



# Restoring Water Tables in India



*An area in Maharashtra, where community members, assisted by the NGO WOTR, have restored their watertables by planting trees, making small dams and bunds along contour lines, and deciding to grow water efficient crops.*

### Water and the Himalayas

India will be seriously affected by the melting of the Himalayan glaciers. The Gangotri Glacier, which provides up to 70 per cent of water in the Ganges, is retreating more than 35 m per year, nearly twice as fast as 20 years ago. If it disappears, the Ganges will become seasonal, ceasing to flow during the dry season. The Ganges Basin is home to 407 million people and contains 40 per cent of India's irrigated cropland.

### Indian water conflicts

Indian water conflicts have already left many people dead. A significant part of the conflicts in the 80's between the Sikhs and Hindus, which left more than 15,000 people dead, was the struggle over the waters of Punjab. The farmers of Punjab, who are mainly Sikhs, felt cheated by the Indian government when a large part of the waters of their rivers were taken from them to be used to irrigate a part of the Rajasthan desert. They argued that the water belonged to Punjab, since the river did not enter Rajasthan, and that many experts supported them in the view that the water would be much more efficiently used on the fertile soils of Punjab than in the desert sand. The "Sikh struggle" in India is often portrayed as a religious conflict, but just as so many other conflicts, the real causes are very material - in this case the struggle for water.



*The glaciers of the Himalayas provide water to nearly 2 billion people. This is rapidly changing and most of these glaciers will melt during the next decades, drastically reducing river flows.*

### The legacy of the Green Revolution

The farmers of Northern India were already experiencing water problems because the crop varieties introduced by the Green Revolution demanded much more water than their traditional crops. New varieties also made it possible to grow two crops. Forty years ago, the region produced only one crop of wheat, but with the earlier maturing varieties, wheat could be harvested in time to plant rice. This wheat/rice combination is now widely used, and was very significant in doubling yield per hectare and thus helping to feed India's 1.2 billion people.

India's grain harvest has not increased since 2000 and India became a leading wheat importer in 2006. A reason is that more land is used for cities, but the main reason is the lack of water.



### 3 - Restoring Water Tables in India

During the last 15 years, Indian farmers have bought 20 million Yamaha pumps to suck water from beneath their fields. This corresponds to an annual pumping up of 100 cubic kilometers more water than the monsoon rains replace. Water tables are plunging, and ten thousand deeper wells need to be drilled every year. This is a very short termed policy, and only a solution as long as water can be found deeper down. Eventually even the deeper wells will go dry, and communities will loose both their food supply and their livelihood.

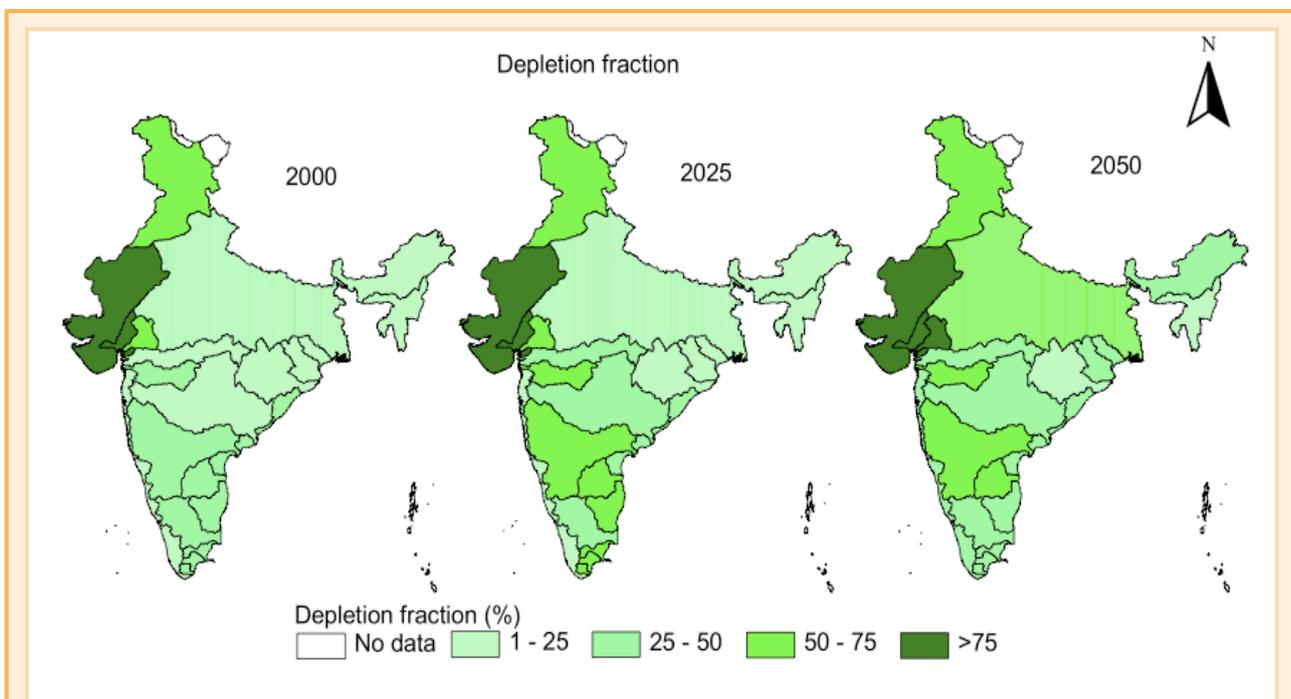
#### Water scarcity affects all of India

In Tamil Nadu, the irrigated area has been

cut in half over the last decade, after 95 percent of the wells owned by small farmers have run dry. Most of the farmers have been forced to return to dryland farming.

