

Review

# Assessing the awareness level, knowledge, and attitudes of the university community for sustainable development in Higher Educational Institutions in India—A review paper

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## CITATION

Vikram S, Tiwari M. (2024).  
Assessing the awareness level,  
knowledge, and attitudes of the  
university community for sustainable  
development in Higher Educational  
Institutions in India—A review paper.  
*Journal of Infrastructure, Policy and  
Development*. 8(12): 9329.  
<https://doi.org/10.24294/jipd.v8i12.9329>

## ARTICLE INFO

Received: 26 September 2024  
Accepted: 21 October 2024  
Available online: 4 November 2024

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**Abstract: Background:** Sustainability plays a crucial role in the development of the education sector. It is analyzed that higher education institutions (HEIs) continuously working on the adoption of sustainable practices for carrying out business operations in the long run. Agenda 2030 is a comprehensive, multifaceted strategy that serve as an important framework for the comparison to uphold different principles. Additionally, the UN 2030 Agenda concerning sustainable development is introduced as global idea of balanced development. The 2030 Agenda and SDGs representing the program related to global development programs. Higher education institutions also working on the adoption of sustainable development perspective and the issues linked with them. **Aim:** The main aim of the study is to determine the level of knowledge, awareness, and attitude of the university community for achieving sustainability in HEIs. **Policy Implementation:** Adopting sustainable behavior is encouraged when policies are implemented well. Universities have the authority to develop and implement sustainability policies that set guidelines and requirements. Topics like waste reduction, environmentally friendly transportation, and environmentally friendly buying may be covered by the sustainability policies. Acting sustainably is encouraged among university community members through the implementation of sustainability policies. **Conclusion:** Findings stated efforts across sectors for the promotion of awareness and alignment with the 2030 Agenda consider a comprehensive strategy for addressing humanity, nature, and human rights. In higher education institutions, the role of education emerges as pivotal, developing green practices, development of campuses, and attracting students globally. In HEIs green practices are carried out for the development of the campus and activities in the future terms. Universities also supported in the adoption of sustainability in working education institutes international students are also attracted to them. It is identified that educators are playing an important role in achieving sustainability aspects in the education sector.

**Keywords:** sustainability; sustainable development; awareness; the university community; higher education institutions; attitude

## 1. Introduction

The concept of sustainable development is gaining more importance over time. The term sustainable development (SD) is mainly associated with meeting the needs of the present, without compromising the ability of future generations to meet own needs (Abdou et al., 2020). However, there are more than 70 definitions of SD are currently circulating. The definition provided by Brundtland Commission's Report stated as in order to meet the needs of the present development must not compromise the ability to future generations to meet their own needs (United Nations, 1987). It has been evaluated that HEIs play a crucial role in fulfilling the responsibility for the

education of today's students and leaders. In order to achieve performance within the institutions an efficient role has to be played by HEIs which is essential for gaining knowledge about the stakeholders. Awareness regarding environmental problems, intellectuals, academics, and policymakers around the globe working on identifying solutions (Sousa et al., 2021).

Further, a survey was conducted regarding the understanding of sustainable development among undergraduate engineering students (Al-Naqbi and Alshannag, 2018). The survey results showed that students globally have less knowledge of sustainable development which is depicted as a gap in knowledge among students. It has been determined that various sectors in the UAE are working towards the adoption of sustainable development for creating awareness among people related to this (Al-Naqbi and Alshannag, 2018). Apart from this, an action plan has been developed for the welfare of people and the earth is known as the 2030 Agenda. The agenda promotes world peace, eradicates poverty in all of its forms and dimensions, and addresses the world's most pressing issues in the current social, economical, and political environment. Additionally, it is a crucial component of sustainable development (Firoiu et al., 2019).

The 2030 Agenda is a comprehensive, multifaceted strategy that serves as a crucial framework for comparison to uphold the principles of humanity, nature, and human rights. The importance of sustainable development has been seen in the results and society's progress. Here, communication is considered a unique aspect as sustainability communication is an important step that helps stimulate commitment and develop the interest of the targeted audience (Firoiu et al., 2019). In addition, the UN 2030 Agenda concerning sustainable development has been launched based on 17 SDGs involving 169 indicators reflecting the global situation. Any country faces a tremendous level of complexity when sustainable development is introduced as a global idea of balanced development. This agenda is an approach involving the average performance of EU member states concerning sustainable development indicators (Firoiu et al., 2019).

However, the 2030 Agenda and SDGs represent the program related to global development programs. It is observed that education has widened up applications and relevance of sustainable goals. It has been evaluated that first-year students studying in Italian universities have good knowledge of SDGs and the 2030 Agenda (Fiorani and Di, 2022). They are also considered an important context for executing Education for Sustainable Development which helps in empowering teachers as well as students (Smaniotto et al., 2020). The Agenda 2030 for sustainable development contributed towards achieving the vision concerning the global human development approach which indicates mutual and complementary reinforcement for the future terms. It also helps in providing a perspective linked with human development and the basis for Millennium which invariably influences Agenda 2030 (Agbedahin, 2019).

Furthermore, higher education institutions also working on the adoption of a sustainable development perspective and the issues associated with it. They have been working since the adoption of the 17 SDGs and the 2030 Agenda (Guinetwork, 2030). It has been determined that in 17 September 2015 sustainable development goals are linked with targets of 169 that have been demonstrated Agenda 2030 ambitious for sustainable development. It is observed that awareness among the public regarding

Agenda 2030 and SDGs is considered to be modest and mainly at the levels of the community instead of actions that have been taken into account at entire levels (Bernat, 2019). In addition to this, rising awareness among the education sector or universities is important not only for the execution but for the development of innovation in the future with aim of achieving sustainable development goals (Manolis and Manoli, 2021).

It has been evaluated that 2015 was considered a significant year in many aspects for concluding agreements by defining important development globally with the aim of framing agendas. After 2015 various important agendas have been developed for the execution of sustainable development goals in higher education institutions. The United Nations Educational, Scientific and Cultural Organization (UNESCO) and the new agenda from the United Nations Habitat. Involvement of sustainability in HEIs helps provide opportunities and the development of practices with a further aim of creating political and administrative inputs (Nhamo and Mjimba, 2020). On the other side, the 2030 Agenda also has certain criticism which represents in imposing a fragmented perspective of the world. It has been determined that the 2030 Agenda also has some critics that have been imposed with involving fragmented view of the world. This agenda involves developing aspects linked with leaving no one behind and higher education institutions' role in proposing strategies and social policies for considering all areas (Binagwaho et al., 2022). The main objective of the paper aims to provide knowledge linked to the awareness and attitudes of the university regarding the development of sustainability in HEIs.

## **2. Sustainability and social responsibility of HEIs**

Higher education plays a crucial role in leading attainment towards the development of sustainability. HEIs also constitute revealing universities and have been at the forefront of the creation of paradigms. It is important to gain knowledge regarding sustainability and its importance in the education sector. Green practices have been carried out on the campus to deliver better aspects and the adoption of sustainability practices. With this regard, ISCN sustainable campus excellence awards have been captured, and a diversity of responses has been carried out for involving challenging aspects in this field. The education sector working on developing eco-campus which further aims to analyze the efforts (Sibbel, 2009). In the education sector, digital transformation involves sustainable aspects to adapt to changes that have been done through involving new technologies. Over the past decades, universities experiencing changes that have been developed through social trends in the era of digitalization. It involves adjustments in all sectors from considering production to banking activities. It has been evaluated that education is considered a basis for developing the lives of people and carrying out sustainable development practices in the global context (Abad-Segura et al., 2020).

Furthermore, universities emphasize the adoption of sustainability by working with faculty, students, and staff. They also play a crucial role in helping out ways for the development of the world and delivering knowledge and innovation in the community. It can be considered engine in the transformation of society. Higher education institutions play a significant role in shaping the way for the world by

tracking issues and further reflecting this in achieving sustainable development goals (Purcell et al., 2019). In the twentieth century, sustainability is considered the biggest issue in society. It has been determined that HEIs have the vision, power, and knowledge to lead the transition and involve changes in the new paradigm (Ramísio et al., 2019). Values linked with sustainability need to be involved in higher education institutions for practicing activities and developing missions. It is observed that HEIs constitute an innovation hub for learning and teaching along with transferring knowledge (Lee and Mirza, 2021).

It has been evaluated that there has been a rapid rise in the number of international students in higher education institutions because of the adoption of sustainability. It is considered a growing aspect of the current market scenario and along with this focuses on the creation of practices that further aim to achieve success. Universities or HEIs continuously focus on adopting sustainable aspects for providing better campuses to students studying in the university it has been determined that universities also have a crucial role in addressing issues associated with a change in the climate. They play a major role in searching for solutions to problems of the environment and developing sustainability aspects (Shields, 2019). It has been identified that higher education institutions are shaped by global sustainability by taking into consideration different agendas associated with sustainable development. They are also focusing on equipping the next generation to develop sustainability leaders by acknowledging and creating essential skills. The transformation has been required in higher education for attracting students and increase awareness among students and staff regarding sustainability on campus (Franco et al., 2019).

