



Campus Sustainability Report (2020-21),



Engr. Abdul Shakoor Shaikh

Focal Person,
UI GreenMetric World University
Rankings,
BBSUTSD Khairpur Mirs

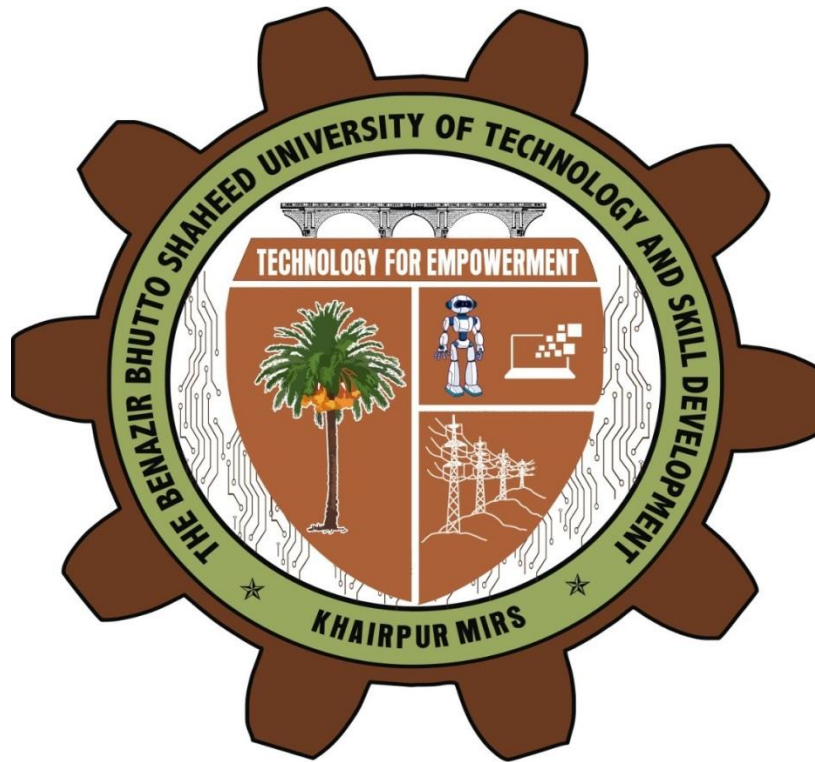
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**The Benazir Bhutto Shaheed University of Technology & Skill
Development (BBSUTSD)
Khairpur Mirs**



**Campus Sustainability Report 2020-21
BBSUTSD**

by

Engr. Abdul Shakoor Shaikh

INTRODUCTION

In 2010, University of Indonesia (UI) developed the UI GreenMetric World University Ranking for universities to share information about their sustainability practices. This ranking system paved the way forward for development of a mechanism through which university could ensure the implementation of best practices pertaining to Sustainable Development Goals (SDGs) set by the United Nations on campus.

Since the first launch of ranking, more universities around the world have increasingly participated in the ranking system including many universities in Pakistan. The Benazir Bhutto Shaheed University of Technology & Skill Development (BBSUTSD) participated in the ranking and was placed on 576th in the entire world and 22nd in Pakistan. This is the first time this university has been positioned in any ranking system. And since then, the BBSUTSD has continued to make improvements in all sectors ranging from conservation of Electricity to being the first university in Sindh province to implement an Official Ban on Plastic Bags on Campus; from observing Tree Plantation Day to development of an Efficient Water Recycling and Water Conservation Program.

This year, the BBSUTSD is trying its best to improve in all areas of ranking particularly the infrastructure. For that, the university has purchased a new land of 28 Acres that will be purely used for Agricultural Purposes initially. Apart from that, the new buildings proposed are set to incorporate all the important aspect Net-Zero Buildings with a particular focus on harvesting Solar Energy from Solar PV cells and conservation of Power giving special attention to lowering its waste usage. Here it is quite important to note that, compared to last year, the consumption of electricity at campus has been reduced to a significantly low level and because of which, considerable amount of money has been saved coupled a great reduction of CO2 emissions by the campus activities.

Following are the glimpses of activities carried out on campus to ensure implementation of all steps towards Sustainable Campus Initiative.

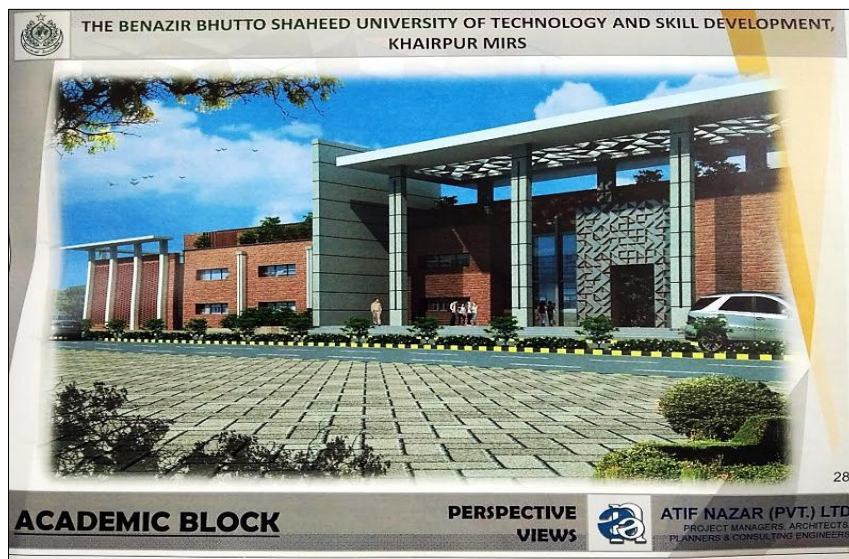
Elements of green building implementation as reflected in all construction and renovation policy