Around the large cities much water is also used for the urban population. The price of water far exceeds the value of the crops they can produce with it. Water tables are also falling here as the underground water resources are mined - for example around Chennai, where 13,000 water tankers haul water to the city.

The water problems of South Asia are huge, and it will require very dedicated and efficient leadership to avoid the growing water problem to turn into bloody conflicts.



India will need increasing amounts of water to produce food for its growing population. A recent report by the International Water Management Institute, IWMI, states that if India continues its current water policies, large parts will have their groundwater seriously depleted by 2050.



### 3 - Restoring Water Tables in India



Farmers protesting against the Coca-Cola corporation in Kerala that has caused the water tables surrounding the bottling plant to fall.

#### Fighting over Water - Coca-Cola in India

Producing soft drinks requires huge amounts of water, and since water scarcity is a very serious issue in many parts of India, this has led to a number of conflicts between the Coca-Cola corporation and the many villagers surrounding its bottling plants.

One of Coca-Cola's largest bottling plants in India - in Plachimada, Kerala - has been closed since March 2004 because of pressure from local farmers who have lost the water they used to have.

A recent campaign among university students in the US and UK forced Coca-Cola to make an independent assessment of six of Coca-Cola's 50 bottling plants in India. This report concluded that some of the company's bottling plants worsen the severity of water shortages in the villages around them.

The report recommends the closure of a bottling plant in Kala Dera, Rajasthan, and warns Coca-Cola about dropping water tables at a plant in Uttar Pradesh.

This is an example of how popular protest can overcome even the largest corporations. The image of the brand is so important to companies like Coca-Cola, that they will make concessions if this image is threatened.

#### Restoring the water balances in Maharashtra

Most conflicts over water have three parties - those in power, the many people, and the nature. Under the existing conditions of power, the many people and the natural systems are normally the losers.

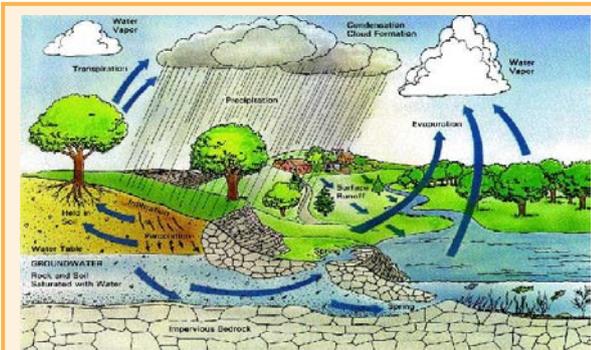
The examples from India have shown how water tables are being depleted and the short-term interest of earning money has won instead of developing and implementing the longer-term sustainable farming systems that can ensure food production and income, also when the climatical conditions become much worse



Villagers have been mobilised to make simple systems such as these micro check dams that collect rainwater for newly planted trees.



### 3 - Restoring Water Tables in India



*Simple systems and a healthy vegetation can greatly increase the amount of water that is stored in the ground instead of running off along the surface, removing nutrients and eroding.*

than now. A World Bank analysis predicts that agricultural output in Northern India will decrease with 60% by 2080, unless radical changes are implemented.

The Indian state of Maharashtra is a typical example of unsustainable use of water in a dry region. The area is also called the "Land of the Sugar Barons". The sugar fields occupy just 3% of land but use 80% of the irrigation water.

The following example from a village, Hiware Bazar, in Nagar Block, Maharashtra, shows the importance of finding alternative ways to ensure that both people and nature win.

It is a dry area that has been greatly affected by deforestation. As the hills lost their vegetation cover, the runoff ruined the fields and water tables dropped. The traditional water storage systems were in ruins and in 1990, only a small part of the cultivable land could be farmed outside the monsoon season.

The village managed to turn this situation completely around. Together with progressive authorities, they decided to use their funds and manpower to restore their forests and build 40,000 contour trenches around the hills to conserve rainwater and recharge groundwater.

1,000 ha of land in the area were restored at a cost of about \$ 100 per hectare. The funds and labour were well spent. The water level in the wells, which had fallen to 90 meters in 1998, was in 2007 stable at 10 meters. The number of wells and area of irrigated land has more than doubled.

Production of grass for cattle feed and milk production has increased hugely. The village has started to grow crops that require less water.

Many of the people who had left the land for the city slums have returned and have prospered. In 1995, 168 families out of 180 were below the poverty line. Now there are only three such households. In the past 15 years, average income has risen 20 times.

This example shows how a village managed to restore their precious natural resources through co-operation, long-term investment and careful planning.

**Read in the next GAIA Info how cotton farmers in India and Pakistan are finding that it pays to use sustainable systems.**