17 PARTNERSHIPS FOR THE GOALS

SDG 17: PARTNERSHIPS FOR THE GOALS

STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALISE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

The Indian Institute of Technology, Gandhinagar (IITGN) aims towards developing a strong outreach programme of training, education, awareness and community engagement on sustainable development and promoting collaboration among scholars, policy makers, industry, non-profit organisations and other stakeholders. The institute conducts several events and activities including an annual Sustainability Fair, a regular Sustainability Seminar Series, collaborations with national and global institutes, etc. to encourage active networking amongst a broad range of stakeholders.

Research

Partnerships in research

The institute collaborates with several organisations including research centres, academic institutes, government agencies, NGOs, etc. to conduct research. The institute provides inputs and expert advice to the government for SDG policy development - including identifying problems and challenges, developing policies and strategies, modelling likely futures with and without interventions, monitoring and reporting on interventions, and enabling adaptive management.

Most of the research projects are sponsored by the State

and National government departments and ministries such as the Ministry of Human Resource Development, Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Department of Biotechnology, Council of Scientific & Industrial Research (CSIR), Defence Research and Development Organisation (DRDO), Ministry of Earth Science (MoES), Ministry of Water Resources (MoWR), Gujarat Council of Science and Technology (GUJCOST), Gujarat State Biotechnology Mission (GSBTM) among others.

Some of our research projects, majorly in the areas of water, climate change, and wildlife are funded by non-government organisations such as WIN Foundation, World Wide Fund for Nature, India, and Gujarat Ecological Education and Research (GEER) Foundation. Thus, the institute as a body collaborates with these NGOs to tackle the SDGs through research programmes.

The institute also collaborates with international organisations to review comparative approaches and develop international best practice on tackling the SDGs. Some of the examples are mentioned below:

IITGN is a project partner in the UK Research and Innovation project "High Impact Weather Events in Eurasia: Selected, Simulated and Storified". HIWAVES3 facilitates a dialogue between climate modelers, impact modelers and partners in different geographical regions with knowledge of local societal relevant meteorological events to construct stories of selected high-impact extreme events, simulated for present-day and future climate conditions.

The research project "The Effects of Reverse Migration on Indigenous Communities following India's Covid-19 induced lockdown" undertaken by a research group in the Humanities and Social Sciences discipline is funded by Social Science Research Council (SSRC).

"Assessing the concentrations and sources of indoor VOC's and particulate matter (PM) in urban India and Comparing to levels in China and the US" is another research project, undertaken in collaboration with Duke University.

The funded research programme 'Water4Change' in which IITGN is a partner organisation, addresses the complex challenges to urban water systems faced by fast-growing cities in India resulting from population growth, rapid urbanisation and the effects of climate change. This funding is a result of the joint call on Urban Water Systems of Dutch Research Council (NWO) and the Indian Government Department of Science & Technology (DST) which included a Sandpit procedure.

We have also collaborated as part of the UK India Education Research Initiative (UKIERI) on Vulnerability Assessment and Sustainable Solutions for Water Quality Management in the Urban Environment.

Another project "ECO-WET: Efficient coupling of water and energy technologies for smart sustainable cities" supported by the Indo-German Science and Technology Centre, focuses on the energy-water nexus.

Global collaborations with SPARC projects

The Ministry of Human Resource Development (MHRD), Government of India, has approved 13 IITGN international research projects worth INR 7.93 crore, as part of the 'Scheme for Promotion of Academic and Research Collaboration' (SPARC). Increasing its global footprint, the institute will collaborate with faculty and researchers in 10 international institutions across seven countries, namely France, USA, New Zealand, South Africa, Israel, Canada, and Australia. These research projects bring together IITGN faculty and world-class scholars to work on fundamental, action-oriented and innovation-driven research in emerging areas of impact.

Operations

CPWD R&D Cell

IITGN and the Central Public Works Department (CPWD) have entered into an agreement to collaborate for cutting-edge research & development in the housing and urban development sector. CPWD has set up a Research and Development (R&D) Cell at the Research Park of IITGN, to develop efficient solutions to problems faced by the construction industry. IITGN and CPWD will collaborate on various academic, training and capacity building programmes that will enable CPWD to become technologically more advanced to address practical problems faced on the field.

