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# SUSTAINABILITY REPORT NIT SILCHAR 2023

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**NATIONAL INSTITUTE OF TECHNOLOGY  
SILCHAR, ASSAM INDIA**

[www.nits.ac.in](http://www.nits.ac.in)

# Contents

## Sustainability Report 2023

|   |           |
|---|-----------|
| <b>About this report</b>                    | <b>3</b>  |
| <b>Introduction</b>                         | <b>4</b>  |
| <b>Statement from Director, NIT Silchar</b> | <b>4</b>  |
| <b>Mission and Vision</b>                   | <b>6</b>  |
| <b>Infographic</b>                          | <b>7</b>  |
| <b>Sustainable Approach</b>                 | <b>8</b>  |
| <b>Renewable Energy</b>                     | <b>10</b> |
| <b>Waste Treatment</b>                      | <b>12</b> |
| <b>Water Conservation</b>                   | <b>15</b> |
| <b>Education and Research</b>               | <b>17</b> |
| <b>Transportation</b>                       | <b>19</b> |
| <b>Equity</b>                               | <b>20</b> |
| <b>Contact</b>                              | <b>21</b> |

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# ABOUT THIS REPORT

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## Welcome to the NIT Silchar Sustainability Report

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The report is intended for all the stakeholders including academic staff, non- academic staff, students and their parents and local communities who have a keen interest in institute's *sustainability performance*. It focuses on our sincere endeavor towards sustainability issues in the society and reflects institutes best practices in achieving the adopted global suitability goals.

### Reporting period and scope

This report provides a review of our sustainability performance during the period July, 2022 to September 2023; it contains data regarding our owned activities in various areas of sustainability. This report has been produced with the approval of the competent authority of the institute.

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# Introduction

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## Statement from the Director Professor Dilip Kumar Baidya

I am pleased to introduce the Institute's *Sustainability Report* for the year 2022-2023 which provides a broad review of our work related to sustainability and environment during the reporting period. The report provides our wholehearted efforts in making a greener and sustainable environment within the campus by adopting some of the most important aspects of environmental, social and economic sustainability to encourage all the inhabitants and neighborhood communities to be self-motivated towards making the environment better.

National Institute of Technology Silchar, is one of the 31 National Institutes of Technology and was established in 1967 as a Regional Engineering College in Assam. In 2002, it was elevated to the status of National Institute of Technology and was declared as Institute of National Importance under the National Institutes of Technology Act, 2007. NIT Silchar is ranked 40<sup>th</sup> in NIRF ranking among engineering category in the year 2023. Institute secured 83rd position in the Overall category of NIRF-2023. NIT Silchar has secured a rank in the band 601-800 in the Times Higher Education World University Ranking 2023. Moreover, NIT Silchar also secured 501-600 in Engineering, 601-800 in Physical Science under THE Ranking 2023. The Institute also secured rank band 401-450 in the QS Asia Region Ranking-2023. NIT Silchar has secured 205<sup>th</sup> in Overall world University Ranking and 5<sup>th</sup> among Indian Universities in UI GreenMetric Ranking 2022. The Institute has Six engineering departments (Civil Engineering, Mechanical Engineering, Electrical Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering and Computer Science Engineering) and have been running undergraduate (4-year, 8-semester), post-graduate (2-year, 4-semester) and PhD programmes. All Science Departments (Physics, Chemistry and Mathematics) and Department of Management Studies have also been



running post-graduate (2-year, 4-semester) and PhD programme except Humanities and Social Science department which only runs PhD programme. UG intake of the Institute stands at 895 (plus supernumerary gender specific additional seats decided by the Government of India from time to time), PG (Engineering) intake is 338 while the intakes for MSc and MBA stand at 75 each. At present, the Institute has 213 regular faculty members. 98% of faculty members are having minimum PhD degree. Faculty members of the institute are involved in carrying out sponsored research and consultancy projects from various Government-funded organizations and other agencies. All departments of the institute have state of the art facilities to conduct teaching, research and consultancy. Institute has NABL accredited Centre for Testing and Consultancy under Civil Engineering Department and Solar Regional Test Centre for Thermal system under the Mechanical Engineering department. Institute has a supercomputing facility in association with C-DAC. Sustainability is at the heart of the Institute's refreshed strategy and we aim to be recognized as one of the most preferred research and innovation driven institute in the country.

