Palestine Technical University– Kadoorie

Annual Sustainability Report

2022

Enabling a culture of Sustainable Development across PTUK, enhancing the student and staff experience and creating a global legacy.

About The Report

This report presents an overview of our sustainability achievements during the academic year 2022-2023, encompassing data related to our internal initiatives. It is tailored for stakeholders with a vested interest in our sustainability endeavors, including faculty, students, local communities, and businesses. The emphasis is on key sustainability concerns that matter both to us and our stakeholders, aligning with the University's comprehensive and award-winning sustainability strategy. Approval for this report has been obtained from University Administration. This report offers a comprehensive overview of our initiatives throughout this academic year. It provides a robust methodology for assessing performance in environmental, social, and economic sustainability.

Vision

Engagement to achieve sustainable development goals (economic, social and environmental) through innovative programs and initiatives.

PTUK sustainability approach

Sustainability is integrated into our updated 2018–2022 strategy. Operationally, the university employs a cross-institutional approach to facilitate the oversight and implementation of financial, social, and environmental sustainability initiatives throughout our operations, research, and teaching and learning activities. This is the focal point where we can make significant impacts: conducting groundbreaking research that provides solutions to global challenges, offering innovative teaching and learning experiences that equip graduates with the necessary attributes and competencies for applying sustainability principles in their civic and professional lives, and ensuring the sustainable operation of our campus.

The main objectives of our sustainability approach is to:

- Develop **sustainable governance** (regulations, strategy, policies, action plans, programs, projects and initiatives) to enhance the university contribution leading to **transformative change**.
- Spread **sustainability culture (**economic, social and environmental) throughout all university persons.
- Integrate sustainable **best practices** into all university activities engaging all stakeholders resulting in **continual improvement**.

Contents

[1] SETTING AND INFRASTRUCTURE (SI)

[1.1] NUMBER OF CAMPUS SITES

PTUK – Main Campus

PTUK – Ramallah Campus

PTUK – Aroub Campus

Description:

There are three campuses for Palestine Technical university Kadoorie. The main campus Located in the north of the country in the city of Tulkam. It is the largest campus. The total area for the three campuses are approximately 490 thousand meters squared. Palestine Technical University started as a high agricultural school in 1930 awarding a three-year diploma course in agriculture. It served the local as well as the regional communities. Students as far as Jordan, Morocco and other African states came and stayed in Kadoorie.

In 1961 under the Jordanian rule the school became a college and began to teach other disciplines. In 1994 the Palestinian Authority took over responsibility for the college. In 1999 the college began to offer B.Sc. courses in different disciplines until finally in 2007 a presidential decree raised the status of the college to a university. Since then it carried the name Palestine Technical University Kadoorie. In 2017 two colleges joined the university adding a campus in the middle of the country (Ramallah) and in the north of the country (Hebron).

The university is regarded as the largest and most attractive universities in the country. It is surrounded by large green areas used by university to grow crops and raise animals. The university sells its produce and dairy products

to the staff and local market. It is also surrounded by large areas planted with different trees. It has on campus deep water wells and also carries out sewage water refining and cleaning where the water is re used for irrigation.

[1.2] CAMPUS SETTINGS

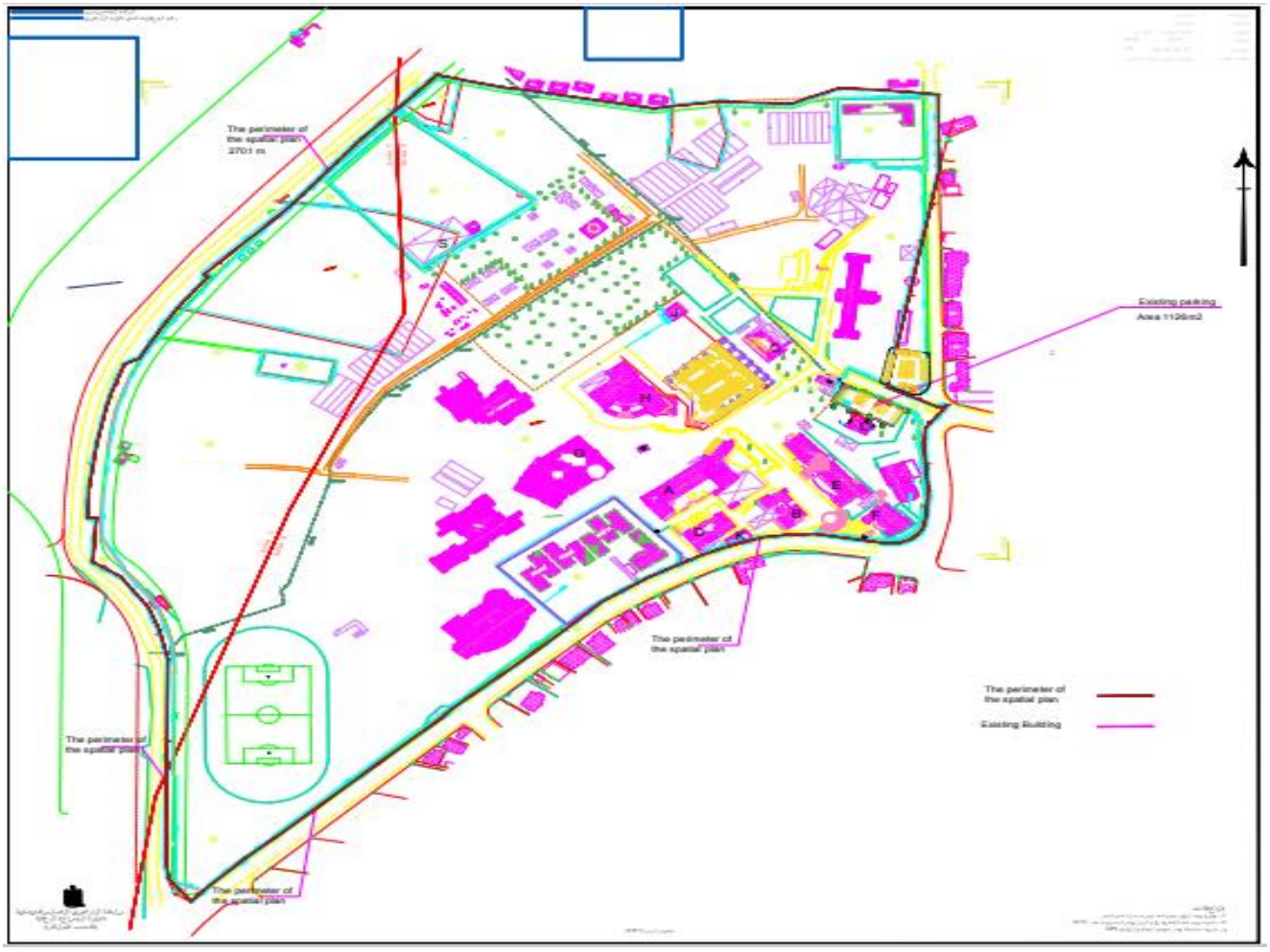
Example of Campus Setting - Rural (PTUK)

