

**SHIV NADAR**

INSTITUTION OF EMINENCE DEEMED TO BE

— UNIVERSITY —

DELHI NCR

# Shiv Nadar University Campus Water Management and Reuse Policy



# Introduction

Water is one of the most essential requirements for the survival of all living organisms, including plants, animals, and human beings. Recent trends of unexpected droughts, floods, and constantly depleting water tables are impacting basic survival.

To overcome this challenge, there is an immense necessity for focused planning and actions across nations and communities to conserve this most valuable natural resource.

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## **Scope & Objective**

The Water Conservation and Management policy reflects the intent and commitment of the leadership of Shiv Nadar Institution of Eminence (Shiv Nadar IoE) towards the conservation of natural resources and promoting knowledge and awareness amongst all its interested parties.

Shiv Nadar IoE is committed to providing good quality water to all members, including students, faculty, staff, visitors, and local communities, at the same time, motivating them to participate and engage in structured initiatives towards efficient usage, avoiding wastage, reuse of treated water, preventing pollution and overall conservation of the water leading to making Shiv Nadar campus a water Neutral campus.

## Our aim is to:

1. Conserve water and prevent wastage
2. Ensure clean water availability through efficient water management practices
3. Sensitize the campus population and the wider community about sustainability in water management
4. Conduct planning and execution activities focused on water conservation
5. Promote responsible water extraction
6. Ensure measures to prevent any contamination and pollution of the water systems present on campus.
7. Enhance knowledge and awareness of all interested parties on the importance and methods of water conservation
8. Provide educational opportunities through formal education programs
9. Conduct outreach programs to enhance awareness of sustainable water management
10. Establish Rainwater harvesting infrastructure on campus and educate the community to establish the same at their village and community level
11. Partner with not-for-profit organizations dedicated to working in the area of water conservation and clean water and sanitation.

# Water Management and Reuse System

To ensure the availability of clean water and advocate water conservation, the university has developed a structured program that includes:

1. Awareness and educational opportunities both on-campus and in the wider community
2. Knowledge sessions on Sustainable Water Management Practices
3. Outreach programs around ensuring clean water availability, sanitation, and conservation
4. General guidelines for water management to be practiced on the residential campus
5. Promote and support research activities relating to water conservation



# Awareness and Educational Opportunities

Shiv Nadar IoE is committed to enhancing awareness around sustainable water management practices. We, as a university, urge our faculty, staff, and students to be aware and also reiterate their knowledge of good water management practices and sustainability.

## Some of these include:

### A. Courses

1. The undergraduate curriculum has a common core curriculum for all students, where Environment and Ecology is a mandatory theme for every SNU student.
2. Semester courses and optional courses on sustainable water management in various areas like agriculture, engineering processes, etc, are available.
3. Certificate courses in water management

### B. Awareness program

Several awareness programs are held for students, faculty, staff, third-party staff and the wider community around water conservation and preservation of natural resources.



1. Conferences are held around this area in different schools by the university as a body
2. Faculty development programs
3. Staff sensitization
4. Local community educational training
5. Talks and community sensitization programs

### **C. Awareness initiatives**

1. Signs are present all over the campus to increase awareness about good water management practices



2. Signage is displayed near the natural and the artificial lake maintained at the university campus, restricting any kind of act that might contaminate the water bodies maintained. Strict vigil is also maintained by the deployed security team to ensure no one pollutes the water bodies by throwing any garbage entering the water body or disposing of any kind of chemical in these lakes.



3. Water-efficient agriculture practices are encouraged. The community is engaged and made aware of the benefits of Drip irrigation to be used for the cultivation of crops, including Grains. Actual proof of the concept is also presented to the community by the faculty who undertook an initiative along with a global partner to grow grains using the drip irrigation process at the campus

4. Awareness programs on the importance of Hygiene and Sanitation are also undertaken to sensitize the community and students

5. Clean drinking water is made available 24/7 on the campus through multiple dispensing stations for drinking and for cleaning purposes to ensure adequate hygiene and sanitation conditions are maintained across the campus.