**Education for sustainable development remains a key priority for the Institute and in 2018 we committed to a new initiative by adopting the United Nations Sustainable Development Goals (SDGs). We recognize the critical role that education and research has in delivering the SDGs and the value this brings to governments, and society at large. We have introduced a PG course on Renewable Energy from 2021.**

The lush green campus of NIT Silchar is located in Assam which is in the north eastern region of the country. The 640 acres campus is having 23 lakes,



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jungles, undulated lush green meadows and planted trees. We protect the bio-diversity of the campus by various means. We have taken a step to identify the flora and fauna in the campus to archive and create awareness of bio-diversity protection. Every year many migratory birds arrive at our lakes during the period November to February which itself is a testimony of the natural calmness and pollution free environment of the institute campus. We also conduct mass tree plantation, tree plantation by visiting delegate's etc. on a regular basis in order to keep the bio-diversity of the institute.

The institute is located in a region that receives 3000 mm precipitation in a year. We are having abundance of rain water in this region and moreover the institute has total of 23 lakes on campus rain-fed lakes which stores rainwater and acts as groundwater recharge system.

Education and research are our strength and we are committed to attain the UN SDGs. We are National Resource Centre in Water resources where our faculty and students are dedicatedly working on various aspects of river flow and flood related challenges. There are a good number of sponsored research projects, national and international, with good number of projects in the domain of sustainability and multidisciplinary areas.

Complementing this, the institute has joined major initiatives of the Government of India including Swachhata Abhiyaan (Cleanliness Movement), Swachhata Hi Seva (Cleanliness is Godliness), Plastic Free India. We have stopped usage of plastic cups and other items in the campus. Through a campaign program of Unnat Bharat Abhiyaan we distributed cloth bags to the neighborhood villages and created awareness about stopping plastic usage.

At the institute we conducted various events throughout the year aiming to make the campus clean, green and pollution free. In an initiative of the institute, along with the graduating batch, our first year UG students are planting trees and take an oath to nurture them till they are in the campus. We believe that mankind can only be happy if the environment is healthy and unharmed. We are constantly thriving towards creating unpretentious human resources for generations who takes care about the environment, and actively participating in making the world a better place to inhabit.

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## Vision:

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- Engage faculty, students and staff in ongoing sustainable practices through capacity enhancement programs, curriculum, and scholarly research.
- Empower students across the curriculum with awareness in sustainability issues and contribute in building the mindful citizens of tomorrow for a sustainable society
- Integrate best sustainable practices into Institute’s planning and development, with emphasis to build a sustainable future.
- Design, build and operate a campus environment that minimizes its ecological footprint, contributing to the goal of climate neutrality.
- Create new paradigms for energy, transportation, water, waste and food systems that contribute to best practices in higher education to achieve the United Nations Sustainable Development Goals.
- Participate in research initiatives and outreach activities that educate our communities, nourish our natural ecosystems, and enrich our cultural experiences.