In order to ensure the element of Sustainability in Campus, all the new buildings are proposed and planned to be constructed keeping in consideration the essential components of Net-Zero buildings with the characteristics of natural ventilation already involved in the building architecture. For that purpose, the layout plans are underway and shall soon be made a part of the building infrastructure of the BBUSTSD Khairpur. Following is the proposed Structure of Main Campus Building at BBSUTSD

Existing Structure of Main Campus Buildings at BBSUTSD



Existing Structure of Main Campus Buildings at BBSUTSD



Use of Energy Appliances at BBUSTSD

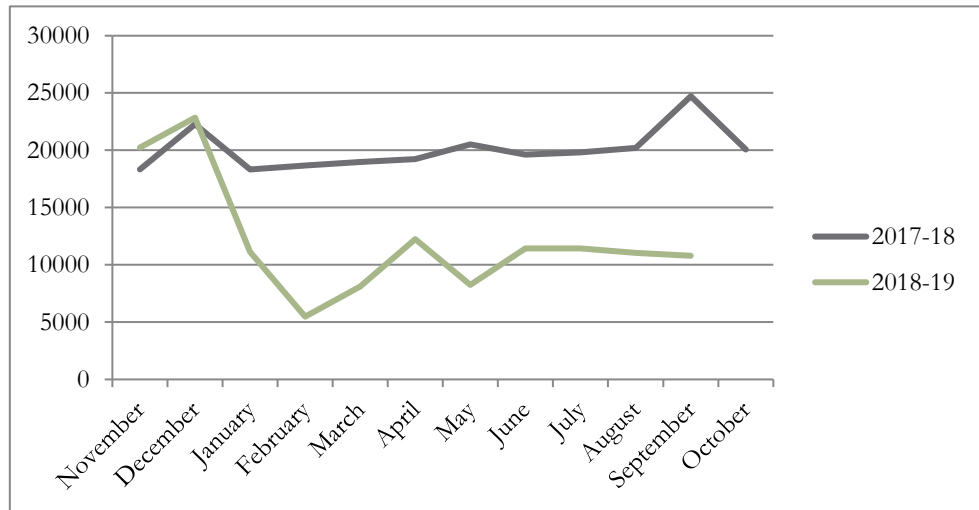
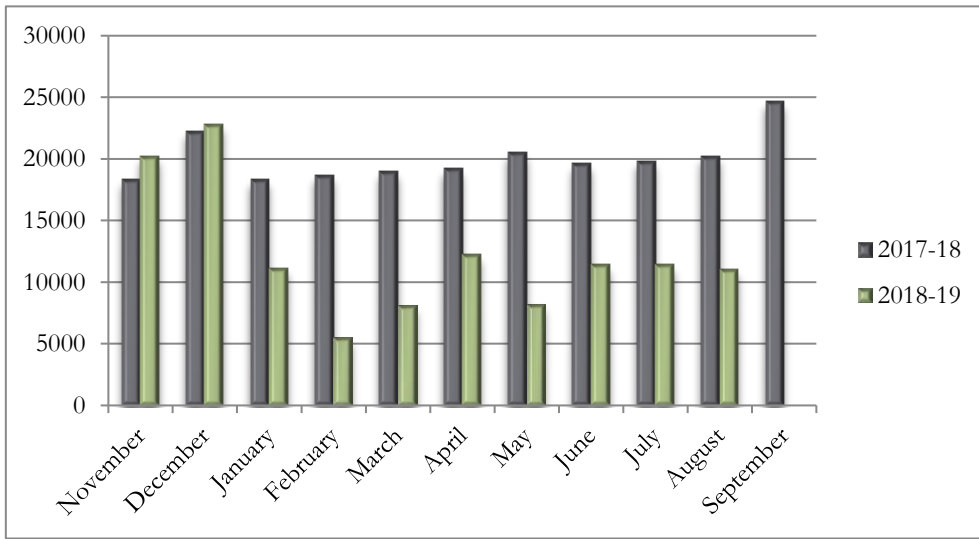
All the computers, office photocopiers, other office appliances and lighting equipment used in the BBSUTSD are Energy Star rated and are use very less amount of Electricity



Energy Conservation Program at BBSUTSD Khairpur

Messages relating conservation of Energy pasted all across the campus. The practice has resulted in significant reduction in the usage of electricity at the campus as mentioned in the graphs below.

Soon after the announcement of the BBSUTSD overall score and position in GreenMetric World University Ranking, strict policies relating to conservation of Electricity were adopted. With the messages to turn off the lights and electrical appliances in the entire university, the excess use of electricity was avoided and a significant reduction of power consumption as depicted in the graphs and picture above was observed.



