SDG 6: *Clean Water and Sanitation*

GD Goenka University - Sustainability Initiatives and Achievements

1. Introduction

Sustainable Development Goal 6 (SDG 6) is dedicated to ensuring the availability and sustainable management of water and sanitation for all. This goal addresses the critical importance of clean water and adequate sanitation in promoting health, well-being, and sustainable development. At its core, SDG 6 aims to achieve universal access to safe and affordable drinking water and to reduce the number of people lacking basic sanitation services or exposed to water-related diseases. It emphasizes improving water quality, reducing pollution, and enhancing water-use efficiency to ensure clean and reliable water sources for everyone.

Another critical aspect of SDG 6 is the emphasis on adequate sanitation and hygiene practices. The goal seeks to end open defecation, provide access to sanitation facilities, and promote hygiene education. By tackling these challenges, SDG 6 contributes significantly to reducing waterborne diseases, improving public health outcomes, and enhancing the dignity and quality of life for communities.

SDG 6 also recognises the interconnectedness of water-related issues with other sustainable development goals — including health (SDG 3), education (SDG 4), gender equality (SDG 5), and poverty reduction (SDG 1). Moreover, water sustainability is essential for preserving ecosystems and biodiversity, and for the sustainable management of land resources.

GD Goenka University, established in 2013 under the vision of Shri A.K. Goenka, is a prominent private institution located on a 60-acre sustainable campus in Sohna, Gurugram (Haryana). Guided by the GD Goenka Group's legacy of excellence in education, the University is committed to integrating environmental stewardship into its infrastructure and operations. GDGU's dedicated page on clean water and sanitation outlines a comprehensive approach that includes wastewater treatment, preventing water-system pollution, free drinking water provision, water-reuse policies, and water-conscious building and landscaping standards.

Through its emphasis on sustainable practices, infrastructure development, and awareness programmes, GDGU demonstrates an institutional commitment to the broader objectives of SDG 6 — ensuring responsible water management, protecting water-related ecosystems, and promoting sustainable living among its students, staff, and surrounding community.

Government of Haryana, Haryana Water Resources Authority has granted approval for the application submitted by GD Goenka University for permission to extract ground water for infrastructure use. The approval letter is enclosed as a supporting document under SDG 6 (Clean Water and Sanitation) to demonstrate compliance with state water regulations and responsible water resource management practices within the campus. Water Resource Authority Letter (Govt. of Haryana)

Government of Haryana

Haryana Water Resources Authority

Application for Permission to Extract Ground Water for Infrastructure Use

Application Type - New

Application No:	**HWRA/INF/N/2022/257** (Application Received Fee Paid)				
Date of Licence to develop: 24/12/2019					
1.	**General Information**				
	Attach Certificate/NOC regarding 'non-availability' or 'Partial Water supply' in the prescribed format from PHED/ HSVP/ HSIIDC/ MCs & other local Government water supply agencies in respect of all categories of assessments units				Download
	(i)	**Name of Applicant**		NARESH KUMAR	
	(ii)	**Designation of Applicant**		naresh kumar	
		Authorization Letter in the name of NARESH KUMAR (applicant):			
		ID Proof Type		Aadhaar	
		ID Proof no		XXXXXXXX3029	
		Id Proof Document		Download	
	(iii)	**Mobile No. of Applicant**		9818171315	
	(iv)	**Email of Applicant**		naresh.kumar@gdgoenka.ac.in	
	(v)	**Name of the Infrastructure:**		G. D. Goenka University	
		Type of Infrastructure:		Universities	
		Infrastructure Unit Address:		G.D. Goenka Education City, G.D.Goenka University, Sohna Gurgaon Road,Sohna	
		Is Commercial		Yes	
		Completion Certificate		Download	
		Date of Completion Certificate		08/01/2003	
		Occupation Certificate		Download	
		Date of Occupation Certificate		01/04/2014	
		Date Of Commencement		01/04/2014	
		Approval letter / CLU of State Government Agency approving the infrastructure development to be attached			Download
		Latest up-to-date valid Environment Clearance Certificate by SEIAA, if applicable			Download
		Whether CTO/CTE by HSPCB is applicable		Yes	
		If not applicable, give reason			
		Latest CTO issued by HSPCB, if applicable		Download	
				CTO/CTE Number : 329993522GUSOCTO21461605	Issue Date : 31/03/2022
		Validity period of uploaded CTO/CTE		From : 31/03/2022	To : 31/03/2027

	(vi)	**Location details of the Infrastructure unit:**			
		State :	Haryana	**District :**	GURUGRAM
		Tehsil:	Sohna	**Block:**	SOHNA
		Village/MC:		**Region:**	over-exploited
		Latitude:	28.264842	**Longitude:**	77.064572
		Infrastructure Locality:	Urban Local Bodies		
		Site Plan:	Download		
		Location Map:	Download		
		Document of OWnership/Lease:	Download		
	(vii)	**Correspondence address:**	As above		
	(viii)	**Land use details of existing/proposed:**			
		Total Land area(sq m):		81872.20	
		Rooftop area of buildings/sheds(sq m):		29157.14	
		Road/paved area(sq m):		6200.00	
		Green belt area(sq m):		4500.00	
		Open Land(sq m):		42018.06	
		Any other structure proposed:		00	
	(ix)	**Source of availability of surface water for Industrial use, if any**		no	
	(x)	**Groundwater utilization for:**		Existing Infrastructure	
	(xi)	**Purpose of Abstraction**		Other Use	
	(xii)	**Applying For:**		Operational Purpose	
	Total number and type of:				
		a. Dwelling units		0	
		b. Commercial units		0	
		c. Industrial units		1	
		d. Others		0	
2.	**Detail of water requirement/ recycled water usage:**				
	Water Requirement for construction purpose :				
		a) Quantity of water required for construction (m3/day)			
		b) Period of construction for which permission is requried (No. Of Days in a year)			
		c) Sewage Water available within 10 kms			
	Water Requirement for operational purpose :				
		Calculation details of water requirement:		Download	
		Water Balance Chart		Download	
	(i)	**Total water requirement, excluding construction (m3/day):**		205.84	
	(a)	**Ground Water requirement, excluding construction (m3/day):**		123.60	
	(b)	**Recycled Water usage (m3/day):**		82.24	

(c)	Proposed/existing water supply from any agency (m3/day):			0.00		
(ii)	Breakup of water requirement and usage:					
	Activity	Existing requirement (m3/day)	Proposed requirement (m3/day)	Total requirement (m3/day)	No. of operational days in a year	Annual requirement (m3/year)
	Residential/ domestic	101.10	0.00	101.10	180	18198.00
	Commercial activity	0.00	0.00	0.00	0	0.00
	Greenbelt development	22.50	0.00	22.50	180	4050.00
	Industrial activity	0.00	0.00	0.00	0	0.00
	Other use	82.24	0.00	82.24	150	12336.00
	Grand total	205.84	0.00	205.84		34584.00
(iii)	Quality of Grounwater			Saline Water		
	Groundwater quality from NABL accredited lab			Download		
(iv)	Whether ETP/STP proposed:			Yes		
			m3/day	No. of operational days	m3/year	
	Quantity of treated water available		101.10	180.00	18198.0000	
	Reuse In Industrial Activity		0.00	0	0.00	
	Reuse In Commercial Activity		0.00	0	0.00	
	Reuse In Green belt development		22.50	180	4050.00	
	Reuse In Other use		78.60	180	14148.00	
	Total		101.10	360	18198.00	
(v)	Whether project would involve dewatering ground water for excavation for basement construction etc.			No		

3. Details of existing and/ or proposed groundwater abstraction structures

(a) Groundwater Abstraction Structure-Existing

SNo.	Type/ Year of construction	Depth (meter) / Diameter (mm)	Depth to water level (meters below ground level)	Discharge(m3 per hour)	Operational hours/ (day)/ days/year	Mode of lift	Horse Power of pump	Whether fitted with water meter or not	Wheter permission/ registered with HRWA / if so Details of permission
1	bore well/ 2012	40.00/ 20.00	30.00	15.00	4.00/ 180	1	3.5	No	No/

2	bore well/ 2012	40.00/ 20.00	30.00	14.00	4.00/ 180	1	3.5	No	No/
3	bore well/ 2012	40.00/ 20.00	30.00	14.00	4.00/ 180	1	3.5	No	No/

		Source of fresh water requirement being met uptill now	Download
		Affidavit duly attested by the Applicant regarding non-existence of tubewell	Download
		Likely date of operation of proposed tubewell	22/08/2102
		Quantum of ground water recharge(m3/year)	30211.78
	a)	Details of rainwater harvesting/artificial recharge measaures for groundwater recharge in the area. If already implemented, details may be furnished. (Attach report on comprehensive &feasibile Rainwater harvesting/recharge proposal)	Download
	b)	Have you applied for groundwater clearance permission earlier from Government Agency, if so give details thereof with status	Download
	d)	Any Other document (if any)	
	i.		Download
	ii.		Download
	iii.		Download
	e)	In cases where dewatering is involved, IAR of existing / proposed groundwater withdrawal on the groundwater regime and socio-economic impacts report. Pro-forma for the report is given in Annexure IV of HWRA Guidelines dated 10.9.21. On top of the IAR, provide the Check List + Salient features of IAR, in the prescribed formats.	
	f)	Certificate from a local government water supply agency regarding non availability of treated sewage water for construction within 10 km. radius of the site in critical and over-exploited areas.	