Description:

Tulkarm is a Palestinian city located in the north west. The area is approximately 32610 thousand meter squared. The main campus is located at the western edge of the city of Tulkarm. It is a mainly rural area with a high rate of agricultural land. The city has a total population of 90000 inhabitants. The city is traditionally an agricultural city and remains so to this date. It has small forest areas.

The second campus outside Hebron is also in a rural area with mainly agricultural areas surrounding it. The third campus is in an urban area of Ramallah but has relatively large green areas.

[1.3] TOTAL CAMPUS AREA (METER^2)



Main Campus

Ramallah Campus

Aroub Campus

Example of Total Campus Area (PTUK, Palestine)

Description:

Total area of the three Campuses: 0.490 km² (0.189 mi²) = 490.000 m^2

Circumference (Main Campus) = 2701m

[1.4] TOTAL CAMPUS BUILDINGS AREA

MAIN CAMBUS at TULKARM			
Building	**Building Name**	**Floor Area (m^2)**	**Total floors area (m^2)**
A	Main Building (Administration)	1774	6200
B	Faculty of Arts	698	2791
E	Faculty of science	1982	6500
G	Library	2516	6250
J	Gymnasium	193	1000
C	Faculty of Physcical Education	537	800
D	Supplies and Procurement Building	785	1800
K	Services	170	500
F	Continuining education	628	1650
L	Graduate studies	240	2000
S	Workshops	1300	1300
H	Faculty of Engineering	1828	8200
J	Diploma Faculty	1212	9500
M	Students center	1077	7649
N	Faculty of Business and Administration	1143	8950
All Roofs Area		**16083**	**65090**

RAMALLAH CAMBUS			
Building	**Building Name**	**Floor Area (m^2)**	**Total floors area (m^2)**
A	Administration Building	450	2250
B	Faculty of Business	1300	2650
C	Faculty of Arts	900	1150
D	Diploma	450	1800
Total Area (m^2)		**3100**	7850

AROUB CAMBUS			
Building	**Building Name**	**Floor Area (m^2)**	**Total floors area (m^2)**
A	Administration and Faculty of Arts	400	800
B	Business and administration	800	2400
C	Diploma	1000	4000
D	Theature	960	960
Total Area		**3160**	8160

Overall ground Floor Area is 22343 m^2
Overall area of total roofs is 81100 m^2

[1.5] The ratio of open space area to total area

Description:

Areas	Area (m^2)	Percentage
Buildings	22343	4.6%
Streets and Pedestrians Paths	48870	10%
Parking	1675	0.3%
Vegetarian	101000	21%
Forests	149390	30%
Water Absorption Areas	166722	34%
Total	490000	100.0%

Ratio of open space towards total area: 95.1%

[1.6] Total Area on Campus Covered in Forest Vegetation ($meter^2$)


REDMI NOTE 8

Ramallah Campus

PALESTINE TECHNICAL UNIVERSITY KADOORIE (PTUK)

Description:

The university started as an agricultural school in the 1930s. To this date it is proud to, have an agricultural college with distinguished professors who carry out research in agriculture. The college offers 3 undergraduate courses and 2 master courses in Agriculture. The university hosts every year an international conference on agriculture (Olive trees). The university has large areas planted with both vegetables and fruit and plans to expand this area. The produce is sold to the staff and local community.

Total area on campus covered in forest vegetation: 149390 m^2

Total area on campus covered in planted vegetation: 101000 m^2

[1.7] Total area on campus covered in planted vegetation (meter^2)

Green House 1	Green House 2
Example of Total Planted Vegetation Area (PTUK))	

Description:

Total planted vegetation area: 101000 m^2

Total Area: 490000

Percentage area: 20.6%

In addition to the areas above the university has plans to increase the vegetation areas and thus increase the diversity in its products. It plans to engage the local farming community through voluntary work and joint ventures. Students are also encouraged to do volunteer work in the university farms and green houses.

