Innovation / Prototype Submission Form

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| S.No | Field Name | Description |
| 1 | Title | AQUA-RECHARGE: AN ERA OF GROUND WATER INCREASING |
| 2 | Developed as part of | Study Project |
| 3 | Financial Year | 2025-2026 |
| 4 | Sector / Domain | IOT BASED TECHNOLOGIES |
| 5 | Innovation Type | Service |
| 6 | Technology Readiness Level | TRL4 |
| 7 | Manufacturing Readiness Level | MRL8 |
| 8 | Investment Readiness Level | IRL1 |
| 9 | Define the problem and its relevance to today's market / society / industry need. | In today’s world, water scarcity and the decreasing level of groundwater have become a serious problem in many places. People use a lot of water for daily activities like washing, cleaning, and bathing, and most of this wastewater is simply drained away without being reused. At the same time, the groundwater level is going down because of over-usage and less rainwater storage. This is creating a big need for smart and affordable solutions to save water and recharge groundwater. The Aqua Recharge project is designed to solve this problem by using smart technology. It checks the quality of household wastewater using sensors like pH, TDS, and Turbidity sensors. If the water is safe, it is filtered and sent back into the ground to increase the groundwater level. The whole process is automated using IoT technology, and users can monitor the system from their mobile phones. This project provides an eco-friendly and cost-effective solution to save water for future generations and helps in solving water problems in homes, industries, and society. |
| 10 | Describe the Solution / Proposed / Developed | The Aqua Recharge project is a smart and eco-friendly solution to increase groundwater levels using household wastewater. In this system, different sensors like Turbidity sensor are used to check the quality of wastewater coming from homes. If the water is clean and safe for the ground, it passes through a simple pipe line using solenoid valve to operate . After the flow sensor through which it checks ow much amount of water is going to the ground every second through an application. Then we uses an ultrasonic sensor through which we can check how much the level of ground is increased after water added.  This system uses an IoT-based controller (ESP32) to collect sensor data and make automatic decisions. It can also send notifications to the user’s mobile phone using the Blynk application, so they can easily monitor the status of the system from anywhere. This solution is cost-effective, automatic, and helpful for saving water and improving the environment. It can be used in homes, apartments, industries, and public places where a lot of water is used daily. |
| 11 | Explain the uniqueness and distinctive features | The Aqua Recharge project is a smart and eco-friendly solution to save and increase groundwater levels. The most unique part of this system is that it reuses household wastewater like washbasin water, RO waste, and bathroom water — instead of letting it go to waste.  It automatically checks the purity of the water using sensors. If the water is safe, it allows the water to flow into the recharge pit to help improve groundwater. If the water is not pure, the system stops the flow — making it a smart and safe process.  Another special feature is real-time monitoring. The system is connected to the Blynk app, which sends instant notifications and alerts to the user’s mobile. It helps the user to stay updated anytime, from anywhere.  This project is fully automatic, reduces manual effort, saves water, and supports environmental protection — making it a smart solution for today’s water crisis. |
| 12 | How your solution is different from competitors | The Aqua Recharge project is different from other systems because most people simply waste the water from washbasins, RO filters, and bathrooms without using it again. But our project saves that water and uses it to increase the groundwater level.  Other systems may store or reuse water for cleaning or gardening, but our system directly helps nature by sending clean water into the ground safely.  Also, this system checks the water quality automatically using sensors and only allows good water to go into the ground. It also sends alerts to the user’s phone through the Blynk app, which many systems don’t have.  This smart and automatic system saves water, needs less human effort, protects nature, and solves the water shortage problem in a new and eco-friendly way. |
| 13 | Is there any IP or Patentable Component? | No |
| 14 | Has the Solution Received any Innovation Grant/Seed fund Support? | No |
| 15 | Are there any Recognitions (National/International)? | No |
| 16 | Is the Solution Commercialized? | No |
| 17 | Had the Solution Received any Pre-Incubation/Incubation Support? | No |
| 18 | Video URL | <https://www.canva.com/design/DAGi8qW-Kh4/OFZ1It6Mvzz67Eda_RPZGQ/edit?utm_content=DAGi8qW-Kh4&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton> |
| 19 | Upload Photograph |  |
| 20 | Utility | The Aqua Recharge system is very useful in today’s world where water shortage is a big problem. This system helps in saving water that usually goes to waste from washbasins, RO filters, and bathrooms. Instead of letting this water flow into drains, it is filtered and sent into the ground to increase the groundwater level.  This project is very helpful for homes, schools, apartments, industries, and public places where a lot of water is used daily. It helps to recharge the groundwater naturally without using extra water or effort.  It also reduces water bills, prevents water wastage, and supports a clean and green environment. This system is smart, automatic, and easy to use for everyone. |
| 21 | Scalability | The Aqua Recharge system can be easily installed and used in many places. It is not limited to homes only. This system can be used on a small scale for individual houses or on a large scale for apartments, schools, colleges, hospitals, industries, and public places.  It is flexible and can be customized as per the water usage of the place. The system design is simple, cost-effective, and easy to maintain.  In the future, this project can also be upgraded with advanced sensors, data analysis, and mobile app control for better monitoring. It has a huge potential to spread in urban and rural areas to solve the problem of groundwater depletion. |
| 22 | Economic Sustainability | The Aqua Recharge system is a cost-effective solution. It uses low-cost sensors and simple technology which makes it affordable for everyone. Once installed, it helps in saving a lot of money by reducing the need for external water sources like tankers or borewells.  This system promotes the reuse of wastewater in a safe way, which helps in increasing groundwater levels naturally without extra expenses. It also reduces water bills and supports long-term water availability.  Overall, it provides a smart solution for water management with less investment and long-term economic benefits for society. |
| 23 | Environmental Sustainability | The Aqua Recharge system helps to protect and improve the environment. It reuses household wastewater after checking its purity, which reduces water wastage. This system helps in increasing the groundwater level naturally without using extra or external water.  It also reduces soil erosion, prevents waterlogging, and helps in maintaining the balance of the environment. By saving and reusing water, it supports a cleaner and greener future.  This project creates awareness about water conservation and promotes eco-friendly practices for a sustainable environment. |