Self Declaration:-

1. I hereby declare that all the documents prescribed in the application form have been uploaded and no blank / another / irrelevant documents have been uploaded against specified documents. I am also aware that any false/ wrong submission /uploading of document will lead to rejection of my application without any notice.

2. I hereby certify that the contents of the above Application are true to the best of my knowledge and belief and that it conceals nothing and that no part of it is false. I understand that if any information furnished by me is found to be false, Haryana Ground Water Authority can take punitive action against me as per the extant rules. Further, I shall comply with all the terms and conditions of the permission/NOC to be granted by HWRA.

Date: 05/06/2024

Place: Gurugram

2	bore well/ 2012	40.00/ 20.00	30.00	14.00	4.00/ 180	1	3.5	No	No/
3	bore well/ 2012	40.00/ 20.00	30.00	14.00	4.00/ 180	1	3.5	No	No/

	Source of fresh water requirement being met uptill now	Download
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i.		Download
ii.		Download
iii.		Download
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Date: 05/06/2024
Place: Gurugram

Signature of Applicant with Office Seal

2. GD Goenka University Initiatives

GD Goenka University has implemented a range of sustainable water management and sanitation initiatives to promote environmental responsibility and efficient resource utilization across its campus. The university has established advanced rainwater harvesting systems, wastewater treatment plants, and water recycling mechanisms that support daily operations while minimizing dependence on external water sources. Treated water is reused for irrigation and landscaping, significantly reducing wastage and supporting the university's green-campus objectives.

Clean drinking water is made available throughout the campus, supported by regular water-quality testing and maintenance to ensure safety standards. The university also emphasizes sanitation and hygiene by maintaining well-equipped restrooms, hand-washing stations, and a robust waste-segregation system.

The School of Agricultural Sciences contributes to sustainable practices through field demonstrations and research on water-efficient irrigation techniques, soil moisture conservation, and climate-resilient agriculture. Students and faculty actively participate in awareness campaigns and community projects that promote water conservation, hygiene education, and responsible environmental behaviour.

Through these measures, GD Goenka University demonstrates its commitment to responsible water stewardship, sustainable campus operations, and the advancement of Sustainable Development Goal 6 – Clean Water and Sanitation.

Through these efforts, GD Goenka University contributes significantly to advancing sustainability-oriented research and fostering innovation that benefits both academia and society. Collaborative engagements with government

agencies, industries, and non-profit organizations further ensure that research outcomes are applied effectively for climate resilience and environmental well-being.

By integrating education, research, and practical innovation, GDGU continues to strengthen its leadership as a higher education institution committed to environmental stewardship and sustainable growth.

a) Water Supply and Management

GD Goenka University draws its primary water supply from four bore wells located within the campus premises. The University caters to approximately 5,881 students and 594 staff members, with an average daily water consumption of around 450 KLD. Water metering is implemented at all major supply points to ensure efficient monitoring and management, and the data is recorded and analysed on a daily basis to track usage and promote conservation.

The campus has a robust and automated water distribution network that includes two underground storage tanks with capacities of 2,00,000 litres and 1,00,000 litres, along with a main overhead water tank of 4,00,000 litres capacity. Water is pumped through two pumps of 33 HP each, and the entire system is automated with sensors to minimize manual intervention and prevent overflow. Each building on campus has an additional rooftop water tank that automatically fills based on occupancy and demand. The underground tanks serve a dual purpose, meeting daily water requirements as well as providing storage for firefighting needs.

To ensure the provision of safe drinking water, the University follows a strict water quality monitoring system. Water quality testing, including detection of MPN, is carried out regularly on a rotational basis from various campus locations. RO (Reverse Osmosis) plants are installed in the main hostel and food court, and water filters are provided at several locations across the University to ensure that all students and staff have access to clean and safe drinking water. The RO systems use the Reverse Osmosis Membrane Mechanism to maintain high-quality drinking water standards and to reduce the use of bottled water.

The University also focuses on sustainable water use through the adoption of micro-irrigation techniques such as sprinklers, drip, and canal irrigation systems for gardens and agricultural farms. These systems improve water use efficiency and reduce wastage. Irrigation activities are carried out during early morning or late evening hours to minimize evaporation losses. All water tanks are monitored regularly and cleaned at least once a year to maintain hygiene and operational efficiency.

GD Goenka University's water management practices are fully automated and sensor-based, which helps control the filling of tanks, prevent overflow, and optimize pumping schedules. These measures significantly reduce manual monitoring requirements and contribute to efficient water resource management. The University's efforts are closely aligned with Sustainable Development Goal 6, which emphasizes clean water and sanitation for all. Through efficient resource management, regular quality testing, and responsible consumption practices, the University ensures equitable access to safe water, promotes sustainability, and contributes to the conservation of natural resources.

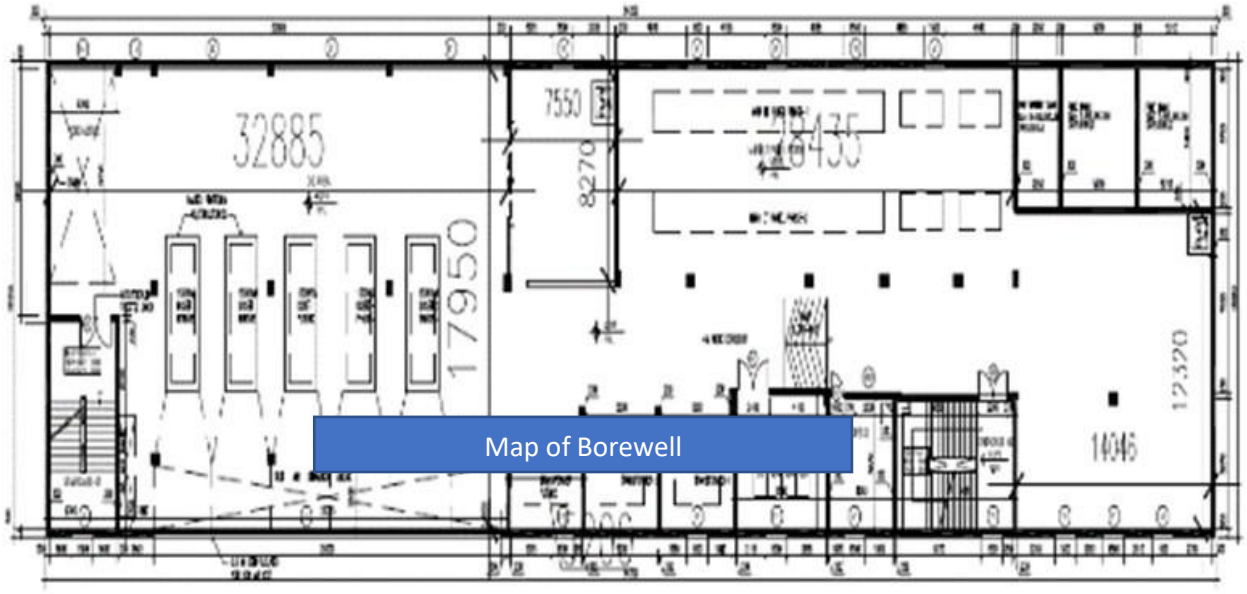
Water Filtration – RO System

Installation of Reverse Osmosis (RO) Plant

As per the audit team's assessment, the Total Dissolved Solids (TDS) level in the campus water supply ranges between 1040 ppm and 1600 ppm. These values exceed the permissible limits for safe drinking water, making it unsuitable for direct consumption. To ensure the availability of clean and potable water for all campus occupants, the installation of Reverse Osmosis (RO) plants has been implemented as a feasible and effective measure. This system helps in reducing TDS levels and improving overall water quality, thereby ensuring safe drinking water across the University premises.