Difference between Electricity consumption (kWh) in Oct-17 to Oct-18 and Sept-17 to Sept 19 at the Benazir Bhutto Shaheed University of Technology & Skill Development Khairpur

Recycling Program for University Waste

With different recycle bins made available at the campus, messages relating to Recycling the waste are also displayed beside them to make sure, every type of waste is segregated in a proper manner.

New Color coded Recycle Bins introduced at various locations in BBSUTSD to spread awareness and ensure proper segregation of types of Waste Material produced at campus

Different promotional messages related to recycling the waste have been affixed on various spots where collection of waste is observed in order to promote the culture of recycling in the entire campus.



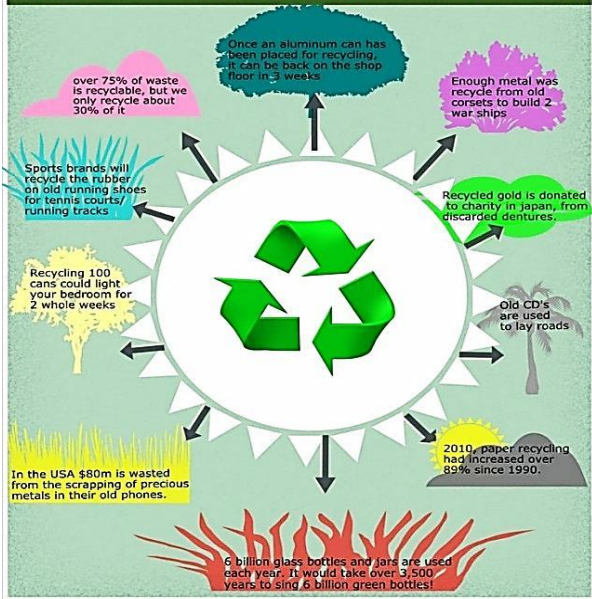
RECYCLE FOR A CAUSE

Recycle old ink & toner cartridges and toner bottles

A Campus Greening Drive message by:



10 Amazing Facts About Recycling



PAPER
CARTONS
PLASTICS #1-7
CARDBOARD
GLASS
METAL

The Total Carbon Footprint (CO₂ emission in the last 12 months, in metric tons)

At BBSUTSD Khairpur, we have tried our best to utilize lesser number private vehicles so that maximum effort can be put on producing the smallest possible value of CO₂ emissions. In future, we are also trying to minimize the emissions by solarizing the entire campus and create an environment-friendly campus in the country.

CO₂ (electricity)

$$\begin{aligned} &= \frac{\text{electricity usage per year (kWh)}}{1000} \times 0,84 \\ &= \frac{132,992 \text{ kWh}}{1000} \times 0,84 \\ &= 111.71328 \text{ metric tons} \end{aligned}$$

CO₂ (bus)

$$\begin{aligned} &= \frac{\text{number of shuttle bus in your university} \times \text{total trips for shuttle bus service each day} \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,01 \\ &= \frac{3 \times 6 \times 2 \times 240}{100} \times 0,01 \\ &= 0.864 \text{ metric tons} \end{aligned}$$

CO₂ (cars)

$$\begin{aligned} &= \frac{\text{number of cars entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,02 \\ &= \frac{10 \times 2 \times 2 \times 240}{100} \times 0,02 \\ &= 1.92 \text{ metric tons} \end{aligned}$$

CO₂ (motorcycle)

$$\begin{aligned} &= \frac{\text{number of motorcycle entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,01 \\ &= \frac{150 \times 2 \times 2 \times 240}{100} \times 0,01 \\ &= 14.4 \text{ metric tons} \end{aligned}$$

CO₂ (total)

$$\begin{aligned} &= 111.71328 + 0.864 + 1.92 + 14.4 \\ &= 128.89728 \text{ metric tons} \end{aligned}$$


Carbon footprint in 2018-19 = 217.65 metric tons

Approximate Total Carbon Footprint of BBUSTSD Khairpur

Program to Reduce the Use of Paper and Plastic in Campus

BBSUTSD becomes the 1st university in the province to put an **Official Ban on Plastic Bags** at Campus and **Introduction of Clothing Bags in Campus** as some steps towards ensuring Campus Sustainability Initiative.

In addition to banning the Plastic Bans, Introduction of Clothing Bags is promoted by faculty & Staff members as well as students. The practice is expected to curb the use of plastic bags across the campus and encourage the use of paper or clothing bags in the entire university.



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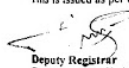
NO.BBSUTSD/ADMN/KHP/1023 Date: 10/8/2019

CIRCULAR

BAN ON PLASTIC BAGS IN CAMPUS

Keeping in consideration the severe damages caused by non-degradable Plastic Bags to the environment, the Benazir Bhutto Shaheed University of Technology & Skill Development (BBSUTSD) Khairpur Mirs has pledged not to use plastic bags throughout the university premises. It is therefore informed to all that the University has declared a **BAN ON PLASTIC BAGS IN CAMPUS** premises with immediate effect. All the employees, teachers and students are therefore advised to stop using Plastic Bags immediately and use cloth/paper bags alternatively, failing which necessary action may be taken against the concerned.


This is issued as per the directives of the competent authority.



