



**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

# SDG 6 | Report on Clean Water and Sanitation

# SDG 6

# REPORT 2021



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# I. Targets



## Water Use Efficiency

Centurion University makes effort of increasing water use efficiency through Waste water treatment, Rain water harvesting, Micro irrigation and others. By 2023, the University targets to install 5 vacuum toilets, 10 water efficient faucet at required location to conduct a pilot study on water use.



## Infrastructure

Centurion University has developed infrastructure in adherence to Plastic Waste Management Rules. There is no usage of single-use plastic of less than 15 microns in its campuses. It transform multi-use plastic as a raw material for manufacturing of paver blocks. Currently it manufactures 500 paver blocks per day. The University targets to increase the capacity to 750 by 2023.



## Mentoring Support

Centurion University regularly spreads awareness about the best practices for effective and efficient usage of water and disposal of waste in the local community. It has a Memorandum(MoU) of understanding for safe disposal of biomedical waste. By 2023, The University targets to make a MoU with Nandankanan Zoological Park for mentoring them on Reducing, Recycling and Reusing waste. This is one of the point of a broad based MoU.



## Vermicomposting

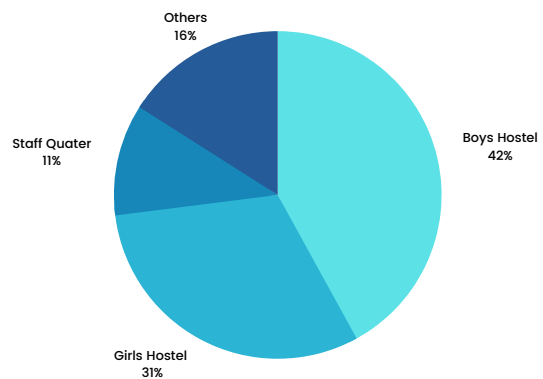
Centurion University strives to transform Organic Waste into compost. It transforms the food waste into compost through Biodigester. Other Organic waste are naturally processed in a vermicomposting tank which has a current capacity of 120 Quintal/Year. By 2023, the University targets to increase the capacity to 180 Quintal/Year.



## II. The Context of Centurion University

Centurion University of Technology and Management adheres to Government of India's policy to provide safe and clean drinking water to all and it believes in the policy of Reduce, Recycle, and Reuse. It ensures minimal wastage of water through Recycling (after Upcycling) the waste water from hostels, canteens and others towards its Green Initiatives. It regularly conducts water audits and analyses the sources of wastage with the purpose of minimizing the same. The University's M. S. Swaminathan School of Agriculture regularly conducts awareness campaigns on minimal water usage practices in agriculture like drip irrigation, rainwater harvesting and no tillage agriculture. It maintains a brigade of Green Army who has dedicated their lives to ensure that the University stays oxygenated

Water is used extensively in the University's campus for various purposes. It uses a total of 2,79,000 liters per day, which must not be ignored. Hence water treatment is of paramount importance.. Keeping in mind, the requirement of water for human, animal and agriculture use, the University has set its own Sewage Treatment Tank ( STP) inside the campus.



“Cleanliness is Godliness” is the mantra of Centurion University. The University maintains clean and hygienic restrooms with eco-friendly cleaning material which requires minimal usage of water. Adhering to Government of India's Solid Waste Management Rules 2016 , Hazardous Waste Management Rules 2019 , all the waste from the University is disposed carefully. The University is also trying to transform food waste into manure. The University has an in-house incinerator for safe disposal of sanitary pads. The pads are collected in separate bins and complete adherence to Prevention of “ The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 ” is followed.

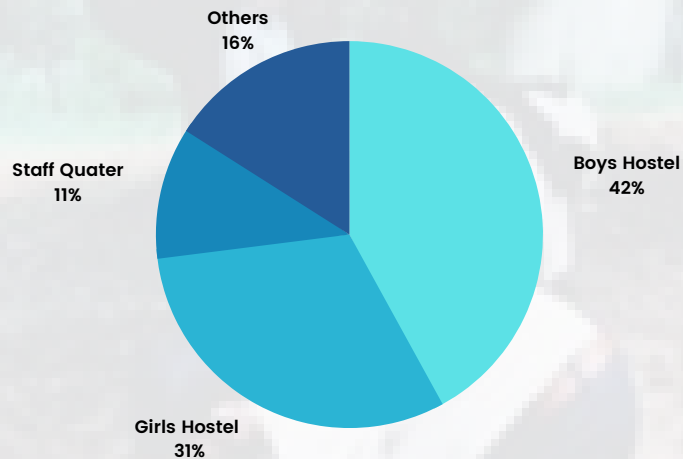
**Jagannath Padhi**  
Director,  
Centurion University



# 1. Introduction

## 1.1. The Campus and Water

Water is used extensively in the University's campus for various purposes. It uses a total of 2,82,000 Liters/day, Water is used for various purposes and certainly there is a wastage as well. In order to make the waste water usable the University had designed and constructed its own Sewage Treatment Tank (STP) inside the campus.