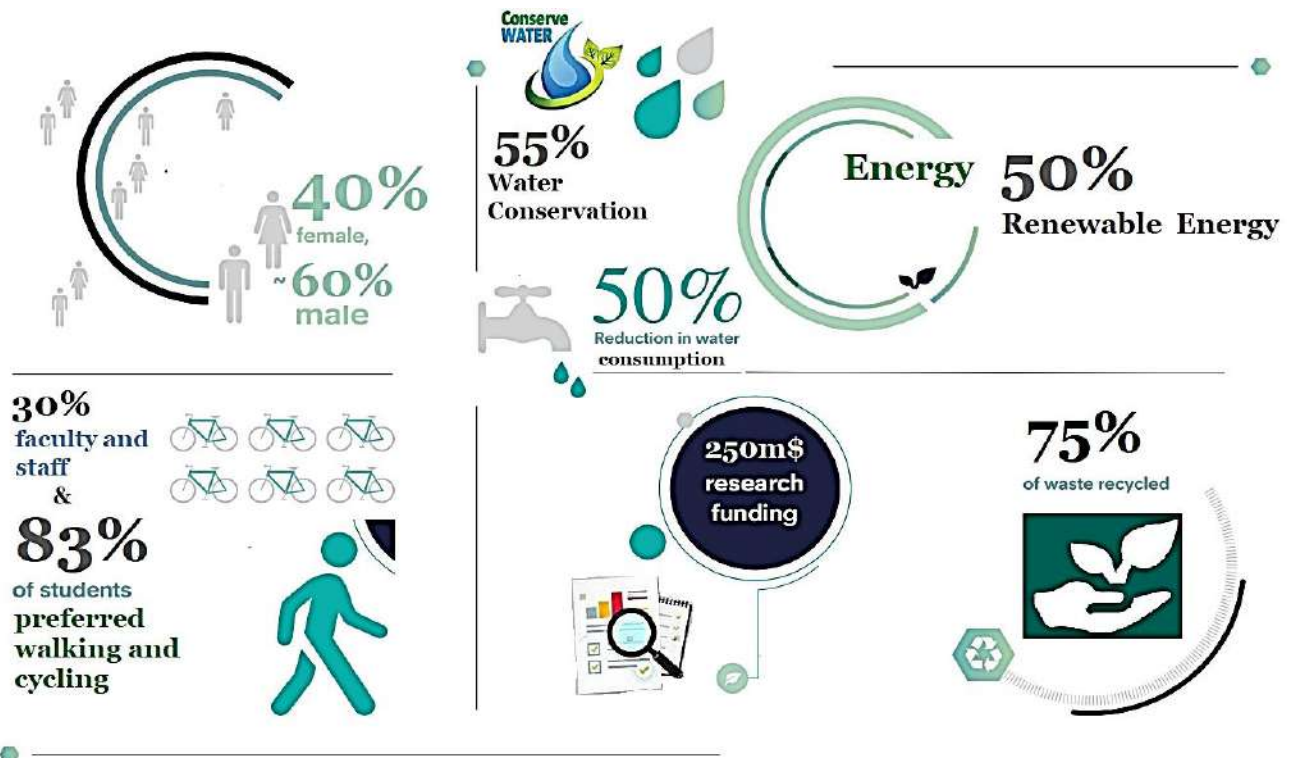
## Mission:

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- National Institute of technology Silchar is committed to create a society where environmental, societal, and economic qualities keep good balance to meet the resource needs of today and of future generations. We adopted the UN SDGs and sincerely put our wholehearted exertion in achieving the goals.
- Our student community, faculty and staff are continuously working in advancing our understanding, research, decimation of knowledge and practices in our journey to attain the sustainable goals.
- We aim to achieve the vision of sustainability through precise focus on research on Energy and material sciences, bio-medical engineering, bio- chemistry and electronics and water conservation.
- We focus on development of Environmental Sustainability Strategy which will cater to the multi-layered aspects of sustainability for today and future.



## Infographic of our vision:



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# Sustainability Approach

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## Sustainable Development



NIT Silchar adopted the United Nation’s Sustainable Development Goals (SDGs) which is the higher education sector’s collective response in bringing sustainable future for our community. The SDGs aim to achieve a better and more sustainable future for all, addressing the global challenges that face societies, including poverty, inequality, climate change, environmental degradation, prosperity, peace and justice.