Deputy Registrar
Benazir Bhutto Shaheed
University of Technology & Skill Development
Khairpur Mirs

Copy to:-

1. Focal Person, Green Metric University Rankings, BBSUTSD Khairpur Mirs.
2. Estate Officer, BBSUTSD Khairpur Mirs, with the directives to ensure compliance.
3. Security Incharge, BBSUTSD Khairpur Mirs, with the directives to ensure compliance.
4. Circular File.





Number of events related to environment and sustainability

Events Related to Environment and Sustainability The Benazir Bhutto Shaheed University of Technology & Skill Development Khairpur



Tree Plantation Campaign at BBSUTSD Khairpur

Organic Waste Treatment

At BBSUTSD Khairpur, the teachers in Chemical Engineering Department ask students to utilize the Organic Waste collected by the gardeners from across the campus and use it for the producing Methane Gas through small scale Bio-Gas plant. The program is carried out on experimental basis for creating awareness among the students regarding the benefits of harvesting energy from biogas. It is further proposed that such plants shall be installed at macro level to generate electricity from biogas for partially meeting the power requirements of the campus.



Small scale Organic Waste Treatment at BBSUTSD Khairpur Mirs

Inorganic Waste Treatment

The inorganic waste generated was collected and dumped in the open air. However, if the waste is hazardous, it is dumped in the underground after taking sufficient safety measures.



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General Lab Safety Instructions

Label Dangerous Laboratory Waste - It's The Law!

LABEL ALL CONTAINERS

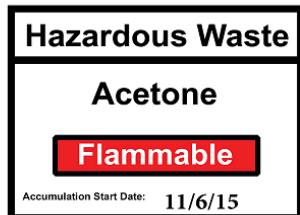
Containers must be labeled, regardless of size, with the name of the substance, the words "hazardous waste" or "dangerous waste", the major risk, and the accumulation start date.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) LABEL SYSTEM

The NFPA diamond or list is a common labeling system in laboratories, used to quickly and easily identify the risks posed by hazardous materials.



HEALTH HAZARD 4 EXTREME - Highly toxic; may be fatal with short-term exposure. 3 SERIOUS - Toxic; full protective suit and breathing apparatus should be worn. 2 MODERATE - Breathing apparatus and face mask must be worn. 1 SLIGHT - Breathing apparatus may be worn. 0 MINIMAL - No precautions necessary.	FLAMMABILITY HAZARD 4 EXTREME - Extremely flammable gas or liquid; flash point below 20° F. 3 SERIOUS - Flammable; flash point 23° F to 100° F. 2 MODERATE - Combustible; requires moderate heating to ignite; flash point below 200° F. 1 SLIGHT - Slightly combustible; requires strong heating to ignite. 0 MINIMAL - Will not burn under normal conditions.
SPECIFIC HAZARD OXIDIZER OXY ACID ACID ALKALI ALK CORROSIVE COR USE NO WATER W RADIATION ☢	INSTABILITY HAZARD 4 EXTREME - Explosive at room temperature. 3 SERIOUS - May detonate if shocked or heated under confinement or mixed with water. 2 MODERATE - Unstable; may react with water. 1 SLIGHT - May react if heated or mixed with water. 0 MINIMAL - Normally stable; does not react with water.



Toxic Waste Handled

At BBSUTSD, we try our best to manage the Toxic Waste and treat it well so that risk could be minimized to the lowest and injuries could be avoided. For that purpose, different program are also underway to spread awareness regarding careful disposal of toxic waste at the campus, particularly in different labs, involving hazardous chemicals.



Chemical Waste Pail

- Designate and label for lab specific use
- Ethidium Bromide gels
- Contaminated solids including plastics and glass
- No sharps
- Provided by EPS (6-3473)



Recycling Bin

- Untaminated paper
- Empty boxes
- Catalogues
- Provided by F&S (6-5711)



Regular Garbage

- Untaminated refuse (paper towels, pipet wrappers, etc.)
- Decontaminated Risk Group 1 biological solids
- Provided by Caretaking (8-6252)



Teal Laboratory Glass Tote

- Untaminated Clear glass (triple rinsed)
- No hazardous materials, garbage or gloves
- No coloured glass
- Provided by F&S (6-5711)

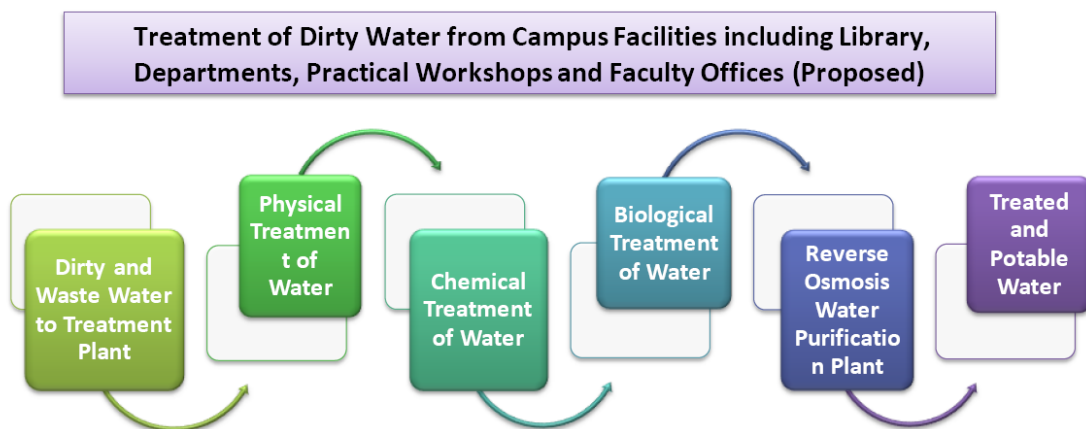
Sewerage Disposal



Snapshots of Sewerage Disposal at The Benazir Bhutto Shaheed University of Technology & Skill Development
Khairpur

Water Recycling Program Implementation

Efforts are underway to develop the facility for Treatment of Dirty Water from Campus Facilities including Library, Departments, Practical Workshops and Faculty Offices. Very soon, the BBSUTSD will have its own Water Treatment facility as proposed in the diagram above.

