

Best Practice

Title of Practice:

Integrated Approaches to Waste Water
Management, Waste Solid Management, Green
Campus Enhancement through Various
Awareness Programs & Activities

Summary Report



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Objectives of the practice: Below are potential objectives that associate with the key themes of conservation, wastewater management, advanced irrigation, rainwater harvesting, and community awareness programs.

Objective -1. Enhance Water Conservation Efforts:

The Context: Reduce overall water consumption in target communities by 20% through the implementation of water-efficient appliances and behavioral change programs. Promote the responsible use and preservation of existing water resources. With increasing populations and urbanization, freshwater sources are under unprecedented pressure. Conservation efforts aim to reduce water waste and improve efficiency across various sectors, including agriculture, industry, and domestic use. Implementing best practices for water conservation can lead to significant reductions in demand, prolonging the viability of available water supplies.

Practice: Implementing Eco-Friendly Campus Policies

Uniqueness: As per the guideline eco-friendly campus in Shri Ram College was developed for water conservation and wastewater management. This includes the installation of water-efficient fixtures, promotion of xeriscaping (landscaping that reduces or eliminates the need for irrigation), and creating awareness campaigns stressing the importance of water conservation. Students were engaged in projects that monitor water usage and conduct regular audits to identify areas for improvement.

Problems Encountered:

Lack of Awareness: Many communities do not fully understand the importance of water conservation and may not see it as a priority.

Cultural Barriers: Traditional water usage practices may conflict with modern conservation methods.

Infrastructure Limitations: Aging or inadequate infrastructure can lead to water loss and inefficiency.

Resources Required:

Educational Materials: Development of workshops, brochures, and online resources to inform the public about conservation benefits.

Technology Investment: Smart meters and monitoring systems to track water use and identify leaks.

Community Engagement: Programs to involve local stakeholders and promote water-saving practices.

Objective-2. Implement Effective Wastewater Management Systems:

The Context: Establish decentralized wastewater treatment facilities, achieving a minimum of 80% treatment efficiency. Improve the treatment and reuse of wastewater to minimize pollution and maximize resource recovery. Wastewater is often viewed primarily as a pollution problem;



however, it contains valuable resources, including water, nutrients, and energy. Effective wastewater management strategies involve the treatment of industrial, agricultural, and domestic wastewater to meet respective safety standards, enabling its reuse for non-potable purposes such as irrigation, industrial cooling, and groundwater recharge.

Practice: Establishing Campus Wastewater Treatment Plants

Uniqueness: A waste water treatment plant with the help or it would be appropriate to write that in collaboration with Japan was established in the campus of Shri Ram Collège. Education programs were integrated with these systems, allowing students to learn about engineering, biology, and environmental science while managing practical applications. It serve as a live project site where students studied the impact assessments and system efficacy.

Problems Encountered:

- **Insufficient Treatment Facilities:** Many regions may lack adequate infrastructure for treating wastewater effectively.
- **Pollution of Water Sources:** Ineffective management can lead to contamination of rivers, lakes, and groundwater.
- **Regulatory Challenges:** Lack of enforcement and compliance with environmental regulations.

Resources Required:

- **Funding for Infrastructure Development:** Investment in new treatment plants or upgrade of existing facilities.
- **Training Programs:** Educating personnel on advanced wastewater treatment technologies.
- **Collaboration with Stakeholders:** Partnerships with NGOs, governmental bodies, and local communities for holistic management plans.

Objective-3 Promote Advanced Irrigation Techniques:

The Context. Agriculture is one of the largest consumers of freshwater. Adopting advanced irrigation techniques (e.g., drip irrigation, sprinkler systems, and smart irrigation technologies) can significantly reduce water usage while maintaining crop yields. To increase the adoption of advanced irrigation systems (e.g., drip irrigation, smart irrigation technology) on at least 30% of local agricultural land within five years to optimize water use efficiency is need of hour. By improving irrigation efficiency, this objective supports food security and sustainable agricultural practices.

Practice: Uniqueness: Implementing an advanced irrigation system significantly enhance water efficiency, crop yield, and sustainability. Here are some practices which were adopted by shri ram college in its campus and research farm



1. **Automated Irrigation Systems:** This reduces the need for manual intervention and optimizes water application.
2. **Drip Irrigation:** Implement drip irrigation systems, which deliver water directly to the plant's root zone. This method minimizes evaporation and runoff, making it one of the most efficient watering techniques.
3. **Sprinkler Systems:** Use low-pressure, variable-rate sprinkler systems that adjust water application based on specific field conditions and crop needs.
4. **Rainwater Harvesting:** Collect and store rainwater for irrigation use. This practice reduces dependency on groundwater and can provide a sustainable water source.
5. **Recycled Water:** Depending on local regulations, consider using treated wastewater for irrigation. This can help conserve potable water while providing nutrients to crops.
6. **Mulching:** Organic and plastic mulch to reduce evaporation from the soil surface and to maintain soil moisture levels have been used in the campus to demonstrate students and farmers of the local area. This practice also improved soil quality over time.
7. **Training and Education:** Training to rural youth and students were imparted to Educate about advanced techniques, tools, and technologies.

Problems Encountered:

- **Inefficient Irrigation Practices:** Traditional methods may lead to significant water wastage.
- **Cost Barriers:** High costs of installing advanced irrigation systems may deter farmers.
- **Limited Technical Knowledge:** Farmers may lack the knowledge or training necessary to implement modern irrigation technologies.