[1.8] Total area on campus for water absorption besides the forest and planted vegetation (meter^2)

Tulkarm

Tulkarm

Tulkarm

Tulkarm

Ramallah

Ramallah

Description:

Total water absorption area: 166722 m^2

Total Area: 490000 m^2

Percentage area: 34%

The university is seeking grants to improve the rain water collection from the buildings and absorption areas in order to collect it in small ponds or wells. This water will be used for irrigation of planted areas thus reducing the dependency on the local municipality

[1.9] University budget for sustainability effort (in US Dollars)

	2020	2021	2022	Average
Budget Total	21,000,000$	23,000,000$	25,000,000$	$ 23,000,000
Sustainability Budget	2,280,000$	3,485,000$	3,413,333$	$ 4,475,000
			Percentage	18 %

Description:

- The percentage university budget for our university (2022) is 18%

The university takes sustainability extremely seriously. It recognizes the importance of its social, environmental and economic impact. The university has a master plan taken into consideration the need for buildings but more importantly the protection of the green areas. The campus plan is designed so that student and staff can move around without the need of any form of transportation. The university regularly invites volunteers from our students, staff and from the local community to participate in initiatives such as tree planting, maintain ace work, awareness seminars and exhibitions.

The university offers a wide range of courses in sustainability, some of these classes focus on finding real world solutions to environmental, economic and social challenges. These include the importance of decreasing the waste through recycling paper, plastics and glass. The importance of using biodegradable materials, the importance of proper disposal of waste. All these initiatives aim to give students and participants knowledge and skills to shape better future for future generations and how small changes to their daily life can positively impact the local community and the world.

Staff are encouraged to develop new courses in sustainability and to carry out research. They are also encouraging staff to match graduates with partner organization to carry out their projects and research to advance sustainability

Recent success stories include huge project to install renewable energy resources to reduce the energy bill, replacing outdated equipment such as laboratory equipment, air-condition units, refrigeration with more efficient newly designed equipment saving a lot of emissions and power.

The university is also working on improving water collection which will be used for irrigation.

[1.10] Percentage of operation and maintenance activities of building in one year period

Solar Panel Maintenance (PTUK)	Cleaning around the playground (PTUK)

Example of **operation and maintenance activities of building in one year period**

Description:

Regular maintenance activities are carried out by different university staff as well as professionals from the local community. Some of this maintenance such as grass cutting, gardening and plumbing as well as simple electrical works are carried out by volunteers from the young youths through the continuing education and community service Centre thus ensuring the engagement of the local community specially the youth.

1	Total campus buildings area	81100 m^2
2	Total operated building	60800 m^2
	Percentage building that operated and maintained	75%

[1.11] Campus facilities for disable, special needs and or maternity care

Accessibility to buildings (PTUK)

Disabled parking (PTUK)

Description:

The university gives great attention to the needs of the disabled or special needs persons. It offers scholar ships for the disabled as well as a quota for their employment. Its aim is to have 5% of its employees from people with special needs specially that the number of disabled people is rapidly increasing due to the political turmoil in Palestine. It also provides help for people with disabilities as inability to write or hear. Those who need others to read or write for them during exams are provided with the help they need through the deanship of student's affairs. Lifts and ramps are available in all buildings given disabled people freedom to move around the campus horizontally and vertically.

The university gives pregnant women 3 months leave when they give birth and 3 days for the father. After they comeback they are entitled to a one-hour break of their choosing every day for breast feeding for the first year.

1. Disable parking spaces available in all buildings
2. Accessible toilets for disabled people in most buildings
3. Ramps available at all entrances for the buildings allowing easy access for disabled people

[1.12] Security and safety facilites


EXIT


الشرطة 100
الإسعاف 101
الدفاع المدني 102
DANGER
إحذر
خطر كهربائي


H-1 13

CCTV on all university ground (PTUK)

Fire Sensors and fire ydrant (PTUK)

Description:

In its pursue to spread the safety culture and practice among its students, the university gives lectures and brings experts in safety from the local community. Seminars as well as exhibitions are regularly held on campus. The university also recently began an under graduate course in fire protection and safety. PTUK is the only university in Palestine offering this course.

1. CCTV on all university ground
2. Fire Sensors and Fire Hydrant on campus
3. Fire extinguishers in Labs
4. Regular visitation from the fire departments to check for safety and escape routes as well as fire exits

[1.13] Health infrastructure facilities for students, academics and administrative staffs' wellbeing

Hospitals our students can use under our insurance

Description:

1. Present of two doctors and two nurses on campus during teaching ours
2. All staff and students are insured by the university

[1.14] Conservation: plant, animal, and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities

Green House (PTUK)

The Library (PTUK)

Water refining (PTUK)

Water refining (PTUK)

Water Research

Electromagnetic wave Radiation measurement

Example of **Conservation: plant, animal, and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities**

Description

The university plants vegetables such as cucumber, tomatoes cauliflower, eggplant, green beans an avocado as well as fruits such as guava, oranges. All products are watered from a deep well available on campus. Refined water is used for forests only. Also cattle are available to produce dairy product such as yogurt, cheese these are also sold for the benefit of the university