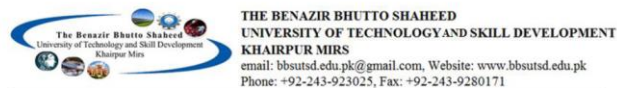


Shuttle service

Keeping in consideration the Carbon emissions of the private vehicles, it is preferred that majority of the students and employees of the university should use University buses. Given above are the Routes of university buses used for transportation within the Khairpur city and to the adjacent city of Sukkur, Pakistan.



Bus Campus



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BBSUTSD Khairpur Mirs Bus Routes

From Locations to University

Bus No.	Time	From	To	Via
1	7:45 AM	Sukkur City Point	BBSTUSD Khairpur	Thehri, Maryam Canon, Panjhatti, Civic Center
2	7:30 AM	Ranipur	BBSTUSD Khairpur	Gambat, Tando Masti, Shah Hussain, Luqman Phatak
3	8:00 AM	Within City Khairpur Mirs		Chandia Mor, Luqman Phatak, Garhi Pul, Civic Center, Khaki Shah Pul, Bilawal Park, University

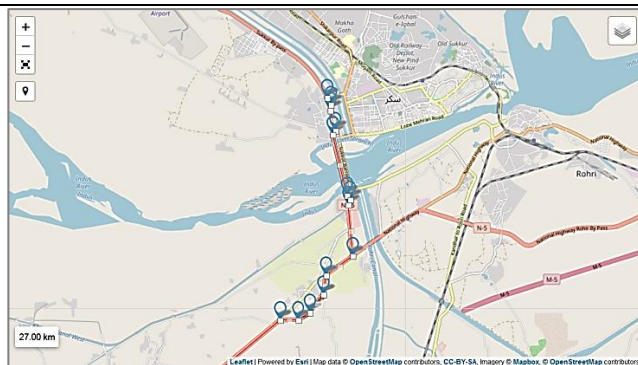
From University to other locatins

Bus No.	Time	From	To	Via
1	3:00 PM	BBSTUSD Khairpur	Sukkur City Point	Civic Center, Panjhatti, Maryam Canon, Thehri
2	3:00 PM	BBSTUSD Khairpur	Ranipur	Luqman Phatak, Shah Hussain, Tando Masti, Gambat
3	3:00 PM	Within City Khairpur Mirs		University, Bilawal Park, Khaki Shah Pul, Civic Center, Garhi Pul, Luqman Phatak, Chandia Mor

Bus Time Tables



Bus Route from University to different locations across the Khairpur City



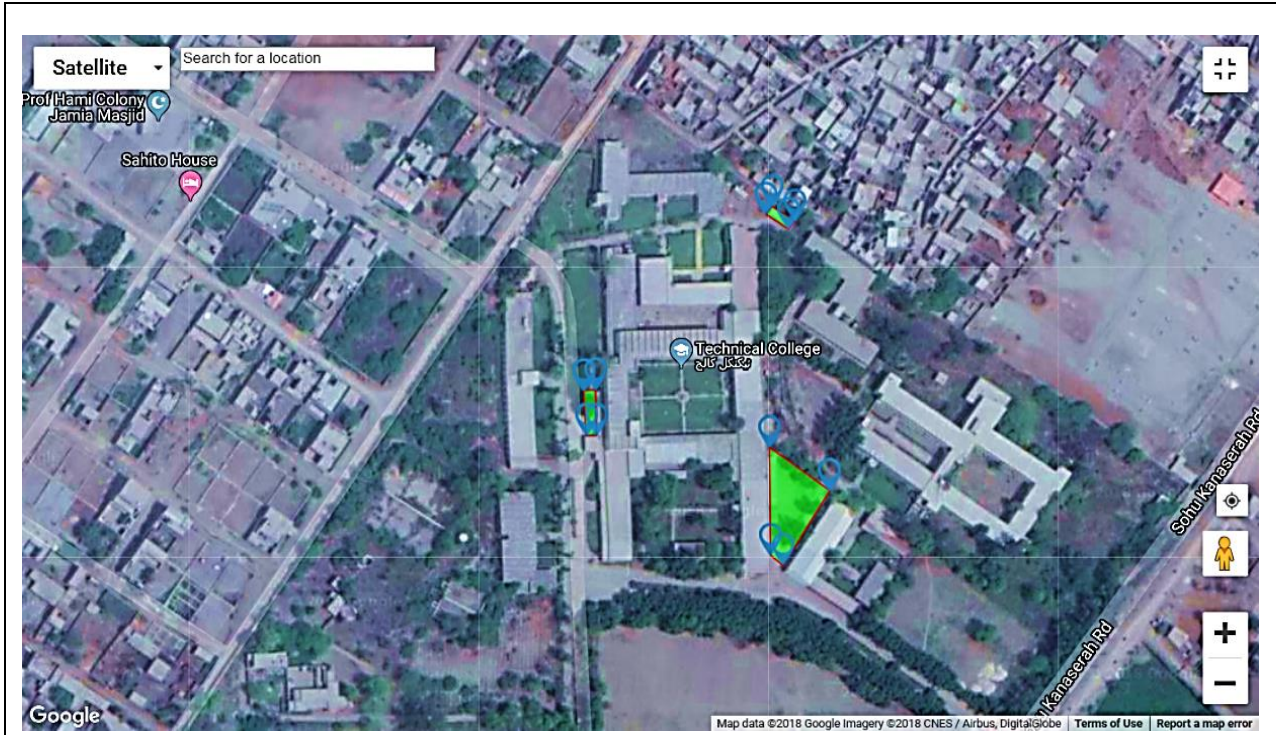
Bus Route from University to Sukkur adjacent to Khairpur Mirs