One of the cardinal rationale of waste water treatment through STP is its usage in the University's garden which is 172945.40 m and 2162 number of planted trees. The maintenance of the garden necessitates large quantity of water. The treated water from STP is used for the purpose of gardening and farming besides other applications.

## 1.2. Sewage Treatment Plant

Owing to the increase in pollution, the quality of water has become a top priority for the people. Hence wastewater, especially domestic sewage, needs to be decontaminated. In the past, domestic waste water treatment was mainly confined to organic carbon removal. Recently, increasing pollution in the wastewater leads to developing and implementing new treatment techniques to control Nitrogen and other priority pollutants. Pollution in its broadest sense includes all changes that curtail natural utility and exert deleterious effect on life.

The crisis triggered by the rapidly growing population and industrialization with the resultant degradation of the environment causes a great threat to the quality of life. Degradation of water quality is the unfavorable alteration of the physical, chemical and biological properties of water that prevents domestic, commercial, industrial, agricultural, recreational and other beneficial uses of the same. Sewage and sewage effluents are the major sources of water pollution. Sewage is mainly composed of human fecal material, domestic wastes including wash- water and industrial wastes.





Sewage Treatment Plant is a facility designed to receive the waste from domestic, commercial and industrial sources and to remove materials that damage the quality of the water, which in turn compromise public health and safety when discharged into water receiving systems. It includes physical, chemical, and biological processes to remove various contaminants depending on its constituents. Using advanced technology it is now possible to reuse sewage effluent for drinking water.

### **Objectives:**

The principal objective of waste water treatment is generally to allow human and industrial effluents to be disposed of without danger to human health or unacceptable damage to the natural environment. An environmentally-safe fluid waste stream is produced. No danger to human health or unacceptable damage to the natural environment is expected. Sewage includes household waste liquid from toilets, baths, showers, kitchens, sinks and so forth that is disposed of via sewers. Sewage also includes liquid waste from industry and commerce.

### **Importance of Wastewater Treatment Plant:**

The importance of wastewater treatment plants is highlighted looking towards the increasing pollution. Water is treated before going down to drains and before releasing it back into the environment. Wastewater treatment plants have evolved considerably over time. Their first and most important purpose is to clear the water we use in our homes of solid materials. This process of screening and settlement is known as primary treatment. Although this removes the largest debris items, the wastewater is still full of organic material, which doesn't smell great and, if dumped directly into our water bodies, can contaminate them and consume available oxygen as it decomposes.

