

Decline of Groundwater Levels Is the declining trend of water levels in critical areas due to erratic and inadequate rainfall or over development? Study the effect of large scale groundwater extraction through bore wells on the existing open wells and shallow bore wells.

Bore Well Failures Study the high rate of failure (reported to be about 60% in critical areas) of the bore wells are the construction stage. What is the life of bore wells in critical areas due to declining water levels and how does it affect the viability of the investments on wells and pumpsets?

Technical Advice to Farmers Study the existing institutional arrangements for tendering advice to farmers on site selection and well (and pump) design - suggest improvements.

Energy Tariff Study the impact of subsidised, flat energy tariff on the extraction of groundwater, particularly in bore well areas. Also the advantages of metered tariff over flat tariff. Which class of farmers is actually benefitted by flat tariff and at whose cost?

Inequitable Distribution How do poor farmers cope with the need of drilling deeper and deeper bores due to declining water levels? Is groundwater in critical areas the monopoly of the more affluent who could drill deeper?

Development of Critical Areas What is the impact of denying institutional credit for wells in critical areas? Which section of farmers is affected most by this policy? How far this policy has helped to retard the growth of wells and arrest the decline of water levels? What is the relevance to groundwater legislation to Indian rural conditions.

Protection of Critical Areas - Water User Associations What is the awareness of farmers and administrators in critical areas to the impending danger of declining water levels? Are the farmers in a mood to organise themselves and face the challenge? What could be the role of NGOs in this direction? What is the scope in the critical areas for shift in the cropping pattern in favour of widely spaced horticulture crops which could be irrigated through drip system? How far can marginal farmers could be benefitted by community drip irrigation system, installed on a common well?

A PROPOSED ACTION PROGRAMME TO MAINTAIN GROUNDWATER LEVELS AND ACHIEVE SUSTAINABLE AGRICULTURE IN TAMIL NADU

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Groundwater is extracted through 1.6 m wells to irrigate about 1.2 MHa in Tamil Nadu, which is almost 40% of the total irrigated area. The depth of open wells vary from 10-15 m in some pockets and near the river bank to 50-70 m in districts like Coimbatore. Bores inside the open well have gone to a depth of another 50-70 m in various places. Groundwater bores have gone up to 100-150 m. The groundwater table has depleted from 10 m to 50 m in the last 40-50 years. The area of irrigation by each well has reduced from 1.5 ha to less than 1 ha in the last 20-30 years.

The assessment of groundwater potential is estimated by many agencies/scientists and the figures given are anybody's guess. It varies from 1.4 MHm to 2.56 MHm.

The last data given by the Directorate of Ground Water has indicated that the total groundwater draft is about 50% and there is scope for constructing another 1.2 MHm wells in Tamil Nadu. However, if you visit the various districts and analyse the groundwater potential, it is observed that most of the wells in all the districts have reduced water supply and thousands of wells have been abandoned. This alarming situation is not only found in Coimbatore, which is traditionally known for its groundwater shortage, but also in Madurai and Chidambaram and Ramanathapuram Districts.

The Government records say that the extraction of groundwater in Pudukkottai District is 1% to 24% in various blocks and about 80,000 more wells could be constructed in the District. But the picture in the field is completely different. Though the district obtained good rains during January 1990, the situation is alarming. In many *taluks*, the water table has dropped to 20-30 m from ground surface and large numbers of irrigation wells have deep bore wells inside to a depth of 60-70 m, and side bore for a distance of 50-70 m.

Further, hundreds of wells in Chidambaranar district (Sathankulam block), Madurai District (Chinnamanoor and Andipatty blocks), and thousands of wells in Coimbatore district (Karamadai, Sulur, Madukkarai, Avinashi blocks) have been abandoned. The depletion of groundwater totals is very alarming all over Tamil Nadu. Therefore, there is an urgent need to look into this aspect very seriously and take some urgent action. Otherwise, even drinking water may not be available in another 5-10 years if the trend continues.

There are many controls in regulating/construction of wells in the State. Banks give loans if the spacing of 200 m is maintained. The electricity is given only for about 8-16 hours daily in most of the areas. Energisation is not that easy and it takes at least 4-6 years. In spite of these restrictions and constraints, many new wells are constructed every year, not only by the individual farmers but also by the Government. The net result is not only lowering the water table and reduced water supply but abandoning of these wells. Though the public as well as Government are aware of the situation, no concrete action is taken for want of proper perspective and will.

As early as 1977, the Tamil Nadu Government brought the groundwater control and regulation bill in the assembly. However, subsequently, it was dropped as there was a strong lobby opposing it. Government of India is advising all the State Governments (including Tamil Nadu) to enact groundwater laws, but nothing could be done so far. Even today, the farmers are able to pump water from these deep wells, thanks to the free (nominal) electricity charge (Rs 50 HP/year) levied by the Government. This again has accelerated the process of depletion of water table and wasting of ground water by many farmers.

Under these circumstances what is to be done is the question. The following action plan is suggested:

- The situation is very serious and all (farmers, public and government) should know the consequences;
- Critical analysis of the rainfall of the area/water shed;
- Assessing the groundwater potential realistically;
- Need for groundwater regulation and control at least in some basins/watersheds to start with;

- Need to diversify crops and cropping patterns based on the available water (tapped);
- Maintaining groundwater level at a determined/particular depth for sustainable agriculture;
- Introduce crops which will use less water, but give more profit per unit quantity of water;
- Adopt drip and sprinkler systems;
- Water should not be conveyed through open/earthen channels on any account, but use pipes with control structures;
- Recharge the groundwater by providing suitable structures.

Government should not invest money for deepening wells or to go for deep bore wells for getting water during the summer. Instead that money may be used to conserve the water during the rainy seasons and encourage economical utilisation of water. The farmers in one village (Iyyampudur in Gobi taluk) have spent nearly 10,000,000 rupees for drilling borewells up to 500 ft depth (250 wells) and installing compressors, but without success. This trend is there in Mettupalayam, Avanashi, Pallam taluks of Coimbatore district, and many other districts including Ramanathapuram which is supposed to be a backward district. If this trend is allowed to continue, the fate of the Tamil Nadu is very gloomy. If the people and Government do not view this trend seriously, immediately, the future generation will blame all of us. Hence, an action plan should be worked out and implemented before 2000 AD, otherwise all are doomed.