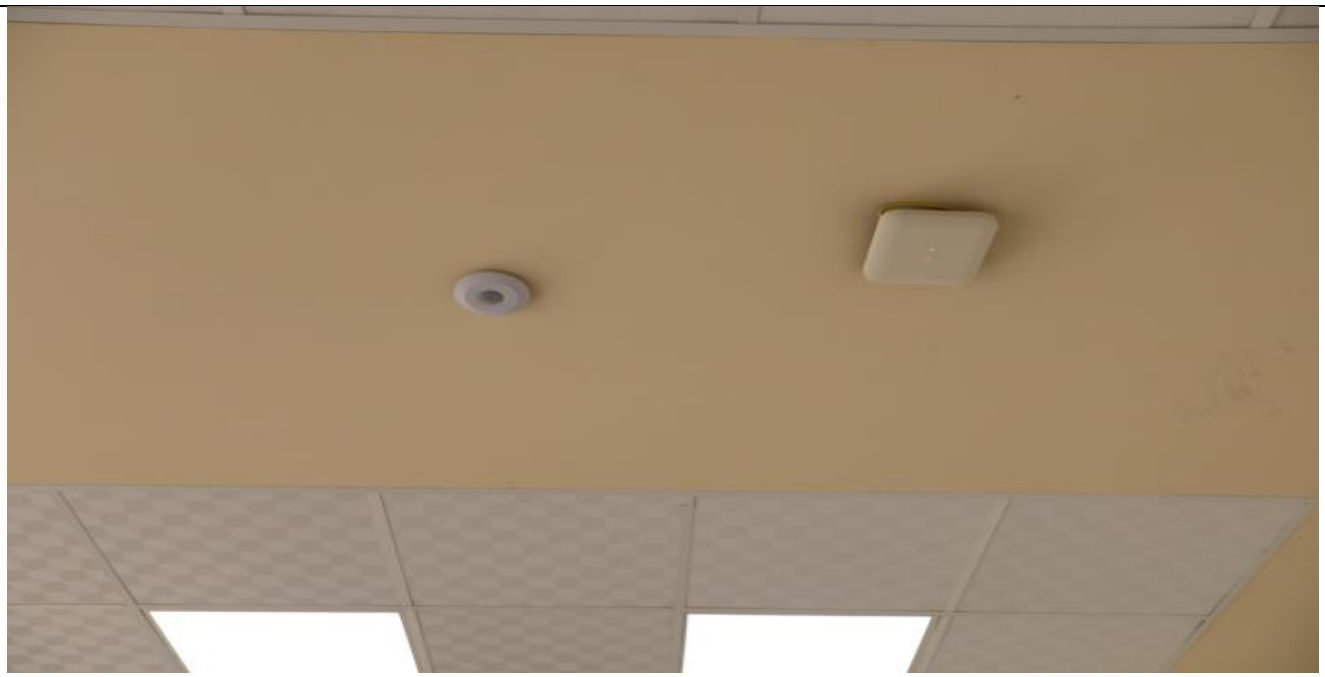
The university also aims to increase the are used for such plantation.

1. Green house for planting vegetables for the staff and local community
2. Cattle farming and dairy products sold for the local market
3. University water refining used for irrigation

[2] ENERGY AND CLIMATE CHANGE (EC)

[2.1] Energy Efficient Appliances Usage

Example of Energy Efficient Appliances Usage: Use of LED lighting and lamps with light detection (PTUK)
 LED LIGHTS



Motion Detector Sensor inside class rooms and corridors

Night lighting sensor

Low Consumption Devices

Example of Energy Efficient Appliances Usage: Solar power system (PTUK)

:

Appliance	Total Number	Total number energy Efficient appliances	Percentage
LED Lamp	150,000	130,000	87%
Fan	250	180	72%
Air Conditioning	300	200	67%
Etc.	…	**…**	**…**
		Average Percentage	**86.6%**

1. Light sensors in the corridors and rooms (when there is movement the light goes on otherwise it stays off)
2. Wide usage of power saving lighting such as LED
3. Wide use of Power solar panels approximately 90% of the buildings have solar panels.
4. Use of power saving Air conditions (inverter system) in some places

[2.3] Smart Building Implementation

No.	Name	Place	automation		safety				energy		water		Indoor environment				lighting				Building Area (m^2)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
	Main Building (Administration)	City, Country			x	x		x		x		x				x	x	x		x	6200
	Faculty of Arts	City, Country			x	x		x		x		x				x	x	x		x	2791
	Faculty of science	City, Country			x	x		x		x		x				x	x	x		x	6500
	Library	City, Country			x	x		x		x		x				x	x	x		x	6250
	Gymnasium	City, Country			x	x		x		x		x				x	x	x		x	1000
	Faculty of Physcical Education	City, Country			x	x		x		x		x				x	x	x		x	800
	Supplies and Procurement Building	City, Country			x	x		x		x		x				x	x			x	1800
	Services	City, Country				x		x								x	x				~~500~~
	Continuining education	City, Country			x	x		x		x		x				x	x	x		x	1650
	Graduate studies	City, Country			x	x		x		x		x				x	x	x		x	2000
	Workshops	City, Country				x		x								x	x				~~1300~~
	Faculty of Engineering	City, Country			x	x		x		x		x				x	x	x		x	8200
	Diploma Faculty	City, Country			x	x		x		x		x				x	x	x		x	9500

	Students center	City, Country				x		x								x	x				~~7649~~
	Faculty of Business and Administration	City, Country			x	x		x		x		x				x	x	x		x	8950
	Total																				**55641**

No.	Name	Place	automation		safety				energy		water		Indoor environment				lighting				Building Area (m^2)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
	Administration Building	City, Country			x	x		x		x		x				x	x	x		x	2250
	Faculty of Business	City, Country			x	x		x		x		x				x	x	x		x	2650
	Faculty of Arts	City, Country			x	x		x		x		x				x	x	x		x	1150
	Diploma	City, Country			x	x		x		x		x				x	x	x		x	1800
	Total																				**7850**