Ratio of parking area to total campus area

The Designated Parking Area (highlighted in Green) of the Benazir Bhutto Shaheed University of Technology & Skill Development Khairpur

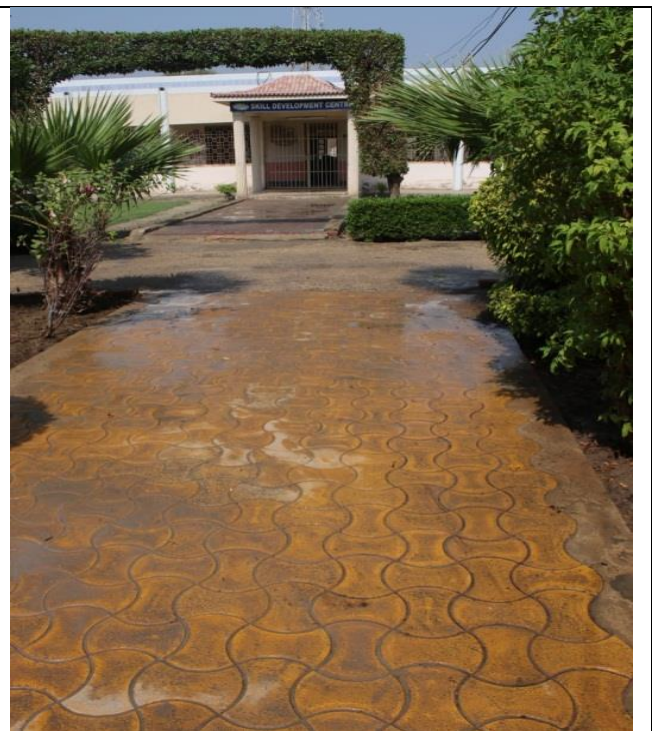
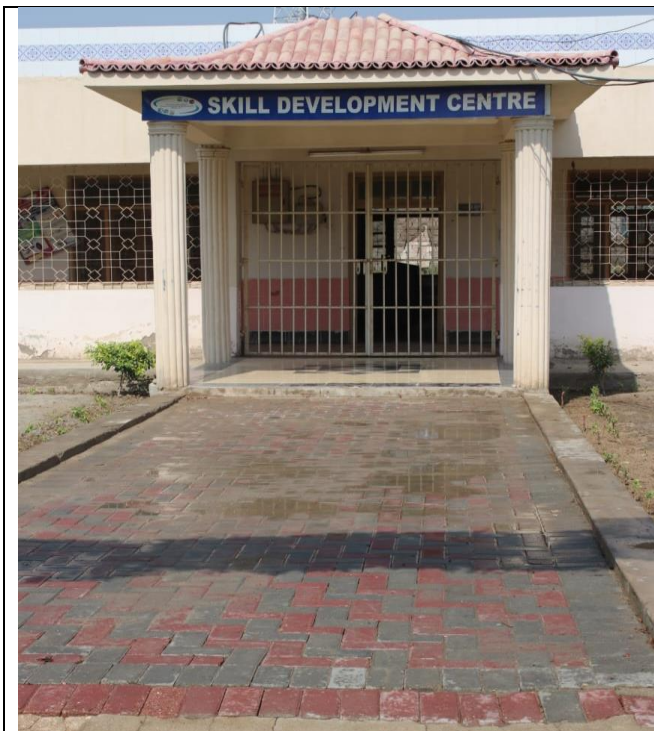
Total Parking area = 1004.32m²

Ratio parking area : 0.7704 %



Pedestrian path policy on campus

Pedestrian paths at Benazir Bhutto Shaheed University of Technology & Skill Development Khairpur





Number of Courses/Subjects Related to Sustainability Offered

Undergraduate Studies

The Benazir Bhutto Shaheed University of Technology & Skill Development (BBSUTSD) is a relatively new university and currently it offers Bachelor of Engineering Technology (HEC - Islamabad Approved Four Years Degree Program) in Four Disciplines and are titled as Bachelors of Engineering Technology "BSET" eg: BSET in civil Technology.