MSME grants

IIT Gandhinagar Innovation and Entrepreneurship Centre (IIEC) has been recognised as a host institute to implement the entrepreneurship support programme by the Ministry of Micro, Small and Medium Enterprises (MSME), Govt. of India. As per the programme, a startup recommended by the host institute can get grant funding of up to INR 15 lakhs.

Visit by the Canadian delegation

A Canadian delegation led by Mr Fred Eisenberger, Mayor of the city of Hamilton (Ontario, Canada), visited the institute on 18 November, 2019. The delegation included several administrators from the city of Hamilton; McMaster University, Ontario; and Mohawk College, Hamilton; who held a meeting with IITGN faculty members to discuss future collaborations between the institutes in academic and research spheres.

Explorer Fellowship

The IITGN Explorer Fellowship, introduced in 2015, is an annual summer programme that enables students, organised in small teams, to undertake a six-week adventure across the country. Fellows must travel to at least six states with at least one in the Northern, North-Eastern and Southern parts of the nation on a budget. They are required to plan their trip frugally, traveling by sleeper class on trains or by state government buses, and staying at low-cost accommodations such as youth hostels, homestays, and dharamshalas. The programme empowers students to set off on a journey of discovery, wherein they encounter diverse cultures and lifestyles.

Sharing of resources with nearby communities

NEEV conducts various programmes including entrepreneurship development workshops, entrepreneurship awareness sessions, vocational skills training courses, stitching skills training courses, training courses on spoken English and computer skills, which are all aimed to enhance the employability and entrepreneurship mindset of the nearby communities. More than 2000 beneficiaries in about 15 villages have been supported through 50 projects and activities. More than 100 participants from nearby villages were trained by NEEV from May to July 2019, through various Skill Development Courses. 25 participants in vocational skill courses of wiring and CNC machining, 33 participants in a basic computer course, 19 participants in spoken English course, seven participants in hardware and networking course, and 26 participants in stitching course were given course certificates on completion of this event. The courses are organised at the institute, and the participants use the institute's resources such as laboratories, computer labs, multi-purpose training rooms, etc.

Memorandum of Understanding

14 MoUs were signed between IITGN and the government, educational institutes (both national and international) and private organisations in the academic year 2019-20. Some of the areas covered by these MoUs include the following:

- Towards collaborative research, education and training in the fields of biotechnology, biomedical technology and related interdisciplinary areas
- Low cost, socially acceptable, easy to use, gravity driven and non-electric Point of use (POU) water purifier for water disinfection
- Funding of an Archaeological Sciences laboratory at IIT Gandhinagar under its Archaeological Sciences Centre and establishment of an Archaeology Chair at IIT Gandhinagar
- Promote interaction and collaboration between faculty, staff and students through student and faculty exchanges and academic and research programmes
- Smart lighting and development of smart cities in India

Education

Sustainability education is becoming increasingly central to academic institutions. On 12 May, 2018, the IITGN Academic Senate had approved a minor in sustainable development, which is planned to be offered to students from the next academic year. It is planned as an interdisciplinary programme that will include subjects from various fields such as water, climate change, pollution, energy and natural resources. The institute offers several courses to its students that relate to sustainability.

Foundation Programme

The Foundation Programme, which is mandatory for all first year undergraduate students, includes sessions on social awareness (with NEEV, NYASA), gender sensitisation, mental health and well-being, physical fitness, waste management, etc. which relate to SDGs.

Courses related to sustainable development

The institute offers core and elective courses that relate to sustainable development. The list of courses and the course content can be found here.

Non degree programmes

A student who is registered for a degree in a recognized institute or university in India or abroad, and who is officially sponsored by that institute or university to complete part of their academic requirements at IITGN, can apply for admission to IITGN as a non-degree student. Such a student may carry out research, or take courses for credit or otherwise, or may use other academic facilities.

Visits by educational institutes

IITGN hosted several student groups from institutions across India, including Gateway College of Architecture and Design, Sonepat; Parul University, Vadodara; Anant School of Architecture, Ahmedabad; Indus University, Ahmedabad; Nobel Foundation, Maharashtra; Shree Sarvajanik Kelavani Mandal, Mehsana; Gujarat Power Engineering and Research Institute (GPERI), Mehsana.

