

University Social Responsibility of Higher Educational Institutions in the Global South: A Case of Indian Academia

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Abstract

This study investigates higher education institutions' diverse social responsibility initiatives and assesses their impact on stakeholders (present students, future students, supporters, etc). Social responsibility emphasizes contributions to sustainable development and proactive solutions to societal and environmental challenges. Recognizing universities as crucial pillars of society, this research explores how they foster socially responsible values in students to cultivate responsible citizenship, focusing on the next generation of leaders. Data was collected using semi-structured interviews from 103 heads of STEM (Science, Technology, Engineering, Mathematics) departments in twenty engineering colleges in Delhi, India. A thematic content analysis using QDA Miner Lite software (ProvalisResearch) had been used to analyze the data. The results were organised into three categories:

The study explores students' involvement in USR activities, implementation challenges, collaborations with corporations, NGOs, and universities, and energy-saving initiatives for sustainable campuses. It emphasizes promoting diverse student experiences, community engagement, and fostering professional and socially responsible development and provides recommendations for stakeholders to achieve environmental sustainability.

Keywords: USR (University Social Responsibility), HEI (Higher Education Institutions), CE (Community Engagement), Sustainability

Introduction

University Social Responsibility (USR) is the ability of higher education institutions (HEIs) to promote and apply a set of principles and values in management, teaching, research, and extension to address educational and social challenges in society (Meikle, 2023). In the current globalized and competitive environment marked by economic crises, there is a critical need to explore new sources for economic and social growth and development. Social responsibility is an ethical framework signifying an entity's obligation, whether an organization or individual, to act for the overall benefit of society. It involves maintaining a balance between the economy and ecosystems (Vasilescu et al., 2010). In this context, both individuals and organizations need to contribute to society and the environment. Recognizing that revenue is derived from these sources, it becomes a fundamental duty to give back. The United Nations established 17 Sustainable Development Goals (SDGs) as a global initiative for all countries to address climate change, eradicate poverty, and foster sustainability by 2030 [1]. Higher education is essential in achieving these goals, as universities play a pivotal role in generating knowledge and nurturing talent. The success of the SDGs relies heavily on significant contributions from university education and research. Higher education institutions, particularly universities, increasingly view social responsibility as an integral aspect of their mission [2]. They bear the responsibility of ensuring that academic knowledge directly contributes to improving human living conditions and the development of civil society. So, they should focus on cultivating future leaders capable of initiating social change, transforming innovative ideas into practical steps for a more inclusive and sustainable future. [3]

Community Engagement (CE) is the higher education institution's counterpart to Corporate Social Responsibility (CSR). While teaching and research were traditionally considered core functions, CE is now widely accepted as the third core function. CE enables universities to leverage their expertise to meaningfully address the development challenges of their communities and country. Community engagement is vital in higher education, equipping students for the workforce and instilling a sense of civic responsibility. It involves students engaging in conversations with communities and institutions to comprehend the lived experiences of their partners. This involvement enables Higher Education Institutions (HEIs) to have a tangible and positive impact on society at large (Driscoll, 2009).

Rapid industrialization, modernization, urban migration and population growth have incessantly depleted the non-renewable resources, resulting in scarcity. The exponential demand for limited resources has increased costs, exacerbating their scarcity. In the current globalized and competitive environment marked by economic crisis, there is a critical need to explore new economic and social growth and development sources. In this context, individuals and organizations need to contribute to society and the environment. The United Nations established 17 Sustainable Development Goals (SDGs) as a global initiative for all countries to address climate change, eradicate poverty, and foster sustainability by 2030. Science, technology, and engineering are vital to the achievement of these SDG, and engineers have changed the world, starting from the development of tools from stones to artificial intelligence and big data; they are needed in every sphere of society.(Velazquez et al., 1999).Higher education in technical disciplines is also essential in achieving these goals, and universities play a pivotal role in generating knowledge and nurturing talents. The success of the SDGs relies heavily on significant contributions from university education and research. Higher education institutions, particularly universities, consider social responsibility an integral part of their mission (Vasilescu et al., 2010). They are responsible for ensuring that academic knowledge directly contributes to improving human living conditions and the development of civil society. So, they should focus on cultivating future leaders capable of initiating social change and transforming innovative ideas into practical steps for a more inclusive and sustainable future. (Ostrander, 2004).

