SDG 6: Clean Water and Sanitation

SDG 6 in India: Clean Water and Sanitation

Sustainable Development Goal 6 (SDG 6) aims to ensure the availability and sustainable management of water and sanitation for all. In India, access to clean water and sanitation is a critical challenge, with millions lacking safe drinking water and adequate sanitation facilities. However, the government has made significant strides in addressing these issues through large-scale programs and policies.

Efforts by the Indian Government to Achieve SDG 6

1. **Jal Jeevan Mission (JJM)**:
    - Launched in 2019, this mission aims to provide **safe and adequate drinking water** through individual household tap connections to every rural home by 2024.
    - It emphasizes water conservation, rainwater harvesting, and community engagement for sustainable water management.
2. **Swachh Bharat Mission (SBM)**:
    - The **Swachh Bharat Abhiyan (Clean India Mission)** focuses on eliminating open defecation and improving sanitation across the country.
    - Over 100 million toilets have been built, and many villages have been declared Open Defecation Free (ODF).
3. **Namami Gange Program**:
    - This flagship program aims to rejuvenate the **Ganga River** by addressing pollution, promoting sustainable water usage, and improving the river's ecology.
    - Projects under this initiative include sewage treatment plants, riverfront development, and community education.
4. **Atal Bhujal Yojana**:
    - Focused on sustainable groundwater management, this scheme promotes efficient use of groundwater resources and supports community-led water conservation projects.
5. **National Rural Drinking Water Programme (NRDWP)**:
    - This program provides financial and technical support for the development of rural drinking water supply systems.
    - Emphasis is placed on quality control to ensure access to clean and safe water.
6. **Water and Sanitation Hygiene (WASH) Initiatives**:
    - Schools and public institutions are equipped with improved water and sanitation facilities to ensure a clean environment.
    - Hygiene awareness campaigns target behavioral change and the adoption of safe practices.
7. **Urban Water Supply and Sanitation Programs**:
    - Programs like the **AMRUT (Atal Mission for Rejuvenation and Urban Transformation)** focus on providing clean water supply and sewage management in urban areas.
    - Cities are encouraged to adopt smart water systems to reduce wastage and improve efficiency.
8. **Wastewater Management and Reuse**:

- Efforts are underway to treat and reuse wastewater for irrigation and industrial purposes, reducing the burden on freshwater resources.

SDG 6 at the University of Petroleum and Energy Studies (UPES)

UPES actively contributes to SDG 6 by promoting sustainable water use, ensuring access to clean water and sanitation on campus, and fostering awareness and research related to water conservation.

1. **Water Conservation on Campus**:
   - UPES integrates water-saving technologies such as rainwater harvesting systems, low-flow faucets, and water-efficient appliances across its campus.
   - The university has implemented wastewater treatment facilities to recycle water for landscaping and non-potable uses.
2. **Awareness Campaigns**:
   - Regular campaigns and workshops educate students and staff about the importance of water conservation and sustainable practices.
   - Student clubs and organizations lead initiatives like "Save Water" drives and awareness events on campus and in surrounding communities.
3. **Sanitation Facilities**:
   - UPES ensures access to hygienic sanitation facilities across its campus, contributing to a clean and safe environment for students and staff.
   - Special emphasis is placed on maintaining high standards of cleanliness and hygiene in residential and academic buildings.
4. **Research on Water Sustainability**:
   - Faculty and students engage in research projects related to water purification, wastewater treatment, and sustainable water management.
   - Collaborative efforts with industries and governmental bodies enhance the impact of these research initiatives.
5. **Curriculum and Projects**:
   - Academic programs at UPES include topics on water resource management, sustainability, and environmental science.
   - Students are encouraged to undertake projects addressing water conservation, pollution control, and innovative water-saving technologies.
6. **Community Engagement**:
   - The university conducts outreach programs in nearby villages to improve access to clean water and sanitation facilities.
   - Training programs for local communities focus on rainwater harvesting, hygiene practices, and sustainable water use.
7. **Green Infrastructure**:
   - UPES emphasizes eco-friendly infrastructure design, incorporating elements like green roofs, permeable pavements, and natural drainage systems to manage water resources effectively.

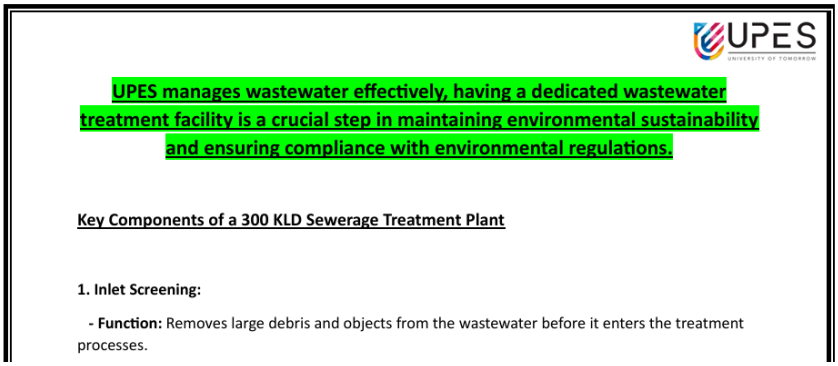
Impact of UPES's Contributions to SDG 6

Through its focus on water conservation, sanitation, and education, UPES aligns with India's broader efforts to achieve SDG 6. By fostering awareness, conducting research, and implementing sustainable practices, the university not only enhances campus operations but

also contributes to the surrounding community's well-being. These efforts demonstrate UPES's commitment to creating a sustainable future and achieving global development goals.