No.	Name	Place	automation		safety				energy		water		Indoor environment				lighting				Building Area (m^2)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
	Administration and Faculty of Arts	City, Country			x	x		x		x		x				x	x	x		x	800
	Business and administration	City, Country			x	x		x		x		x				x	x	x		x	2400

	Diploma	City, Country			x	x		x		x		x				x	x	x		x	4000
	Theature	City, Country				x		x								x	x				~~960~~
	Total																				**7200**

Smart building implementation

$$\frac{total\ smart\ building\ area}{total\ building\ area} \times 100\%$$

Example:
*Total Smart Buildings Area: 70,691 m^2
*Total Building Area: 81,100 m^2

$$\frac{70{,}691\ m^2}{81{,}100\ m^2} \times 100\% = 87\%$$

Note: One building could be classified as a smart building if it has a minimum of 5 features. Please add the total smart building area from buildings which are classified as smart buildings.

[2.3] Renewable Energy Sources in Campus

Example of Mounted Solar Panels (PTUK- Main Campus, Tulkarm, Palestine)

Example of wind turbine (PTUK, Main Campus, Research, Tulkarm, Palestine

Example of wind turbine (PTUK, Main Campus, Research, Tulkarm, Palestine

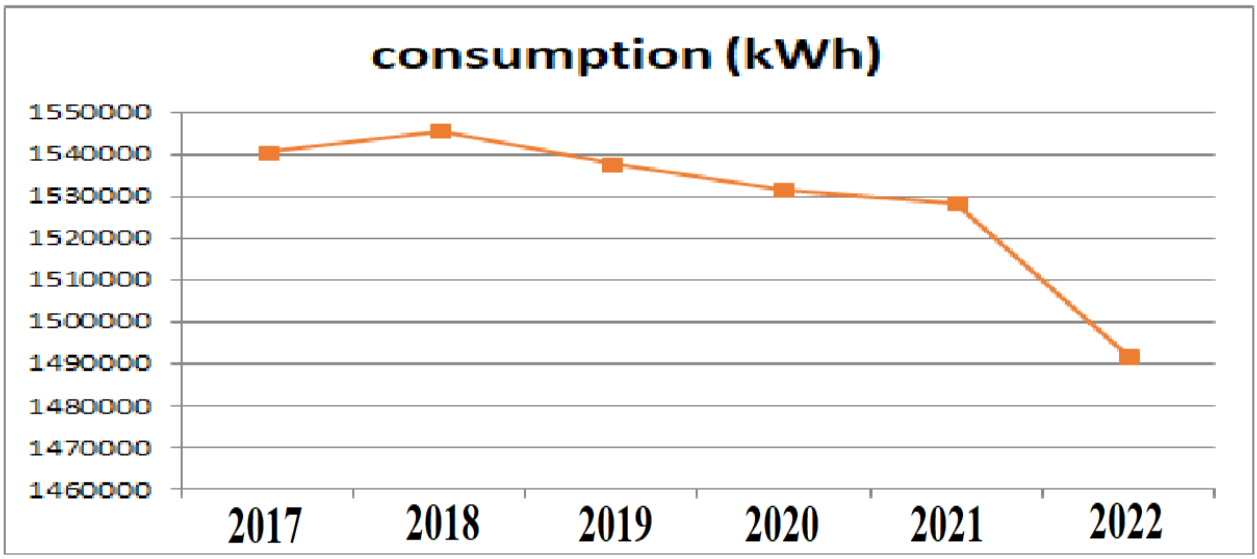
Example of Biogas digester generating biogas to supply a methane engine generator(PTUK – Main campus, Tulkarm, Palestine)

Example of Biogas digester generating biogas to supply a methane engine generator(PTUK – Main campus, Tulkarm, Palestine)

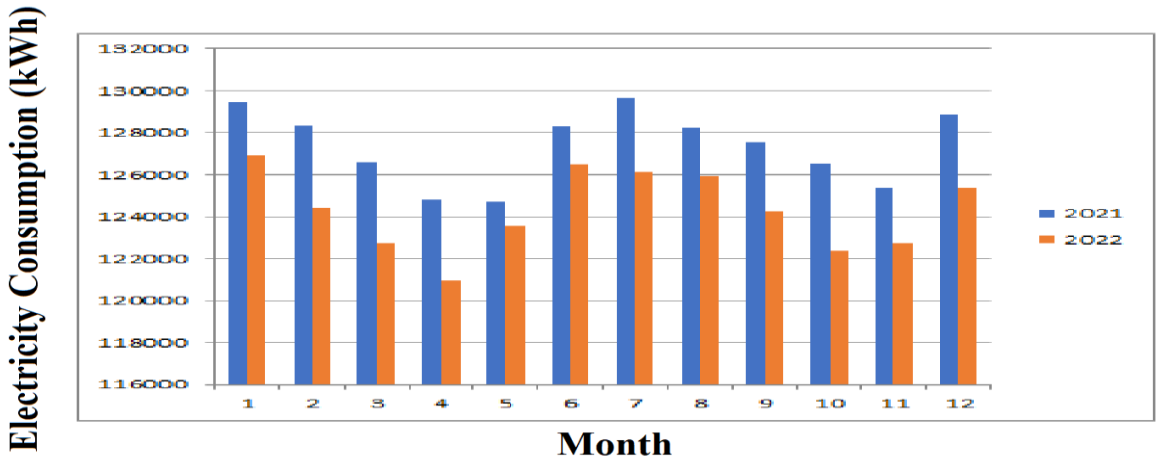
Description:

The university is proud to be able to generate a very large of its power from renewable sources. All the main buildings have solar panels mounted on their roofs utilizing otherwise not used space generating 731452 Kwh. We also have a wind turbine on one of the roofs (Faculty of Engineering roof) generating 12000 Kwh electrical energy and digester to generate bio gas generating 9000 Kwh electricity yearly that is installed beside one of the green houses inside the main campus. The electricity generated by the biogas generator to supply the electrical pumps and the smart irrigation system built for this green house. The raw material for this aerobic digester is the agricultural waste as well as any organic waste from the university cafeterias. is The university aims to have all its energy needs from renewable sources. In its master plan all new buildings will have solar panels.