Currently, research on different types of USR initiatives and the challenges faced by universities in developing nations is limited,. This study tries to fill this gap by shedding light on the experiences of the heads of departments of various engineering colleges in Delhi, India. Further, it also gives

recommendations for the universities. The study includes the STEM leaders of only engineering colleges because technical disciplines are high in demand for innovation, and global warming is a cause of concern for the world. In this regard, green innovation management will help the university students (future entrepreneurs) adopt sustainable practices while innovating, which can reduce the negative environmental and economic impact. It now serves as a vital catalyst for national and regional economic growth, playing a pivotal role in fostering sustainable development (Wang et al., 2021).

Theoretical Background

There needs to be more literature specifically addressing social responsibility in higher education from Africa, excluding South Africa, as well as in Asia and the Middle East. Generally, the social responsibility literature complements the extensive body of work on community engagement. It offers insights into how social responsibility is manifested within Higher Education Institutions (HEIs) and their collaborations with communities and society. In a study of engineers in an HEI, which tried to analyze the student's contribution to society, it was analyzed that the inclusion of a course on sustainable development in the engineering curricula could motivate the students to contribute to society. (Pritchard and Baillie, 2006). Engineering students must know the interaction between society, technology, and the environment so that the benefits of technology are positive for all. (Installs, 1996). In a study by an Australian university, the results revealed that to achieve sustainability and have a good quality of life, engineers need to create or modify existing technologies to enhance efficiency. For, e.g., they can develop technologies for the poor and the desolate to upgrade them in society and help them come out from the shackles of poverty. (Johnston, 2001) According to the world data, 12% of the population did not have electricity in their homes in 2016; in 2015, 2.1 billion people did not have access to safe drinking water. To address these challenges, the economic, social, human, and environmental impacts of engineering need to be considered. Courses that help engineers incorporate such value-based perspectives need to be added to the engineering curricula of educational institutions. (UNESCO, 2021). To make engineers sensitive to the demands of the global world, they need to be educated in courses like ethics and environment (Johnston, 2001). Courses like STS (Science, Technology, and Society) have been developed to educate engineers and make them understand how their contributions can benefit society's welfare.

A study on Malaysian university students revealed that most were aware of the importance of environmental preservation but lacked exposure to actual social responsibility activities (Ahmad, 2012). In a study of Ethiopian HEIs, the USR activities were present, but the significant impediments were a lack of precise institutional arrangements, limited funding, inadequate collaboration/partnerships, lack of comprehensive data, and insufficient emphasis on morals, ethics, values, and principles (Cremonini and Adamu, 2021). In another study carried out in the US, the results revealed that a collaboration between the government and the undergraduate students of a university on a sustainability project benefitted the government agency and the students. With collaborations, the students gain hands-on experience and also achieve recognition through the presentation of papers at conferences. (Elaine Venson; Rejane Figueiredo; Wander Silva; Luiz C. M. Ribeiro, 2016). Recruiting students in firms as interns serves as a route for interaction between firms and universities. (Thune, 2009). Informal contacts, conferences and publications, consultancy, and recruitment from college were the factors that led to university-firm tech transfer. Education by a university on conducting sustainable research for its students is an important factor in determining the economic development of a country. (Veugelers, 2016).