It has been determined that sustainable development is an important area of focus for leaders, universities, governments, and businesses. Focusing on the Millennium development goals that were set in the year 2000 involving 17 SDGs considered by 193 UN member states in September 2015, to reduce poverty, develop prosperity by 2030, and protect the planet. The agenda was expanded for involving issues linked to sustainable consumption, innovation, the importance of peace and justice, and change in climate along with involving high levels of development. It has been evaluated that promoting quality education is considered a critical aspect of enhancing the lives of people and catering to sustainable development (Annan-Diab and Molinari, 2017). Sustainable development goals are mainly developed with specific targets that emphasize creating sustainability in higher education. It is observed some of the disciplines encouraged having discussions regarding sustainable development in different fields by contributing awareness among students to motivate them to play a crucial role in delivering set SDGs (Ruiz-Mallén and Heras, 2020). Future leaders will need to understand the complicated and divisive problems surrounding sustainable development as a result of growing globalization (Annan-Diab and Molinari, 2017).

The Sustainable Development Goals (SDGs) of the UN 2030 agenda place a strong emphasis on education as stated in Goal 4 and foresee a future of inclusive equity, justice, and prosperity within environmental constraints. With sustainability listed as a goal for education in objective 4.7, education is acknowledged as a means of accomplishing the remaining Goals. It is challenging to connect the SDGs to educational learning outcomes because of the interdependence of the SDGs and the complexity of sustainability as a concept (Kioupi and Voulvoulis, 2019). It is observed

that sustainable development in education plays an important role in achieving perspective and bringing aspects to the future (Kopnina, 2020). It is a dynamic concept that supports incorporating vision and seeking to empower students of all ages to take responsibility for the creation of a sustainable future. It also facilitates acquiring skills, attitudes, knowledge, and values that help in achieving a sustainable future. It supports providing information, knowledge, and facts that help in dealing with ever-changing situations and issues associated with the environment (Agbedahin, 2019).

Furthermore, universities also practiced social responsibility by emphasizing reducing the impact of activities on the environment. They focus on fulfilling social commitments linked with the community. Social responsibility in universities becoming a different field for enhancing CSR principles. It has been determined that universities working on achieving social responsibility and ethical behavior. Students in the universities and employees in business did not have a common perception regarding social responsibility and the adoption of CSR activities. Universities' mission is to provide better learning to students by use of technology and adoption of unique ways considering green aspects towards achieving social responsibility (Kouatli, 2019).

It has been determined that in recent years the concept of social responsibility has gained attention from universities. This helps in addressing issues that arise in society. It is observed taking into account CSR activities supports gaining the attention of students in higher education institutions (Binsawad, 2020). CSR activities are promoted as it provides benefits to external as well as internal stakeholders involving students, staff, communities, and academics. With the help of CSR activities universities tend to adopt sustainable development and work towards meeting social responsibility (Rahman et al., 2019). The status of social responsibility in universities has been determined as universities focus on providing an environment for students which supports providing better education to students and developing skills and knowledge of students. In addition to this, they also deliver study programs in accordance by providing descriptions in publications of the university along with web pages and informing students regarding major changes in the courses. In the present competitive world, universities also facilitate in adopting effective strategies for providing learning to students. They emphasize communicating the requirements of the study programs which helps in providing better sources for study (Binsawad, 2020).

It has been evaluated that universities provide teaching aspects to students by adopting delivery modes and further help in considering aspects in the long run. This also involves different learning opportunities that have been provided by the staff of the university. It also constitutes building practices and similarly aims to experience and provide better education to students. They also emphasize providing feedback to students which helps in improve themselves and develop better careers (Rahman et al., 2019). Social responsibility performed by universities also provides benefits and helps in achieving objectives linked with sustainability.

Universities also have a responsibility toward the environment by reducing negative influences on the environment and involving responsible behavior for taking into consideration green practices. They emphasize building green practices and along with this support carrying out activities in an effective manner. Universities need to

emphasize developing energies and support in having a better procurement process. Different issues arise in the creation of responsible approaches for the environment. It also deals with carrying out activities efficiently and further aims for the development of practices in the long run (Lyon and Maxwell, 2019). In addition to this, universities also take into account the ethical responsibility approach which is concerned with maintaining ethics and fairness in the university. They also emphasize practicing ethical behavior concerning the fair treatment of stakeholders along with involving investors, employees, suppliers, and customers. It has been evaluated that ethical responsibility is also practiced within universities for involving ethics and carrying out activities efficiently (Slade and Tait, 2019).

The research conducted by Sterling (2021) focuses on bringing transformation in the education and educational system to receive increasing attention in the growing debate on the role of education in securing the future. It is indicated that UNESCO has set up the International Commission on the Future of Education (ICFE) to rethink education in a world of developing complexity, inequalities, and uncertainty. It is determined that Education for Sustainable Development (ESD) reflects the need and urgency for bringing transformative change in the educational systems if the sustainable development goals (SDGs) are met. It is evaluated that higher education reflects the Western intellectual legacy from where it came which is also rooted in the memes of education, reductionism, and objectivism affecting the purpose as well as educational discourse.

### **3. Sustainability awareness within the university community**

Sustainability awareness refers to understanding the economic, environmental, and social issues and knowledge of a person that impacts the world's future generations. Sustainable behavior is the actions and conducts that meet all the expectations and requirements of the present generation without compromising and delicate the capability of future generations to meet the owners' needs (Mori et al., 2019). Universities are considered both producers and disseminators of needed climate knowledge to the several institutes, the cultural and social change are needed for the mitigation and climate change adaptation to occur. Several universities are trying to spread awareness and follow sustainable behavior practices. Also, the universities consist of the opportunities and chances that will help them to lead other students, like how they follow sustainable practices and conserve resources for future generations as well. This specific paper explores the things that have to be taken care of, this study has aimed and focused on examining the efficiency and effectiveness of sustainability education on sustainable behavior and awareness of the students of the university (Nurse et al., 2019).

On the other side, study carried out by Kinoshita et al. (2019) highlighted the effectiveness of incorporating the sustainability concept into sustainability education program. The research provide knowledge related to three hypothetical scenarios related to the land-use-patterns with predicted values of sustainability. The research was carried out through questionnaire surveys before and after the workshops. The results from ordered probit models that were based on participants responses to 68 items of sustainability related perspectives and attitudes towards the participation in

the workshops increasing participants concerns related to environment and their intention to pro-sustainability actions. The results showed that sustainability teaching program using sustainability concept is effective in higher education.

Sustainability practices depend on environmental quality and environmental quality depends on patterns of human behavior. It entails how much of the carbon footprint an individual contributes. The students studying in universities are considered young people, and society expects such students to take care of the community as well as future generations. In universities, sustainability is all about fulfilling all the needs of society and ensuring the balance between social well-being, environmental care, and economic growth. In the university community, sustainability is about the three dynamics that is equity, ecology, and economy (Shafiei and Maleksaeidi, 2020). University and humanity face a lot of sustainability challenges, some of the challenges inequality, inequality is the major challenge to be taken into consideration, poverty, access to education and healthcare are other challenges that the students of universities face, this is because all students are not that much capable to access the education from universities or good institute. So, for spreading awareness about sustainable practices all need to have a bit of knowledge about sustainable behavior. And food security is also a challenge. All these are major issues for the global population (Leal et al., 2019).

The universities must have to increase the quality of education as this helps students to a better understanding of things. Also, for universities sustainability is considered the main goal and focus of education (Kioupi and Voulvoulis, 2019). Several universities and institutes are trying to transform sustainability science to generate and create a positive environment and social change globally (Shrivastava et al., 2020). Also, some universities are spreading sustainable awareness and the universities play a significant crucial part in promoting the practices of sustainability, universities used to implement several programs and initiatives that completely aim to empower students as well as the young generation, educate them and engage them to adopt the sustainable behaviors and practices (Ebrahim et al., 2022).

The current scenario of sustainable awareness in the education sector and universities is that several institutes are following sustainability practices, they used to provide education regarding sustainability education, by offering certain workshops, educational programs, and courses related to sustainable behavior that mainly focus on sustainability practices and all these educational stuff raises the understanding and awareness of the significance of sustainability and even motivates students to follow and adopt the sustainable behavior (Sá and Serpa, 2020). Another rising significance in the education sector is sustainable infrastructure, it means implementing sustainable infrastructure and building design that mainly incorporates or subsumes green technologies such technologies are like energy-efficient heating and lighting systems, environmentally or eco-friendly systems, and conservation systems. All these factors can serve and provide a tangible demonstration and validation of the university's true commitment to sustainability and motivate staff and students to adopt practices of sustainable behaviors. It also focuses on the conservation of resources like renewable energy (Majid, 2020).

Higher education institutions are responsible for promoting sustainability and incorporating sustainable practices into their daily operations and courses because of

the considerable impact they have on the environment, the economy, and society (Boca and Saraçlı, 2019; Martins et al., 2019). These programs aid in fostering a culture of sustainability and increasing awareness among teachers, staff, and students. Universities can host conferences, workshops, and other gatherings to promote sustainability and include faculty, staff, and students in related activities in outreach as well as participation. By carrying out research and creating creative responses to environmental problems, universities can also support sustainability via research as well as innovation. It is also said that sustainable behavior inside higher educational institutions as well as sustainability awareness among the universities are closely linked (Yong et al., 2020).