Resources Required:

- **Subsidies and Financial Assistance:** Providing funding or incentives for farmers to adopt efficient irrigation technologies.
- **Technical Training:** Programs to educate farmers on the benefits and operation of advanced irrigation systems.
- **Research and Development:** Investment in innovative irrigation technologies suitable for local conditions.

Objective 4. Facilitate Rainwater Harvesting Initiatives:

The Context: Rainwater harvesting offers an innovative solution to alleviate water scarcity, especially in arid and semi-arid regions. By collecting and storing rainwater, communities can



reduce their dependence on traditional water sources, help recharge groundwater, and mitigate the impact of flooding. This practice also promotes resilience to climate variability.

Practice: Installation of Rainwater Harvesting Unit in college campus

Uniqueness: Higher education institutions can organize workshops and competitions where students can design and implement rainwater harvesting systems on campus. The educational approach can combine theoretical learning with practical applications, wherein students can build models and systems for harvesting rainwater and understand groundwater recharge processes. Integrating local traditional knowledge with modern techniques can provide culturally relevant insights into rainwater harvesting.



Main well and overflow pit of WHU

1. Installation of Rainwater Harvesting: Shri Ram

College always tried to spread the knowledge of water saving for domestic, irrigation or industrial purpose. A unit for water harvesting and ground water recharging has been installed in the campus during 2020-21. Under this unit B block of Shri Ram college has been selected. Main pit of 9 feet deep and 6 feet diameter in between B and C block were constructed based on total rainwater harvesting potential per day on catchment area and maximum rain occur in a day during last 30 years.

Similarly, rainwater harvesting potential of pit for annual

basis was also calculated. Based on the harvesting potential a rainwater harvesting unit was installed. Drainage pipe from roof relates to a main pipe which is connected to overflow pit / siltation pit (3x4 feet size) located both side of main pit for recharging. The catchment area (894.65 m^2) will receive 35.78 m^3 water if on an averages maximum 40 mm rain occurred in one day based on last thirty years data. In the center of main pit, a 4-inch bore is made, and 4-inch diameter plastic pipe is dispensed. Rainwater is pouring in ground through a 4-inch diameter pipe bored into the ground. Before the installation of unit ground water is recorded and after each year at different intervals the ground water level of surrounding area will be studied to find out the impact of water harvesting unit on ground water level. This study will help to convince the students and faculty as well as farmers visiting the college campus at different time. These students, faculty and farmers will advocate and spread the knowledge gained from this unit.

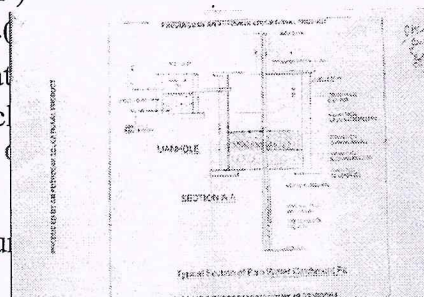


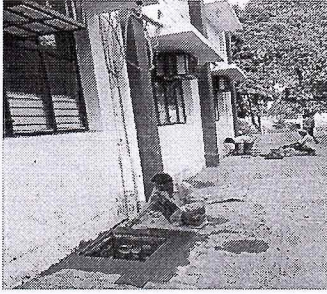
Diagram of Well for WHU

2. Rainwater Harvesting

Problems Encountered:



- **Lack of Infrastructure:** Many areas lack the built environment to effectively capture and store rainwater.



- **Disbelief Toward New Technologies:** Resistance to adopting rainwater harvesting systems due to unawareness.
- **Variable Rainfall Patterns:** Changes in climate may cause inconsistent rainfall, limiting the effectiveness of harvesting systems.

Resources Required:

- **Construction Materials:** Investment in rainwater harvesting systems, including storage tanks and filtration systems.
- **Awareness Campaigns:** Educating communities about the benefits of rainwater harvesting.
- **Policy Support:** Development of regulations or incentives to encourage rainwater harvesting installations.

Objective-5: Enhance Community Awareness and Participation:

The Context: Conduct quarterly workshops and awareness campaigns reaching at least 1,000 community members each year to educate on sustainable water practices, aiming for a 50% increase in community participation in water conservation activities. Enhance public understanding of sustainable water management issues and practices. Community involvement is essential for the success of sustainable water management initiatives. Awareness programs aim to educate the public about the importance of water conservation, pollution prevention, and the adoption of sustainable practices. Engaging community members not only fosters a sense of stewardship over water resources but also encourages local participation in decision-making processes.

Practice: Community Engagement Programs and Outreach Initiatives

Uniqueness: Shri Ram college initiate outreach programs where students collaborate with local communities to address water issues. This include organizing awareness campaigns, organizing workshops in local schools, using community theatre, or developing visual storytelling through documentaries on water conservation. Involving local stakeholders ensures that programs are culturally relevant and increases community buy-in.

Problems Encountered:

- **Low Community Engagement:** Communities may not participate actively in awareness programs due to varying interests or values.
- **Information Overload:** Potential confusion from too much information without clear guidance.



- **Access to Education:** In some areas, especially rural ones, access to educational programs may be limited.

Resources Required:

- **Community Workshops:** Organizing regular workshops and events to engage community members.
- **Communications Resources:** Development of clear, accessible messaging regarding sustainable water management practices.
- **Evaluation Tools:** Mechanisms to assess the effectiveness of awareness programs, allowing adjustments based on feedback.

Conclusion

To successfully implement Integrated Approaches to Sustainable Water Management, addressing the identified problems will require a combination of financial, educational, technical, and community resources. Collaboration among government, NGOs, local communities, and industry stakeholders is crucial for creating effective and sustainable solutions

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