University : Karunya Institute of Technology and Sciences
Country : India
Web Address : www.karunya.edu

[4] Water (WR)

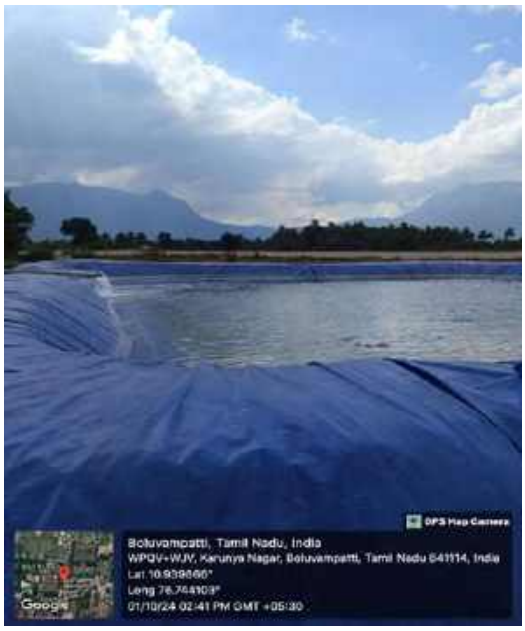
[4.1] Water Conservation Program Implementation

Water Conservation Program Implementation:

S.No	Water Conservation Programme	Amount in Litres
1	Ponds and Tanks	14334170
2	Cultivating crops in the Instructional farm with rain water	138,6880000
3	Rainwater Harvesting structures and Recharge of Wells	86237000
	Total	**1487451170**
Amount of Water Conserved – 89.8%		

Water Conservation - Rainwater Harvesting Structures (Ferro Cement structure and Groundwater Recharge Pits) – Karunya Institute of Technology and Sciences

Water Conservation Structures (Farm Ponds and Tanks) – Karunya Institute of Technology and Sciences



Evidence: Water Conservation - 89.8%

Annual Rainfall – 1453.2 mm (From Meteorological Station at KITS)

1. University area alone (Buildings) - 244339.76 m^2
2. Agri land area – 12,60,800 m^2

i. Water Resources Conservation and Management through
   a) ponds and tanks
   b) rainwater harvesting and recharge of wells (34 Nos)
   c) use of recycled water (1344.55m^3)
   d) usage of water efficient appliances
   e) rainwater utilization for crops
   f) optimal water usage through drip irrigation
   g) IoT based water level controller for reducing the wastage

ii. Water Quality Monitoring

iii. Capacity building and awareness creation

Water Conservation Calculation:

Amount of water available through rain in the Campus – 268773 m^3
Amount of water available through rain in the Farms – 1386880 m^3
Total water available from rain – 1655653 m^3

University Campus

The Karunya Institute of Technology and Sciences (KITS) campus receives an average annual rainfall 1100mm to 1453.5 mm, as recorded by the Meteorological Station located within the campus. The university area comprising buildings and associated infrastructure covers 244,339.76 square meters, while the agricultural land—used extensively for research, student training, and community outreach under the Department of Agriculture—extends over 12,60,800 m^2square meters. This diverse land use pattern supports KITS's integrated approach to education, sustainability, and environmental stewardship, allowing for efficient management of natural resources such as rainwater, soil, and vegetation within the campus ecosystem.

The Karunya Institute of Technology and Sciences (KITS) campus, located at the foothills of the Western Ghats—a region celebrated for its rich biodiversity of flora and fauna—has implemented extensive measures for water resource conservation and management. Recognizing the importance of sustainable natural resource utilization, Karunya has adopted scientific and technological strategies with active involvement from its students and faculty to transform the campus into a green, water-efficient ecosystem. The campus is fully residential, comprising 13 residences for boys and girls (including FDR, EGR, P.R. Garg Residence, HR, AR, JMR, SGBRR, JVR, BYR, EVR/Oprah, SRR, SPR, and DMR) and 15 quarters such as Zion, Alpha, Bethel, Elim, Canaan, Carmel, Kidron, Tabor, Sinai, Hebron, Frankincense, Pat Robertson, Antioch, Bethsaida, and Beersheba, accommodating around 663 residents. The 329-acre agricultural land is used primarily for academic, research, and community development activities by the Department of Agriculture.

Water resource management in KITS is efficiently organized with 23 bore wells and 5 open wells supplying water to 166 storage tanks across the campus, ensuring a continuous 24-hour water supply to all academic blocks, residences, and agricultural fields. The main components of the distribution network include pump houses, primary and secondary pipelines, overhead tanks, and end-user connections. The water supply system integrates surface and groundwater sources, including the Siruvani Water Supply Scheme and stormwater storage facilities, to meet the campus's total demand.