UPES manages wastewater effectively, having a dedicated wastewater treatment facility is a crucial step in maintaining environmental sustainability and ensuring compliance with environmental regulations

Pdf evidence 4



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Key Components of a 300 KLD Sewerage Treatment Plant

1. Inlet Screening:

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2. Primary Treatment: - Settling Tanks: Allows for the removal of settleable solids and grease.

3. Secondary Treatment: - Biological Treatment: Involves processes like activated sludge, trickling filters, or aeration tanks to degrade organic pollutants. - Clarifiers: Separates treated water from the sludge.

4. Tertiary Treatment: - Filtration and Disinfection: Further purification of the wastewater through methods such as sand filtration, UV disinfection, or chlorination to remove remaining contaminants and pathogens.

5. Sludge Management: - Dewatering and Disposal: Processes for dewatering the sludge and managing its disposal or potential reuse.

6. Monitoring and Control Systems: - Automation: Includes sensors and control systems to monitor the treatment processes and ensure compliance with discharge standards.

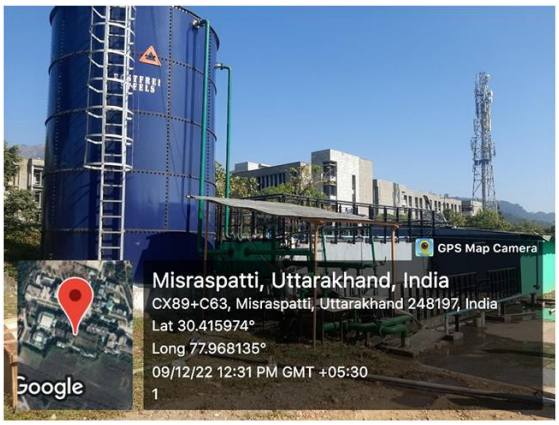
Benefits and Considerations

1. Environmental Impact: - Reduced Pollution: Proper treatment of wastewater helps in reducing pollution and protecting local water bodies.

2. Regulatory Compliance: - Standards: Ensures that the university adheres to local environmental regulations and standards for wastewater discharge.

3. Resource Recovery: - Reuse: Treated wastewater can be reused for non-potable purposes such as landscaping, reducing the demand for fresh water.

4. Educational Opportunities: - Learning: Provides practical learning opportunities for students studying environmental science, engineering, or related fields.



UPES has an ultraviolet (UV) filtration system and processes to manage and prevent polluted water from entering the water system

Pdf evidence 5

UV Filtration System

Purpose and Function:

- Disinfection: The UV filtration system is used to disinfect water by using ultraviolet light to kill or inactivate harmful microorganisms, such as bacteria, viruses, and protozoa.

- Non-Chemical: UV disinfection is a chemical-free method, making it environmentally friendly and reducing the risk of chemical residues in treated water.

Components:

- UV Lamps: Emit UV light that disrupts the DNA of microorganisms, preventing their reproduction and rendering them harmless.

- Quartz Sleeve: Protects the UV lamps while allowing UV light to pass through to the water.

- Flow Chamber: Where water flows past the UV lamps, ensuring that it is sufficiently exposed to UV light for effective disinfection.

Process:

1. Pre-Treatment: Water is often pre-treated to remove larger particles and impurities that could affect UV effectiveness.

2. UV Exposure: Water flows through the UV chamber where it is exposed to UV light.

3. Post-Treatment Monitoring: Regular monitoring of UV intensity and water quality to ensure the system is functioning properly.

Processes to Prevent Polluted Water from Entering the Water System

1. Accident and Incident Management:

- Spill Containment: Procedures to quickly contain and manage spills or leaks, preventing them from reaching the water system.

- Emergency Response Plans: Established protocols for responding to environmental incidents, including communication with local authorities and remediation efforts.

2. Prevention Measures:

- Routine Maintenance: Regular inspection and maintenance of the UV filtration system and other water treatment infrastructure to prevent failures and ensure reliability.

- Monitoring Systems: Continuous monitoring of water quality parameters, such as turbidity and microbial counts, to detect any issues early.

3. Wastewater Management:

- Treatment Processes: Comprehensive wastewater treatment processes before UV disinfection, including primary, secondary, and tertiary treatments to ensure the water is adequately prepared for UV treatment.

- Sludge Handling: Proper management of sludge generated from wastewater treatment to prevent contamination.

4. Staff Training and Awareness:

- Training Programs: Educating staff on the operation of the UV filtration system, maintenance procedures, and emergency response.

- Awareness Campaigns: Promoting awareness about pollution prevention and proper waste disposal among the university community.

5. Compliance and Reporting:

- Regulatory Compliance: Adhering to local and national regulations regarding wastewater treatment and water quality standards.

- Documentation and Reporting: Maintaining detailed records of water treatment processes, maintenance activities, and any incidents to ensure transparency and accountability.

Living Lab Summit

https://www.linkedin.com/posts/upes-soae_earthday-sustainability-livinglabsummit-activity-7185486589609828354-iA7z/?utm_source=share&utm_medium=member_desktop

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