Just like any possible crisis, science has been warning about the impending Climate Crisis which we can see with more floods, burning forests and increasing cyclones. It is our responsibility as members of the academia and the research community to respond to these challenges, now to make our planet habitable for future generations.



There are 17 goals and the UN aims to achieve all by 2030. For the institute we have tried to include some of the goals in our best practices among all the stakeholders. In the coming year, we aim to map our activities to the goals to identify which we are supporting through our activities and implement a delivery programme.



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Our key prospects and area of impact are our research and development competences, our brilliant students and our holistic approach towards local community and society. With just under 5000 students and staff in the outskirts of the city, the institute has a moderately resilient positive impact upon society and the economy. The cultural contribution also has a deep impact in overall growth of the community in order to bring a more resilient and sustainable future.

As an institution we believe there to be no barrier to talent, and we continue to strengthen our commitment to widening participation for a more sustainable society.

Our student community has an important influence on resources, and we believe that they are to play even bigger roles in progress towards a low-carbon economy in their future workplaces. So, by embedding sustainability courses in the curriculum, we produce graduates who are equipped with many of the environmental concerns and are the messenger for a better sustainable future.

# Renewable Energy

**RENEWABLE ENERGY**

1. CLEAN BIOMASS: 5475 KWH
2. SOLAR ENERGY (SOLAR PV (ON-GRID AND OFF-GRID) + SOLAR THERMAL): 1073472.2 KWH
3. WIND ENERGY (LABORATORY-LEVEL HYBRID ENERGY SYSTEM): 219 KWH

THE RATIO OF RENEWABLE ENERGY PRODUCTION DIVIDED BY TOTAL ENERGY USAGE PER YEAR

**ANS:** TOTAL RENEWABLE ENERGY PRODUCTION OF 2022= 1079166.2 KWH  
 TOTAL ENERGY CONSUMPTION OF 2022= 4292439 KWH

$$\text{Ratio} = \frac{1079166.2}{4292439} = 0.251$$

the requirement of the campus. The system has generated 1073472.2 kWh of electricity IN 2022.

Also, all the hostels are installed with solar water heater system to reduce the total energy consumption.

With this green solar initiative, the institute could save an amount of Rs. 5890052.52/- as electricity charge and could also export 892432.2 units of electricity to the Grid till December 2022. Moreover, the institute could reduce 901.1 metric tons of Carbon Dioxide (CO<sub>2</sub>) emissions due to in-house renewable energy usage.



**Target:** NIT Silchar aims to Generate **50 %** of its energy requirement from the renewable sources.





## Rooftop Solar Systems and Solar Water Heater



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# Waste Treatment

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## Recycling program for university's waste

The institute centrally collects recyclable garbage items from all campus dwellers and is segregated manually. The segregated items are transported to municipal facility named “Solid Liquid Resource Management (SLRM)” center. The facility is run by District Administration Cachar, Assam, India. The garbage is further segregated in secondary manually at SLRM center and used in go run garbage to gold program.



Segregation of recyclable items at NIT Silchar dispatched to SRLM unit at Silchar

## Program to reduce the use of paper and plastic on campus

The institute has adopted policy of “Plastic Free Campus” last year and strictly following the norms to keep the institute plastic free. The “Plastic Free Campus” policy also include banning on single use plastic which is in line with the United Nations program as well as guidelines of Government of India. A few indicative measures of awareness and implementation are as follows

- Promotion of both side printing of the document and follow double check of data before printing.

- No use of plastic disposables but only biodegradable plates in all institute celebrations and programs e.g. use of banana leave during festivals
- We have banned use of all kinds of single use plastic including use of plastic glasses. Paper glasses are used instead.
- The institute secured award in ecofriendly puja festival celebration from District Administration, Cachar District, Assam
- Organization of awareness drives such as “**Plastic Free Village Campaign**” in neighboring villages to stop plastic use and promote biodegradable sustainable material usage
- Promoting use of **stainless steel glass** in hostels to curb the use of paper/plastic cups completely. Distributed 4000 steel glasses to students for their use.



