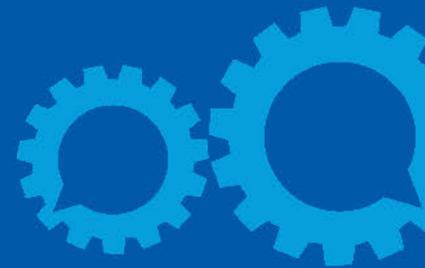


# DECARBONISE WATER PUMPING SYSTEM



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#### About the author:

With a distinguished background in media, he has dedicated a significant portion of his career to the water sector. As the Chief Strategist at TS Advisory Services, he has played a pivotal role in developing, evaluating, and defining marketing and communication strategies across various industries. His extensive knowledge and strategic acumen have proven instrumental in driving growth and success in the ever-evolving landscape of the water sector.

Decarbonizing built infrastructure is a growing concern for the nations across the globe. But focusing on carbon emissions alone is no longer sufficient; the climate change crisis is much deeper and interlinked with several other factors. As the world accelerates towards net zero, technology-based solutions are poised to provide necessary emissions reductions and much desired energy efficiency and longevity of the infrastructure. The UN Climate Conference, COP26, brought these ideas together, with many nations and organizations pledging to reduce the carbon emissions and adopting sustainable practices to safeguard the environment.

There is an urgency of protecting nature and its habitats. It is predicted that over one million species could go extinct in coming decades. The threat of extreme weather conditions hangs over every corner of the world, sustainability and resilience of facilities is no longer a choice but a necessity. World Economic Forum projecting that approximately half of the global Gross Domestic Product (equivalent to US\$44 trillion in economic value) relies significantly or moderately on the services provided by nature.



Carbon Footprint of Water System



**Pumping Station for Drinking Water Supply**

Adequate and quality water supply being the harbinger of growth, water infrastructure is an essential part facilitating the reliable supply and distribution for various purposes. This crucial network comprising pipes, pumps, and treatment plants plays a pivotal role in shaping the trajectory of life ahead. Efficient and resilient infrastructure is vital for public health, environmental sustainability, and overall economic development.

Pumping systems, essential components of water infrastructure, represent a significant aspect of energy consumption, accounting for 20 to 60 percent of the total global electrical energy usage. The Bureau of Energy Efficiency highlights that pumps are one of the least efficient components within a water supply system. Considering the substantial electricity consumption associated with pumping systems, even minor enhancements in efficiency have the potential to result in substantial electricity savings.

### **Energy Efficiency Measures**

One of the most effective ways to reduce carbon emissions in water pumping station is to enhance energy efficiency. Upgrading pumping stations with energy-efficient technologies, such as iPUMPNET, can significantly decrease energy consumption by upto 25%. This IIoT enabled system offers insights into energy usage patterns and opportunities for energy conservation. By analyzing historical data, iPUMPNET identifies areas where pumps can be operated more efficiently, reducing the amount of energy it consumes. It intelligently adjusts pump speed, flow rates, and other operational parameters based on real-time demand

and efficiency criteria. If iPUMPNET is implemented across all water pumping stations in India, it is projected that approximately 5 gigawatts (GW) of energy could be saved annually. In terms of monetary benefits, this translates to a significant saving of INR 250 billion for water utilities. These funds could be redirected towards fulfilling other essential purposes, contributing to broader water sustainability and resource optimization.

### **Reducing Carbon Emission**

India has made a commitment to achieve Net-Zero Emissions by 2070 at the COP26. It has pledged to reduce the emissions intensity of its



**Reduce Carbon Footprint**



Water Pumping System

GDP by 45% by 2030, compared to the 2005 level. Reducing carbon footprint is a crucial goal for India as it helps mitigate the impact of climate change, improves public health, boosts economy, and preserves biodiversity.

Reducing carbon emissions in water pumping stations is a multifaceted challenge that requires a combination of technological advancements, operational improvements, and strategic planning and advanced monitoring and control. Embracing energy-efficient technologies like iPUMPNET, significantly contributes to reducing the carbon footprint of pumping systems. Implementation of iPUMPNET across all water pumping stations in India is estimated to save almost 5 GW of energy. Based on a conservative estimate, one MW reduction in energy consumption at a pumping station can save approximately 612 tonnes of CO<sub>2</sub> emissions, equivalent to planting 21,500 trees.

By implementing iPUMPNET in all water pumping stations in India, it is



Water Supply Pumping System

projected that 3.06 million tonnes of carbon emissions could be reduced, making a significant contribution towards achieving the vision of the Hon'ble Prime Minister to make India Net-Zero Emissions by 2070.

Ecosystem Marketplace has reported that in 2021, the total recorded carbon credit transactions globally were valued at US\$1.98 billion (INR 163.42 billion). This would mean the average price of a carbon credit was US\$4 (INR 332) in 2021. Upon evaluating the worth of India's retired credits, it must have garnered up to US\$652 million (INR 53.76 billion). India has become a lucrative market that developers anticipate will expand further as the urgency of the climate change crisis increases, prompting companies to actively pursue net-zero emission goals.

India's carbon market is valued at US\$1.2 billion (INR 98.94 billion) or possibly more given the current market rates. At this rate, the saved carbon emission from the water pumping stations only after implementing the iPUMPNET is 3.6 million carbon credits with a face value of US\$ 14.4 million (INR 11.96 billion) every year.

### Way Forward

In its efforts to bring about a visible impact, Pump Academy Private Limited under the distinguished leadership of its Chairman, Mr. Anil Sethi, has a wealth of experience from executing over 500 water supply projects and installing pumping stations across India. The introduction of iPUMPNET, an innovative IIoT-based solution, marks a significant step in optimizing pumping station operations. iPUMPNET integrates cutting-edge technology to enhance energy efficiency, transforming conventional pumps into intelligent and responsive devices. Pump Academy's objective is to revolutionize the management and operation of pumping stations in India through the implementation of iPUMPNET.

In India, prioritizing energy efficiency and reducing carbon emissions is crucial, aligning with the nation's ambitious economic goals. As India aspires to achieve a \$5 trillion GDP in the near future and aims to become the world's third-largest economy by 2030, further targeting to reach \$40 trillion by 2047, at the centenary year of India's Independence, sustainable and environmentally conscious practices are essential. Enhancing energy efficiency not only contributes to economic growth but also aligns with global efforts to combat climate change. It reflects India's commitment to a green and sustainable development path, ensuring long-term prosperity while enhancing the environmental sustainability.

Pump Academy is fully prepared to play a vital role in achieving these objectives by optimizing pumping stations. Through the initiative, it aims to reduce dependence on fossil fuels and minimize carbon footprints, contributing significantly to the conservation of valuable resources. Their commitment lies in fostering sustainable practices and advancing environmentally conscious solutions within the realm of pumping station operations. Through the efforts of the company by implementing iPUMPNET, valuable resources are conserved, aligning with broader sustainability goals and contributing to a greener and more environmentally responsible future.