Featured Courses:

- B.Tech (Civil Engineering Technology)
- B.Tech (Electrical Engineering Technology)
- B.Tech (Mechanical Engineering Technology)
- B.Tech (Electronic Engineering Technology)

In all of the courses above, special care have been taken to incorporate the concept of Sustainability in each subject in order to ensure an understanding among the students about their duty towards environment and the future of generations to come. From time to time, courses are updated in the “Board of Studies” meeting, duly recommended by the “Board of Faculty” and approved by the “Academic Council”.

Total number of courses/modules offered

Total number of department in Benazir Bhutto Shaheed University of Technology & Skill Development Khairpur in two sections of University i-e DAE and BSc



Courses offered in BSc Engineering Technology (4 Years)

- ❖ Civil Technology
- ❖ Electrical Technology
- ❖ Mechanical Technology
- ❖ Electronics Technology

Departments of DAE Section (3 Years)

- ❖ Civil Technology
- ❖ Electrical Technology
- ❖ Mechanical Technology
- ❖ Electronics Technology
- ❖ Auto & Diesel Technology
- ❖ Refrigeration and Air-conditioning Technology
- ❖ Petroleum Technology
- ❖ Chemical Technology

The Benazir Bhutto Shaheed University of Technology and Skill Development Khairpur Mirs

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Total number of department in Benazir Bhutto Shaheed University of Technology & Skill Development Khairpur in two sections of University i-e DAE and BSc

Total research funds dedicated to sustainability research (in US Dollars)

Total research funds dedicated to sustainability research (in US Dollars) at Benazir Bhutto Shaheed University of Technology & Skill Development (BBSUTSD) Khairpur Mirs

Head	2018-19	2019-20
Research	0	5 million
ORIC	1 million	0.5 million
Plantation	0.5 million	0.30 million
Building	11 million	30 million

	in PKR	in Dollars
Total research fund dedicated to sustainability research in 2018	1 million	6,419.52
Total research fund dedicated to sustainability research in 2019	5.5 million	35,307.33

Total research funds (in US Dollars)

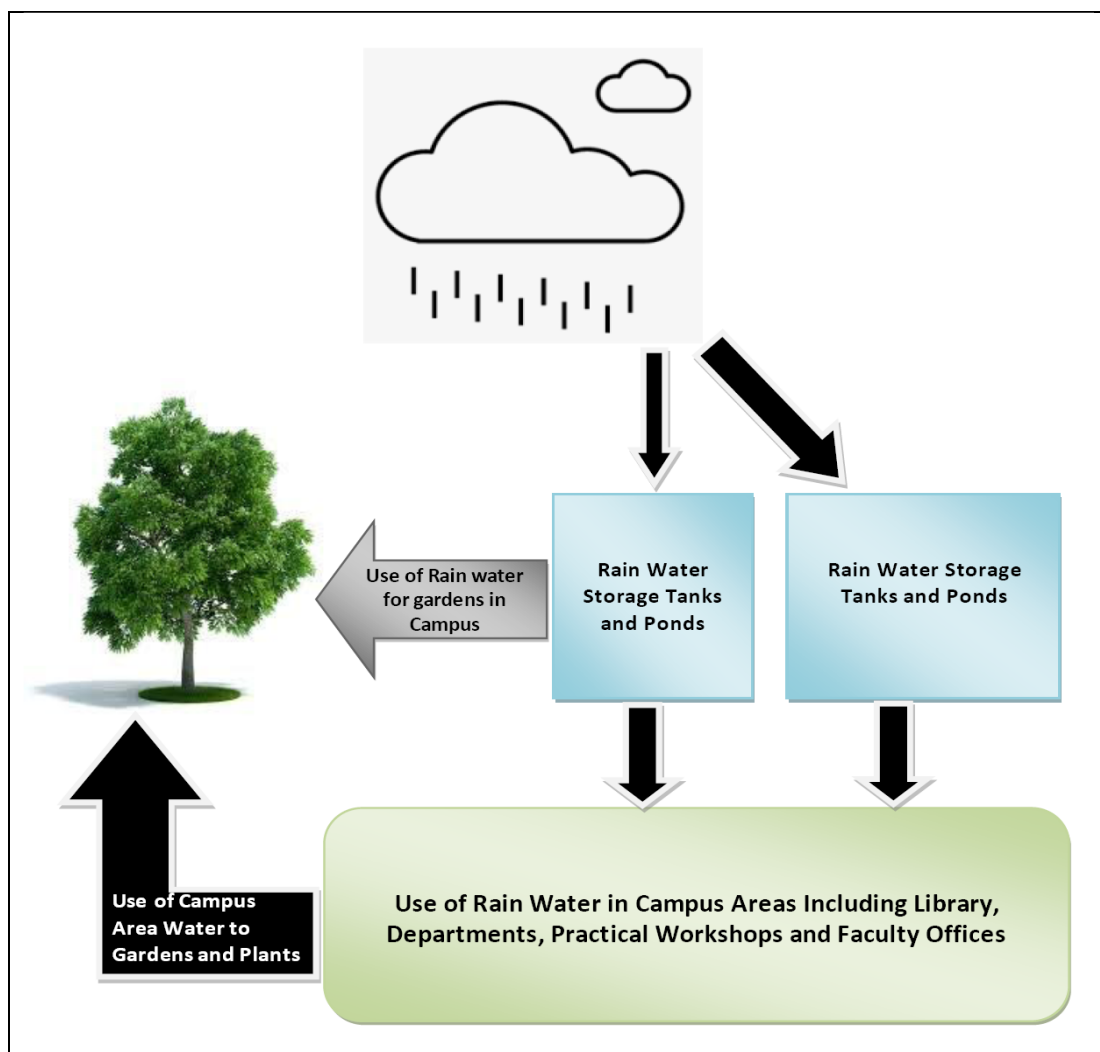
Compared to the last year, this year special attention has been paid to Sustainable Campus Initiative and a significantly higher number of funds have been dedicated to Research Fund particularly reserved Sustainability. Following are the statistics;