*Distribution of Jute bags to local villagers and steel glasses to institute hostel residents*

**Target:** NIT Silchar aims to recycle 75 % of its wastes to reusable sources.





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## Organic waste treatment

- The institute has a biogas digester of 100 Kg/day capacity installed on 27th July 2013.
- It generates 15 Kg/day methane and manure; methane is used for cooking in hostel & weed free good quality manure is used for gardening.
- The organic waste (tree leaves, gardening waste) is collected and is refrained from burning. The same is allowed to naturally decompose in a pit near forest areas.
- The institute has 12 nos. of hostels. The hostel mess generates uncooked food waste which are collected and taken up by the nearby village people to feed their cattle.



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**Target:** NIT Silchar aims to recycle 75 % of its wastes to reusable sources.

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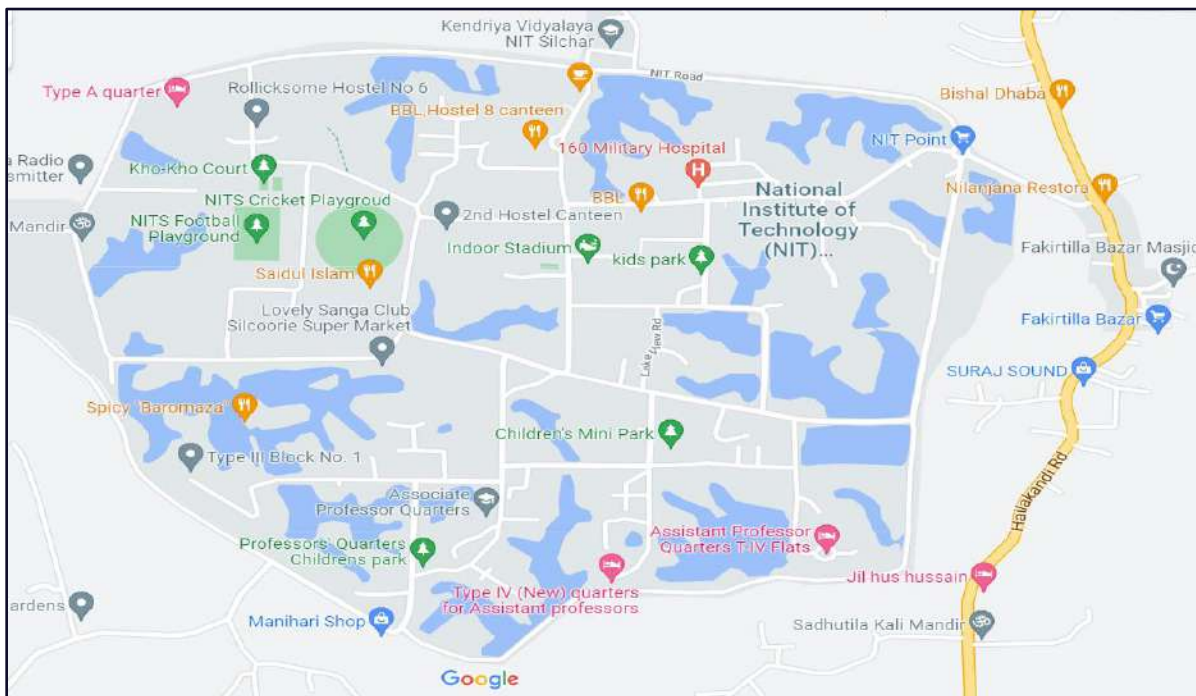


# Water Conservation



The institute is located in a region that receives **3000 mm precipitation in a year**. Abundance of water in this region makes it uneconomical to recycle the water given cost of recycling. Nevertheless, the institute has total of 23 on campus rain-fed lakes those stores rainwater and acts as groundwater recharge system.

The rainwater fed lakes are meant and maintained to act as groundwater recharge system.