When institutions of higher learning employ sustainable practices and projects, they increase public understanding of sustainability's significance and foster a culture of environmental responsibility. Members of the university community may be encouraged and motivated to adopt sustainable practices as a result (Norström et al., 2020). An extensive recycling program, for instance, could help a university spread the word about the value of resource conservation and waste reduction. A recycling program encourage people to adopt eco-friendly transportation by providing environmental awareness and enhance sense of responsibility towards sustainability. Recycling programs mainly highlight the relevance of reduction of waste and conserving natural resources. This creates awareness and develop eco-friendly behaviors including sustainable transportation such as cycling, walking and public transport. When people participated in recycling, they become more conscious of their overall environmental impact. This can lead to them adopting other green habits including reduction in the carbon footprint with the help of eco-friendly transport. Recycling initiatives also created culture of environmental stewardship within communities. People see others adopting eco-friendly practices get motivated towards adopting greener transportation. Additionally, the university community may be more inclined to support and engage in sustainability efforts and programs as they become more knowledgeable about sustainability challenges and the effects of their activities (Ardoin et al., 2020). This could support the development of a sustainable culture at the university, as well as raise awareness of the issue and encourage sustainable conduct. In conclusion, sustainable conduct employed by institutions of higher learning and sustainability awareness within the student body are related to and reinforce one another. Higher education institutions can be essential in fostering a sustainable future by boosting awareness and sustainable conduct (Pham et al., 2019).

The specific aspects of a recycling program that would help promote eco-friendly transportation are promotion of recycled materials in eco-friendly transport, recycling infrastructure for sustainable vehicles, eco-incentives for users, campaigns for public awareness, integrating public transport, and partnership with the transport industry. It is determined that promoting the recycling vehicle component such as metals, tyres, and plastics used in the manufacturing of eco-friendly vehicles.

Universities can contribute to the development of sustainable culture and support sustainable behavior among their faculty, staff, and students by increasing community understanding of sustainability issues (Fawehinmi et al., 2020). This may result in a more environmentally friendly school and society. Sustainable conduct is defined as acts and routines that respect the environment and work to lessen the effects of human



activity on it. In conclusion, universities are essential for advancing sustainability. By increasing understanding and fostering sustainable behavior, universities can have a good effect on the environment, the economy, and society. Higher education institutions can lessen their environmental effect, save natural resources, and help create a more sustainable future by adopting sustainable behavior. Also, the university community is crucial in raising awareness of sustainability issues and encouraging sustainable conduct (Chambers et al., 2021).

Faculty involvement through faculty can act as role models for sustainable conduct and include sustainability in their research and teaching. Engagement of employees can support sustainability efforts by incorporating environmentally friendly practices into their daily work activities and by participating in sustainability initiatives (Famiola and Wulansari, 2020). Universities can work with their neighborhood to spread sustainability and environmental awareness as well as to coordinate sustainability projects. Members of the university community can adopt simple lifestyle modifications to support sustainability, such as consuming less energy, using reusable items, and producing less waste. Also, talking about the four principles of sustainability are defined as human sustainability, social sustainability, environmental sustainability as well as economic sustainability in any higher educational institutes. Following up the university community thing as well as sustainability awareness this aims to maintain as well as improve all the capital regarding this particular factor. This is also crucial to get knowledge of the current situation which is made with the help of permanent choices on the topic of suitability awareness inside any higher educational institutes (Caniglia et al., 2021).

Universities may set an example for the community and get them involved in environmental efforts. Implementing green campus activities, encouraging sustainable behavior, and motivating students, employees, and professors to participate in sustainability projects are a few examples of how to do this. Tracking and measuring sustainability performance and effect can help universities gauge their success and pinpoint development opportunities. This can involve monitoring efforts to reduce waste and recycle materials, measuring the use of energy and other resources, and assessing the success of sustainability programs (Pizzi et al., 2020). Through a variety of platforms, including newsletters, websites, social media, and public events, universities can spread the word about sustainability and environmental challenges.

The phrase “sustainability knowledge and sustainable behavior of the university community” describes how students, faculty, and staff understand and support sustainable practices in a university environment. This entails fostering environmentally friendly behaviors across a range of sectors, including waste management, energy use, food systems, transportation, and campus operations. A culture of sustainability that not only improves the environment but also fosters social and economic well-being is what is intended to be created through fostering sustainability knowledge and conduct in the university community (Shafiei and Maleksaeidi, 2020).

Education about sustainability is essential for encouraging pupils to act sustainably. Universities can assist students in developing knowledge of the environmental, social, and economic implications of their actions as well as the significance of sustainable practices by incorporating sustainability into the

curriculum and offering chances for experiential learning (Mian et al., 2020).

Strategies for waste reduction and recycling are essential for promoting sustainability in academic environments. A waste management strategy that incorporates source reduction, reuse, and recycling tactics as well as suitable infrastructure for trash separation and collection can be developed by universities. While rules can be enacted to reduce waste and encourage the use of reusable items, waste audits can assist identify areas for improvement and tracking progress. Universities can greatly lessen their environmental effect and support a sustainable culture by recycling more and reducing waste. Furthermore, by lowering disposal costs and minimizing the acquisition of disposable things, waste reduction initiatives can help institutions save money. They can also assist universities in achieving their sustainability objectives and demonstrating to stakeholders their dedication to sustainability (Lederer et al., 2020).

Promoting sustainability in academic environments requires sustainable food systems. Food systems cover all facets of food production, from farming techniques to food consumption and distribution. Food production and consumption have substantial effects on the environment, society, and economy, making it a crucial area for supporting sustainable practices. The promotion of sustainable food options in university dining halls and restaurants can be quite important. Universities may dramatically lessen their environmental impact and support sustainable food systems by providing meal options made from sustainably produced ingredients, cutting down on food waste, and encouraging plant-based diets. Local, organic, fair-trade, and plant-based alternatives to meat and dairy products are all examples of sustainable food options. Universities should also cut down on portion sizes, develop composting and food recovery programs, and encourage teachers, staff, and students to take only what they can eat (Wezel et al., 2020).

On university campuses, community gardens and sustainable agricultural programs can help advance sustainable food systems. Community gardens can encourage a culture of sustainability and environmental responsibility by offering chances for experiential learning, group building, and access to fresh, locally grown fruit. Agroforestry, permaculture, and regenerative agriculture are examples of sustainable agriculture efforts that can promote sustainable agricultural methods while also opening up chances for research and innovation. Generally, improving sustainability in academic settings requires a focus on sustainable food systems. Universities may lessen their environmental footprint and foster a culture of sustainability among their community members by encouraging sustainable food options in their dining halls and restaurants and by sponsoring community gardens and sustainable agricultural initiatives.

Promoting sustainability on college campuses requires using sustainable energy. Given their high energy usage and influence in their surrounding communities, universities have a big part to play in the switch to renewable energy sources. Universities may dramatically lower their carbon footprint and support sustainable energy systems by incorporating renewable energy sources including solar, wind, and geothermal energy.

Universities can encourage energy saving and efficiency in addition to utilizing renewable energy sources. Reducing the amount of lighting and heating you use,

promoting environmentally friendly transportation, and utilizing energy-efficient appliances and equipment are all examples of energy-saving methods. These actions can assist colleges in lowering their energy usage and environmental effects while also lowering their energy costs. It's crucial to take into account how university energy strategies may affect the environment and nearby people. Universities may have a big impact on the neighborhoods around them, and energy policies that put sustainability first can benefit communities outside of campuses. Universities, for instance, can work with nearby communities to establish renewable energy initiatives, like community solar gardens, that are advantageous to both the university and the communities around it. Universities can also show their dedication to sustainability and encourage others to take action by developing sustainable energy policy (Muqet et al., 2022).

Promoting sustainability on college campuses requires collaboration with the community and community engagement. Universities can support sustainability programs that benefit the campus and the larger community by working with neighborhood organizations. Universities can fulfill their sustainability goals by forming alliances with organizations that are dedicated to sustainability, which can offer significant resources and knowledge (Ojikutu et al., 2021). Also, by providing outreach and teaching programs that support sustainable behaviors, colleges can play a critical role in promoting sustainability in the larger community. Universities may have a big impact on achieving a more sustainable future by forming alliances with regional groups and advocating sustainability in the larger society.

Philosophy and the humanities' status in society, as well as the nature of interdisciplinary research, are reexamined in sustainable knowledge. It has been identified that sustainability is considered key to achieving a better future. As businesses are dependent on resources for carrying out activities and survival similarly educational institutions also require resources for running their activities in the competitive world. It is determined sustainability is not only concerned with environmentally friendly aspects as it supports the development of skills involving communication and management (Seto-Pamies and Papaioikonomou, 2020). It has been evaluated that sustainability in higher education supports changing the future of the education sector. It also helps in providing support to authorities by having appropriate laws and policies. Sustainable development is also responsible for taking action by communities and individuals and above all this deep compassion has been put forward for alleviating the global environmental crisis (Zuin et al., 2021).