Reverse osmosis (RO) is an effective water purification technology that removes dissolved salts, suspended particles, and microorganisms from water, making it suitable for both industrial and potable use. At GD Goenka University, RO systems are primarily used to treat bore well and municipal water to ensure safe drinking water quality. Although RO systems typically generate some wastewater—approximately equal to or slightly more than the volume of purified water produced—the reject water is efficiently reused for landscaping and other non-potable purposes within the campus. A 500 LPH RO plant, costing approximately INR 1,00,000 to 1,20,000, meets the daily drinking

water requirements while promoting sustainable water resource management by recycling the reject water for irrigation.



Water intake from Bore wells in School Premises

Location	Power (HP)	Discharge Rate (LPM)	Operational Hours (Hours)
Transformer	7.5	200	20
4-quarter	6	150	20
ATM front	5	120	21
Phase-I	7.5	200	14
At front	10	250	8
At RW Pit	3	80	4

Basement	7.5	200	4
STP	3	80	4
Near Entry Gate	5	120	14

Graphical Representation of Daily and Annual Water Usage in Baseline & Actual case

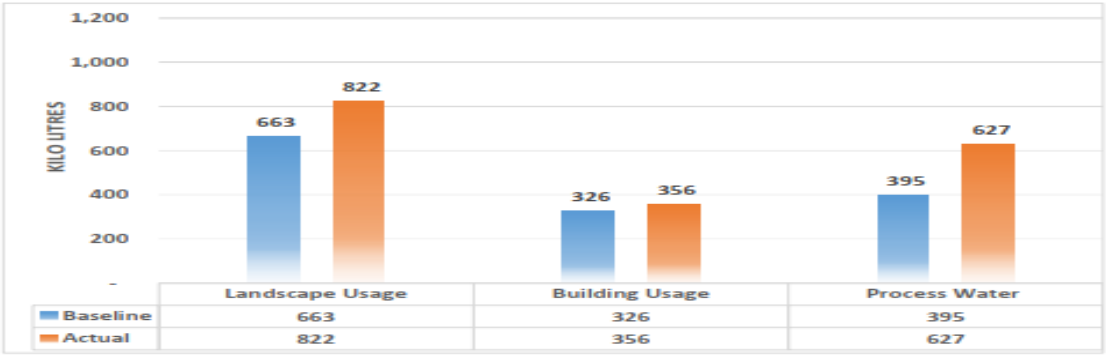
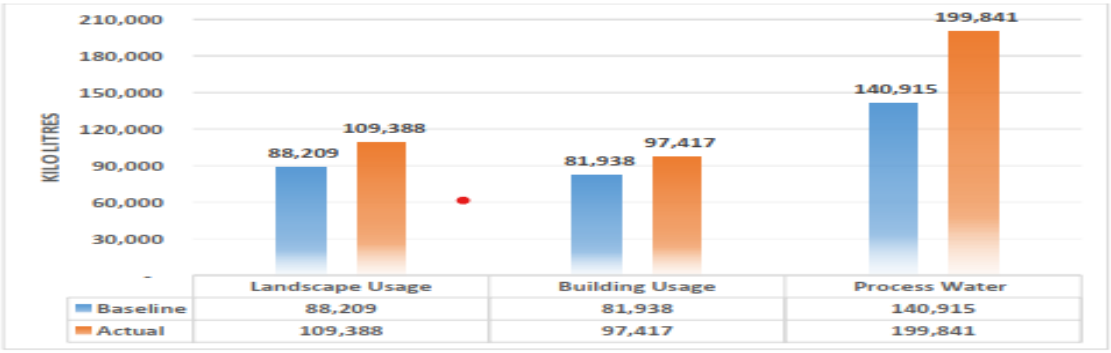


Figure 8 Graph b/w Daily water usage is Baseline & Actual



b) Water Reusability Revolution

At the heart of GD Goenka University's water management strategy is a passion for reusability. The university is committed to reducing water consumption, using drip irrigation to this effect. The pride of GD Goenka University is its Sewage Treatment Plant (STP) with a whopping 125 KLD Treatment Plant combination of biological treatment and activated carbon-based treatment technology. In biological treatment, the Activated Sludge Process for the treatment of used water by Microorganisms in a bioreactor is used. It produces nutrient-enriched sludge. In tertiary treatment, the effluent from the bioreactor (which may contain dissolved organic matter) is further subjected to secondary treatment utilizing pressure filters through sand and activated carbon. The treated water was again treated with sodium hypochlorite for the removal of bacteria. employing a dual approach of biological treatment and activated carbon-based treatment. This unique setup

transforms wastewater into nutrient-enriched sludge and treated water used for horticulture, garden irrigation, and even construction.

c) Water Consumption and Daily Usage

The campus water usage is calculated on the basis of National Building Code - 2016 (NBC 2016) to define the baseline case and the actual water usage is calculated on the basis of performance data provided and observed during the site visit.

a) Building Usage

National building code, 2016 is followed to define the base case to compare with actual as per the national guidelines. The following table followed in the daily water usage in base case:

Occupants Daily Water Usage (as per NBC 2016)

	University			Hostel		
Occupant	**Student + Teaching & Non-Teaching Staff**			**Number of Beds + Warden Residence + Staff**		
Water Usage (Per Occupant)	**Domestic Usage 50 Litres**	**Flushing Usage 50 litres**	**Total Usage 1 0 0 Litres**	**Domestic Usage 70 Litres**	**Flushing Usage 40 Litres**	**Total Usage 110 Litres**

Flow Rates of Existing Water Fixture

Fixture Type	Flow Rate
Dual flushing WC	3/6 LPF
Sensor-based Urinals	3 LPF
Lavatory, faucet (Private)	9 LPM
Sink, Faucet	12 LPM
Health Faucet/Hand Spray	12 LPM
Shower Head	12 LPM

b) Process Equipment Water Usage

c) Laundry

The washing and drying of the clothes is performed by means of 3 clothes washer and 2drying machines. The equipment works continuously from 8 AM to 5 PM on daily basis. The cycle time of the equipment is 30 minutes; hence, all the machines operate 18 times on daily basis.

Water Usage in Laundry

Usage	Capacity	Model	Water Demand per cycle (Litres)	Daily Consumption (Litres)
Staff	7.5 KG	IFB Senator Aqua SX	7.5	**135**
Students	30 KG	STEFAB AX 30	30	**540**
Students	60 KG	STEFAB AX 60	60	**1,080**
Total				**1,755**

Cooling Tower

The campus is equipped with 4 cooling towers which operates 23 hours on daily basis. Efficiency of the system remained 0.71% under standard conditions. However, during the preliminary meeting it was conveyed that the make-up water is higher (approx. 1.2 lakh liters) in actual. Hence, the losses in the actual case of cooling tower is considered as 1%.

Water Usage in Cooling Tower

Case	No. of Cooling Tower	Consumption (Litres)	Evaporation & Drift Losses	Make Up Water (LPM)	Operation (Hours)	Make- up Water (Litres)	Total Usage (Litres)
Standard	4 (600 each)	9,085	0.71%	65	23	89,015	392,399
Actual	4 (600 each)	9,085	1%	65	23	123,373	537,832

Note: LPM= Litres per minute

Kitchen

In the kitchen premises, the water used for food processing and dishwashing is done with the open pipe of ½ inch. The kitchen spaces is under operation for more than 6 hours from preparing to cleaning process on daily basis. Therefore, the actual total water consumption of the kitchen space comes out to be 86 kilo litres per day.

Vehicle Washing

Campus has 30 vehicles which are washed on daily basis by means of bucket system. The washing is done before and after the trip and daily trips are two i.e. one while picking everybody and other is dropping.

Water Usage in Vehicle Washing

No. of Vehicles	Method	Daily Consumption (Litres)
30	**Bucket/Manual**	**900**

d) Landscape Use

The baseline landscape consumption is calculated as 4.8 Litres/m^2/day. Whereas, the actual landscape requirement is done as per the plantation species/trees/turf grass. Also, during the actual calculation the annual impending rainwater is also considered.

However, as the part of landscape demand is catered with the treated water from STP. Hence, the treated water is reduced from the total landscape demand for more feasible solution.