Methodology

The aim of the study was to discuss the USR activities undertaken under the STEM leaders in different ways and how they can help to transform society in social and economic ways. The study utilized a qualitative explorative design rooted in hermeneutic phenomenology to gather descriptive data on the opinions and experiences of STEM leaders with USR activities in various departments of engineering colleges in Delhi, India. Interpretative phenomenological analysis emphasizes on providing detailed

accounts of experiences in participants' own terms, avoiding predefined categories. IPA is considered phenomenological, focusing on interpretation, with a hermeneutic commitment to understanding (Smith and Fieldsend, 2021). Data had been collected using semi-structured interviews with 103 Heads of departments of STEM (Science, technology, Engineering, Mathematics) disciplines, and thematic analysis has been conducted using QDA Miner Lite software (Provalis-Research). A census was done and emails were sent to all the HoDs to give their nod to personal interview sessions where out of 127 STEM HoD's in a total of 20 engineering colleges of Delhi providing regular Btech degrees, a total of 47 agreed to give personal face-to-face interviews in the first round and 56 in the second round. So, a total of 103 leaders were involved, and their experiences with USR activities are the focus of this study. The interviews were conducted for a period of eight months in the respective departments of HEI's, starting from 01-10-2022 to 31-05-2023. An institutional approval letter was shown to the respondents to get their consent and they were informed that the results would be anonymised. The respondents included heads of the following ranks i.e., professor and associate professor. Open-ended questions were posed during interviews lasting an average of 20 to 30 minutes. While flexible, all respondents were asked a similar set of questions. The Consolidated Criteria for Reporting Qualitative Research, (COREQ) was completed (Tong et al., 2007) (Appendix A). The first author conducted the interviews and no other individual was present in the interviews. Coding was done by both the authors. Both the authors had no prior relationships with the majority of research participants. However, the first author had met one participant at a conference. Research participants had received information sheets explaining the study's purpose without personal details about researchers. While participants knew the researchers' identities through email correspondence and could access their research interests online, this might have influenced their responses during interviews.

The thematic analysis approach (Braun and Clarke, 2023) was followed and it ensured that research findings were rooted in the understandings and experiences of respondents, reflecting their subjective meaning. Interviews were recorded, and data was coded and transcribed verbatim. The transcribed data were collected using The Framework Method (Hackett and Strickland, 2019) and then analyzed thematically using coding process (Braun and Clarke, 2023). Data were initially organized into an Excel spreadsheet using a framework matrix. Each investigator coded the data. The thematic analysis involved constant data checking, and meetings to review and combine themes. The process focused on inductively identifying emerging themes rather than a hypothesis-deductive approach. After extracting the ideas, the coding had been carried out in three phases.

Interview guide:

Q1 What are the types of USR activities that your department is involved in?

Q2 Do you face any challenges from the university about its operations?

Q3 Are there any linkages to develop the required skills among the students?

Q4 How do you inculcate the value of economic, social, or environmental responsibility among students, or can you provide any suggestions?

<i>Population</i>	<i>Public</i>	<i>Private</i>	<i>Total</i>
Heads of Science	Male - 40, Female- 26, Total- 66	Male - 25, Female - 12, Total- 37	Male - 25, Female - 12, Total- 37
Heads of Engineering	Male - 25, Female - 12, Total- 37	Male - 25, Female - 12, Total- 37	Male - 25, Female - 12, Total- 37

Note: Applied science, i.e., Physics, Chemistry, Mathematics, and Engineering branches: IT/Electronics/Mechanical/Biological Sciences/Civil/Design/Environmental/Architecture/Material Sciences/Energy Sciences/Textile and fiber.

Source: Prepared by the authors

Table 1: Information of the respondents:

Population	Public college	Private college	Total
Heads of departments Professor – 92 (38 to 59 yrs) Associate Professor – 11 (36 to 45 yrs)	Male - 40, Female - 24, Total- 68	Male - 25 , Female - 14, Total- 38	Male - 65, Female – 38, Total- 103
All Engineering disciplines	Applied science (Physics, chemistry, maths), IT, Electronics, mechanical/biological sciences, civil/design/environmental engineering, architecture and planning, material sciences, energy sciences, textile and fibre.		12

Source: Made by the authors

Results

The qualitative data after coding has been categorized into the following themes:

Theme 1: Involvement in economic, social, and environmental activities

The qualitative data from respondents' interviews showed that in many departments of various universities, the USR activities were absent, or the Heads of the departments didn't take the initiative to conduct these activities, and only a few outreach programs were done to meet the institutional requirements. The average no. of projects ranged from 2-3 in a year. The universities that were engaged in USR activities had diverse perspectives. When asked about the type of USR activity their department is involved in, they were engaged in three types of activities: economic, social, and environmental. For e.g., Projects like Education for all, gender sensitization, mental health awareness, design for the marginalized, inclusive design, design for all, etc. Many were involved in social activities like woollen clothes distribution, blood donation, health camps, renewable energy, campaigns for saving water and electricity, plantation, anti-drug camps, cleanliness drive, voter's awareness, programs like adopt five villages nearby colleges, medicines to needy people, sleep awareness program for patients, education mentoring of govt. School girls in STEM, donation to Kerala relief fund, several projects done by the students targeting the benefit of the rural areas.

Some excerpts from the interviews are provided below.

P 8: "We address most of UN SDGs, particularly SDG 7, SDG 13, SDG 4, e.g.: nutrition application, etc."

P 69: " There are solar panels installed, and rainwater harvesting is also there in the university." Yes, we have 146 kW Solar energy rooftop in my college."

P 60: "Many of the faculty members in our department are working in the area of solar cell technology, green technology, sensors, cancer research, and targeted drug delivery."

P 83: "The faculty members are setting up the waste treatment plant."

P 72: "Some of my students work in corporate hospitals and provide free healthcare services to the poor every Friday afternoon, and they thank me for motivating them for this, and it is giving them more happiness than their salary."

P 2: "Our students participated in SAGY (Saansad Adarsh Gram Yojana) in a nearby village as a part of the NSS activity. They are also mentoring poor students and giving them free tuition".

P 81: “We are working on making the university zero waste. I have worked on composting kitchen waste to produce manure, refurbished furniture, and reduced condemnation. Reused and recycled civil and paper waste”.

P 44: “Students have been involved in tree planting, park cleaning, waste recycling, training workshops, university fairs, etc..”

P 27: “Our students participate in many volunteering programs. They collaborate with NGOs for community outreach. I feel that such initiatives empower them with a sense of social responsibility and help foster an understanding of all the challenges of the society”.

P 91: “Under community services (CS), students actively engage in programs, volunteering in various homeless shelters, low-income schools, family support centers etc. The university also emphasizes providing students with different opportunities to bring about positive change in the local communities.”

Sub Theme 1.1: Energy saving initiatives taken by universities

The participants had informed about the projects undertaken by their institutions and further information had been verified from the websites. DTU announced the upcoming installation of a 432-kW solar power plant, set to be installed on rooftops and covering an area of 7050 square meters (Mohammad Ibra, 2019). HMR Institute of Technology & Management is a prominent private engineering college in New Delhi, India. It offers a range of courses in both engineering and management disciplines. In pursuit of a green vision, HMR Institute of Technology & Management partnered with Tata Power Solar to install a 146-kW rooftop system. The institute now operates entirely on green energy, meeting 100% of its energy needs through solar power. Additionally, students are actively involved in hands-on learning through access to live solar projects, fostering awareness and expertise in green technologies. The rooftop solar system at HMR Institute of Technology & Management generates 204,000 units of electricity annually. Over 25 years, it is expected to offset 3,679 tonnes of carbon emissions (Tata Power Solar, n.d.)

Colleges under IP University have taken measures for energy conservation and usage of renewable energy to minimize the carbon footprint of the campus by leveraging solar power for electricity generation, implementing a biogas facility for renewable energy production, engaging in grid wheeling to optimize energy distribution, utilizing sensors for efficient energy conservation, incorporating LED bulbs and power-efficient equipment for reduced energy consumption, etc. Some more initiatives by the university in this regard include sustainable design with open courtyards, fly ash brick construction for energy efficiency, and energy-efficient screw chillers for air conditioning. LED luminaries, green reflect SOL glass windows, and clay-tiled surfaces enhance energy conservation. They also have provision for under-deck insulation, which reduces heating and air conditioning loads. A 140KW solar power plant generates 300,000 units annually, with surplus power fed into the grid. Solar water heaters are installed in four hostels, which provide 40,000 liters of warm water. Sensor-based electrical fittings are in key areas to minimize power consumption. Additionally, a biogas plant has been installed, which serves both lighting and educational purposes, emphasizing bio-resource recycling and societal needs (Guru Gobind Singh Indraprastha University, n.d.)