Young people who are environmentally conscious and empowered could be the biggest agents of change for the long-term preservation and management of the environment. It has been identified that environmental education which promotes these types of changes will support youth in developing their voice towards issues in the environment. Sustainability knowledge is important for educational institutions to carry out activities smoothly and make campuses green and free from harmful activities (Erhabor and Don, 2016). Apart from this, higher education institutes are continuously working on bringing transformation in the sector by developing a more sustainable future. They emphasize on creation of knowledge among students and faculties which helps in the development of sustainability aspects. Sustainability can be achieved through knowledge creation, carrying out research, education, and outreach which support the leading the path towards sustainable development.

It has been evaluated that in the 1970s environmental education gained greater attention in the academic realm to focus on the importance of the environment and creating awareness among people regarding sustainable development. A letter has been issued from Belgrade stating that education is the main means for addressing the challenges in the environment. It has been stated by the Belgrade charter that environmental education goals are formulated for developing knowledge, awareness, skills, and attitude and their participation in the activities. Education programs in HEIs are concerned with the environment which ultimately supports the development of sustainability (Berchin et al., 2021). It has been evaluated that higher education institutions are facing issues with greater responsibility after committing and adopting the Agenda 2030 for sustainable development. HEIs guide different stakeholders and also execute this agenda and goals in the institutions. They carry out core activities including providing education, carrying out research, outreach operations, and having a significant influence on environmental, economic, and societal aspects. The role of higher education institutions and their influence on sustainability has been recognized and issues have also been addressed by them in developing transition concerning sustainability (Omazic and Zunk, 2021).

Sustainability knowledge is considered an important aspect of the education sector as it helps in improving environmental quality for achieving success. To provide knowledge to students, it is necessary to bring awareness and create a positive attitude toward the environment. Students also emphasize adopting practices that help protect the environment from harmful activities. In some cases, students know sustainability but the practices that have been carried out in institutions are at a moderate level. It has been determined that female students are having a higher attitude toward the environment compared with male students (Hassan et al., 2011). It has been determined sustainable development goals (SDGs) and Agenda 2030 further represent programs associated with global development. With the help of education, HEIs can widen acknowledgment of their applications and further support in bringing aspects in the future. Carrying out surveys in higher education institutions supports in the development of knowledge and awareness among students regarding the environment and the adoption of the sustainability approach. To achieve sustainable goals different perspectives have been developed for achieving scope and further carrying out activities in the future terms. Different perspectives have been considered with the aim of achieving sustainability and meeting the goals of higher education institutions (Smaniotto et al., 2020).

It has been determined that there has been a significant rise in the adoption of sustainable development practices in higher education institutions. Students and faculties working in universities are more conscious about taking into account sustainable practices for creating a better campus. On the other side, some students did not know sustainable practices which created a gap in their knowledge and somewhere influenced institutional activities. Universities in Turkey carried out surveys to examine knowledge among students regarding sustainable development (Al-Naqbi and Alshannag, 2018). Moreover, it has been evaluated that integrating environmental education in universities helps in creating awareness among students and faculties for adopting sustainability. Based on the data collected from the world bank depicted that the population of humans increased in the 20th century. This creates a problem in

worldwide. Deforestation and changes in climate globally directly or indirectly influence the environment and have increasingly negative effects on living things including environmental and health problems. Educational activities in universities also intend to enhance awareness among students for the protection of the environment and adopting sustainability practices. The main aim behind involving education linked with the environment is the rising aspect in the education sector for achieving sustainability (Sukma et al., 2020).

#### **4. Attitude to sustainability and sustainable behavior of the university community**

In this report, attitude to sustainability and sustainable behavior of the university community were discussed. Many facets of society, including education, are paying increasingly close attention to the idea of sustainability. The promotion of sustainability and the development of a sustainable future are expected to be major responsibilities of higher education institutions (HEIs). A crucial step in accomplishing HEIs' sustainability goals is for the university community to adopt a sustainable mindset and conduct (Boca and Saraçlı, 2019). This paper gives a broad overview of the university community's attitude towards sustainability, as well as the consequences of that attitude and behavior for achieving sustainability goals. In recent years, organizations, industries, and governments have paid a lot of attention to the idea of sustainability, realizing how crucial it is to advance sustainability. Because they are tasked with training the next generation of leaders, carrying out sustainability research, and advocating sustainable practices, higher education institutions (HEIs) have a crucial role to play in advancing sustainability. The university community, which consists of students, staff, faculty, and the administration, must adopt a sustainability attitude and promote sustainable behavior if HEIs are to meet their sustainability goals (Ruiz-Mallén and Heras, 2020).

The study investigates the current situation of the university community's attitudes and behaviors toward sustainability, the significance of these attitudes and behaviors for accomplishing sustainability goals, and the methods used by the university community to foster these attitudes and behaviors. The paper identifies the major forces that influence sustainable behavior, provides examples of sustainable behavior practices in HEIs, and discusses the difficulties HEIs have in encouraging sustainable behavior and attitudes (Lozano et al., 2019). Strategies for encouraging sustainable behavior in HEIs and advancing sustainability goals are provided in the report's conclusion. HEIs can aid in the accomplishment of sustainability goals and take the lead in promoting sustainability in their local and international communities by encouraging a sustainability mindset and behavior in the university community.

The sustainability attitude refers to the beliefs, values, and principles that shape individuals' perceptions of environmental, social, and economic sustainability. A person's sense of environmental, social, and economic sustainability is shaped by their ideas, values, and principles, which are referred to as their sustainability attitude. It is essential to encourage sustainable conduct among university students (Cebrián et al., 2020). The measures that people or groups take to limit adverse effects on the environment, society, and economy are referred to as sustainable behavior. It includes

a variety of initiatives, such as promoting social justice, resource conservation, and waste reduction. Also, the attitude toward sustainability and sustainable behavior of the university community is the general attitude and behavior of people in a university setting toward sustainability. This involves people's attitudes, principles, and actions toward social, economic, and environmental sustainability. This also involves a recognition of the interconnectedness of the environment, society, and the economy and a commitment to preserving and enhancing these systems for future generations. This involves a willingness to prioritize long-term sustainability over short-term gains and to make decisions that consider the potential impact on the environment and society. On the other side, sustainable behavior refers to the actions that people take to promote sustainability. This could entail actions like conserving energy, composting food waste, using public transit, and promoting sustainable practices and goods. Due to their frequent prominence in their communities and potential to serve as role models for others, students, faculty, and staff at universities can play a significant role in promoting sustainability as a core value. Universities also have a big impact on the environment, and they can do a lot to slow down environmental deterioration and encourage a more sustainable future by focusing on sustainability (Longoria et al., 2021).

The role of HEIs in promoting sustainability is critical, given the potential impact of universities on the environment and society. A sustainability attitude and sustainable behavior are essential in achieving the sustainability goals set by HEIs. Developing a sustainability attitude in the university community is a prerequisite for promoting sustainable behavior, leading to the successful accomplishment of sustainability objectives (Zhu et al., 2022).

HEIs have a crucial role in developing a sustainability attitude among the university community. The institutional culture, values, and guiding principles that influence people's conduct are only a few examples of the many aspects that make up a sustainable attitude. Prioritizing sustainability at HEIs increases the likelihood that the university population will adopt a sustainable mindset. Attitude change with sustainability is all about changing one's feelings towards several issues related to surroundings or environment (Hamon et al., 2020).

In the existing scenario, HEIs worldwide have recognized the importance of promoting sustainability and have taken significant steps to promote sustainable behavior and develop a positive sustainability attitude in the university community. The sustainability plans and policies that HEIs have developed encourage sustainable actions and behaviors. And the current scenario or situation of HEIs' sustainability attitudes varies across various areas and nations. With numerous institutions implementing sustainable practices including renewable energy, green buildings, and sustainable transportation, many HEIs in North America and Europe have made tremendous headway in encouraging a sustainability mentality and sustainable behavior. In contrast, HEIs in developing nations have considerable obstacles when promoting sustainability, such as a lack of financing and resources, poor infrastructure, and a low level of public awareness. There is a rising understanding of the significance of fostering sustainability in higher education, notwithstanding the heterogeneity in the current scenario of HEIs' sustainability attitudes. The growing number of HEIs that have created sustainability committees and offices implemented sustainability

plans and policies, and incorporated sustainability into their curricula and research initiatives reflect this acknowledgment. So, simply means HEIs are essential in advancing sustainability outside of their campuses. To promote sustainability and advance sustainability goals, many HEIs work in partnership with outside parties like enterprises, governments, and community organizations. These partnerships can encourage sustainable behavior and support global and local sustainability goals (Rutting et al., 2022).