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## Uses of lake water

1. The water collected/stored in lakes are utilized for the construction activities.
2. Gardening activities is another area where the water from these lakes is utilized.
3. The nearby villagers from 3 villages utilize lake water for their domestic purpose during the dry period of year.
4. Some of the lakes are used for beautification purpose and conserve the aquatic biodiversity inside campus.



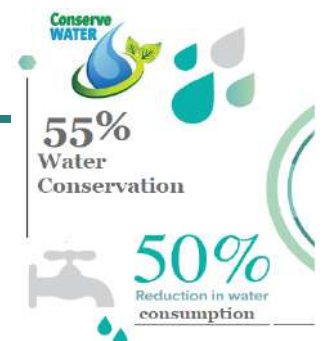
The institute is supplied with raw municipal water and has WTP of 30 MLD capacity that treats water to comply IS 10500: 2012.

The institute houses 2.5 MLD a fluidized mechanized reactor technology based sewage treatment plant (STP).

The treated wastewater is checked for Indian discharge standard (Environment Protection Rules, 1986) and discharged into nearby water bodies.

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**Target:** NIT Silchar aims to conserve 55% of water and reduce the water consumption by 50%.

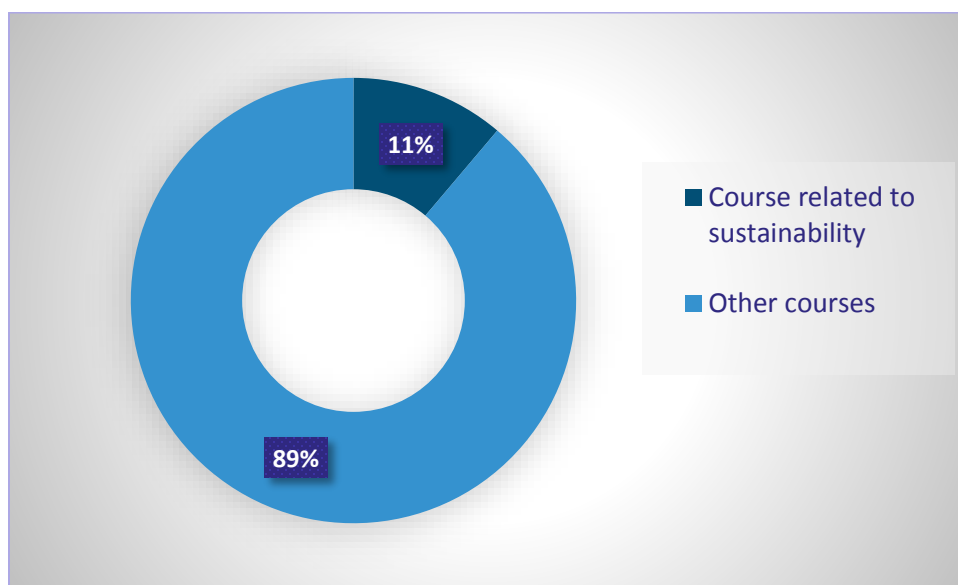




# Education and Research



NIT Silchar is striving towards excellence in research and development through industry and academic collaborations. The faculty and research scholars are working together in various multidisciplinary areas. The institute is offering PhD degree in all the Engineering, Sciences and MBA in various fields.



|  |               |
|--|---------------|
| <b>Number of courses/subjects related to sustainability offered</b>  | <b>192</b>    |
| <b>Total number of courses/subjects offered</b>                      | <b>1718</b>   |
| <b>The ratio of sustainability courses to total courses/subjects</b> | <b>11.17%</b> |

## Sponsored Research

Sponsored Research and Development is one of the central focus areas of the institution. We have established a complete and inclusive eco-system of research and development starting from UG research to PhD. We are constantly improving our abilities and infrastructure towards international and national sponsored research projects. We have made a steady and substantial progress in the area of sponsored research projects.