# Sustainable water management Practices

## Water use and reuse system

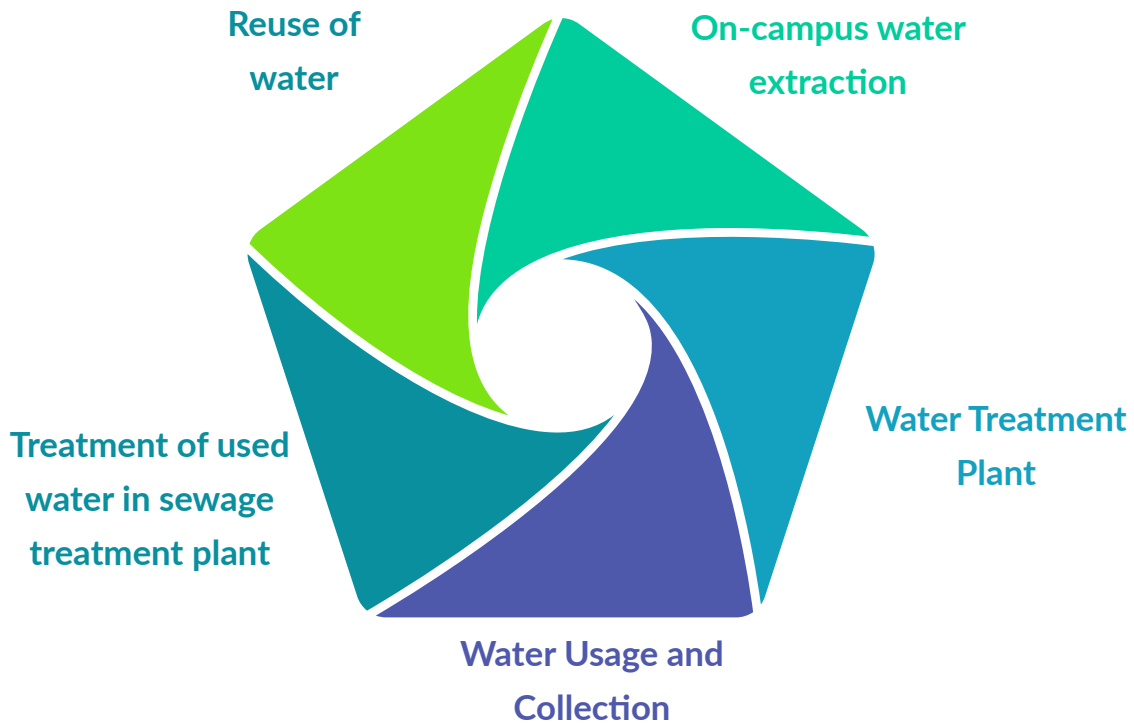


Figure 1: Process Overview

### Process:

#### 1. Water extraction

- On-campus water extraction is done from borewells. Compliance is ensured with the daily extraction limit provided by Central Ground Water Authority (CGWA)
- In addition to the ground water, water is also collected through the Rainwater harvesting infrastructure installed on campus. Rain water is collected using the installed infrastructure of the university building for usage.

## 2. Water Treatment Plant

- A part of the treated water is directly supplied for domestic use in washrooms and for the cleaning activities
- Another portion of the treated water is supplied to be further filtered and used for drinking
- Chemical testing and analysis are done to ensure that all relevant parameters are within the acceptable limits.



Water Treatment Plant

## 3. Water usage and collection

- Signage is placed across the campus promoting conscious water usage
- Water consumption is monitored and analyzed for usage trends and identification of opportunities for further improvement.

## 4. Treatment of used water in the sewage treatment plant

- Water being treated is measured, and records are maintained.
- Documentation of water usage and reuse is done for carbon footprint computation in the Carbon Footprint Data Sheet.



**Sewage Treatment Plant on campus**

### 5. Reuse of water

- Water is currently being reused for horticulture purposes through tanks and pipes for irrigation
- Measurement of reused water is done by recording the number of tanks sent for horticulture purposes and the amount of water being sent through pipes.



**Gardening water supply pumps for reuse of treated water**

Water	Water from Bore well	233179 kl	
	Water from Municipal Water Supply	0	
	Water purchased from Tanker suppliers	0	
	Bottled water purchased	3050 Ltr	Academic and Non Academic= 5500 Bottle of 250 MI Cafeteria= 4040 Bottle of 250 MI 2385000MI 2385 Ltr
	Waste Water Treated	109899000 Ltr	Clubhouse= 359Ltr VH=306 Ltr
	Treated waste water consumption	109899000 Ltr	

**Figure 2 Section of Carbon Foot print data sheet talking about water use and reuse measurement**

# Prevention of pollution of water systems

Processes and controls are deployed to prevent water leakage from the pipelines and maintain the quality and safety of water.

- All the water pipes are placed in separate concrete trenches, not allowing infiltration of water from any other source
- The water pipelines are sealed and reviewed at periodic intervals to identify any possible leakage
- Pressure differential gauges are installed to detect any possible leakage.
- Littering on campus is strictly prohibited and monitored near the lake through guards and CCTV surveillance. In addition, signage is placed on campus to prevent contamination of ground or water systems.



**STP 150 KLD: This modular-type plant (50+100) treats water from campus**

1. Pressure differential gauges are installed to detect any possible leakage and Regular preventive maintenance is undertaken to prevent any leakage into the ground or contamination of the water system present on campus.
2. Throwing of garbage or any contaminating material on the ground or lake is strictly prohibited in the university, and monitoring is done near the lake system through guards and CCTV surveillance to ensure compliance with the same. In addition, signages are present on campus to prevent contamination of ground or water systems on the campus.