Academic Advisory Council

The Ninth Academic Advisory Council (AAC) meeting of the institute was held on 3 January, 2020 at IITGN. Eminent and illustrious external academicians from India and overseas as well as IITGN faculty members attended the same. The Council focused on strategies for effective faculty service towards institution building, advancing faculty and staff development, promoting research among non-PhD students, and examining the need to adopt a general education component in the curriculum.

The day-long deliberations started with participants from Duke University, USA; University of Colorado, USA; University Institute of Lisbon, (ISCTE-IUL), Portugal; Yale University, USA; IIT Delhi; IIT Bombay; Tata Institute of Fundamental Research, Bangalore among others, who provided their valuable and strategic inputs. The need to adopt a General Education component in the curriculum, on the lines of the US universities, was also considered which includes subjects like culture, ethics, civics, history, society, data analysis, writing, etc. The council members discussed various perspectives of the current education scenario where students work in a more networked society and are using multiple external platforms for learning.

MoUs with four New Jersey Universities

IITGN and four New Jersey public universities (New Jersey public universities, including New Jersey Institute of Technology, New Jersey City University, Rutgers University and Rowan University) sign MoUs for academic and research collaboration, and knowledge exchange. New Jersey Governor Phil Murphy said that diversity is the great strength of India and the United States, and that both countries can only achieve their full potential if all communities are empowered. Governor Murphy said that diversity and empowerment of marginalised communities were Mahatma Gandhi's message as well as that of Martin Luther King.

Centre for Creative Learning

Centre for Creative Learning (CCL) at IIT Gandhinagar is involved in STEM education. CCL came into being in April 2017, as a space that nurtures a scientific temper and the inherent creativity in students and teachers alike. The idea was, and remains, to immerse oneself in a subject in order to learn it, to do rather than read. We need to make our classes engaging, provide experiential learning, foster creativity and innovation with a sole focus on concepts. The Centre boasts of 1000+ unique STEM models and activities, including 100+ STEM and hands-on learning workshops for over 10,000 teachers and engineering college professors, and interaction with 100,000 students from all across the country.As per UNSDGs and UNESCO websites, "STEM education is a global prerequisite for individual development and participation in a technology-driven world, which is why we focus our education programme on science and technology. Additionally, skills

such as critical thinking, problem solving, and the ability to innovate are increasingly important for openly embracing change and responsibly shaping the future."

Teaching and learning exchange partnerships

35 faculty members visited universities abroad for academic and research exchanges. These universities are located across the globe in Bangladesh, Canada, China, France, Germany, Israel, Malaysia, Poland, Switzerland, South Korea, Sri Lanka, the United Kingdom and the United States of America.

During the academic year 2019-20, about 90 students visited 40 international organisations including research centres, universities, private organisations for research activities and internships. Approximately 350 students did internships in India in renowned organisations such as Barclays, Goldman Sachs, Forbes Marshall, IISc Bangalore, among others.

Visiting faculty

About 25 faculty from eight countries across the globe such as USA, UK, Canada, France, Italy, Japan, Switzerland and Portugal were invited for a period ranging from six months to one year during the past year. These visiting faculty members designated as scholar-in-residence, visiting professor, trainee teacher, and adjunct professor represented different disciplines such as journalism, mathematics, anthropologist, librarian, psychology, etc. Their major contribution included research, teaching and different activities, in collaboration with the faculty and students.

Community outreach

WIN-CSD-ACT Roundtable 2019

The roundtable held on 9 July, 2019 discussed the vision and activities of Kiran Patel Centre for Sustainable Development (KPCSD) at IITGN, WIN Foundation and Arid Communities and Technologies (ACT), a NGO working in water conservation in Kutch, Gujarat, was designed to identify areas of potential collaboration. Desalination for coastal areas using technology with very low power consumption, exploring the potential of electrolytic technology developed by CSMCRI, Bhavanagar, intelligent crop watering system with precise control based on crop, soil condition, rainfall, etc. were discussed.

Industry Conclave

The second edition of Industry Conclave, "Connections 2019: Creating Opportunity to Stimulate IndustryAcademia Partnerships", was organised on 9 November, 2019. Mr Kris Gopalakrishnan (Co-founder, Infosys; Chairman of the Advisory Council of the Research Park and the IIEC) chaired

the programme. More than 70 participants from over 50 different industries from across the country participated in the programme. A Startup Pitching and Networking programme was also organised as a part of the event.