The ratio of sustainability project to total sponsored project is around 20.83%.

|                                |                       |
|--------------------------------|-----------------------|
| <b>Total Sponsored Project</b> | <b>9863238.75 USD</b> |
| <b>Sustainability project</b>  | <b>2054527.71 USD</b> |

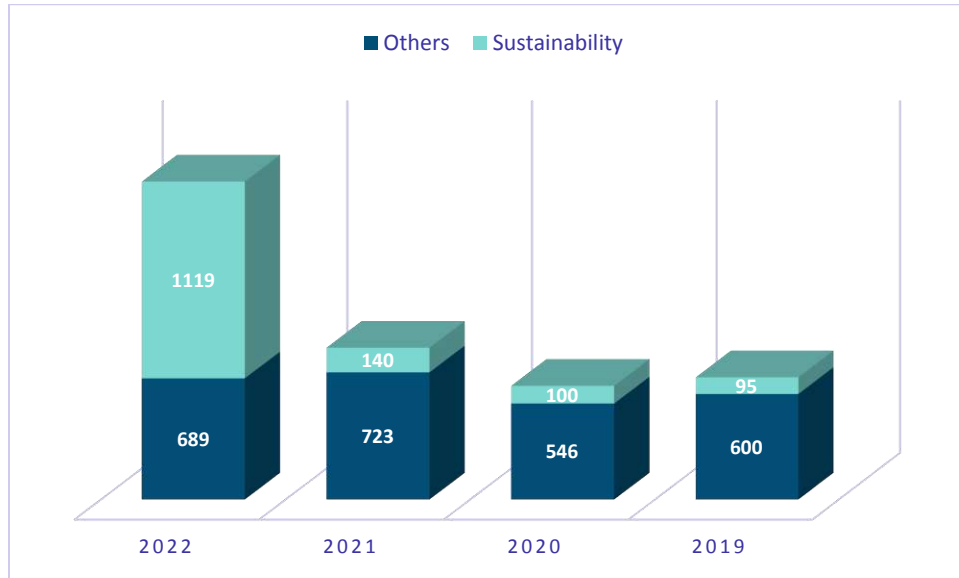
**Target:** NIT Silchar aims receive more than 250m\$ under sponsored research projects



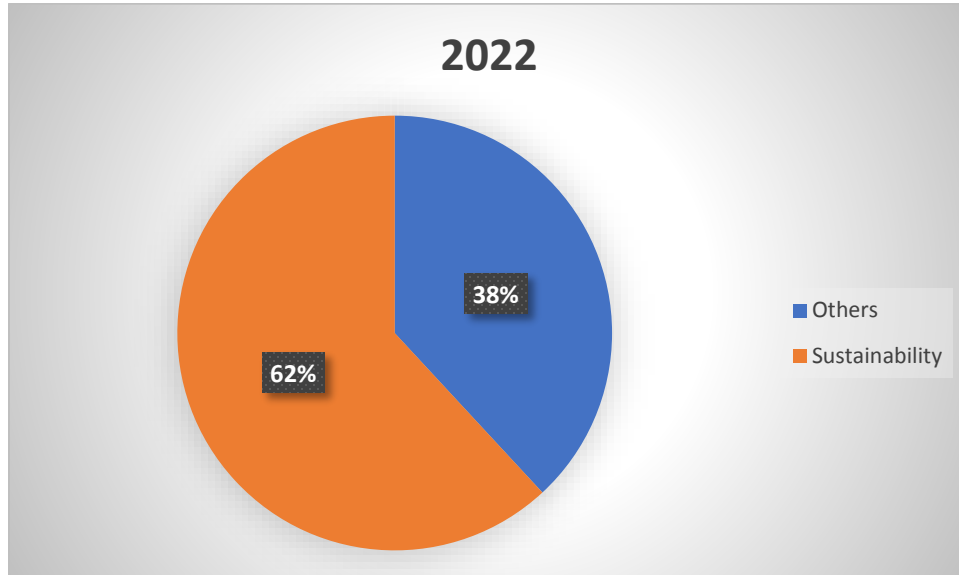
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## Publication Profile:

The quality and number of publication in high impact factor international journals during last 03 years are the testimony of the outcome of our engagement in quality research and development.