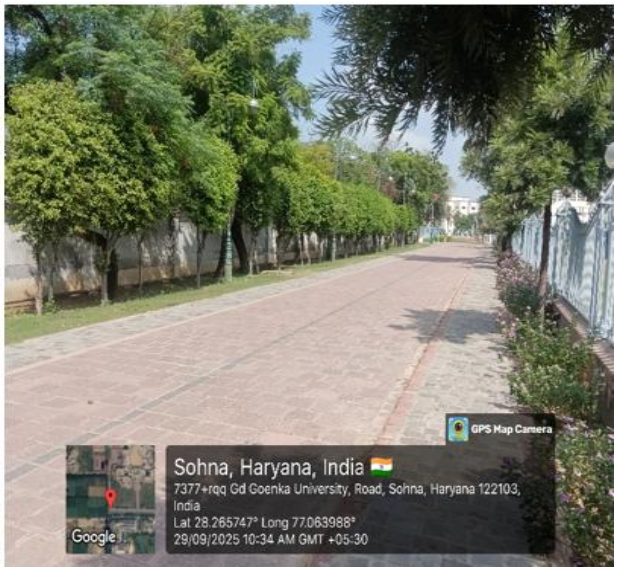
Landscape Area and Irrigation Method

Plantation	Irrigation Method	Area (sq.ft.)
Turf Grass	Manual	10,92,312
Shrubs	Manual	59,080
Mature Trees	Manual	1,18,160
Turf Grass	Sprinkler	2,07,447
Total Area		14,76,999

The water distribution system at GD Goenka University is efficient and well-maintained, with an adequate network and water-efficient fittings in all toilets to minimize wastage. Regular inspections ensure there are no leakages in the system.

Water is primarily used for cooling towers in the centralized air-conditioning system, domestic purposes such as drinking, cooking, bathing, washing, and flushing, and for gardening.

Lush Greenery with Drought-Tolerant Plants



GD Goenka University's commitment to water conservation extends to its lush landscape. The university is covered with lush green trees in and around the campus planted by students and faculties. The campus boasts drought tolerant plantations that not only beautify the surroundings but also play a vital role in intercepting rainfall, preventing water runoff, and boosting groundwater levels. We also educate the local communities about the plantation of drought-tolerant plants to preserve water consumption and increase the groundwater level.

Water Conservation – Measures Detail

S. No.	Description	Savings in Kilo Litres	Remarks
1	Water Metering	Direct daily monitoring	Directly affects daily usage by representing end-use consumption.
2	Use of Aerators in Hostel, School & University Premises	37,130 kilo litres per annum	Represents 38% of total building occupant water usage.
3	Thermostats at Boilers	—	Prevents evaporation losses due to heating of water at high temperatures.
4	Use of Low Flow Fixtures in Kitchen Space	—	46% savings in water usage.
5	Install Pre-rinse Spray Valves	—	66% savings; 60% reduction in water usage for dishwashing.
6	Use of Dishwasher	3,185 kilo litres per annum	60% reduction in dishwashing water consumption.
7	Use of Grease & Oil Interceptor in Kitchen	12,601 kilo litres per annum	Prevents blockage of kitchen drain pipes and increases STP lifespan.
10	Use of Regulator in Washing Machines	—	10% savings in laundry water usage.

11	Prevent Leakage in Cooling Tower	—	100% savings in leakages; additional savings in make-up water.
12	Use of Treated STP Water	25% of total make-up water	Reuse of treated wastewater for non-potable purposes.
13	Use of Irrigation System	63 kilo litres per annum	40% savings in landscaping water usage.
14	Installation of RO Plant	5 kilo litres per day	100% savings in purchased drinking water.
15	Prevention of Leakages in Building Taps	12 kilo litres per day	100% savings in leakages through maintenance and monitoring.
16	Other Combined Measures	125–327 kilo litres per day	Continuous monitoring and optimization of total campus water usage.

1. Protecting the Environment: Preventing Accidental Pollution

GD Goenka University is on a relentless quest to prevent polluted water from infiltrating natural resources. The university has an intricate sanitary system to channel wastewater from various sources to the STP. This state-of-the-art facility is equipped with integrated biological treatment and tertiary treatment technologies, efficiently eliminating bacteria, and ensuring water purity.

2. Water Cans

The campus meets its daily drinking water demand through the purchase of water cans. On average, **250 cans of 20 litres each** are required to meet the needs of all campus occupants.

$$Drinking\ Water\ Supply = Number\ of\ drinking\ cans \times Capacity\ of\ each\ can\ (Litres)\ \boldsymbol{Daily}$$
$$\boldsymbol{Drinking\ Water\ Supply = 250 \times 20 = 5000\ LPD\ or\ 5\ KLPD}$$

This system ensures a reliable and safe supply of drinking water for students, faculty, and staff. In addition to providing convenience and accessibility, it allows the campus to monitor and manage water consumption effectively, enabling tracking of daily water usage patterns and identifying opportunities for conservation. By using a controlled distribution system, the campus minimizes wastage, promotes responsible water use, and contributes to overall water sustainability objectives.

3. Fish Pond

The School of Agricultural Sciences at GD Goenka University maintains a fish pond to utilize rainwater effectively and provides students with a hands-on learning opportunity in fish farming. This initiative integrates practical education with sustainable water management practices, allowing students to observe and engage in aquaculture activities firsthand.

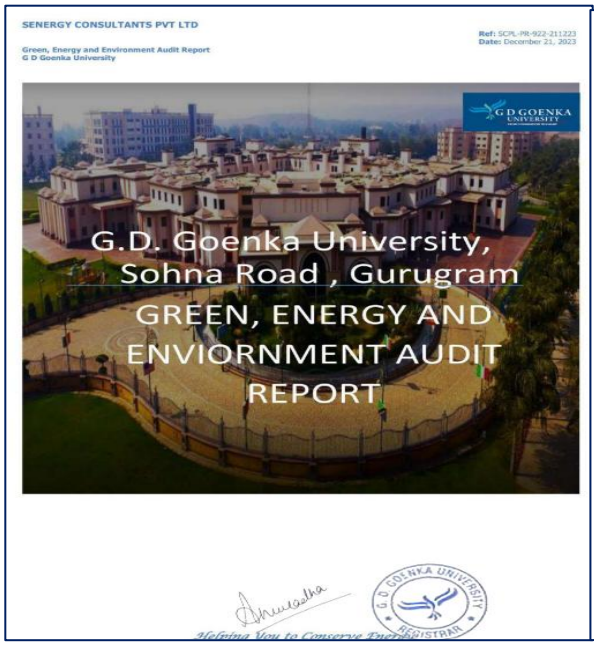
4. Azolla Culture

The School of Agricultural Sciences at GD Goenka University promotes the cultivation of Azolla, a floating aquatic fern known for its symbiotic relationship with the nitrogen-fixing cyanobacterium *Anabaena azollae*. Commonly referred to as water fern, Azolla serves as an eco-friendly biofertilizer, green manure, and sustainable animal feed. It plays a vital role in improving soil fertility and supporting water-based farming systems, particularly in paddy cultivation.

At GD Goenka University, Azolla is cultivated in campus ponds as part of sustainable agricultural practices aimed at enhancing soil health and water resource efficiency. This initiative not only demonstrates the University's commitment to sustainable farming and resource conservation but also serves as a practical learning platform for students. By integrating Azolla culture into agricultural education and research, GD Goenka University encourages the use of natural, cost-effective, and environmentally responsible methods to promote water-efficient agriculture and soil restoration.

5. **Notable sustainability-driven initiatives include**

- **<u>Green Energy Audit & Net Zero Commitment</u>** – A structured approach to assess and reduce the University's carbon footprint, promoting renewable energy use through on-campus solar photovoltaic systems.