The Green Policy at IIIT-Delhi Campus includes Yule e-bikes to reduce conventional fuel vehicular traffic, building orientation, and window design is there for maximum natural light utilization, steps to reduce air conditioning load are being taken, terrace and walls are equipped with insulation, dry cladding, and cavity walls are there to minimize the solar radiation, there is waste segregation into biodegradable, non-biodegradable, and e-waste, on-site composting and disposal through authorized agencies is available, biomedical waste from the health centre and labs are responsibly managed by the authorized agency (M/s Biotics) under DPCC, i.e., Delhi Pollution Control Committee (Indraprastha Institute of Information Technology, n.d.)

MAC INSERCH is a collective initiative at Maharaja Agrasen College, uniting students, teachers, and administrative staff in their shared commitment to environmental conservation, heritage preservation, and overall sustainable development. The initiatives include five functional rainwater harvesting pits, a 10,000-liter Effluent Treatment Plant that manages water discharge from washrooms, the canteen, and the

girl's hostel. Energy-efficient measures include hermetically sealed windows and cavity-walled structures in air-conditioned rooms. In many areas, LED lights are used instead of CFL and mercury tube lights. The Cycling Club Cyclopaedia also encourages eco-friendly commuting with 20 practice cycles and over 12 high-end bicycles (Maharaja Agrasen College, 2022)

MSIT has transitioned from incandescent bulbs to LED lights, replaced CRT monitors with energy-efficient TFT or LCD monitors, and advocates for efficient electrical systems. Regular maintenance of UPS batteries reduces charging current. There are frequent equipment checks which prevent excess electricity usage. The institute promotes energy conservation by urging staff and students to turn off fans and lights when they are not in use. Solar heaters in hostels reduce electrical power usage. There are transparent glass windows that bring natural light to classrooms. There will be a provision for solar-based LEDs on campus. The institution also adopts rainwater harvesting, where water is collected from an open terrace and then directed to the ground through drains to sustain groundwater availability. Efforts for Carbon Neutrality include No burning of leaves or waste papers, leaves buried in soil; there is waste disposal in Nagar Nigam dumping yards, minimal AC usage, routine inspections for lower emissions, a vast tree cover neutralizes the carbon in the campus (Maharaja Surajmal Institute of Technology, 2019). In NSUT's electrical engineering department, a dedicated renewable energy lab will cater to Simulation-in-the-loop setups, Real-time simulators, DC microgrids, Wind energy emulators, and Fuel cell setups.

IIT Delhi has a supercomputer, i.e., Padum, which was inaugurated in 2015 and employs chilled water-cooling technology and innovative energy-saving measures, earning it a "green" designation. It ranked 28th on the Green 500 list of the world's most energy-efficient supercomputers. The ESPOB (Energy Storage Platform on Batteries Centre) is researching various energy storage technologies, including flow batteries, supercapacitors, fuel cells, electrolyzers, Li-ion, Na-ion, Mg-ion, Al-ion batteries, and Li Recovery. A 50 kg/day capacity pilot-scale reactor has been designed and is installed at the IIT Delhi campus to address the electronic and plastic waste streams (IIT Delhi, 2013)

IGDTU has installed solar water heaters in hostels and guest houses so that students and residents can use green and renewable energy. There are energy-efficient lights campus-wide, and five percent of the energy demand is being met by solar panels via Hero Future Energies Pt. Ltd. The campus also has carton boxes for segregating paper and plastic collection and also promotes the recycling of litter (Indira Gandhi Delhi Technological University, 2012)

GB Pant Institute of Technology had installed rooftop solar panels to harness solar energy, generate electricity, and reduce operating costs (G.B Pant Institute of Technology, n.d.).