Panel session

Prof Sudhir K Jain, Director, IITGN, was invited as Chair of the panel session on 'Expectations and Role of Governments in India-Canada Collaborative Opportunities'. The session was held on Day 1 of the Vice Chancellors' & Presidents' Summit, "Dynamics of Higher Education in India and Canada: Envisaging Greater Collaborations and Opportunities to Network", organised by the Shastri Indo-Canadian Institute (SICI) at New Delhi on 25-26 November, 2019.

10th Leadership Conclave

IITGN's 10th Leadership Conclave held on 4 January, 2020 focussed on devising a comprehensive strategy for "IITGN Next"; ways to sustain and build upon its distinctive culture; strategising to deal with unexpected challenges; and approaches to scale-up fundraising. The conclave brought together eminent thinkers and industry experts from India and overseas.

Student Leadership Conclave

The third edition of the Student Leadership Conclave was held at IITGN during 11-12 January, 2020. Student leaders from 21 IITs participated and extensively discussed various topics.
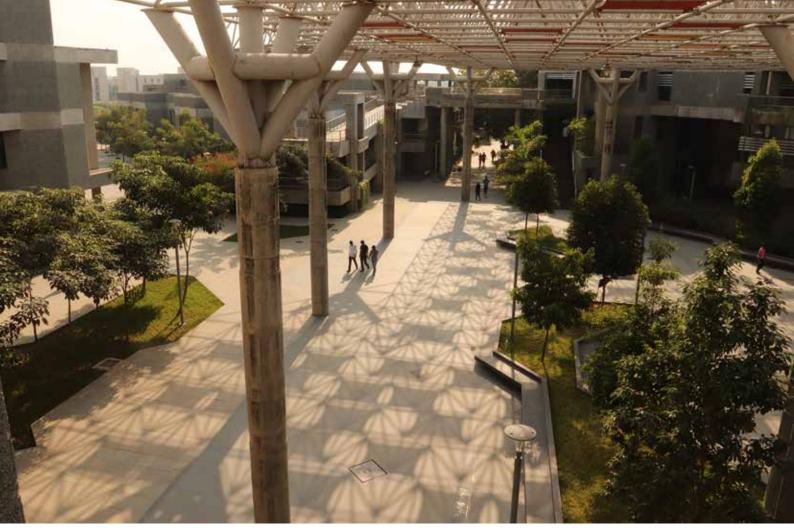
Mathegon 2020

Discipline of Mathematics organised its annual outreach event, MatheGon on 1 February, 2020. The event, coordinated by Prof Indranath Sengupta, engaged school children in various facets of Mathematics through day-long events, talks and activities.

UTYAEI:

IITGN, with the National Institute of Educational Planning and Administration (NIEPA), New Delhi, organised an international conference on Urban Transformations, Youth Aspirations and Education in India (UTYAEI) on 20-21 February, 2020, co-organised by Prof Mona Mehta, IITGN and Prof Manisha Priyam, NIEPA.

Sustainability Fair 2020

The Dr Kiran C Patel Centre for Sustainable Development at IITGN hosted its 2nd Annual Sustainability Fair on 28 February, 2020. The event had nearly 30 exhibitors, including government agencies, NGOs, welfare organisations, and industry leaders from across the country who showcased a wide range of sustainable development practices, projects, products and services.

The event featured three keynote talks by Mr Kartikeya Sarabhai, Founder & Director, CEE; Dr Ratan Chand Jain, Ex-Chairman, Central Groundwater Board; and Mr Sarbjit Singh Sahota, Emergency Specialist, Disaster Risk Reduction Section, UNICEF India. The event encourages cross sectoral dialogue and provides a networking platform to share knowledge, resources and experiences.

Sustainability Seminar Series
The Centre for Sustainable Development conducts regular events on topics related to sustainable development, that are targeted for a general audience. The events are kept open to all, and the events are announced through emails, social media channels, etc. to ensure participation from all interested.

International conference
IITGN in association with the Indian Council of Social Science Research (ICSSR), New Delhi, organised a three-day international conference on Affect, Embodiment and Ecology: Multi-disciplinary Perspectives during 2-4 March, 2020. This was coordinated by Profs Ambika Aiyadurai, Arka Chattopadhyay and Nishaant Choksi.