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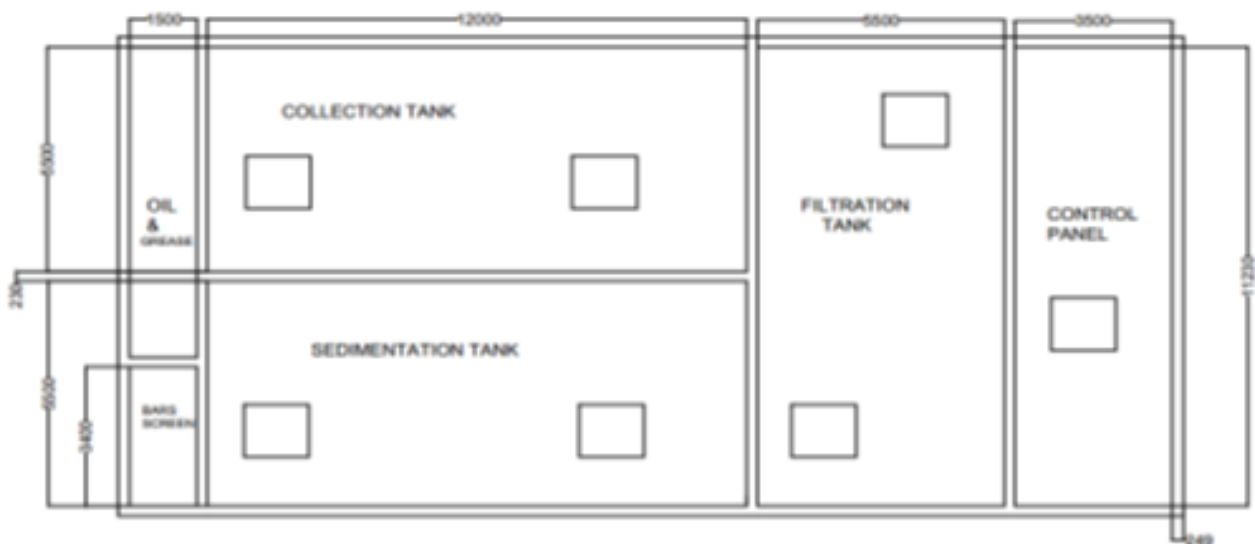
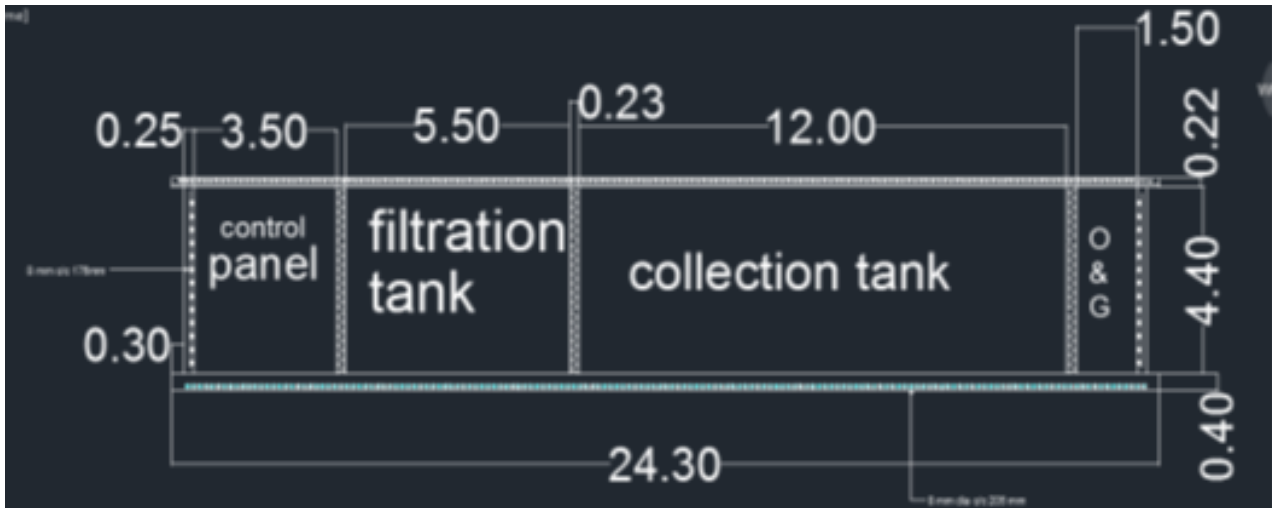
## **Advantage of Wastewater Treatment:**

The advantage of waste water treatment save water and can be used for agriculture, plantation, vegetation, and gardening. This treated water can be used it for curing of bricks and watering while constructing of new buildings. Treated water can be used for toilets and for domestic need of human beings. The treated water can be stored in tanks and use it during the period of water crisis. By the treatment of polluted there will be decrease in the cost of transportation. A lot of ground water, surface runoff and pollute d can be recycled through treatment process and may be use it for the wellbeing of the society.

1. Waste water as it enters into waste water treatment plant is screened to remove large items from the water. The goal of this step is to remove debris that could damage the treatment facility's equipment.
2. The grit from the waste water is removed by forcing the water through a grit chamber. Forcing the waste water quickly through the chamber prevents organic waste from settling and aerates the mix. Small waste water treatment plants may skip grit removal.
3. The screened waste water is pumped into sedimentation tanks to help further separate the components of waste water. Remove and condense the organic matter, called sludge, which settles to h bottom of the tank.
4. The surface of the waste water is skimmed to remove oil, soap scum and grease. Rakes from the top of tanks remove these components of waste water, known collectively as scum.
5. The scum and sludge is collected into a single sludge processing unit for further treatment. Aerobic digestion process of solid waste, and some facilities use the resulting methane gas as a source of energy.
6. The waste water is filtered through sand to remove excess Iron and Calcium, some bacteria and remaining solid particles in the water. Filtering the waste water should also reduce the color and make the water more transparent.
7. The waste water is treated with chlorine to kill remaining bacteria. Chlorine is to be added avoid over contamination; most of the chlorine will break down as it kills the bacteria. Sometimes the chlorinated waste water is treated wastewater is treated with chemicals to neutralize any remaining Chlorine.
8. The cleaned waste water, called effluent is either reused or disposed.