The new building of Vivekananda College features a rainwater harvesting system that stores water for gardening and running tracks. PM2.5 aerosol concentrations are monitored using standardized equipment from the CSIR-National Physical Laboratory. The college promotes cleanliness through waste separation campaigns and provides green and blue dustbins throughout the campus. Organic waste is composted using compost pits and a compost machine. Medical and electronic waste are managed separately, with designated bins and storage areas. Laboratories handle non-hazardous materials, reducing the need for exceptional waste management. The well-ventilated classrooms minimize energy use and are aided by natural lighting and cross-ventilation. Solar panels and LED lights further reduce energy consumption. Garden waste is composted, and burning is prohibited. RO plants ensure safe drinking water, while a greenhouse supports plant replication and maintains greenery. Soundproof generators provide efficient backup power near Gate no. 2 (Vivekananda College, n.d.). HMR Institute of Technology and Management is now the first green and energy-efficient institute in GGSIPU after installing a 146 KW grid interactive solar power plant (HMRITM, n.d.).

Theme 2: Collaborations with the stakeholders

Most of the participants had a limited view of USR, and they focussed only on the social dimension of it, whereas a few of the college heads had their students involved in the CSR activities through partnerships/collabs and had linkages with the industry (Microsoft, IBM, pharmaceutical companies, coding blocks) via MoU's and NGOs to conduct joint research projects. The respondents mentioned how

training and placement cell helped sign MOUs to develop linkages with industries and how working with industry gave their students unique perspectives and an understanding of dynamic sustainability challenges and opportunities. Some excerpts from the interview are as follows:

P 22: “LinkedIn is a valuable platform for connecting professionals from various fields and bridging the gap between Industry and academia. Our students exchange ideas, insights, and experiences related to sustainable practices in the supply chain. I think it is important for students to learn socially responsible entrepreneurship”.

P46: “The project involved collaboration with a technology manufacturer company, and the students gave the company a sustainable solution. They have taken this collaboration positively and seem to have a growing interest in partnering through the project course.”

P 91: “The college conducted a workshop, which around 150 entrepreneurs and business leaders participated in. It was focused on developing resilient business practices with a sustainability strategy.”

P 76: “A few of my students are engaged with the Tata Group on a project focusing on developing renewable energy for rural schools. The collaboration has led to a course redesign and the establishment of a co-curricular practicum”.

P11: “We have programs to train our students for collaborations with local industries. However, I feel that with the integration into the global knowledge economy, the students have a shift in their sense of purpose. I feel that the concept of public good is taking a backseat, and revenue generation and profit making are given more importance”.

P20: “The Placement Cell also helps us get many MOUs with the industry and conducts mandatory programs for students. Also, many of the students are hired as interns in companies to fulfil certain projects.”

Theme 3: Lack of resources and delays in conducting the USR activities.

The challenges faced by the departments in conducting these activities were a shortage of funds and human resources, lack of support from administration (delays in approvals), poor communication, bureaucratic setup, and shortage of infrastructure. The participants also expressed concerns about low community engagement in social responsibility activities, the need for building local capacity, transparency issues, a narrower perception of social responsibility, a lack of consensus on implementing social responsibility initiatives, and cultural differences among students in a classroom also impacted productivity due to varying perspectives on fulfilling social responsibility. Apart from all these, many leaders raised concerns over environmental challenges like poverty and higher taxes as impediments to fulfilling social responsibility. A few excerpts of the interview are as follows:

P 42: “Cultural diversity and indifference also pose a challenge to implementing social responsibility since we have a lot of foreign students here.”

P 73: “Lack of community participation hinders the proper implementation of social responsibility.”

P 13: “The universities prioritize cost concerns and competitive advantage over societal health, security, and ecological development. I don’t think they are willing to spend much on such activities”.

P 98: “Most of the students are doing projects with government funding that undergoes annual audits, and this leads to potential interruptions in project continuity. Since universities are constrained by stringent public sector accounting regulations that are basically aimed at preventing fraud and protecting stakeholders, we face challenges in project implementation, mainly in procurement and resource utilization.”

P 57: “Many times, I have helped my students get funding from my own funds, which had been allocated to me as an HOD for external uses, so that my students could go ahead with the project.”

