

# Groundwater Usage by Industrial Sector and its Impact

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## Introduction

Groundwater, the water content present beneath earth's surface, is found between pore spaces of soil and rocks. Being one of the largest users of groundwater in the world, India uses an estimate of 230 cubic kilometre groundwater every year and it is nearly equal to a quarter of the global total consumption.

As per an official groundwater assessment of 6,607 units in the country, including various blocks, mandals, talukas and districts, over 1,071 units are overexploited, 217 units are with very critical groundwater level, 697 units are semi-critical, 4,580 units are safe, and 92 units are saline. Meanwhile, the rapid scale of industrialisation that has become the need of any developing country like India has turned into a major cause of groundwater exploitation and contamination.

## Groundwater statistics of India

According to government reports, as on April 2015, the usable water resources of the country have been estimated as 1,123 Billion Cubic Metre (BCM) per year, and the share of groundwater and surface water is 433 BCM and 690 BCM per year respectively. As 35 BCM of water goes as natural discharge, the net annual availability of groundwater for the country is about 398 BCM.

The overall annual rainfall contributes about 68% to the country's groundwater resource. Due to increased population, the national per capita annual availability of water has decreased from 1,816 cubic metre in 2001 to 1,544 cubic metre in 2011 with a reduction rate of 15%.

## Industrial utilisation of groundwater: A statistical view

In this current scenario, experts state that industrialisation in the country is moving towards the crisis of groundwater overuse, exploitation, and contamination. As reported by World Bank, the current industrial water use in India is about 13% of the total freshwater withdrawal. However, 89% of extracted groundwater in India is being utilised by agricultural and irrigation sector, 9% for domestic use, and 2% of extracted groundwater is utilised by various industries.

Meanwhile, 85% of rural domestic water and 50% of urban water requirements is also been fulfilled by extracted groundwater in the country. Central Pollution Control Board (CPCB) of India stated that about 500 BCM of water out of the total available fresh water is been utilised by various industries annually, and in this about 30 BCM is used for refrigeration purposes and 10 BCM of water is been used by processing industries. In addition, Ministry of Water Resources, Government of India, also reported that about 40 BCM of groundwater is been used by industrial areas of the country in recent years, which accounts for 6% of total available water in the country.

## Water struggle: Plachimada vs Coca-Cola – A case study

On 27 January 2000, Hindustan Coca-Cola Beverages (HCCB), a Coca-Cola subsidiary company, got licence to open factory and use groundwater for the production of beverages by the Plachimada panchayat in Palakkad district of Kerala. Brands produced at the Plachimada production line included Coca-Cola, Maaza, Sprite, Thums Up, Limca, Fanta, and Kinley soda.

The factory was found to use 5,00,000 litre of groundwater in a day for its beverage production after attaining the permission from Plachimada panchayat. After six months, local communities complained about extreme water shortage and water pollution after the establishment of the factory.

In 2003, women from the village of Plachimada, protested that their wells and groundwater resources had dried up because of the excess use and over exploitation of groundwater by the Coca-Cola production plant. However, in 2003, the panchayat ordered the closure of the production plant as it led to the lowering of the water table. Mounting pressure on the Kerala government also ordered to shut down the factory, and eventually the plant closed down permanently. A government committee has determined that the damage to the village community amounts to ₹ 216.26 crore, and as of 2019, no compensation has been given or paid to the villagers.

### **Government laws, legislation, and groundwater**

In 2011, as a part of 'Right to Life' under the Article 21 of the Constitution emphasising on Fundamental Right to Water, Government of India, announced a Model Bill for groundwater management stating, "All industries, mining infrastructure, and dewatering projects, whether it is new, existing, under expansion, and proposing to extract groundwater through energised means shall need to obtain no-objection certificate (NOC) for groundwater withdrawal from the Central Ground Water Authority (CGWA)."

The draft guidelines for the grant of NOCs has been sent to all state governments by Union Ministry of Water Resources, River Development and Ganga Rejuvenation. A new water conservation fee based on use, area, and quantity of groundwater extracted, from Rs 1 to Rs 6 per cubic metre has also been proposed with the draft guidelines. In addition, district magistrates, deputy commissioners, state groundwater authorities, and CGWA are stated as the official authority to issue NOCs for groundwater extraction.

### **Current challenges and future needs: Industrialisation and groundwater**

According to the statements by World Bank, the demand for water for industrial use and energy purpose is increasing at the rate of 4.2% per annum. Meanwhile, it is been reported that 60% of all districts in India have issues related to availability or quality of groundwater, or both. The CGWB recognises overexploited and critical regions with groundwater within states. However, the Board can only notify the owners but it does not have the power to stop over extraction of groundwater in such critical regions.

The National Commission for Integrated Water Resources Development Plan, Ministry of Water Resources, and Government of India reported that industry and energy sector in the year 1990 and 2010 has consumed 34 BCM and 41.1 BCM of water respectively. In the meantime, it has also estimated that industry and energy sectors in India will be in the need of 80 BCM and 143 BCM of water by the year 2025 and 2050. In addition, World Bank statistics also highlight that industrial water usage and requirement in the country will reach 228 BCM by 2025.

### **Conclusion**

Even though India is a developing country with its peek growth in industrialisation, the future demands for available freshwater and groundwater will inevitably put pressure, due to over consumption, exploitation, and pollution of water resources. Industrial use and demand for groundwater is not negligible in India as it is bound to grow as a critical future need.

In coming 20 years, about 60% of all Indian aquifers and water table will be in very critical condition if country moves with this current trend. Rise of awareness and responsibility among industrialists, with a strong law enforcing and implementing authority will definitely reduce water exploitation, pollution, and degradation of natural resources, which boosts up restoring of distorted groundwater level and other local livelihoods.