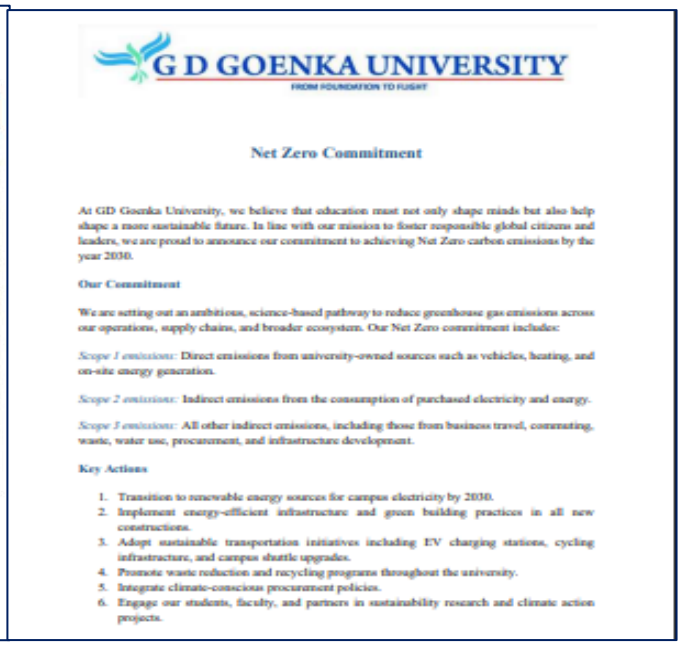

SENERGY CONSULTANTS PVT LTD

Green, Energy and Environment Audit Report
G D Goenka University

Ref: SCPL-PR-922-211223
Date: December 21, 2023

G.D. Goenka University,
Sohna Road , Gurugram
GREEN, ENERGY AND ENVIORNMENT AUDIT REPORT

Helping You to Conserve Energy


G D GOENKA UNIVERSITY
FROM FOUNDATION TO FLIGHT

Net Zero Commitment

At GD Goenka University, we believe that education must not only shape minds but also help shape a more sustainable future. In line with our mission to foster responsible global citizens and leaders, we are proud to announce our commitment to achieving Net Zero carbon emissions by the year 2030.

Our Commitment

We are setting out an ambitious, science-based pathway to reduce greenhouse gas emissions across our operations, supply chains, and broader ecosystem. Our Net Zero commitment includes:

Scope 1 emissions: Direct emissions from university-owned sources such as vehicles, heating, and on-site energy generation.

Scope 2 emissions: Indirect emissions from the consumption of purchased electricity and energy.

Scope 3 emissions: All other indirect emissions, including those from business travel, commuting, waste, water use, procurement, and infrastructure development.

Key Actions

1. Transition to renewable energy sources for campus electricity by 2030.
2. Implement energy-efficient infrastructure and green building practices in all new constructions.
3. Adopt sustainable transportation initiatives including EV charging stations, cycling infrastructure, and campus shuttle upgrades.
4. Promote waste reduction and recycling programs throughout the university.
5. Integrate climate-conscious procurement policies.
6. Engage our students, faculty, and partners in sustainability research and climate action projects.

- **Environmental Sustainability Practices at GD Goenka** – Campus-wide initiatives involving rainwater harvesting, wastewater recycling, solid waste segregation, and energy-efficient infrastructure.

- **Sustainable Development Practices to Mitigate Climate Change** – Student-led programs, innovation challenges programs, innovation challenges, and community outreach activities designed to promote practical climate action.

Through these efforts, GD Goenka University contributes significantly to advancing sustainability-oriented research and fostering innovation that benefits both academia and society. Collaborative engagements with government

agencies, industries, and non-profit organizations further ensure that research outcomes are applied effectively for climate resilience and environmental well-being.

By integrating **education**, **research**, and **practical innovation**, GDGU continues to strengthen its leadership as a higher education institution committed to environmental stewardship and sustainable growth.

6. Green Campus Initiative

GD Goenka University is developed as a **large green cover**, showcasing a wide variety of plants and trees that contribute to a clean, sustainable, and eco-friendly environment. The lush greenery not only enhances the aesthetic appeal but also plays a vital role in maintaining ecological balance, reducing carbon footprint, and promoting biodiversity.

The entire campus is maintained as a **plastic-free zone**, encouraging the use of eco-friendly and biodegradable alternatives to ensure environmental conservation.

SR. NO.	PLANT/TREE NAME	QTY.	REMARKS
1	SNEH PLANT	2500	Drought and Low water required plant
2	TIKOMA	1000	
3	HAMELIYA	2400	
4	GALFENIA	60	
5	ALMUNDA	40	
6	BUGGM BELL	120	
7	LAMUNIA	150	
8	INDOSIA	60	
9	SANOF INDIA	120	
10	AEROKERIA	40	
11	PHYCUS LUDA	15	Drought and Low water required plant
12	PLUMBOO	140	
13	GLLDEN RAISINA	130	
14	CHANDNI	80	
15	MOTIA MOGRA	30	
16	HAAR SINGAAR	6	
17	DRUNDA BAROLIO	250	
18	GOLDEN DRUNDA	5000	
19	ANARMI	6000	
20	AQLIFA	3000	
21	HIBISCUS	2500	Drought and Low water required plant

22	PHYCUS PANDA	4500	
23	CHIKOO	20	
24	ANAAR	15	Drought and Low water required plant
25	GUAVA	25	Drought and Low water required plant
26	LIME	10	Drought and Low water required plant
27	EPIJANA	6	
28	AMLA	10	Drought and Low water required plant
29	MEHENDI	8	Drought and Low water required plant
30	CURDSULA	10	Drought and Low water required plant
	TOTAL		

Sr. No.	**PLANT/TREE NAME**	**QTY.**	**Remarks**
1	PILKHAN	67	
2	ALOSTONIA	80	
3	KAJRINA	30	
4	ISPOTHODIYA	12	
5	SILVER ROCK	155	
6	PAPDI	75	
7	ASHOKA	235	Drought and Low water required plant
8	KACHNAR	20	
9	AICESHIYA AIRAKULI	6	
10	MOLSIRI	45	
11	CHUKRASIA	190	
12	KADAM	20	
13	AMALTAS	6	
14	KUSUM	45	
15	JACKRANDA	30	
16	SEESHAM	4	Drought and Low water required plant
17	IMLI	1	
18	JAMUN	6	Drought and Low water required plant Plant
19	NEEM	15	Drought and Low water required plant
20	PIPAL	7	Drought and Low water required plant
21	AAM (MANGO)	6	
22	KATHA	4	
23	PUNJANJIA	150	
24	KAJLIYA PINATA	45	

25	PINE	2	
26	BOTTLE BRUSH	15	Drought and Low water required plant
27	PHONIX PALM	80	
28	SAGU PALM	8	
29	SAICUS PALM	20	
30	PHYCUS SISNOL	90	
31	PHYCUS BENJUMINA	400	
32	PHYCUS BLACK	60	
33	BOTTLE PALM	55	Drought and Low water required plant
34	PISTOL PALM	250	
35	JAMIYA PALM	5	
36	POSTAL PALM	25	Drought and Low water required plant
37	TUKA PALM	10	Drought and Low water required plant
38	JUNIPERS	30	
39	CHAMMPA RUBRA	100	
40	KADI PATTA	10	Drought and Low water required plant
41	BECPATRA	6	
42	JATRUPA	60	Drought and Low water required plant
	TOTAL		

7. A Commitment to Water Reuse

Water reuse is a central theme at GD Goenka University**.** After rigorous treatment, water is repurposed for diverse uses, including irrigation, laboratory work, and toilet flushing. Different labs contribute to the university's comprehensive water recycling strategy, significantly reducing daily water requirements. We are continuously reusing the harvested or extracted water as the used water first enters our ETP for treatment. At present, we have an ETP of capacity 50 KLD. Hence, out of the 290 KLD of our used water, 50 KLD water is reused daily after treatment. The used water from the sinks in the laboratories, kitchens, showers, and washing machines, that is used once, is further recycled and then reused. The recycled water is reused for various beneficial purposes such as agricultural and landscape irrigation, laboratory purposes, toilet flushing, and groundwater replenishment. Besides this, we also have rainwater harvesting sites that are used for toilet flushing, construction purposes, irrigation purposes, and most importantly to increase the groundwater level in our region, which can also be counted as reused water. **GD Goenka** University keeps the measurements of the total volume of water consumed on the campus that is taken from various resources.

8. Community Engagement for a Better Tomorrow

GD Goenka University actively engages with local communities, imparting knowledge on effective water management, water reuse, and rainwater harvesting. The goal is to empower residents with the ability to recycle

water for irrigation, and domestic use, and cultivate drought-tolerant plants, promoting water conservation and healthier groundwater levels.