P 38: “Sometimes, the students need technical help for the project, and hiring professional or technical personnel is again a financial problem.”

P 89: “Diverse contexts and students from various backgrounds in a classroom pose a challenge to carry out a project as the foreign students might not feel a sense of belongingness to the people.

Theme 4: Different ways to inculcate social responsibility amongst students

The responsibility towards society was inculcated by the faculty in students through numerous ways like classroom learning, social practices (assigning a social project in co-project mentoring, expert lectures, conferences and workshops in operation with NGO's or mentoring by experts. Involvement of students in business clubs, eco clubs, rotary club, seminars, workshops, discussing real case studies in the classroom, involvement as drishti and NSS mentors and motivating them by becoming their models. Students were involved into various societies like ENACTUS, discussion of SDG's in the classroom, conducting awareness through workshops etc. Students also engaged in practical learning like arranging a visit to the slums to know the problems of the desolate and come up with low cost effective, innovative solutions for the same and in this way inequalities in the society could be reduced by uprooting the poor and letting them enjoy equal access to technologies. Community engagement had been emphasized by a lot of leaders. Many faculty said that they had certain courses designed to inculcate the values of social responsibility and some colleges had an additional paper of Human Values and Ethics.

Some excerpts from the interviews are as follows:

P 35: "Practical learning is needed. My students have installed a low cost water pump in the nearby slum to solve the problem of shortage of water. The students are also associated with many social organizations". We have rain water harvesting in our college. Apart from this, there are posters in toilets for saving water and in the classrooms for switching off lights when not in use".

P 47: "Activities outside the college are conducted like the sikh community in our college does donations, langar sewa especially in times of covid like situations or any other natural calamities".

P92: "We do design projects on socially relevant issues (maybe from education, healthcare, water and sanitation, sustainability, smart cities domains and so on). Hence, our students are trained to not just value but actually empathise and resolve the problems of stakeholders in the social environment".

P 8: "Biological Sciences students generated diverse health campaign materials for partner communities, addressing shared health concerns. These materials had been distributed as digital files and the partners got them printed and disseminated them within their respective communities.

The faculty also pointed out how they would know whether a student actually undergoes a change after engaging in a USR activity.

P 66: "I don't evaluate them but one can feel the change through discussions".

P 28: "When they became very knowledgeable and through expertise, I can feel that they have it in them now".

The faculty also made sure that the students had inherited the USR values in them by discussions, conducting counselling, assigning them marks in their projects for USR activities conducted by the students, classroom interaction, All round assessment test, viva, portfolio management, feedback forms, All round assesment test, viva, portfolio management, feedback from staff, quiz test, conducting presentations, Pre and post test of how their business ideas have changed drastically after undergoing USR activities etc. Participants expressed how students are able to comprehend the urgency of climate change at the local and global level and via joint communications, they will seek collaborative solutions. The faculty also promoted social responsibility not only in education but in research as well. They inspired the students to get real experiences and turn those community insights into research projects thereby returning the outcomes to benefit the community. This was done through projects, debates, and teamwork which sparked an interest in the real-world issues and cultivated the necessary skills in the students to address them. The faculty promoted a positive attitude toward volunteering and teamwork among students, familiarized them with diverse organizational environments through project participation and evaluated student's theoretical knowledge effectively.

P 09: "Partnering with day care centers, orphanages enables the students to understand team work".