For effective rainwater management, KITS has developed various conservation systems such as ponds, tanks, rainwater harvesting structures, groundwater recharge wells, and IoT-based control mechanisms. Ponds and tanks on campus conserve approximately 14,334.17 m^3 of water, while rainfed crop cultivation contributes an additional 1386880 m^3 to water conservation. Rainwater harvesting and recharge of wells add about 86,237 m^3 more, resulting in a total of 89.8% of the rainwater available (1655653 m^3) being effectively conserved within the campus. The campus also utilizes recycled water—amounting to 1344.55m^3 annually—for gardening and non-potable uses, thereby minimizing freshwater consumption.

One of the major initiatives is the installation of a partially underground ferrocement storage tank with a capacity of 25,000 liters (25 m^3) near the administrative block. This tank collects rainwater from a rooftop area of 1,900 m^2 and supplies it for washing and gardening purposes. Additionally, 33 soak pits, each with a depth of 3 meters and a diameter of 1.8 meters, are strategically placed throughout the campus near academic departments and residential buildings to recharge groundwater. These soak pits ensure that roof runoff during monsoon seasons percolates into the subsurface, improving groundwater availability.

Rainwater harvesting systems are located at 33 key sites across the campus. Major installations include the Administrative Block (1,900 m^2), Aerospace Lab (278 m^2), Old Biotech Block (766 m^2), Ebenezer Auditorium (1,100 m^2), CST Department (1,247 m^2), Elohim Auditorium (450 m^2), Mechanical Lab (2,960 m^2), Civil Department (2,812 m^2), Mechanical Workshop (2,218 m^2), Food Processing Lab (4,277 m^2), Computer Centre (1,023 m^2), and the S&H Block (5,590 m^2). Other significant structures include the Visitor Waiting Hall, STP blocks near hostels, various residences such as Oprah, Sundaraj, Sevagapandian, PRGR, DMR, and FDR, as well as the Guest House and Post Office. Each of these locations has been designed to collect rooftop runoff and direct it into soak pits or storage tanks, thereby maximizing rainwater utilization and groundwater recharge.

Furthermore, KITS has adopted water-efficient technologies such as drip irrigation for optimal water use in agricultural fields and IoT-based water level controllers in tanks to prevent wastage. The use of water-efficient appliances in residences and laboratories further enhances the sustainability of water consumption. Alongside these infrastructure measures, the institution actively promotes capacity building and awareness creation among students and staff regarding water conservation and quality monitoring.

Through these collective efforts—integrating engineering solutions, sustainable agricultural practices, and smart monitoring systems—KITS has successfully conserved over half of its annual rainwater potential and established itself as a model campus for holistic water resource management and conservation in higher education institutions.

Water management in Agricultural crops (2024-2025)

1. Instructional FARMs (North and South)

The Instructional Farms under the School of Agricultural Sciences, Karunya Institute of Technology and Sciences, encompass a total area of 329 acres, distributed across two distinct locations. Each farm is designated for specific purposes based on crop duration, soil characteristics, and irrigation facilities. The North Farm is dedicated to the cultivation of horticultural crops such as fruits, vegetables, and ornamentals, while the South Farm is primarily utilized for growing annual agricultural & crops and, to some extent, for establishing permanent seedling and clonal nurseries of tree species including Eucalyptus, Teak, Casuarina, and Acacia. Both the Instructional Farms received an annual rainfall of 1453.2 mm during the year 2024–2025(Annexure - Table.1).

1.1 North Farm

The North Farm spans 129.0 acres and is organized into three major blocks—Block A, Block B, and Block C—covering 35.58, 47.44, and 42.98 acres respectively. Block A is further subdivided into plots A1 to A12, Block B into B1 to B10, and Block C into C1 to C10. The major crops cultivated include coconut, fruit crops, spices, and vegetables. The farm serves as an instructional unit to support the academic and practical training of B.Sc. (Hons.) Agriculture students. Currently, coconut occupies the largest portion of the area, while other crops are distributed across different blocks. A crop cafeteria featuring 26 species of fruit crops is established in Block B6, and an orchard block in C3 houses diverse varieties of mango, guava, sapota, pomegranate, lime, and passion fruit.

It has one mist chamber and one nursery shed (in Block C2) and a poly house in Block C3 with 2000 sqm built up area meant for practical classes and Experiential Learning Programme (ELP) of final year students. The farm also has one farm office, Field laboratory building, Bio fertilizer unit, meteorological station, threshing yard, implement store, Farm machinery lab, cattle and poultry shed, Biocontrol laboratory, Azolla unit, Mushroom units and Security office. The farm is also established with a well spread network of irrigation facilities with 10 open wells, three borewell points, 3 farm ponds and a canal flowing across (Annexure - **Table 2 & 3**.). All the perennial crops like coconut and orchard crops are drip irrigated. In North Farm, **96.03** hectares of land is cultivated with vegetables, fruit crops, plantation crops, spices and condiments and the other area are under establishment. The water requirement for the crops in North Farm is given in Annexure - **Table 4.**