## Planning And Development Processes

1. Water efficiency renovations, building designs, and upgradation

### **1.1 Infrastructure**

1.1.1 All washrooms are equipped with press-matic taps that regulate water flow to prevent the wastage of water.

1.1.2 A rainwater harvesting system is installed campus-wide in all the buildings. Stormwater drainage systems are present near pavements, and rainwater harvesting systems are present in buildings as well, then the water is filtered and released into an artificial lake and a natural lake.



Stormwater drainage and catchment



Rooftop Rainwater harvesting

1.1.3 The university is IGBC LEED certified with processes to conserve water and increase water efficiency in place. One of the key areas of IGBC green homes is water efficiency. In addition, the upgrade of the building is planned with an increase in measures and upgrades centered around environmental protection, including water efficiency measures.

#### 1.1.4 Water-saving process during development:

- 1.1.4.1 During the construction process, it is ensured that only the minimum amount of water is used.
- 1.1.4.2 Hessian Cloth/Gunny Bag Usage For Water Curing, which helps in the reduction in usage of potable water.

#### 1.1.5 Water-saving process during development:

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Figure 8 Gunny bags are used to reduce water usage

## 1.2 Maintenance

1.2.1 All washrooms and taps are maintained regularly to prevent water wastage.

1.2.2 QR Codes are present in hostel and washroom facilities for students and staff to scan the codes and mention their complaints or report any issue in the washrooms.

1.2.3 Housekeeping: All staff responsible for cleaning are trained to use only the necessary amount of water for cleaning or maintenance purposes.

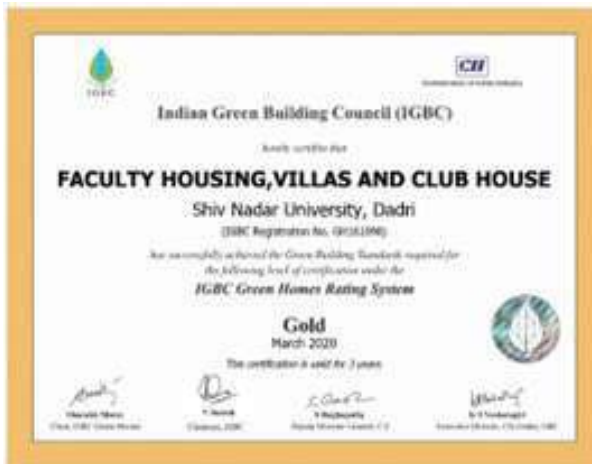
- Awareness programs on the importance of Hygiene and Sanitation are also undertaken to sensitize the community and students
- Clean drinking water is made available 24/7 on the campus through multiple dispensing stations for drinking and cleaning purposes to ensure adequate hygiene and sanitation conditions are maintained across the campus.



# University Infrastructure – Water efficiency in renovations, building designs, and upgradation

At Shiv Nadar, all buildings, including the 120,000 square ft. sports complex, are [certified](#) by the Leadership in Energy and Environmental Design (LEED). The LEED Gold-certified buildings have state-of-the-art water harvesting and water-efficient plumbing fixtures and in-built efficient water conservation systems, including water meters, efficient taps, and waterless urinals. Also, it is certified by the Indian Green Building Council (IGBC). It has extensive requirements for water conservation and mandatory requirements of rainwater harvesting (roof or non-roof) and water-efficient plumbing fixtures. The university meets both these requirements, including 15% of the credits that impact water resources.







## Commitment to maintaining rich biodiversity on campus

We are committed to maintaining the rich biodiversity on campus, including the campus lake. The lake's revival has allowed many fish and aquatic plants to thrive. It is home to many species of birds that are endangered, near threatened, or vulnerable in the International Union for Conservation of Nature (IUCN) category. In an exciting discovery in 2018, a faculty isolated the bacterial strains *Exiguobacterium sibiricum* strain DR11 and *Exiguobacterium undae* strain DR14 that can degrade plastic, especially polystyrene. These bacteria have great potential in arsenic removal from wastewater and biodegradation of polystyrene from waste. All efforts are being taken to preserve the lake and its natural ecosystem. During summers, the lake is supported by external water to maintain life underwater, and the water is conserved and rejuvenated through rainwater harvesting.

Signages near the natural and artificial lakes restrict any act that might contaminate the water bodies. The deployed security team also maintains strict vigil to ensure no one pollutes the water bodies by throwing any garbage, entering the water body, or disposing of any chemicals in these lakes.

Water-conscious planting has resulted in a green campus and reduced irrigation requirements. The campus has many drought-tolerant plants, such as *Acacia auriculiformis* A.Cunn.ex Benth., *Albizia lebeck* (L.) Benth., *Casuarina equisetifolia* L.



LAKE

18  
MUNJ  
GRASSES

3

14

8

21

15

52

20

32

43



ACADEMIC BLOCK



LIBRARY

4

16

48

CRICKET  
FIELD

39



31

46



1

38



27



17