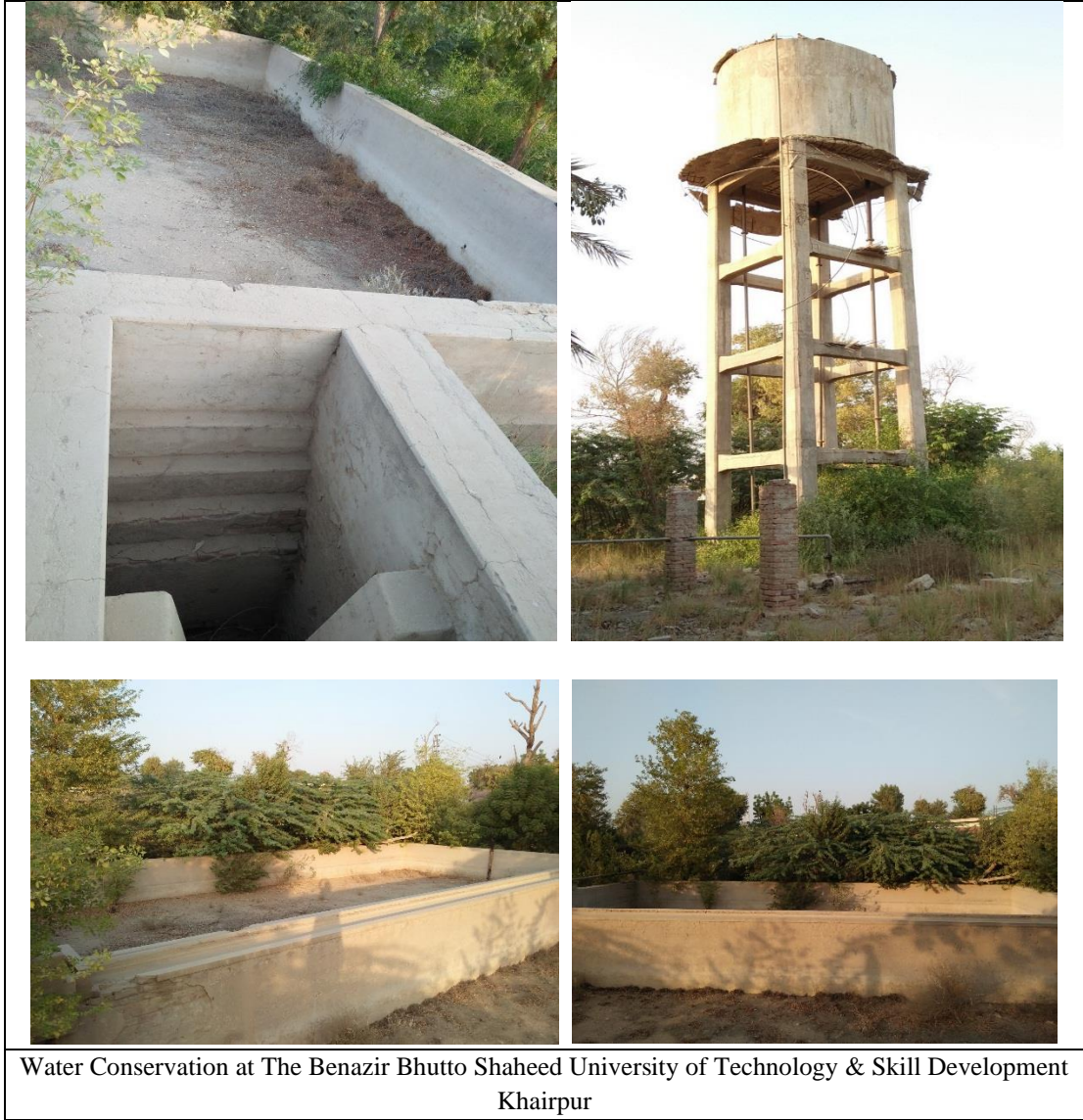
Total research fund in 2019-20 = 35,307.33 US Dollars

	in PKR	in Dollars
Total research fund dedicated to sustainability research in 2018	1 million	6,419.52
Total research fund dedicated to sustainability research in 2019	5.5 million	35,307.33

Water Conservation Program Implementation

Rain Water Collection System under Water Conservation program at The Benazir Bhutto Shaheed University of Technology and Skill Development, Khairpur Mirs, Sindh, Pakistan





At the moment, the water conservation facilities are not functioning properly. But however, depending upon appropriate funding opportunities, the storage & conservation facilities will once again be utilized for the campus as well as for the residential colony