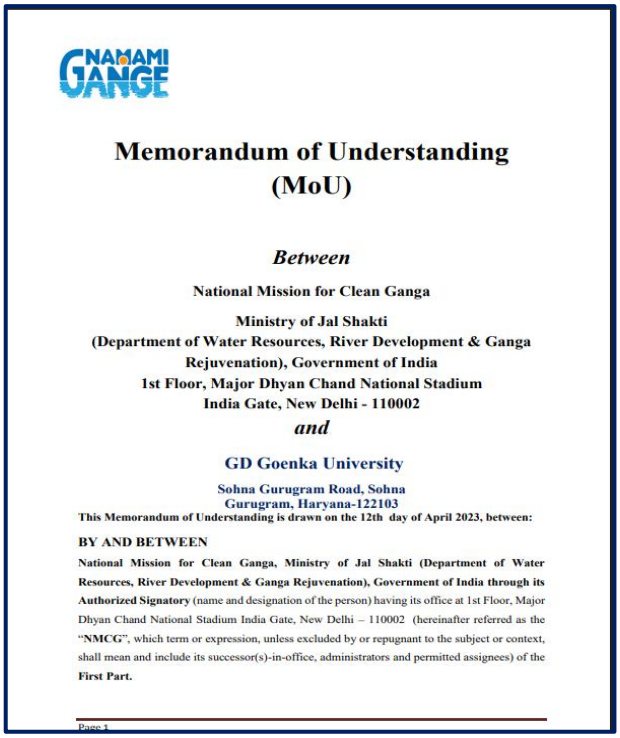
9. Awareness Drive: Swachta hi Sewa Dated: 18/09/2024

As a part of the Swachta Hi Sewa campaign, the NSS unit of GD Goenka University organized an awareness drive in the village Alipur, Sohna, in collaboration with Navjyoti NGO. The drive saw enthusiastic student NSS Volunteers lead an awareness rally through the rural Alipur region, interacting with the local population, identifying garbage hotspots and educating people on the methods of segregating dry waste and wet waste, as also the importance of maintain a clean and hygienic environment for good health and wellbeing. As a part of the Swachta Hi Sewa campaign the students also interacted with the students of PM Shree Government School, Alipur, educating them on the different methods of waste segregation and the ways and means of adopting hygiene in daily life. A fun hand painting activity was done with the children to symbolize the concept of each hand for cleanliness.

A Tree Plantation Drive was organized by School of Humanities, Social Sciences and Education and School of Agricultural Sciences in association with National Skill and Environment Protection Foundation (NSEPF) on 22 nd September 2023 at Agricultural farm of GD Goenka University. Students and faculty gathered near A block at 12:20 pm. Badges and posters, which were created using recycled materials, were distributed to start with the event, showcasing a dedication to reducing waste and conserving resources. The walkathon from A Block to the Agricultural Farm was a symbolic gesture of unity towards the cause of environmental preservation. At the Agricultural Farm, participants actively engaged in the tree planting process. The trees were strategically placed alongside the agricultural farm, constituting a well-planned initiative cantered on agroforestry and sustainability practices. This approach not only enhances the visual appeal of the farm but also indicates the conscious integration of agriculture and forestry. This hands-on experience contributed to the greening of the campus and provided valuable knowledge on sustainable horticulture practices to students. By involving students from diverse academic backgrounds, the event facilitated interdisciplinary learning and promoted a holistic approach to environmental conservation.

Empowering Minds: GD Goenka University's Water Management Awareness Event

Water management educational opportunities



NAMAMI GANGE

Memorandum of Understanding (MoU)

Between

National Mission for Clean Ganga

Ministry of Jal Shakti
(Department of Water Resources, River Development & Ganga Rejuvenation), Government of India
1st Floor, Major Dhyan Chand National Stadium
India Gate, New Delhi - 110002

and

GD Goenka University

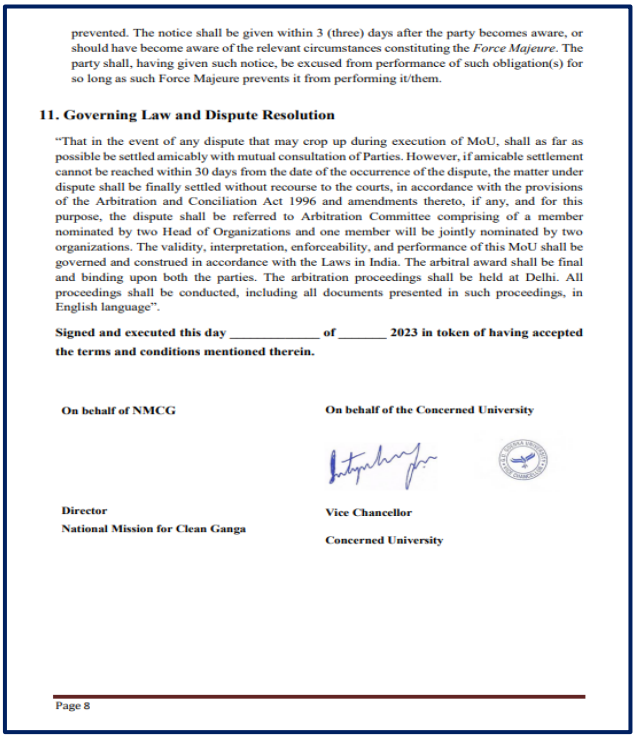
Sohna Gurugram Road, Sohna
Gurugram, Haryana-122103

This Memorandum of Understanding is drawn on the 12th day of April 2023, between:

BY AND BETWEEN

National Mission for Clean Ganga, Ministry of Jal Shakti (Department of Water Resources, River Development & Ganga Rejuvenation), Government of India through its Authorized Signatory (name and designation of the person) having its office at 1st Floor, Major Dhyan Chand National Stadium India Gate, New Delhi – 110002 (hereinafter referred as the "**NMCG**", which term or expression, unless excluded by or repugnant to the subject or context, shall mean and include its successor(s)-in-office, administrators and permitted assignees) of the **First Part.**

Page 1



prevented. The notice shall be given within 3 (three) days after the party becomes aware, or should have become aware of the relevant circumstances constituting the *Force Majeure*. The party shall, having given such notice, be excused from performance of such obligation(s) for so long as such Force Majeure prevents it from performing it/them.

11. Governing Law and Dispute Resolution

"That in the event of any dispute that may crop up during execution of MoU, shall as far as possible be settled amicably with mutual consultation of Parties. However, if amicable settlement cannot be reached within 30 days from the date of the occurrence of the dispute, the matter under dispute shall be finally settled without recourse to the courts, in accordance with the provisions of the Arbitration and Conciliation Act 1996 and amendments thereto, if any, and for this purpose, the dispute shall be referred to Arbitration Committee comprising of a member nominated by two Head of Organizations and one member will be jointly nominated by two organizations. The validity, interpretation, enforceability, and performance of this MoU shall be governed and construed in accordance with the Laws in India. The arbitral award shall be final and binding upon both the parties. The arbitration proceedings shall be held at Delhi. All proceedings shall be conducted, including all documents presented in such proceedings, in English language".

Signed and executed this day _____ of _____ 2023 in token of having accepted the terms and conditions mentioned therein.

On behalf of NMCG

Director
National Mission for Clean Ganga

On behalf of the Concerned University

Vice Chancellor
Concerned University

Page 8

Government Collaboration for a Wider Impact

Jal Shakti Awareness Conference

G D Goenka University on April 12th,2023 signed an MoU with Jal Ministry under the national initiative "Namami Gange: Universities Connect –Igniting Young Minds Rejuvenating Rivers". The MoU offers the scope to the University, Faculty and Students carrying out in UG/PG programs or PhD program working on environment studies/Sciences and Water to work with Jal Ministry of Jal Shakti under its National Mission for Clean Ganga (NMCG). They would get access to all facilities under the ministry, mentoring from experts, to opportunity for projects grants, advocacy activities, holding conferences, workshops to incorporating activities in academic programs, to publications and more.

Further we can participate in all Artha Ganga project to even activities like Zero Budget Farming on Riverbanks and more. The University has also been asked to provide details of any activity or technology already developed which can be adopted in a scaled-up manner.

The Jal Shakti Minister Shri Gajendra Singh Shekhawat is handing over the MoU Dr. Sitharam Chairman AICTE is next to our Hon'ble Vice Chancellor Prof. B.S. Satyanarayana on his left. The Director General of National Mission for Clean Ganga (NMCG) Shri G. Ashok Kumar is next to our Registrar Dr. Dhirendra Singh Parihar.