Table: Approach of colleges towards fulfilment of SDG's

SDG	Initiatives taken by HEI's
Goal 1: No poverty	Woollen clothes distribution, programs like adopt five villages nearby colleges, medicines to needy people etc.
Goal 2: Zero Hunger	Nutrition application, Community kitchen initiatives.
Goal 3: Good health and Well being	Blood donation, Health camps, Sleep awareness program for patients.
Goal 4: Quality Education	Teaching in slums
Goal 5: Gender Equality	Gender sensitisation campaigns
Goal 6: Clean Water And Sanitation	Campaigns for saving water, Waste treatment plant, Rainwater harvesting
Goal 7: Affordable And Clean Energy	Biogas plant for lighting, fly ash brick construction, wind energy emulators, fuel cell setups.
Goal 8: Decent Work And Economic Growth	Incubation centres for funding and startup culture.
Goal 9: Industry, Innovation and Infrastructure	Pilot scale reactor for plastic waste, Various energy storage technologies.
Goal 10: Reduced Inequalities	HEI's give quotas and scholarships to students for particular sections of the society.
Goal 11: Sustainable Cities And Communities	Green Technology, Yule e-bikes
Goal 12: Responsible Consumption and Production	Segregating paper and plastic collection, special waste management, composting of garden waste.
Goal 13: Climate Action	Rooftop solar panels, on-site composting and disposal
Goal 15: Life On Land	Tree planting, park cleaning, waste recycling, bio resource recycling
Goal 17: Partnerships for the Goals	Partnership with Tata power for solar rooftops.

Source: Made by the authors

Conclusion

Education must prioritize the integration of the 17 UN Sustainability Goals, with University Social Responsibility (USR) as a cornerstone reflecting ethical engagement for holistic development. Overcoming barriers such as resistance to change and financial constraints is essential for implementing sustainable practices. Despite challenges, many universities champion social responsibility in critical areas. Institutions should align with international benchmarks, forge strategic partnerships, and integrate USR into strategic planning to fortify their societal impact. Fostering student awareness and promoting University Social Responsibility (USR) is imperative for cultivating graduates with enhanced capabilities and a commitment to addressing societal challenges. There is a need for comprehensive approach to global sustainability. Universities need to enhance visibility of their actions and engage various stake

Limitation and Recommendation

The deliberate choice of qualitative study methods restricts the generalizability of the findings. Further, interviews included only the STEM leaders and not the rest of the faculty in a department. Our study suggests some specific recommendations as experienced by the STEM leaders.

Diversified funding achieved through collaboration with local and global stakeholders is crucial for aligning educational efforts with industry and societal needs. Higher learning institutions should allocate budgetary provisions to prioritize implementing social responsibilities as a core activity in higher education. Partnerships/collaboration between universities and government/civil society/corporates can yield additional funding and research opportunities for USR activities. The government can mandate legislation and enforce strategies to ensure that HEIs prioritize and implement social responsibility to the public. University leaders can drive Social Responsibility (SR) by incorporating it into organizational strategy, creating dedicated units and roles, and aligning rewards (compensation, awards for impactful teaching and research) and performance evaluation measures (volunteering, advisory services). This establishes an essential infrastructure for collaboration with external stakeholders and internal legitimacy for social responsibility.

The universities should engage in Service-learning. It integrates learning objectives with community service to offer a practical and progressive educational experience that addresses societal needs. E.g., courses, mentoring programs, student initiatives, and internships. Service-Learning and Civic Engagement aim for the common good, offering exceptional opportunities for civil society, students, and lecturers to apply academic knowledge to address social needs within a community context. Integrating various Service-Learning formats into the curriculum ensures institutional sustainability and fosters the acknowledgment of social responsibility in higher education. Universities should incorporate the SDGs (Sustainable Development Goals) into their teaching and learning by adding undergraduate courses which address them and make sure that this learning makes a difference in the world. They shouldn't have a motto to adopt it to improve their university rankings but through these reforms instill a sense of social responsibility not only in academic work but also in other functions that link universities with real-world problems. Sustainability rankings, accreditation standards emphasizing social impact, and funding instruments for sustainable development significantly shape organizational practices for social responsibility and impact assessment in universities. These mechanisms create benchmarks, standards, and financial incentives that drive institutions to prioritize and enhance their commitment to sustainable and socially responsible practices.

holders for greater effectiveness and to enhance organizational identity.

Declarations

Ethics approval and consent to participate

Both authors approve of the ethics and consent to participate. Institutional approval was taken prior to the primary data collection.

Consent for publication

Both authors have given their consent for publication. The research participants have also given their consent for publication, but their identities will remain anonymous.

Competing interests

Both authors have no competing interests.

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