## **Layout of STP**

Centurion University has designed and constructed a Sewage Treatment Plant for treatment of waste water. The plan and capacity of STP is detailed below:



### Plant capacity:

- Maximum daily demand = 180 liter/day.
- Average water supply per day =  $180 \times 1550 = 279000$  liter =  $279 \text{ m}^3/\text{h}$  .
- Average sewage generated per day = 85% of supplied water =  $0.85 \times 279 = 223 \text{ m}^3/\text{h}$  .
- Average sewage generated per hour =  $223/24 = 9.29 \text{ m}^3/\text{h}$  .
- Peak factor = 3
- Design flow capacity (maximum) =  $9.29 \times 3 = 27.85 \text{ m}^3/\text{h}$  .





# 1.3. Rain Water Harvesting

Centurion University strives to conserve rain water through rain water harvesting. One of such endeavour is to transform the natural pit in the campus into a temporary water storage tank. Besides conservation and storage of rain water, it is also getting used for aquaculture and other gardening works. RWH recharges the ground water and it makes the soil puross and arable.



Natural Pit being used for Rain Water Harvesting



Pits made by illegal mining activity which is transformed for waste water treatment and RWH

# 1.4. Micro Irrigation in Action

Micro Irrigation is defined as the frequent application of small quantities of water on or below the soil surface as drops, tiny streams or miniature spray through emitters or applicators placed along a water delivery line.



## Micro Irrigation



## 2. Academic Engagements

### 2.1. Action Learning Lab

#### Aquaculture

Aquaculture (less commonly spelled as aquiculture) also known as aquafarming, is the controlled cultivation or farming of aquatic organisms such as fish, crustaceans, mollusks and algae. It also includes other organisms such as aquatic plants. The University has established an action learning on Aquaculture, which is equipped with all necessary instruments and chemicals.



#### Aim of Aquaculture Laboratory

To enable the students to get theoretical and practical understanding of various equipment, the aquaculture system and its advanced techniques.

#### Objectives

- To standardize the culture as well as feeding strategies to maximize the growth of the aquatic organisms.
- Protocol for short cycled and compatible species to be reared for more production with specific crop period.
- To spread awareness about the semi and super intensive aquaculture system.



#### Outcomes

At the completion of the practical courses,, the students will:

1. Have an increased practical knowledge to work in different fields of aquaculture..
2. Gain the technical knowledge to handle the culture and production.
3. Develop the skill to guide the entrepreneurs and stakeholders.
4. Gain the scientific knowledge required to be an entrepreneur in this field.

#### List of equipment

1. Simple microscope
2. Conductivity meter
3. Seechi disk
4. Weighing balance
5. Imhoff cone
6. Refractometer
7. pH meter
8. Magnetic stirrer



## Outcomes

Students will get acquainted with the basic micro biological tools and techniques employed for fish-disease diagnosis  
The students will gain practical knowledge” to gain insights in fish pathology and disease diagnosis.

## Caters to

It caters to the needs of the courses of Bachelor of Fisheries Science and M.Sc. Zoology.

## Relevant Sustainable Development Goals



## 2.2. Courses at the University

NAME OF THE COURSES	LINKS
1. Water and soil quality management in aquaculture	<a href="#"><u>Know more</u></a>
2. Monitoring of water quality	<a href="#"><u>Know more</u></a>
3. Soil and Water chemistry	<a href="#"><u>Know more</u></a>
4. Soil and Water Conservation through Watershed	<a href="#"><u>Know more</u></a>
5. Aquatic Pollution	<a href="#"><u>Know more</u></a>

# 3. Celebration Activity

## 3.1. Awareness on World Water Day

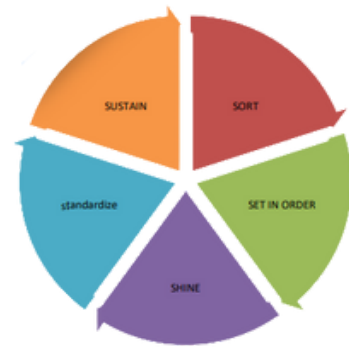
Centurion University regularly conducts awareness programs on the effective and efficient utilization of water. One such event was organized during World Water Day in collaboration with UNICEF and YOUTH4WATER.