Around 50+ institutions have participated in the program

10. GD Goenka University: A sustainable Campus with zero water discharge

GD Goenka University has been harvesting rainwater system operational since 2013. To collect the rainwater and percolation in the ground, seven rainwater harvesting pits (90 *4*4 cube feet) are constructed. The purpose of rainwater harvesting is to reduce storm runoff from entering sewage water and recharge the groundwater table. This helps in two ways, first reduces the sewage treatment cost and second increases the groundwater table. The water collected from rooftops of academic, Lab and administrative blocks is collected in the pits through pipes and gutters. There are 7 pits designed on the university campus and each pit. The University is following a judicious water consumption pattern. The main water sources in the University are bore wells (two in number). The University caters to around 5000 students and around 450 teaching and 1000 non-teaching staff. The average consumption of water is around 43290 lit/day. Metering of water is done at both the supply points and monitored on a daily basis. The water is stored in two underground water tanks of a capacity of 2,50,000 L & 1,00,000 L and an overhead tank of a capacity of 2,50,000 L. Apart from these storage tanks buildings have additional overhead storage tanks on their rooftops. The water is pumped through two pumps with a capacity of 33HP each. The water supply system is fully automated. The water quality is tested on a regular basis (Detection of MPN) and the samples are taken on a rotational basis from different locations. The University has installed RO plants in a main hostel and food court and water filters are provided at various locations in the University to provide clean and safe drinking water. The micro-irrigation techniques like sprinklers, drip, and canal irrigation systems are used in the garden and agricultural farms to improve water use efficiency. The irrigation works are taken up either in the early morning or late evening for better efficiency.

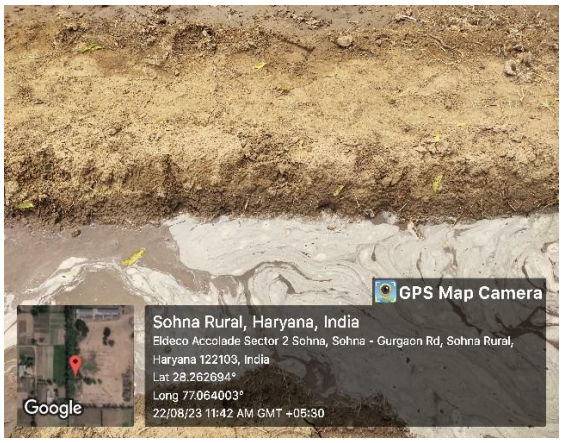
Monitoring of water tanks is done on a regular basis and thorough cleaning of tanks is taken up at least once a year.

There are two STPs of capacity 250KLD to treat sewage. The treated water is used for irrigation for agriculture/horticulture and landscaping purposes. Treated water is being used for flushing purposes in some buildings by way of dual piping and being taken up in a phased manner in the earlier-constructed buildings. Water-efficient flush cisterns are used for lesser consumption. There is dedicated staff for maintenance and inspection of water supply systems and any leakages are attended promptly for repairs to reduce water loss.

a) Construction of tanks and bunds

The campus is well equipped with a Main overhead water tank with a capacity of four lakh litres. Water drawn from 2 bore wells is routed to this tank at regular intervals to cater to the requirement of the 25000 litres /day of water on campus. The process is automated using sensors, hence reducing efforts of manual monitoring, and chances of overflow of water.

Every building is provided with enough overhead water tanks, based on the footfall of the building. These tanks get automatically filled (sensor-based) from the Main Overhead Tank. We also have the luxury of 2 underground water tanks with capacities of 2 lahks (UG Tank No. 1 at crop cafeteria) and 1 lakh litre (UG Tank No.2 at crop cafeteria) each. These are dual-purpose tanks that would cater to fire tanks as well as for use in routine water requirements. The overhead water tank is cleaned annually. The water pipeline layout is attached.



b) Waste water recycling

There are 2 Sewerage Treatment Plants (STPs) on the campus that enable the treatment of black water. These are of capacity 250 KLD (FAB Technology) and 1000 KLD. The input of 4.5 lakh litres of water used in campus is treated in these STPs.

The utilization of Treated Water

a) Treated water is used for the watering of grounds

b) Treated water is shared with villagers based on their request

c) Treated water is used for flushing purposes (dual plumbing)

d) Treated water is used in the Nursery as well as in Canal technology

Sustainable Technologies at Work

Sustainability is at the core of **GD Goenka** University's DNA. The institution employs an array of sustainable technologies, such as desalination, wastewater treatment, and solar energy utilization for water purification. The campus is designed to optimize rainwater harvesting and reduce external energy consumption, promoting eco-friendliness. The university is also working on various projects to treat wastewater in a sustainable way.

3. Publications

GD Goenka University has made significant strides in the field of water conservation and management, as evidenced by its impressive record of publications. According to Scopus Data, the university has demonstrated substantial contributions in the areas of water treatment and related water management. With a remarkable total of 833

publications associated with the keyword "water treatment," **GD Goenka University** has been actively engaged in cutting-edge research and dissemination of knowledge in this critical domain. These publications encompass a wide range of topics, including innovative wastewater treatment technologies, sustainable water management strategies, and eco-friendly approaches to address water quality issues. The university's commitment to advancing research in water conservation is clearly reflected in its extensive body of work, making it a notable contributor to the global efforts to protect and preserve our precious water resources.

SDG 6 – Clean water and sanitation - Publications - 69					
S.No.	**Type**	**Title**	**Authors**	**Journal / Book**	**Year**
1	Article	Harnessing cotton fibril decorated ZIF-67 for bio-inspired all-weather sustainable photothermal desalination	Jain, G.; Jain, Y.; Sikarwar, B.S.; Mukherjee, M.; Chakrabarti, S.	Chemical Engineering Journal	2025
2	Conference Paper • Open access	Wetland protection and Ramsar Convention – an empirical study of wetlands in Bihar, India	Pandey, S.; Bansal, S.; Vasmatkar, A.D.; Dharangutti, Y.M.	E3S Web of Conferences	2025
3	Review	Responses of natural plastisphere community and zooplankton to microplastic pollution: a review on novel remediation strategies	Rai, M.; Dhanker, R.; Sharma, N.; Du, Z.; Mohamed, H.I.	Archives of Microbiology	2025
4	Article • Open access	QGIS: an effective tool in assessing the quantity and quality of groundwater resources	Mittal, A.; Pandey, G.; Siddiqui, N.; Mondal, P.; Molokitina, N.S.	Water Supply	2025
5	Book Chapter	Industrial Application of Bio-nanomaterials in Agriculture	Pandey, V.; Sharma, A.; Kumar, D.; Samadhiya, N.; Tomar, S.S.	Bio Nanomaterials in Environmental Remediation Industrial Applications	2025
6	Book Chapter	Cleaning up wastewater through algae and its integration with other processes	Dhanker, R.; Yadav, R.; Khushboo; Kasere, S.; Anshul	Advanced Technologies in Wastewater Treatment Food Pharmaceutical and Chemical Industry	2025
7	Conference Paper • Open access	Enhanced Water Treatment using Sustainable nanomaterial-based Adsorbents	Bhalla, L.; Saxena, A.; Sharma, P.; Krishna, P.V.; Vyas, A.	E3S Web of Conferences	2024
8	Conference Paper • Open access	Green Synthesis of Nanocomposite Membranes for Sustainable Water Filtration	Mishra, M.; Mittal, A.; Negi, G.S.; Srilakshmi, K.; Karthikeyan, R.	E3S Web of Conferences	2024
9	Conference Paper • Open access	Green Materials for Sustainable Water Desalination: Nanocomposite Membranes	Sharma, G.; Singh, R.; Kaur, P.; Lavanya, C.; Shradhey	E3S Web of Conferences	2024
10	Article	Groundwater Resilience in Rice-Growing Regions: Utilizing GRACE Data for Sustainable Water Management	Neelam; Rathee, R.K.; Mishra, S.K.; Kumar, A.	Water and Energy International	2024
11	Conference Paper • Open access	Reuse and Recycling of Waste Materials for Green Nanocomposite Fabrication	Sharma, V.; Negi, A.S.; Sharma, N.K.; Prashanthi, B.; Sharma, P.	E3S Web of Conferences	2024