[2.4] Electricity Usage per Year (in Kilowatt hour)



Example of Total Electricity consumption (Main Campus – PTUK – Tulkarm) 2017-2022
The consumption of the last year decreases due to implementation of energy conservation strategies at most of the PTUK buildings



Example of Electricity Total consumption (kWh) Main Campus (PTUK, Tulkarm, Palestine)
From Renewable sources and main grid
The consumption decreases as part of the PV system has been added at the start of 2022.

Description:

The total electricity usage of main campus is 1491837 kWh at 2022. The sources of this consumption are: the main grid (739385) and the renewable energy sources (752452 kWh)

Electricity consumption varies from month to month. however, there is a significant increase in power usage in the summer months and winter because of the usage of air conditioning and heating for our class rooms. All the old air conditioning units were replaced with energy saving new units. All buildings are insulated to save energy.

[2.5] ratio of renewable energy production divided by total energy usage per year

Description:

No	Renewable Energy	Production (in kWh)
2	**Biomass**	9000
3	**Solar panel**	731452
4	**Wind turbine**	12000
	Total	752452

752452 kWh (Renewable Contribution) / 1491837 kWh (Total Electricity usage) = 50.4 %

Some of the renewable energy projects were funded through joint projects with partners from Europe (Czechia) Since the weather in Tulkarm is extremely suitable for solar power with a very high number of hours of day light available in summer and winter is very mild.

[2.6] Elements of Green Building Implementation as Reflected in All Construction and Renovation Policies

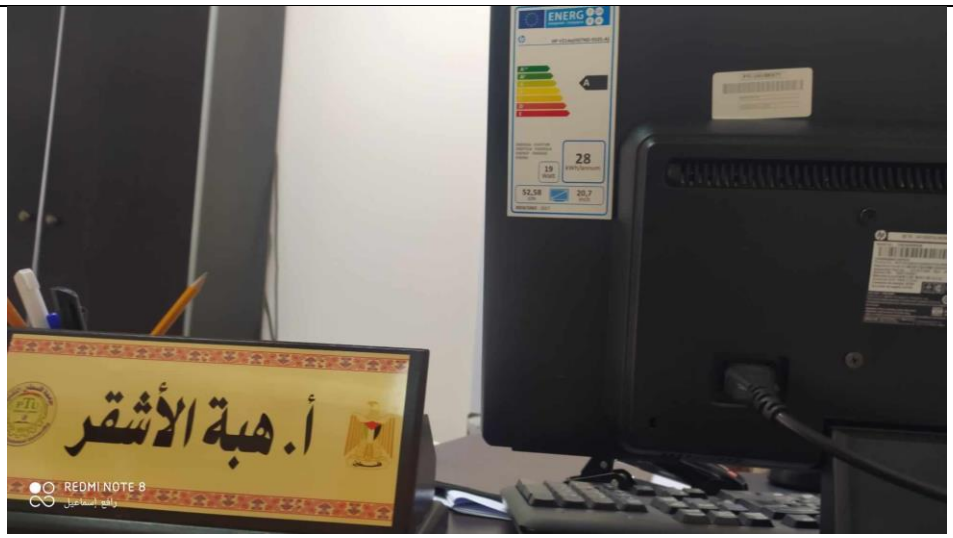
Utilizing Natural Lighting – Engineering Building


REDMI NOTE 8
رافع إسماعيل


PalEV
ELECTRIC CAR CHARGING STATION
موقف خاص
للسيارات
الكهربائية فقط


BISAN
Inverter Plus


Inverter Plus
BISAN
24



Description:

The buildings are designed to insure sufficient light is entering through the windows and glass domes which means there is no need to use lighting. Buildings are insulated to protect the internal from heat and to save on air-conditioning bills.

[2.7] Greenhouse gas emission reduction program

Electrical Vehicles' Batteries Charge point(Palestine Technical University)

PV Solar System (Palestine Technical University)

Wind Turbine

Electric Bikes

Using Electrical Vehicles

Description:

The university has solar panels for power reducing the amount of purchased electricity. It encourages the use of small electric cars and bikes. The university campus is designed to be walk friendly eliminating the need for the use of any form of transportation thus reducing any harmful emissions. The university is currently building a testing center for electric vehicles thus encouraging the use of electric cars.