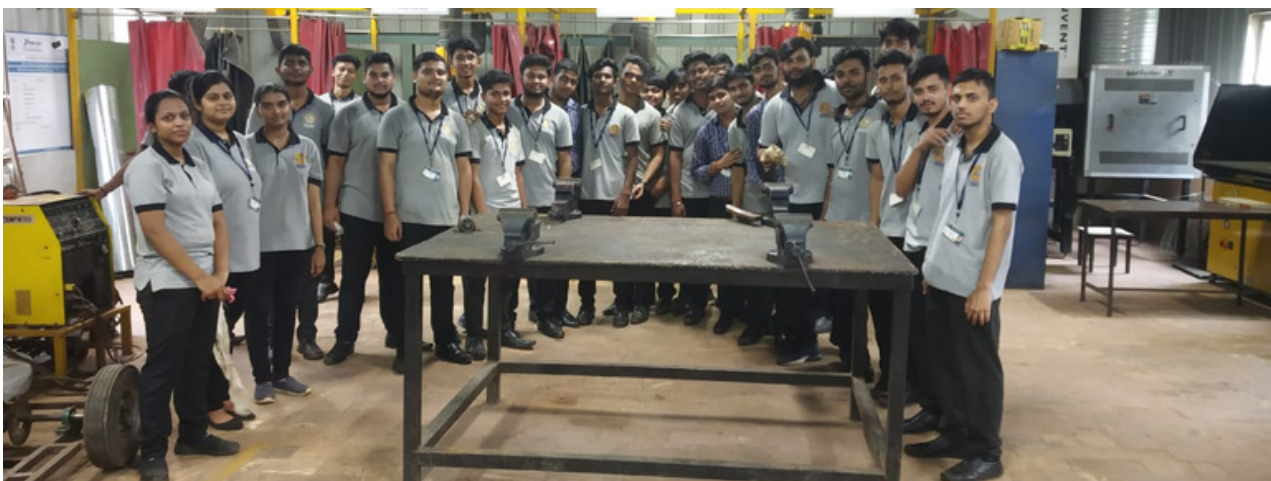
# 4. Sanitation

## 4.1. "5S" Initiatives

Adhering to prevention of The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 ' (the 'Act'). The Act mandates the provision of safety equipment and gear for workers engaged in hazardous cleaning, and also a shift towards mechanization of cleaning septic tanks, sewers, and other spaces. The University in agreement with local Municipal Council or Corporations discourages manual cleaning of sewage and instead adapts mechanical ways for the same.



To ensure Gender Parity, the University has employed female workers who regularly clean the classrooms and laboratories. The University believes that it is the collective responsibility of the workers', employees and students to maintain cleanliness in the campus.



## 4.2. Cleanliness Efforts

Centurion University aligned its goals with the belief that "Cleanliness is Godliness" and with the "Swachh Bharat Abhiyan" by the Govt. of India. The University adheres to the rules of solid waste management and has placed different kinds of bins at strategic locations across its campuses. The University follows a proper segmentation and disposal system for biological waste. The aeration tanks in the University increased the biological oxygen demand which enables the aquatic ecosystem to flourish.



**Incinerator**



**Bins**



**Biological Dustbins**



**Aeration Tank**



## 4.3. Plastic Free Campus

Centurion University commits itself towards a “No Plastic Campus”. Adhering to Plastic Waste Management Rules, all multi use plastics and PET materials are Reused by Upcycling the waste plastics like in development of infrastructure through manufacturing of pavers block.



Bing eco-friendly Centurion University constantly experiments and manufactures biodegradable products like bamboo cups, bottles and cups made-up of coconut shells.



Centurion University with the mantra "Reduce, Reuse, Recycle and Upcycle" transforms the waste plastic in the campus. It uses them as one of the raw materials in the manufacturing of pavers.



Centurion University has zero tolerance for the usage of plastics in adherence to the Plastic Waste Management Rules. There are signages at all the strategic locations of the University.