12	Article	Optimization of Operational Parameters for Treatment of Domestic Wastewater Using Electro-Coagulation	Sushila; Kumar, P.	Annals of Biology	2024
13	Article	Sustainable Management of Floral Waste to Reduce Environmental Pollution...	Gupta, V.K.; Kumar, R.; Dhanker, R.; Kamble, S.S.; Mohamed, H.I.	Water Air and Soil Pollution	2024
14	Review	Regeneration and reusability of non-conventional low-cost adsorbents...	El Messaoudi, N.; El Khomri, M.; El Mouden, A.; Kumar, V.; Américo-Pinheiro, J.H.P.	Biomass Conversion and Biorefinery	2024
15	Book Chapter	Enhancing nutrient uptake with nano fertilizers and soil amendments	Tomar, B.; Patle, T.; Parihar, S.S.; Singh, P.K.; Tomar, S.S.	Harnessing Nanoomics and Nanozymes for Sustainable Agriculture	2024
16	Book Chapter	Nanotechnology solutions for sustainable pest and disease control...	Singh, P.K.; Tomar, B.; Patle, T.; Tomar, S.S.; Singh, D.	Harnessing Nanoomics and Nanozymes for Sustainable Agriculture	2024
17	Review • Open access	Pesticides impacts on human health and the environment...	Ahmad, M.F.; Ahmad, F.A.; A Alsayegh, A.A.; Abdelrahman, M.H.; Hussain, S.	Heliyon	2024
18	Article	Interval-valued intuitionistic fuzzy AROMAN method and its application...	Alrasheedi, A.F.; Mishra, A.R.; Pamucar, D.S.S.; Devi, S.; Cavallaro, F.	Journal of Intelligent and Fuzzy Systems	2024
19	Review	Stereoselective analysis of chiral pesticides: a review	Vashistha, V.K.; Sethi, S.; Mittal, A.; Bala, R.; Yadav, S.	Environmental Monitoring and Assessment	2024
20	Conference Paper • Open access	Micro-essential and toxic heavy metals in surface water of Harike wetland - India	Naqash, N.; Devi, S.; Singh, R.	Bio Web of Conferences	2024
21	Article • Open access	Modelling groundwater dynamic for zone budgeting using MODFLOW...	Neelam; Rathee, R.K.; Mishra, S.K.	International Journal of Water	2024
22	Book Chapter	Enhancing the Nutrient Use Efficiency Through Nano-Biochar	Deb, P.	Nanomaterials and Nano Biochar in Reducing Soil Stress	2024
23	Book Chapter	Antibiotic resistance genes as contaminants in industrial wastewater treatment	Dhanker, R.; Mammen, M.; Singh, A.; Hussain, T.; Tyagi, P.	Genomics of Antibiotic Resistant Bacteria in Industrial Waste Water Treatment	2023
24	Review	Algae-bacteria mediated treatment of industrial wastewater...	Dhanker, R.; Khatana, K.; Verma, K.; Kumar, R.; Mohamed, H.I.	Biocatalysis and Agricultural Biotechnology	2023
25	Article	Optimum redundancy allocation using spider monkey optimization	Agrawal, A.; Garg, D.; Sethi, R.; Shrivastava, A.K.	Soft Computing	2023
26	Article	The versatile world of cellulose-based materials in healthcare...	Chandel, N.; Jain, K.; Jain, A.; Yang, Y.; Bhatia, S.K.	Industrial Crops and Products	2023
27	Article	Impact Assessment of Water Conservation Measures Using SWAT Model...	Rathee, R.K.; Neelam; Mishra, S.K.	Water and Energy International	2023
28	Article	Sustainable application of nanoparticles in wastewater treatment...	Mondal, P.; Nandan, A.; Ajithkumar, S.; Kola, A.K.; Deepanraj, B.	Environmental Research	2023

29	Article	Changes in bacterioplankton and zooplankton communities...	Prakash, D.; Dhanker, R.; Kumar, R.	Aquatic Ecosystem Health and Management	2023
30	Review	Modern Advancement in Biotechnological Applications for Wastewater Treatment...	Goyal, S.; Dhanker, R.; Hussain, T.; Kumar, K.M.; Mohamed, H.I.	Water Air and Soil Pollution	2023
31	Article • Open access	Biosynthesis and characterization of silver nanoparticles...	Deepa; Dhanker, R.; Kumar, R.; Saxena, K.; Goyal, S.	Frontiers in Nanotechnology	2023
32	Article	Impact of Crop Residue Burning on Groundwater Storage and Air-Quality	Neelam; Rathee, R.K.; Kumar, A.	Water and Energy International	2023
33	Book Chapter	Introduction to Micropollutants and Their Sources	Shaida, M.A.; Talukdar, S.; Mahtab, M.S.; Farooqi, I.H.	Management of Wastewater and Sludge New Approaches	2023
34	Article • Open access	Wheat (Triticum aestivum) genotypes under deficit-watered conditions	Zhiipao, R.R.; Pooniya, V.; Kumar, D.; Choudhary, R.L.; Babu, S.N.S.	Frontiers in Plant Science	2023
35	Book	Omics for Environmental Engineering and Microbiology Systems	Kumar, V.; Garg, V.K.; Kumar, S.N.; Biswas, J.K.	Omics for Environmental Engineering and Microbiology Systems	2022
36	Article	Bioremediation of metal(loid) cocktail and plant growth promotion...	Mondal, M.; Kumar, V.; Bhatnagar, A.; Chaudhuri, P.; Biswas, J.K.	Environmental Research	2022
37	Article • Open access	Recovery of silver nanoparticles and management of food wastes...	Dhanker, R.; Rawat, S.; Chandna, V.; Sharma, A.; Kumar, V.	Environmental Advances	2022
38	Article • Open access	Integrated application of macrophytes and zooplankton for wastewater treatment	Prakash, D.; Kumar, R.; Rajan, K.; Dhanker, R.; Khudsar, F.A.	Frontiers in Environmental Science	2022
39	Article • Open access	Microalgal mediated bioremediation systems for antibiotics removal	Chandel, N.; Ahuja, V.; Gurav, R.G.; Yang, Y.; Bhatia, S.K.	Science of the Total Environment	2022
40	Review	Microalgal-bacterial granular consortia for wastewater treatment	Bhatia, S.K.; Ahuja, V.; Chandel, N.; Kim, S.H.; Yang, Y.	Bioresource Technology	2022
41	Review • Open access	Biological Approaches Integrating Algae and Bacteria...	Mathew, M.M.; Khatana, K.; Vats, V.; Dahms, H.U.; Hwang, J.	Frontiers in Microbiology	2022
42	Book Chapter	Phytoremediation: A Sustainable Solution to Combat Pollution	Saxena, K.; Hussain, T.; Dhanker, R.; Jain, P.; Goyal, S.	Biotechnological Innovations for Environmental Bioremediation	2022
43	Book Chapter	Bioremediation of pharmaceutical combinations in wastewater	Kumari, S.; Singh, R.; Mohapatra, B.	Synergistic Approaches for Bioremediation Recent Advances and Challenges	2022
44	Book Chapter	Decontamination and Management of Industrial Wastewater Using Microorganisms	Sharma, A.; Sharma, S.; Singh, C.S.; Kumar, V.	Omics Insights in Environmental Bioremediation	2022
45	Book Chapter	Microbial Ecology of Wastewater Treatment Processes	Chauhan, A.S.; Kumar, A.; Parmar, K.; Kumar, V.	Omics Insights in Environmental Bioremediation	2022
46	Book Chapter	Microbial Community Composition and Functions in Activated Sludge	Dey, S.; Anand, U.; Bhattacharya, S.; Kumar, V.; Dey, A.	Omics Insights in Environmental Bioremediation	2022

47	Book Chapter	Contamination and impacts of metals and metalloids on agro-environment	Jha, S.; Singh, R.; Jha, G.; Singh, P.; Dikshit, A.	Metals and Metalloids in Soil Plant Water Systems	2022
48	Book Chapter	Genetically engineered microbes for bioremediation and phytoremediation	Arunraja, D.; Romauld, S.I.; Parthiban, B.D.; Thiruvengadam, S.; Kumar, V.	Metagenomics to Bioremediation Applications	2022
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4. Impact and Way Forward

GD Goenka University stands as a model of innovation, awareness, and accountability in water conservation and management. The University's initiatives go beyond academic learning, integrating sustainability into every facet of campus operation. Through systematic water metering, reuse of treated wastewater, rainwater harvesting, and efficient irrigation systems, GD Goenka University demonstrates a strong commitment to preserving water resources in a water-scarce region.

By actively engaging with the community and collaborating with government bodies, the University ensures that its sustainability practices have a lasting regional impact. Its ongoing research, policy alignment, and technological adoption reflect a forward-thinking approach to addressing global challenges related to clean water and sanitation.

Moving forward, GD Goenka University aims to strengthen its efforts under SDG 6 by expanding water recycling capacities, enhancing rainwater harvesting infrastructure, and promoting greater student and community participation in conservation initiatives. The University envisions a future where responsible water management becomes a shared commitment, ensuring that future generations value, conserve, and sustain this vital resource.

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