[2.8] Please Provide The Total Carbon Footprint (CO_2 emission in the last 12 months, in metric tons)

Option 2: Recommended by UI GreenMetric

CO_2 (electricity)

$$= \frac{electricity\ usage\ per\ year\ (kWh)}{1000} \times 0{,}84$$

$$= \frac{739385\ kWh}{1000} \times 0{,}84$$

= 621.0834 metric tons

CO_2 (bus)

$$= \frac{number\ of\ shuttle\ bus\ in\ your\ university \times total\ trips\ for\ shuttle\ bus\ service\ each\ day \times approximate\ travel\ distance\ of\ vehic}{100}$$

0,01

$$= \frac{0 \times 150 \times 5 \times 240}{100} \times 0{,}01$$

= 0 metric tons

CO_2 (cars)

$$= \frac{\text{number of cars entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times$$

0,02

$$= \frac{188 \times 2 \times 0.25 \times 240}{100} \times 0{,}02$$

= 4.512 metric tons

CO_2 (motorcycle)

$$= \frac{\text{number of motorcycle entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 24}{100}$$

0,01

$$= \frac{3 \times 2 \times 0.20 \times 240}{100} \times 0{,}01$$

= 0.029 metric tons

CO_2 (total)

= 621.1 + 0 + 4.5 + 0.03

= 625.6 metric tons

Carbon footprint in 2022 = 625.6 metric tons

Total Carbon Footprint (UI GreenMetric)

The electricity usage per year (kWh) used in the calculations of total carbon footprint is 739385 kWh (the part of the energy imported from the grid) as part of the total electricity usage (1491837 kWh) is contributed by renewable energy sources. This renewable energy is 752452 kWh

[2.9] Number of innovative program(s) in energy and climate change

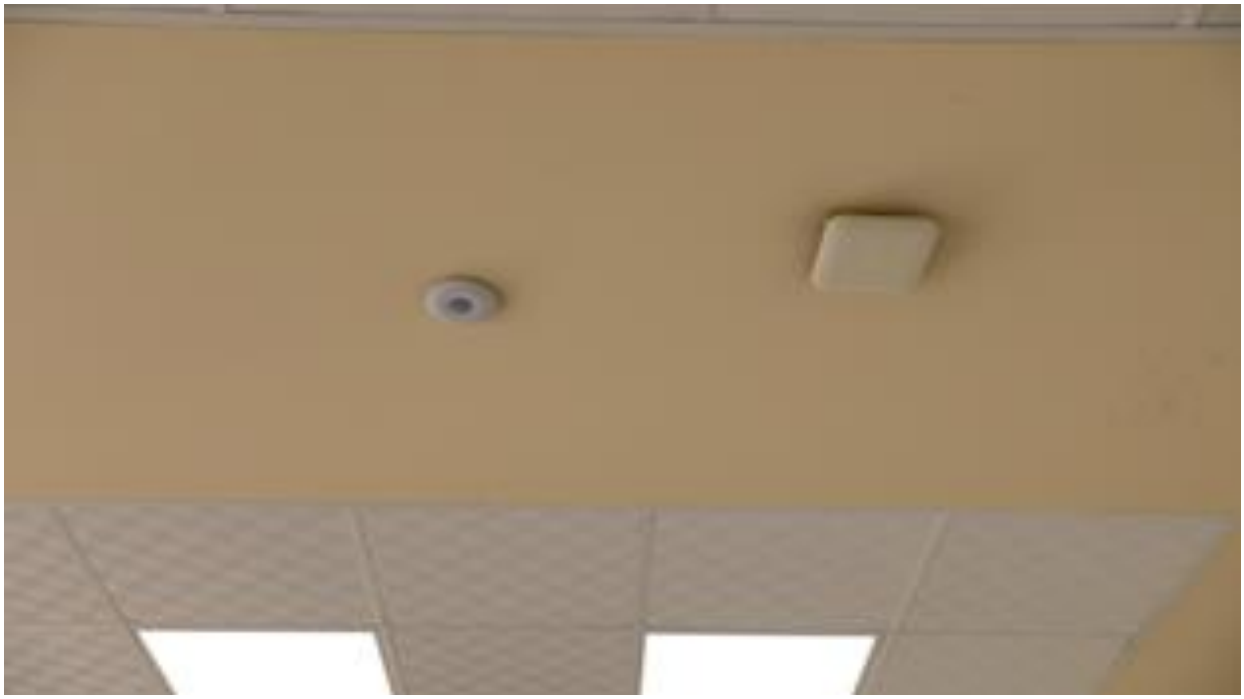
Almaqdisi project

Almaqdisi project

Almaqdisi project

Almaqdisi project

Almaqdisi project



Class rooms with motion detectors to control lighting inside rooms with presence of students

Water research (WaSec ERASMUS program)

Examples of innovative program (Palestine Technical University, Palestine)

Description:

The university has several Innovative program both at the M.Sc. and B.Sc. level. Some of these programs were the outcome of international projects these include

1. Climate change and meteorology program (The only one of its type in Palestine)
2. Engineering in renewable energy program (sustainable Energy Engineering)- Bachelor degree program
   There is a continuing strong cooperation with international agencies to equip the labs of this program mainly the GIZ (the German international agency)
3. Almaqdisi Project
4. innovation in water technology program. This program is an outcome of one of the ERASMUS international programs (WaSec).

5. Innovative program inside university campuses for smart automation of buildings.

The university also has some ongoing projects these include an Erasmus project in Innovations in Water Education programs, enhancing water security and Scio-economic development in the eastern Mediterranean under climate change (WaSec). Another project is Almaqdisi project which deals with solar panel research and capacity building.