Sustainability mindset and sustainable behavior connection the development of a sustainability attitude is a requirement for encouraging sustainable behavior in the university community because the two concepts of sustainability attitude and behavior are closely related. A proactive approach to sustainability is encouraged by a positive attitude toward sustainability, which results in sustainable behavior. The sustainability attitude of the university community has significant implications for achieving sustainability objectives in HEIs. The sustainability attitude refers to the values, beliefs, and perceptions of individuals regarding sustainability issues and their willingness to take action to promote sustainability. A positive sustainability attitude is essential for promoting sustainable behavior and achieving sustainability objectives in HEIs (Al-Nuaimi and Al-Ghamd, 2022). There are many ways to see how a sustainable mindset affects HEIs' ability to achieve their sustainability goals. First, students, staff, and professors can behave sustainably if they have a pro-sustainability attitude. This can involve implementing sustainable behaviors like cutting back on energy use, using the bus or carpooling, and decreasing waste. These procedures can help advance sustainability goals and lessen HEIs' negative effects on the environment. Second, HEIs may embrace sustainable policies and practices if they have a pro-sustainability mindset. Individuals' attitudes toward sustainability can have an impact on the administration's decisions and the creation of sustainability policies. More support for sustainability policies and practices can result from the university community's good sustainability attitude, making it simpler for all (Fanea and Baber, 2022).

The university community can use a variety of strategies or approaches to developing a sustainable mindset and behavior. To raise awareness and improve understanding of sustainability challenges, one strategy is to design and put into practice sustainability policies and practices. Universities might also build programs and courses that focus on sustainability to educate students about its significance. Another strategy is to support sustainable behavior habits by providing the tools and infrastructure needed to do so. To raise awareness of sustainable behavior patterns among the university community, universities might also offer workshops, seminars, and events. The approaches followed by the university community for adopting a sustainable attitude and sustainable behavior are given below:

(1) Education and awareness

Initiatives to increase education and awareness are essential for encouraging the adoption of sustainable attitudes and behaviors. Universities can offer workshops and courses on sustainability to raise awareness among faculty, staff, and students. To give students information and comprehension of sustainability, the courses connected to it can be incorporated into the curriculum. It is possible to run awareness programs to encourage sustainable behavior among university students.

## (2) Policy implementation

Promoting the adoption of sustainable behavior requires effective policy implementation. Universities can create and put into effect sustainability policies that establish standards and regulations. The sustainability policies may include topics like waste minimization, sustainable transportation, and sustainable shopping. By putting sustainability policies into practice, the university community is encouraged to act sustainably.

## (3) Sustainable infrastructure

To encourage the adoption of sustainable behavior, sustainable infrastructure must be readily available. Universities can invest in environmentally friendly infrastructure, such as waste management programs, renewable energy sources, energy-efficient buildings, and sustainable transportation systems. The university community is encouraged to act sustainably through the presence of sustainable infrastructure (Argyroudis et al., 2022).

## (4) Community engagement

Initiatives to engage the community are essential for encouraging the adoption of sustainable behavior. University communities can participate in sustainability-related efforts like tree planting, rubbish cleanup campaigns, and sustainable transportation programs. The university community's participation in sustainability-related activities aids in fostering sustainable behavior and developing a sustainable culture.

The adoption of sustainable attitudes and behavior by the university community is essential for achieving sustainable development objectives. The sustainable behavior practiced by HEIs and its role in promoting sustainable development. The linking of sustainable attitudes and behavior among the university community is crucial for achieving sustainable development objectives. The adoption of sustainable attitudes and behavior by HEIs helps in reducing the environmental impact and promoting sustainable development. The associated aspects of sustainable attitudes and behavior, such as education and awareness, policy implementation, and community engagement, play a significant role in achieving sustainable development objectives. The linking of sustainable attitudes among the several different university communities for sustainable development and associated aspects are given below:

## (5) Sustainable attitudes and sustainable development

To meet the requirements of the present generation without menacing the ability of future generations to meet their own needs, sustainable development is pursued. To achieve sustainable development goals, the university community must adopt sustainable attitudes. Positive environmental attitudes, awareness of the need for sustainable development, and a desire to adopt sustainable behaviors are examples of sustainable attitudes. Through fostering a culture of sustainability, the university community's acceptance of sustainable attitudes aids in the promotion of sustainable development (Zhang et al., 2022).

## (6) Sustainable behavior and sustainable development

To achieve the goals of sustainable development, HEIs must practice sustainable conduct. Energy conservation, trash reduction, environmentally friendly transportation, and ethical shopping are all examples of sustainable conduct. The adoption of sustainable techniques and the availability of sustainable resources are prerequisites for the implementation of sustainable behavior. HEIs' use of sustainable



practices helps to lessen their negative effects on the environment and to advance sustainable development (Olsson et al., 2022).

The adoption of sustainable behavior is related to the development of sustainable attitudes among university students. A positive sustainable attitude is necessary for the adoption of sustainable conduct, and a positive sustainable attitude encourages sustainable behavior. The sustainable behavior of the university community aids in minimizing the negative effects on the environment and encouraging sustainable development. The university community's promotion of sustainable attitudes and behaviors contributes to the establishment of a sustainable culture and the accomplishment of sustainable development goals.

The accomplishment of sustainable development goals depends on several related factors of sustainable attitudes and behavior. These elements consist of community involvement, policy execution, and education and awareness. Initiatives for education and awareness that provide information on sustainability encourage the adoption of sustainable attitudes and behaviors. By establishing standards and regulations for sustainability, policy implementation encourages the adoption of sustainable behaviors and practices. By incorporating the campus community in sustainability-related activities, community engagement projects encourage the adoption of sustainable practices and behavior.

From the above report, it has been concluded that the adoption of a sustainable attitude and behavior by the university community is essential for achieving sustainable development objectives. The approaches for adopting a sustainable attitude and sustainable behavior include education and awareness, policy implementation, sustainable infrastructure, community engagement, and sustainable partnerships. The adoption of sustainable attitudes and behavior by the university community helps in promoting sustainable development and creating a culture of sustainability. The linking of sustainable attitude and development is discussed which entails positive sustainability and encourages the positive attitude of people toward sustainability. The accomplishment of sustainable development goals depends on many related factors of sustainable attitudes and behavior.

#### **4.1. Problem statement**

In the dynamic business environment, the importance of sustainable development in higher education institutions (HEIs) increasing continuously. Considering the current environmental, economic, and social concerns it is essential to evaluate the level of knowledge, attitude, and awareness toward sustainable development among university faculty. Sustainability is increasingly recognized as a global priority there is much known regarding how well this awareness is used in higher education. The issue that arises is that there is a need to evaluate the degree of sustainable development awareness among teachers, staff, and students in HEIs. Furthermore, it's equally important to comprehend people's levels of knowledge about sustainable practices and the complexity of their attitudes about incorporating sustainability into extracurricular and academic activities. The gap makes it difficult for HEIs to plan and carry out successful sustainable development activities. Institutions might find it difficult to foster a comprehensive approach to sustainability that affects the university

community without detailed knowledge of the present state of knowledge, attitude, and awareness. To promote a culture of sustainability within HEIs it is essential to address this issue as it sets the stage for making decisions wisely and effectively. Therefore, through evaluating gaps in knowledge, attitude, and awareness that exist presently within the university community this article provides interventions for the progress of sustainable development in higher education institutions.

#### **4.2. Whole institution approach**

The research carried out by Kohl et al. (2022) emphasizes on providing knowledge related to the approach of the whole institution toward sustainability. The study depicted that the approach of the whole institution is considered a promising tool. The term whole has been used since the 1980s to describe the holistic way of teaching which goes further than knowledge to include execution and practice. It is identified that transformative learning and training environments recognized the Whole Institution Approach (WIA) as the central concept in schools and other educational settings. In the present business environment, WIA is a way to move towards sustainability by involving teaching methodology and content affecting the process of learning further embedded by sustainability in institutions involving operations, creating interaction with stakeholders in the community, facilities, and capacity building. The promotion of whole institution approaches requires certain aspects including an institution-wide process that is organized in a manner that helps enable stakeholders, learners, teachers, and administrations. This also emphasizes involving technical and where possible and appropriate which also provides financial support to the institution. Moreover, the research also emphasizes providing knowledge of the whole institution's approach to considering leadership. It is analyzed that one of the aspects linked with WIA is leadership for successful transformation. Visionary leadership also determined as a key element of successful WIA by UNESCO. Leadership is essential for motivating and engaging followers along with involving high-potential students, graduates, and professional leaders in their fields.

On the other side, Holst (2023) discussed that framework was introduced concerning introduction related to WIAs and laid out within three chapters and core principles of WIAs involving organizational area of action along with underlying the culture within the organization. In the educational setting, sustainability is the fundamental paradigm as organizations that execute WIA tend to enhance the overall sustainability related to providing better learning experiences. WIAs also imply that particular attention is put on the processes of informal learning within businesses. With the help of WIAs, formal and informal learning is consistently connected within a sustainable organizational environment contributing to sustainable learning and practice. It is evaluated that WIAs also adopted the holistic approach to sustainability in organizational development.

