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Urban Resilience and Adaptation for India and Mongolia

Curricula, capacity, ICT and stakeholder
collaboration to support green & blue
infrastructure and nature-based solution

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Educational visit and stakeholder engagement visit of NIRMA students to the GIFT City

March 18, 2023

GIFT City, Gandhinagar

Nirma University (P12) and GIFT City, Gandhinagar
(P16)

Introduction

Nirma University (P12) paid a visit to Gift-City as part of the URGENT Project to encourage stakeholder cooperation. GIFT City has a vision of being a major worldwide financial & technology centre. GIFT City is a planned business district in the state of Gujarat, India. It is the new business destination offering competitive edge to Financial services and Technology related activities.

The visit's goal was to explore and comprehend the numerous technologies and factors that went into creating and maintaining the GIFT-City. To further understand the sustainable strategy used by Gujarat International Financial Tec-City Company Ltd in GIFT-City, the students were brought to the utility tunnel, sewage treatment plant, water treatment plant, and commercial and residential complexes.

The current proposed master plan of GIFT city covers 1000 Acres (404 Hectares) of land along-side Narmada Canal, in-between Ahmedabad and Gandhinagar. The current population of the city is approximately 50,000 and it has a floating population of 4.4 lakhs.



P12 Nirma University		P16 Gift City		
Dr. Swati Kothary	Ms. Utsavi Shah	Mr. Lovleen Garg	Mr. Rakesh Patra	
Students				
Dattani Krutik	Vatsalkumar Avasthi	Keyur Gupta	Selvi Kataria	Patel Kavisha
Khushagra Uday	Agrawal Vidushi	Mistry Prachiben	Shah Yatri Sarvesh	Patel Devanshi
Mansi Chapla	Ahir Vinesh	Niravsinh Chawda	Sidhdhapara Ravi	
Naman Goyal	Bhumika Tak	Patel Nimmi	Soni Nishee	
Nitya Bhargava	Chauhan Kritiy	Patel Vedantkumar	Tasmay Bhawsar	
Nityashree Uttarwar	Dhruvi Bhuva	Pranjal Chaturvedi	Tej Shah	
Parekh Yug	Divyansh Mehta	Pranshu Joshi	Varia Tanay	

Pratheeksha	Hardik Maheshwari	Rachit Sinvhal	Vidhi Jaydeep Desai	
Raval Yash	Harshil Jivani	Ria Shailesh Syal	Vyas Samruddhi	
Thumar Bhavya	Jain Prachi	Rishita Jain	Zainab Hasan	

Utility Tunnel

In respect to vast infrastructure systems, GIFT developed the vision of “DIGGING FREE CITY” by placing all the utilities in a TUNNEL across the city so that there is no need to excavate the roads in future for repair/maintenance /renovation/up gradation of any utility.

The Utility Tunnel accommodates all the utilities including Power Cables, Raw Water supply pipe line to Water Treatment Plant (WTP) as well as treated water supply pipe



line from WTP to various developments, chilled water supply from District Cooling Pipe (DCP) to various developments and return pipe line to DCP, ICT cables, Automated Waste Collection pipe line, Fire hydrant water pipe line, etc. From safety point of view the tunnel is divided into WET and DRY sections which are physically separated with each other. Wet section is carrying utilities related to water, ICT and others while dry section carries power cables and have access from top. The wet section has been designed in such a manner that material handling or maintenance vehicles can enter into.

City Command and Control Centre

GIFT uses advance of technology in form of unique IoT (Internet of Things) based to monitor and manage city Infrastructure. The city command and control center is an

advanced centre with the infrastructure to provide monitoring the entire GIFT City from one place.

1. Surveillance: 200 CCTV cameras have been deployed across the city, and C4 controls them. Additionally, they employ AI to support the monitoring.

2. There are two sources of electricity in the city. Since that all of the infrastructure is centralised and dependent on high-speed internet and electricity, each building has a substation and is given access to two sources of electricity as a backup. In the city, diesel generators are also available as a backup in case of emergency.

3. Water Supply : Water source for the city is the Narmada canal, which is located 15km away from the city. The water taken from there is referred to as 'Raw water' . The raw water gets separated into 2 channels i.e. Construction water channel and Potable water.

4. Water Treatment Plant (WTP): The wastewater is gathered from the structures and delivered there. Following treatment, the water is used in the cooling plant and other applications.

For flushing, landscaping, watering plants, etc.

5. Sewage Treatment Facilities (STP)

6. District Cooling Plant: City-level centralised facility In comparison to conventional cooling systems, the district cooling plant uses 30% less electricity and has a lower potential to contribute to global warming.



India's First District Cooling System

District cooling system is a well known and energy efficient technology adopted across the world. District cooling system has been implemented in India for the first time at Gujarat International Finance Tec-City (GIFT City). A district cooling system is an environmentally friendly and energy-saving air conditioning system that can save up to 30% more energy than conventional air conditioning systems. Pipelines located in the utility tunnel are used to deliver the cooled water. SCADA (Supervisory Control and Data Acquisition) is used for energy metering and control.



Solid Waste Management and Sewerage Plant

The students also went to the sewage treatment facility, which was located at the city's base. Hence, without any additional electricity, the sewage would naturally flow in the direction of the sewage treatment facility owing to gravity. In order to lessen the scent, the treatment was carried out in three stages: primary, secondary, and tertiary.

Together with the sewage treatment facility, the students also went to the solid waste management facility. Because the solid waste management system is automated, persons who shouldn't be involved in the process in the first place are kept out of it. An Automatic Trash Collection System via a chute system is a component of solid

waste management. At a speed of 90 km/hr, the waste is sucked through pipes that are located in the utility tunnel. Plasma technology is used for waste treatment.