**Fig: Number of Publications**





# Transportation



Institute Aims to:

- To provide sustainable and cheap travel choices for staff and students traveling to the Institute, and between institute sites.
- To lessen the number of vehicles incoming at the institute.
- To manage the demand for car parking within current levels of provision.
- To promote cycle and walking to be adopted as a preferred mode of travel by all stakeholders inside the campus.

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**Total official vehicle: 12**

**Total Population : 8000**

**Total vehicles : 650**

**Ratio: 0.08**

**Zero Emission Vehicles: 603**

**Ratio: >0.02**

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To maintain the environmental sustainability at NIT Silchar, some well framed initiatives have already been designed to facilitate the staff and students make more sincere decision about sustainable travel choices and contribute to the decrease of carbon emission in the institute by:

- Cycles, ii. Walk for short trips, iii. Electric rickshaw, iv. Shuttle services, v. Campus connect buses, vi. Car-pooling.



**Target:** NIT Silchar aims to confirm 30% of faculty and staff, and 83 % of students use zero-energy mode of travel

30%  
faculty and  
staff  
&  
83%  
of students  
preferred  
walking and  
cycling



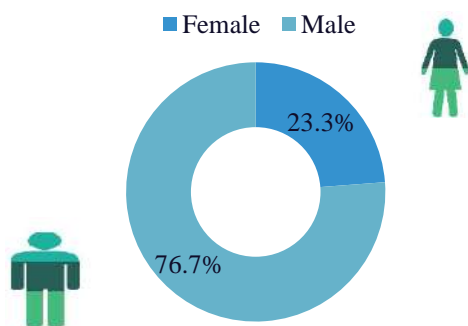
# Equity

Higher education institutes like NIT Silchar are largely reliant on its people and it requires all the members of the institute team to contribute to our mission and long term vision. The institute provides sincere attention to harness the talent pool and the educational aptitude of its employees. The institute puts importance to ensure that all its employees feel valued and respected for what they deliver to the institute.

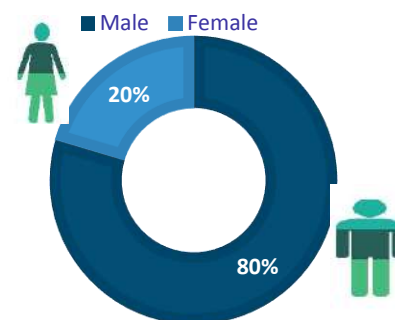
We believe in diversity, inclusion and equity. The health and mental wellbeing of our employees is firmly integrated in our policies and practices. Faculty and staff members of the institute are from different states of the country covering almost the breadth and width of the country; in the south from Kerala to Himachal Pradesh in north, in west from Rajasthan to Manipur in the east. The admission criteria in NIT Silchar also ensures 50% of its total student strength is from other states of the country. Such diversity offers the strength and motivation to our community and brings the harmony essential for an inclusive growth of the institute and the nation.

We recognize equality not just as a legal requirement or a moral imperative but as a critical driver of success for our institute. The present gender split is around 17-20 %. In order to bring the gender equality at NIT Silchar adopts the government policies of enhancing Girl students' upto 10% from previous years.

| Gender | Students | Faculty |
|--------|----------|---------|
| Male   | 3380     | 176     |
| Female | 868      | 41      |



FACULTY GENDER SPLIT



STUDENT GENDER SPLIT

**Target:** NIT Silchar aims to enhance the female gender employee to 40% of its total strength.



Please get in touch as below for any questions relating to the content of this report.

The University is committed to providing information in accessible formats.

If you require information from this guide in an alternative format, please contact:

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