Schopp et al. (2020) discussed the whole institution approach within the university with specific reference to achieving sustainability. It is determined that applying sustainable development (SD) helps in the creation of activities and carrying out activities in the long run. In the year 2014, UNESCO introduced WIA as a method for developing sustainability in the learning contexts because of all aspects focusing

and sustainability applied in all of them. Sustainable development in some institutions is highly associated with education and this approach is further applied to schools. The teaching process of SD mainly depends on strict lessons at school and broadened to the school as a whole institution. It is identified that HEIs function as a place where educators are providing education. Here, the specialized conception is associated with a whole-of-university approach. In transferring the whole school approach to HEIs the idea here is HEIs in all areas participated in applying SD. The institution approach taken into account at the university level equally focuses on education for SD.

### **4.3. Transformative learning**

The study conducted by Clifford and Montgomery (2015) stated that the transformative learning process requires the active participation of teachers as well as students. In transformative learning, critical reflection is considered a pathway. Critical reflection is a journey in which the personal and sociocultural readiness of students is essential. The research also indicated the role of learners and teachers which is central to the process of critical reflection and transformative learning is the role of the teacher. The transformative learning approaches ask teachers to take risks and challenge norms associated with cultural discipline to reflect on their work. Teachers must become transformative intellectuals and understand the pedagogy as a form of cultural production. This is the potential journey that affected the identities of teachers. The study indicated that the teacher-student relationship is considered vital to transformative learning. There are risks involved in exploring emotions and disrupting students' worldviews in the learning setting. Trust is required of their students and excellent facilitation skills.

Balsiger et al. (2017) provide knowledge related to transformative learning and education for achieving sustainable development. The research depicted a recent assessment of SD at Swiss universities by determining progress in transforming training environments. This can be explained by considering coaching and guidelines at the university to help teachers realize an understanding of science safely linked with SD. In higher professional education, training courses for educators promoted SD and transformative learning for different years. It is determined that Swiss higher education institutions are still far from enabling researchers and students to become an agent of change for SD. It is identified from the study that there can be no transformative learning without transformative teaching. Teachers take on the roles of coaches and also facilitate learning as well as co-learning among students.

## **5. Discussion**

The research carried out by Omisore et al. (2017) highlighted the aspects related to sustainable development goals (SDGs) in a university community in the region of Southern western Nigeria. The study's objective is to assess the awareness, knowledge and attitude towards the SDGs among students and the identification of gaps and recommending strategies to enhance education linked with SDG and engagement within the academic setting. In the study, cross-sectional survey was carried out and data collected through semi-structured questionnaire. It is analyzed that having positive attitude is associated with being an academic staff as well as belonging to the

middle age group.

On the other side, Jati et al. (2019) focuses on discussing about the awareness and knowledge of sustainable development goals among students studied in university. The main purpose is to building success of the Millennium Development Goals (MDGs) comprises of 17 goals linked to action to end poverty, protecting planet, and ensuring prosperity and peace. In the study, descriptive statistics and chi-square test was carried out. The results indicated that 89.5% students are aware and 62.5% of students have knowledge related to SDGs. The knowledge of students mainly affected through accessibility of information and students; awareness is related to not only accessibility of information but also gender.

Bashar (2022) stated that education played a central role in the development of sustainable goals. The main purpose of the study is to analyze the attitude and awareness of university teachers towards executing SDG in the public universities in Malaysia. In the research, quantitative method adopted and the samples of the study are university teachers who were selected by adopting convenience sampling method. The samples were gained through five public universities. In the research, statistical tools utilized in measuring the awareness and attitude of sustainable development goals. University teachers' differences in awareness and attitude in terms of the demographic profile which not statistically significant for gender, age, program, and education. Universities also taken teachers statistically differ from non-science major teachers.

As per the view of Peedikayil et al. (2023) the objective of the study is to analyze the attitudes of high school teachers towards education for sustainable development on the basis of gender, subject taught and type of institutional management in order to inform reforms in the education system for enhancing sustainable development. In the study, descriptive research was adopted using normative survey method for describing high school teachers' aspects on their attitude towards education for sustainable development (ESD). The results of the study indicated that high school teachers' attitude towards ESD was determined through an item-based assessment. It is observed that mean score of teacher's attitudes towards ESD do not significantly vary by type of institution and gender. The study was effective in offering clear perspective and sustainable pathway for teachers in the promotion of ESD.

On the contrary, Dasgupta and Pawar (2021) highlighted that the purpose of the study is to testing a model on pro-sustainability orientation among the students and further comparison has been done of the levels of sustainability among students studied in first and second year in higher education institutions. In the research, quantitative analysis was carried out through questionnaire which was distributed among MBA/PGDM students of higher education institutions in the state of Maharashtra. The findings depicted difference in the PSO among male and female students with respect to equity dimension and significant differences among the first-year and second-year MBA students with respect to pro-environmental deliberations. There was positive influence of pro-sustainability orientation on SB.

The study conducted by Malik and Shafeeq (2018) emphasize on analyzing the attitude of undergraduate students towards sustainable development in relation to their religion and gender. The findings of the study indicated that student attitude considered as most powerful agent of positive change. It is evaluated that male and female

undergraduate students did not differ in their attitude towards sustainable development. There was no significant difference in attitude of Hindu male and Hindu female students at undergraduate level. It is observed that insignificant differences were found while comparing the attitude of male Hindus and female Muslim undergraduate students towards sustainable development.

Leal et al. (2022) stated that the main purpose of the study is to incorporate the theory or practice of sustainable development in the education programs. In the study, bibliometric analysis was carried out and online-survey method. The online survey data was analyzed with the help of descriptive analysis and *t*-test. The findings depicted that there is considerable variation among Asian countries related to sustainability practices in HEIs. The results indicated that respondents strongly perceive that HEIs in Asia have executed sustainability initiatives with reference to having a sustainable development policy. The limitation of the study is that Asian countries even though collected a significant number of responses from participants. There was also variation in the responses between countries, due to wider promotion of the study considering specific areas of knowledge.

## **6. Research gap**

The studies that were carried out earlier did not provide a better understanding related to sustainability and social responsibility in the context of higher education institutes. The studies emphasize providing understanding related to sustainability in general as did not reflect in providing knowledge concerning higher education institutes. On the other side, studies also did not highlight properly on status of social responsibility practiced by universities and the benefits associated with it as well as attributes as part of sustainability objectives. There is also a lack of information regarding the rising importance of sustainability in the education sector. It has been determined that proper information was not provided in the research that was done earlier on the topic selected for the present research.

Furthermore, previous studies lack information relating to approaches adopted by the university community for the purpose of achieving sustainable behavior and sustainability knowledge. Studies also did not provide information linked to sustainable development and aspects associated with sustainable behavior which has been practiced by the HEIs. Apart from this, studies also lack information for the implications of accomplishing the sustainability objectives that have been taken into account by the education sector. There was also a lack of information regarding the approaches adopted by the university community for the adoption of a sustainable behavior and sustainability attitude.

## **7. Methods**

A thorough literature search was carried out using various databases and google scholar to determine studies that involved assessing the awareness level, knowledge, and attitudes of the university community for sustainable development in Higher Educational Institutions in India. The keywords such as higher education institutions, sustainability, awareness, the university community, sustainable development, and education institutions were used to determine relevant studies completing the paper.

Studies published in the context of sustainability also taken into consideration. Empirical studies based on peer-reviewed journals and articles were included. On the basis of this criterion abstracts and titles of different studies were reviewed for identifying relevant studies and articles. Furthermore, the reference list was also analyzed for including additional studies in the paper.

## **8. Conclusion**

It can be concluded from the above research that sustainable development goals are gaining more importance day by day. Further, the 2030 Agenda is considered a multifaceted and comprehensive strategy that serves as a building framework for doing comparisons to uphold different principles associated with nature, humanity, and human rights. In addition to this, the 2030 Agenda represents programs associated with global development programs. It has been determined that education enhances the applications and importance of sustainable goals which further supports building perspective in the long run.

Moreover, higher education plays an important role in attaining goals for sustainable development. In HEIs green practices are carried out for the development of the campus and carrying out activities in the future terms. Universities also support the adoption of sustainability in working with staff, students, and faculty. It is observed educators are playing a crucial role in achieving sustainability aspects in the education sector.

It is analyzed that sustainable development is gaining importance with HEIs playing an important role in educating future leaders related to sustainability. The UN's Agenda 2030 with its 17 SDGs, provide global framework for balancing development, though it faces criticism for a fragmented view. HEIs must enhance innovation, enhance awareness, and support the execution of sustainability initiatives to achieve the SDGs. The role of HEIs in promoting sustainability and social responsibility is important. HEIs lead in providing education related to sustainability, involving green practices into campus operations and research. They contributed to addressing global issues such as change in climate, innovation, and dissemination. HEIs also focuses on developing sustainability leaders among staff and students, aligning with UNs SDGs mainly goal 4. The integration of sustainability into the educational system enhance transformation by preparing future leaders to address environmental issues.

It is highlighted that the critical role of HEIs in promoting sustainability through the university community's adoption of sustainable attitude and behaviors. Sustainable mindset helps in shaping education, policy and community engagement which is important for enhancing sustainable behaviors including reduction in waste and conserving energy. HEIs also made progress but developing nations facing issues because of limited resources.

