



## Integration of Wastewater Treatment and their Approach in Ecosystem

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### DESCRIPTION

In order to prevent sewage from polluting rivers, lakes, and seas, waste water management involves filtering it of pollutants. It aims to protect human health and the environment by preventing water pollution and conserving water resources. It involves different stages such as collection, treatment, and reuse of waste water. The introducing of pollutants, diseases, nutrients, and sediments into water sources and habitats harms the aquatic life and people's health. It causes eutrophication, a phenomenon in which an abundance of nutrients encourages the growth of algal blooms in water bodies, which reduces oxygen levels and produces dead zones. Decreasing in the quantity and quality of freshwater resources, worsening water scarcity, and raising water costs affects the crop production, fish populations, and leisure activities, which has an impact on agriculture, fisheries, and tourism.

Treatment methods vary depending on the type and level of contamination and the intended use of the treated water. It is a major challenge for sustainable development, especially in urban areas and developing countries where the volume of waste water is increasing and the infrastructure and systems are inadequate. It requires an integrated and ecosystem-based approach that considers the impacts and interactions of different sectors and activities on water quality and quantity.

Some of the benefits of waste water reuse are:

- Improved health and safety by reducing exposure to pathogens and pollutants
- Reduced water scarcity by providing an alternative and reliable source of water
- Lower industrial costs by saving on water bills and meeting environmental standards
- Lowered strain on the environment by conserving natural resources and reducing greenhouse gas emissions.

Wastewater treatment for reuse involves different processes depending on the intended use and quality standards. Some of the common processes are filtration, decantation and lamellar clarification to remove sediment and suspended solids. The

disinfection is used in ultraviolet light or oxidation to kill bacteria and pathogens. The removal of nutrient by using biological or chemical methods reduces nitrogen and phosphorus levels. Membrane filtration or reverse osmosis to remove dissolved salts and contaminants.

Domestic sewage from houses and apartments, which contains used water from toilets, sinks, showers, and washing machines. Industrial sewage from manufacturing or chemical processes, which contains specific and identifiable pollutants depending on the industry. Storm sewage or storm water from precipitation runoff, which carries sand, grit, oil, and chemicals from roads and other surfaces.

Water and habitat contamination are introduced in harmful chemicals, pathogens, and nutrients into natural bodies of water, affecting aquatic life and human health. Squalor and their diseases are exposed to the people from wastewater that can carry at various infections and illnesses, especially in developing countries where sanitation is poor. Soil degradation and erosion by altering the natural balance of soil nutrients and microorganisms, affecting crop productivity and biodiversity.

To prevent or reduce wastewaters are thrift and mend clothes are used instead of buying new ones, as it takes a lot of water to produce textiles. Install low-flow fixtures and appliances that use less water, such as showerheads, faucets, toilets, and washing machines. Turn off the tap while washing your face, brushing your teeth, and shaving to save water. Use rain barrels to collect rainwater for watering plants and gardens instead of using tap water. Fix leaks in pipes and faucets as soon as possible to avoid water loss.

### CONCLUSION

Implementation of waste prevention policies and measures at the government, industry, and community levels, such as setting targets, providing incentives, raising awareness, and monitoring progress. The benefit of waste prevention is by saving money or reducing purchasing and disposal costs. Improving efficiency resource by using less materials, energy, and water. Conserving

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natural resources and reducing greenhouse gas emissions by avoiding extraction, processing, and transportation of raw materials. Enhancement of safety and health by minimizing the

exposure to hazardous substances. Improving environmental performance and reputation by meeting regulatory standards and customer expectations.