and the administration will take all the major managerial decisions concerning the natural resources of the watershed (Table).

**Structure of watershed Organization**

| | | Members | | | |
|---|---|---|---|---|---|
| **Level** | **Organisation** | **Users** | **Elected** | **Administration** | **Foreseeable Activities** |
| Micro level "Man & Nature" (Tank village) | Resource User Association (UA) | • Farmers<br>• Villagers<br>• Land Owners<br>• Land Less | **Consultative**<br>• Panchayat leaders<br>• Panchayat President | **Consultative**<br>• VAO's | • Management of natural resources<br>• Maintenance of assets<br>• Collection of simple data<br>• On- going training |
| Mezzo level "the Human level" (chains of tanks, around 22 villages) | Users Federation (UF)<br>• Federation Committee "the council"<br>• Federation Agency (FA) "Engineering & administrative support" | • Reps of UA's<br>• Reps of industries<br>• Reps of NGOs<br>• Three reps. from committee<br>• Staff<br>-Tank eng.<br>-Forest eng.<br>-Agri. scientist<br>-Civil engineering (drinking)<br>-Secretary<br>-Accountant | **Consultative**<br>• Panchayat Councillor<br>• MLA | **Consultative**<br>• RI<br>• UE-DRDA<br>• AE-PWD<br>• Tahsildhar<br>• Range officer (forest)<br>• BDO | • Management of natural resources of the Federation<br>• Decision on the management of the federation<br>• Self regulation at federation level<br>• Decides on Fed. Budget<br>• Mediation over disputes<br>• Technical advise to the user groups in managing their resources<br>• Assistancein the preparation and realisation of projects<br>• Monitor data<br>• Provide on going training<br>• Centralise accounts of UA's<br>• Acts as Secretary of Federation Committee |

| | | Members | | | |
|---|---|---|---|---|---|
| **Level** | **Organisation** | **Users** | **Elected** | **Administration** | **Foreseeable Activities** |
| Macro level | Watershed Development Organisation (WDO) | | | | |
| | Watershed Development Committee (WDC) "The Assembly" | • Reps. of federation<br>• Reps of towns<br>• Reps. of industries<br>• Reps of NGOs | • Panchayat councillor<br>• MLA's<br>• Town Panchayat Presidents | • Collector<br>• Revenue Director<br>• PO, DRDA<br>• DFO (Forest)<br>• DFO (Social forest)<br>• EE (PWD)<br>• EE (TWAD)<br>• EE (GW)<br>• SCE (Agri) | • Decides on policies for the management of the natural resources of the watershed<br>• Vote the budget of the WDO<br>• Decides on priorities of projects for the development of the watershed<br>• Decides on the rates and taxes on natural resources |
| | Watershed Development Agency (WDA) "The Manager" | • Reps. from WDC as board of directors<br>• Staff<br>-Manager<br>-Financial manager<br>-Tank engineer<br>-GW engineer<br>-Agri. -Scientist<br>-Agri. engineer<br>-Civil Engineer<br>-Economist<br>-Social scientist<br>-Administrative staff and assistants | | • Collector<br>• Project Officer | • Implement the decisions taken by WDC<br>Prepares reports and organise meetings of WDC<br>• Acts as secretariat of WDC<br>• Keeps accounts for WDO<br>• Provides engineering and scientific support for major projects<br>• Provide awareness programmes through media or otherwise<br>• Monitor and analyse data over the entire watershed<br>• Prepare budget for the WDC<br>• Prepare proposals for major projects<br>• Liaise with administration., state and district departments |

**Our Common Future**

And of course a last point is protection.

The same way one protects his interests and his capital, one has to protect natural resources, which are one of our most precious assets.

We cannot put it in a bank, this is a living thing, but one has to protect it from those who plunder it and also those who deliberately destroy it by dumping all kind of industrial waste in the aquifers. Mettupalayam is only one of the sad stories that we will leave to our future generations.

The future generations have a right to the availability of safe drinking water and this is our responsibility today to make sure that this will be respected.

There is a future, let us not forget it.

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