Future research on analyzing the awareness, knowledge and attitude of the university community for sustainable development in Indian higher educational institutions emphasize on different aspects. The longitudinal studies can track changes in awareness and attitudes to determine the influence of sustainability education initiatives. This provides valuable insights related to the long-term effectiveness of

sustainability programs and highlighting areas for improvement. The research also includes diverse geographical regions and types of institutions uncovering barriers and opportunities for the promotion of sustainability in various educational contexts. Future studies also explored the integration of sustainability into curricula and extra-curricular activities, assessing the role of digital tools and community partnerships in the promotion of sustainability offering innovative strategies.

**Conflict of interest:** The authors declare no conflict of interest.

## References

- Abad-Segura, E., Cortés-García, F. J., & Belmonte-Ureña, L. J. (2019). The sustainable approach to corporate social responsibility: A global analysis and future trends. *Sustainability*, 11(19), 5382.
- Abdou, A. H., Hassan, T. H., & El Dief, M. M. (2020). A description of green hotel practices and their role in achieving sustainable development. *Sustainability*, 12(22), 9624.
- Agbedahin, A. V. (2019). Sustainable development, Education for Sustainable Development, and the 2030 Agenda for Sustainable Development: Emergence, efficacy, eminence, and future. *Sustainable Development*, 27(4), 669-680.
- Al-Naqbi, A. K., & Alshannag, Q. (2018). The status of education for sustainable development and sustainability knowledge, attitudes, and behaviors of UAE University students. *International Journal of Sustainability in Higher Education*.
- Al-Nuaimi, S. R., & Al-Ghamdi, S. G. (2022). Sustainable consumption and education for sustainability in higher education. *Sustainability*, 14(12), 7255.
- Annan-Diab, F., & Molinari, C. (2017). Interdisciplinarity: Practical approach to advancing education for sustainability and for the Sustainable Development Goals. *The International Journal of Management Education*, 15(2), 73-83.
- Ardoin, N. M., Bowers, A. W., & Gaillard, E. (2020). Environmental education outcomes for conservation: A systematic review. *Biological Conservation*, 241, 108224.
- Argyroudis, S. A., Mitoulis, S. A., Chatzi, E., Baker, J. W., Brilakis, I., Gkoumas, K., ... & Linkov, I. (2022). Digital technologies can enhance climate resilience of critical infrastructure. *Climate Risk Management*, 35, 100387.
- Balsiger, J., Förster, R., Mader, C., Nagel, U., Sironi, H., Wilhelm, S., & Zimmermann, A. B. (2017). Transformative learning and education for sustainable development. *GAIA-ecological Perspectives for Science and Society*, 26(4), 357-359.
- Bashar, M. K. (2022). Attitude and awareness of university teachers towards implementing Sustainable Development Goals in public universities in Malaysia.
- Bernat, G. C. (2019). University and the 2030 Agenda for Sustainable Development: processes and prospects. *UTE Teaching & Technology (Universitas Tarraconensis)*, 78-94.
- Binagwaho, A., Bonciani Nader, H., Brown Burkins, M., Davies, A., Hessen, D. O., Mbow, C., ... & Tong, S. (2022). Knowledge-driven actions: transforming higher education for global sustainability: independent expert group on the universities and the 2030 agenda. UNESCO Publishing.
- Binsawad, M. H. (2020). Corporate social responsibility in higher education: a PLS-SEM neural network approach. *IEEE Access*, 8, 29125-29131.
- Boca, G. D., & Saraçlı, S. (2019). Environmental education and student's perception, for sustainability. *Sustainability*, 11(6), 1553.
- Caniglia, G., Luederitz, C., von Wirth, T., Fazey, I., Martin-López, B., Hondrila, K., ... & Lang, D. J. (2021). A pluralistic and integrated approach to action-oriented knowledge for sustainability. *Nature Sustainability*, 4(2), 93-100.
- Cebrián, G., Junyent, M., & Mulà, I. (2020). Competencies in education for sustainable development: Emerging teaching and research developments. *Sustainability*, 12(2), 579.
- Clifford, V., & Montgomery, C. (2015). Transformative learning through internationalization of the curriculum in higher education. *Journal of Transformative Education*, 13(1), 46-64.
- Dasgupta, H., & Pawar, S. K. (2021). Impact of higher education imparted by Indian universities on the pro-sustainability orientation of students. *Journal of Applied Research in Higher Education*, 13(4), 1110-1132.
- Ebrahim Elshall, S., Samir Darwish, S., & Mohamed Shokry, W. (2022). The effectiveness of educational interventions about sustainability development among nursing students. *Egyptian Journal of Health Care*, 13(1), 294-310.
- Erhabor, N. I., & Don, J. U. (2016). Impact of Environmental Education on the Knowledge and Attitude of Students towards the

- Environment. *International Journal of Environmental and Science Education*, 11(12), 5367-5375.
- Fanea-Ivanovici, M., & Baber, H. (2022). Sustainability at Universities as a Determinant of Entrepreneurship for Sustainability. *Sustainability*, 14(1), 454.
- Fawehinmi, O., Yusliza, M. Y., Mohamad, Z., Noor Faezah, J., & Muhammad, Z. (2020). Assessing the green behaviour of academics: The role of green human resource management and environmental knowledge. *International Journal of Manpower*, 41(7), 879-900.
- Fiorani, G., & Di Gerio, C. (2022). Reporting University Performance through the Sustainable Development Goals of the 2030 Agenda: Lessons Learned from Italian Case Study. *Sustainability*, 14(15), 9006.
- Firoiu, D., Ionescu, G. H., Băndoi, A., Florea, N. M., & Jianu, E. (2019). Achieving sustainable development goals (SDG): Implementation of the 2030 Agenda in Romania. *Sustainability*, 11(7), 2156.
- Franco, I., Saito, O., Vaughter, P., Whereat, J., Kanie, N., & Takemoto, K. (2019). Higher education for sustainable development: Actioning the global goals in policy, curriculum and practice. *Sustainability Science*, 14, 1621-1642.
- Gholami, H., Bachok, M. F., Saman, M. Z. M., Streimikiene, D., Sharif, S., & Zakuan, N. (2020). An ISM approach for the barrier analysis in implementing green campus operations: Towards higher education sustainability. *Sustainability*, 12(1), 363.
- Gunetwork, (2030). Implementing the 2030 Agenda at Higher Education Institutions: Challenges and Responses. [Online]. Available through <[https://www.gunetwork.org/files/guni\\_publication\\_-\\_implementing\\_the\\_2030\\_agenda\\_at\\_higher\\_education\\_institutions\\_challenges\\_and\\_responses.pdf](https://www.gunetwork.org/files/guni_publication_-_implementing_the_2030_agenda_at_higher_education_institutions_challenges_and_responses.pdf)>. [Accessed on 3rd Feb, 2030]
- Hamón, L. A. S., Martinho, A. P., Ramos, M. R., & Aldaz, C. E. B. (2020). Do Spanish students become more sustainable after the implementation of sustainable practices by universities? *Sustainability*, 12(18), 7502.
- Hassan, A., Rahman, N. A., & Abdullah, S. I. S. S. (2011). The level of environmental knowledge, awareness, attitudes and practices among UKM students. *University Kebangsaan, Malaysia*, 13, 5-8.
- Holst, J. (2023). Towards coherence on sustainability in education: a systematic review of Whole Institution Approaches. *Sustainability Science*, 18(2), 1015-1030.
- Jati, H. F., Darsono, S. N. A. C., Hermawan, D. T., Yudhi, W. A. S., & Rahman, F. F. (2019). Awareness and knowledge assessment of sustainable development goals among university students. *Jurnal Ekonomi & Studi Pembangunan*, 20(2), 163-175.
- Kinoshita, A., Mori, K., Rustiadi, E., Muramatsu, S., & Kato, H. (2019). Effectiveness of incorporating the concept of city sustainability into sustainability education programs. *Sustainability*, 11(17), 4736.
- Kioupi, V., & Voulvoulis, N. (2019). Education for sustainable development: A systemic framework for connecting the SDGs to educational outcomes. *Sustainability*, 11(21), 6104.
- Kohl, K., Hopkins, C., Barth, M., Michelsen, G., Dlouhá, J., Razak, D. A., ... & Toman, I. (2022). A whole-institution approach towards sustainability: a crucial aspect of higher education's individual and collective engagement with the SDGs and beyond. *International Journal of Sustainability in Higher Education*, 23(2), 218-236.
- Kopnina, H. (2020). Education for the future? Critical evaluation of education for sustainable development goals. *The Journal of Environmental Education*, 51(4), 280-291.
- Kouatli, I. (2019). The contemporary definition of university social responsibility with quantifiable sustainability. *Social responsibility journal*, 15(7), 888-909.
- Leal Filho, W., Dinis, M. A. P., Sivapalan, S., Begum, H., Ng, T. F., Al-Amin, A. Q., ... & Neiva, S. (2022). Sustainability practices at higher education institutions in Asia. *International Journal of Sustainability in Higher Education*, 23(6), 1250-1276.
- Leal Filho, W., Will, M., Salvia, A. L., Adomssent, M., Grahl, A., & Spira, F. (2019). The role of green and Sustainability Offices in fostering sustainability efforts at higher education institutions. *Journal of Cleaner Production*, 232, 1394-1401.
- Lederer, J., Gassner, A., Kleemann, F., & Fellner, J. (2020). Potentials for a circular economy of mineral construction materials and demolition waste in urban areas: a case study from Vienna. *Resources, Conservation and Recycling*, 161, 104942.
- Lee, S. S., & Mirza, C. (2021). Pursuing innovation as a strategy for improving quality of higher education: challenges and opportunities facing gcc countries. *Higher education in the Gulf*. Routledge, 16-31.
- Longoria, L. C., López-Forniés, I., Sáenz, D. C., & Sierra-Pérez, J. (2021). Promoting sustainable consumption in Higher Education Institutions through integrative co-creative processes involving relevant stakeholders. *Sustainable production and consumption*, 28, 445-458.