Online inservice courses for KVS teachers
Centre for Creative Learning (CCL) also conducted two 12-day online in-service courses for teachers of Kendriya Vidyalaya Sangathan (KVS). The objective was to train them about ways to engage students online. The online course was conducted from 26 May to 6 June, 2020, and 29 June to 10 July, 2020 for Mathematics and Science teachers respectively.

Initiated by the Organisation for Economic Co-operation and Development (OECD) in the year 2000, the Program for International Student Assessment (PISA) essentially gauges whether the education of a country is helpful for its students in their daily lives or not. India is going to participate in this exam in 2021 and in an attempt to improve its performance and ranking globally, the Government of India has given the responsibility to the Centre for Creative Learning for making necessary preparations. The Centre began the work for capacity building of teachers in the summer itself, with the first batch of 100 KVS teachers (24-28 June, 2019), followed by another batch of 100 KVS teachers (26-30 August, 2019). The aim of this initiative was to inculcate a sense of active and applied learning which serves as the backbone for practical application of classroom concepts in real life.

Chemistry camp
A three-day residential Chemistry Camp for 9th standard students was conducted by the Royal Society of Chemistry (RSC), India and Salters' Institute, UK in association with IITGN, between 10 to 12 December, 2019. It hosted 66 students of several state government schools of Gandhinagar and Ahmedabad. IITGN faculty members Prof

Bhaskar Datta and Prof Sivapriya Kirubakaran gave two lectures and Prof Sriram Kanvah conducted a demo of chemistry experiments.

PHASE 2020

An Indo-UK Workshop on Photonics for Health, Atmosphere, Safety and Education (PHASE 2020) was conducted at IITGN during 10-14 January, 2020. It was sponsored by the Royal Academy of Engineering, UK and was organised jointly by Dr Arup Lal Chakraborty (IITGN), Prof Ken Grattan (City University London) and Dr Ralf Bauer (University of Strathclyde, Glasgow)

National conference in Chemistry

The Discipline of Chemistry organised the 3rd National Conference in Chemistry during 12-13 February, 2020. The conference was hosted by IITGN with support from SERB, GUJCOST and several industrial partners. About 200 faculty and students from several universities participated, 21 distinguished speakers from reputed institutes presented their research findings in six technical sessions. The conference was coordinated by Prof Sivapriya Kirubakaran and Prof Sriram Kanvah.

CHEMCATCON 1.0

The discipline of Chemistry virtually organised ChemCatCon 1.0 during 11-12 July, 2020. The conference offered a platform for young researchers to acquire knowledge in the area of heterogeneous catalysis, which is considered as the central science for a sustainable future. The two-day event invited eminent speakers from prestigious institutions like IITs, CSIR labs, TIFR and BITS, among others, to talk about the current and future research implications in energy conversion and fuel cell research. The event was coordinated by Prof Sudhanshu Sharma.

TEQIP-III

TEQIP-III project at IITGN entered its third phase in December 2017 and started to work with the local engineering colleges. This Technical Education Quality Improvement Programme (TEQIP) has conducted various short courses and workshops for faculty, students, and administrative staff as well. During this year 2019-20, nine such programmes were held at IITGN. More than 300 faculty members/students/staff from different engineering colleges across the country participated in the programmes to learn about Advanced Pedagogy, Digital Tools of Learning and other important subjects. The topics of discussions included Technology-enhanced Learnings like Applied Digital Signal Processing, Electrical Machines & Power Electronics, Thermodynamics, Hands-on training on Special Electrical Machines and Drives and Data Science and Analytics. Faculty members of IITGN interacted with the participants of these activities while introducing new concepts and pedagogy for effective learning. A programme for staff of TEQIP colleges was conducted focusing on Leadership, RTI, Office Procedures and Purchase Procedures. It was very useful for them to understand the recent working procedures in an efficient manner.

STEM box

CCL has created a STEM box of 200+ unique activities. During the year 2019, the team has sent this box to 54 science communicators centres and recently to 100 schools of Gujarat. The box contains about 75 science-based, 75 math-based and 50 High Order Thinking Skills (HOTS) hands-on activities and projects that allow students to tinker around and grasp seemingly difficult basics with absolute ease and develop out-of-the-box thinking capabilities.