- Lozano, R., Barreiro-Gen, M., Lozano, F. J., & Sammalisto, K. (2019). Teaching sustainability in European higher education institutions: Assessing the connections between competences and pedagogical approaches. *Sustainability*, 11(6), 1602.
- Lyon, T. P., & Maxwell, J. W. (2019). "Voluntary" approaches to environmental regulation. In *Economic institutions and environmental policy* (pp. 75-120). Routledge.
- Majid, M. A. (2020). Renewable energy for sustainable development in India: current status, future prospects, challenges, employment, and investment opportunities. *Energy, Sustainability and Society*, 10(1), 1-36.
- Malik, M., & Shafeeq, N. Y. (2018). Attitude of Undergraduate Students towards Sustainable Development. *International Research Journal of Human Resources and Social Sciences*, 5(3), 119-132.
- Martins, V. W. B., Rampasso, I. S., Anholon, R., Quelhas, O. L. G., & Leal Filho, W. (2019). Knowledge management in the context of sustainability: Literature review and opportunities for future research. *Journal of cleaner production*, 229, 489-500.
- Mori Junior, R., Fien, J., & Horne, R. (2019). Implementing the UN SDGs in universities: Challenges, opportunities, and lessons learned. *Sustainability: The Journal of Record*, 12(2), 129-133.
- Muqet, H. A., Javed, H., Akhter, M. N., Shahzad, M., Munir, H. M., Nadeem, M. U., ... & Huba, M. (2022). Sustainable Solutions for Advanced Energy Management System of Campus Microgrids: Model Opportunities and Future Challenges. *Sensors*, 22(6), 2345.
- Nhamo, G., & Mjimba, V. (2020). The context: SDGs and institutions of higher education. *Sustainable development goals and institutions of higher education*, 1-13.
- Norström, A. V., Cvitanovic, C., Löf, M. F., West, S., Wyborn, C., Balvanera, P., ... & Österblom, H. (2020). Principles for knowledge co-production in sustainability research. *Nature sustainability*, 3(3), 182-190.
- Nurse-Bray, M., Palmer, R., Meyer-Mclean, B., Wanner, T., & Birzer, C. (2019). The fear of not flying: Achieving sustainable academic plane travel in higher education based on insights from South Australia. *Sustainability*, 11(9), 2694.
- Ojikutu, B. O., Stephenson, K. E., Mayer, K. H., & Emmons, K. M. (2021). Building trust in COVID-19 vaccines and beyond through authentic community investment. *American journal of public health*, 111(3), 366-368.
- Olsson, D., Gericke, N., & Boeve-de Pauw, J. (2022). The effectiveness of education for sustainable development revisited—a longitudinal study on secondary students' action competence for sustainability. *Environmental Education Research*, 28(3), 405-429.
- Omisore, A. G., Babarinde, G. M., Bakare, D. P., & Asekun-Olarinmoye, E. O. (2017). Awareness and knowledge of the sustainable development goals in a University Community in Southwestern Nigeria. *Ethiopian journal of health sciences*, 27(6), 669-676.
- Peedikayil, J. V., Vijayan, V., & Kaliappan, T. (2023). Teachers' attitude towards education for sustainable development: A descriptive research. *Int J Eval & Res Educ ISSN, 2252(8822)*, 8822.
- Pham, N. T., Tučková, Z., & Jabbour, C. J. C. (2019). Greening the hospitality industry: How do green human resource management practices influence organizational citizenship behavior in hotels? A mixed-methods study. *Tourism Management*, 72, 386-399.
- Purcell, W. M., Henriksen, H., & Spengler, J. D. (2019). Universities as the engine of transformational sustainability toward delivering the sustainable development goals: "Living labs" for sustainability. *International Journal of Sustainability in Higher Education*, 20(8), 1343-1357.
- Rahman, A. A., Castka, P., & Love, T. (2019). Corporate social responsibility in higher education: A study of the institutionalisation of CSR in Malaysian public universities. *Corporate social responsibility and Environmental Management*, 26(4), 916-928.
- Ramísio, P. J., Pinto, L. M. C., Gouveia, N., Costa, H., & Arezes, D. (2019). Sustainability Strategy in Higher Education Institutions: Lessons learned from a nine-year case study. *Journal of Cleaner Production*, 222, 300-309.
- Ruiz-Mallén, I., & Heras, M. (2020). What sustainability? higher education institutions' pathways to reach the agenda 2030 goals. *Sustainability*, 12(4), 1290.
- Rutting, L., Vervoort, J., Mees, H., Pereira, L., Veeger, M., Muiderman, K., ... & Driessen, P. (2022). Disruptive seeds: a scenario approach to explore power shifts in sustainability transformations. *Sustainability Science*, 1-17.
- Sá, M. J., & Serpa, S. (2020). The COVID-19 pandemic as an opportunity to foster the sustainable development of teaching in higher education. *Sustainability*, 12(20), 8525.
- Schopp, K., Bornemann, M., & Potthast, T. (2020). The whole-institution approach at the University of Tübingen: Sustainable development set in practice. *Sustainability*, 12(3), 861.

- Seto-Pamies, D., & Papaoikonomou, E. (2020). Sustainable development goals: A powerful framework for embedding ethics, CSR, and sustainability in management education. *Sustainability*, 12(5),1762.
- Shafiei, A., & Maleksaeidi, H. (2020). Pro-environmental behavior of university students: Application of protection motivation theory. *Global Ecology and Conservation*, 22, e00908.
- Shields, R. (2019). The sustainability of international higher education: Student mobility and global climate change. *Journal of Cleaner Production*, 217, 594-602.
- Shrivastava, P., Smith, M. S., O'Brien, K., & Zsolnai, L. (2020). Transforming sustainability science to generate positive social and environmental change globally. *One Earth*, 2(4), 329-340.
- Sibbel, A. (2009). Pathways towards sustainability through higher education. *International Journal of Sustainability in Higher Education*, 10(1), 68-82.
- Slade, S., & Tait, A. (2019). Global guidelines: Ethics in learning analytics.
- Smaniotto, C., Battistella, C., Brunelli, L., Ruscio, E., Agodi, A., Auxilia, F., ... & Sisi, S. (2020). Sustainable development goals and 2030 agenda: awareness, knowledge and attitudes in nine Italian universities, 2019. *International Journal of Environmental Research and Public Health*, 17(23), 8968.
- Sousa, S., Correia, E., Leite, J., & Viseu, C. (2021). Environmental knowledge, attitudes and behavior of higher education students: a case study in Portugal. *International Research in Geographical and Environmental Education*, 30(4), 348-365.
- Sterling, S. (2021). Concern, conception, and consequence: Re-thinking the paradigm of higher education in dangerous times. *Frontiers in Sustainability*, 2, 110.
- Sukma, E., Ramadhan, S., & Indriyani, V. (2020, March). Integration of environmental education in elementary schools. In *Journal of Physics: Conference Series* (Vol. 1481, No. 1, p. 012136). IOP Publishing.
- Wezel, A., Herren, B. G., Kerr, R. B., Barrios, E., Gonçalves, A. L. R., & Sinclair, F. (2020). Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. *Agronomy for Sustainable Development*, 40, 1-13.
- Yong, J. Y., Yusliza, M. Y., Ramayah, T., Chiappetta Jabbour, C. J., Sehnem, S., & Mani, V. (2020). Pathways towards sustainability in manufacturing organizations: Empirical evidence on the role of green human resource management. *Business Strategy and the Environment*, 29(1), 212-228.
- Zhang, Y., Jiang, T., Sun, J., Fu, Z., & Yu, Y. (2022). Sustainable development of urbanization: From the perspective of social security and social attitude for migration. *Sustainability*, 14(17), 10777.
- Zhu, S., Wu, Y., & Shen, Q. (2022). How environmental knowledge and green values affect the relationship between green human resource management and employees' green behavior: From the perspective of emission reduction. *Processes*, 10(1), 38.
- Zuin, V. G., Eilks, I., Elschami, M., & Kümmerer, K. (2021). Education in green chemistry and in sustainable chemistry: perspectives towards sustainability. *Green Chemistry*, 23(4), 1594-1608.