[2.10] Impactful university program(s) on climate change

No	Programs	Scope (international / regional / national / local / etc)	Total Participants	Photo	Short Description
	Program to install 500 kWp on the roofs of main campus buildings	local	To serve about 8000 of staff and students		This PV project participates in production of about 750 MWh clean energy yearly
	Climate change and meteorology program	Local	186		It is a bachelor program. This program comes as an outcome of international cooperation between PTUK and number of Spanish universities

	sustainable Energy Engineering				It is a bachelor program. This program comes to be in line with the national and international interest in renewable energy sources and their importance regarding climate change. This program was prepared with local community.
	innovation in water technology program	International	Students and staff of many universities who participated in this project		Erasmus project in Innovations in Water Education programs, enhancing water security and Scio-economic development in the eastern Mediterranean under climate change (WaSec).
	Almaqdisi Project	International	20 (who directly participated in this project from Palestine and France) but its outcomes benefit all of the students of the related program		This project was implemented between staff from Palestine and France. It is developing power electronic circuits used in renewable energy systems.
	Workshop about electrical vehicles	national	320		Our university has launched an academic program in Vehicle Engineering. There are number of yearly workshops regarding the trend to switch to electrical vehicles

	Workshop about waste recycling	national	365		The university has many academic programs regarding the environment. Many of workshops are yearly held to increase the awareness of the university and national / local community about the environment. Many national agencies participate in holding these workshops.
	Workshop about an international cleanliness day	local	250		Number of workshops are yearly held to increase the awareness of the university and local community about the cleanliness especially for the surrounding environment and its Importance for health.
	A workshop about earth day	national	300		This is a yearly basis day
	Program to install 5 kW wind turbine on the roof of engineering buildings	local	To participate in energizing the engineering building (1500 staff and students)		This wind turbine is installed for research. Meanwhile, it participates in clean energy production to serve this building

Description:

The university has several Innovative program both at the M.Sc. and B.Sc. level. Some of these programs were the outcome of international projects these include

2. Climate change and meteorology program (The only one of its type in Palestine)
3. Engineering in renewable energy program (sustainable Energy Engineering)- Bachelor degree program
   There is a continuing strong cooperation with international agencies to equip the labs of this program mainly the GIZ (the German international agency)
4. Almaqdisi Project
6. innovation in water technology program. This program is an outcome of one of the ERASMUS international programs (WaSec).
7. Innovative program inside university campuses for smart automation of buildings.

The university also has some ongoing projects these include an Erasmus project in Innovations in Water Education programs, enhancing water security and Scio-economic development in the eastern Mediterranean under climate change (WaSec). Another project is Almaqdisi project which deals with solar panel research and capacity building.

[3] Waste (WS)

[3.1] 3R (Reduce, Reuse and Recycle) Program for University Waste

Waste Sorting Program

Waste Sorting Program

Compost Project

Compost Project

PTUK Products – LOGO

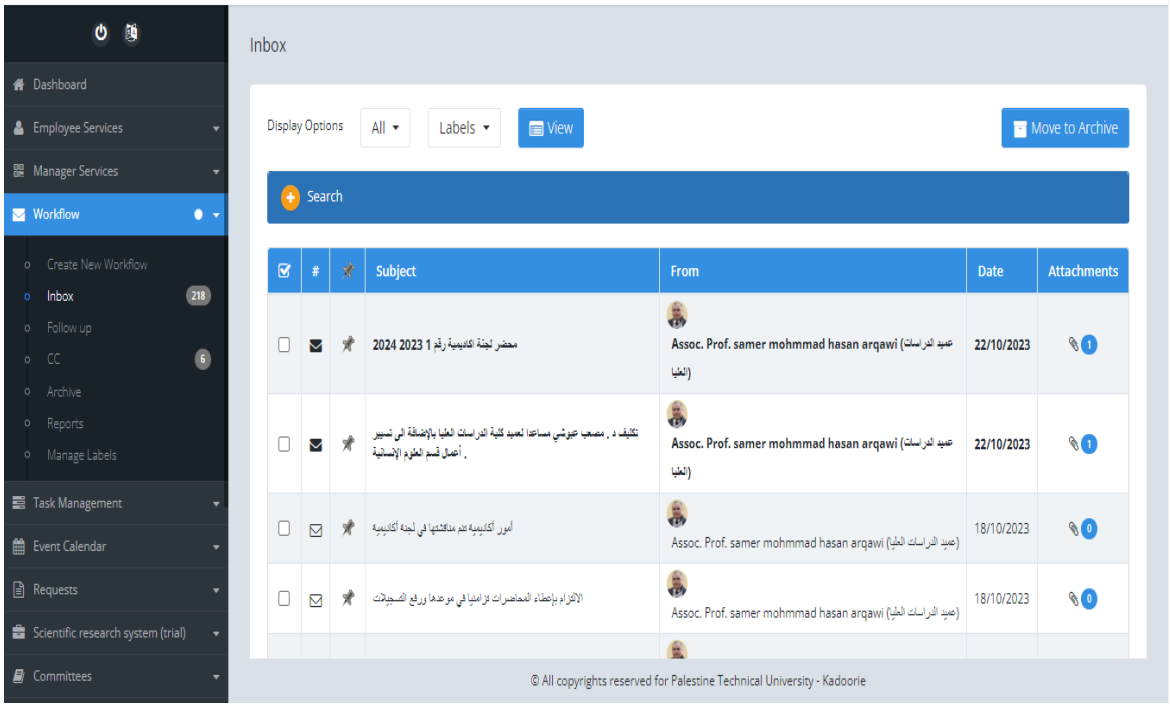
Paper Shredder for paper reuse

Description:

The university spreads the culture of recycling by providing separate bins for paper, plastics and glass. It is hoped that students who engage in these activities understand that small changes in their behavior will have great impact in our future. The university promotes the recycling of Electronic Waste and ink-cartridges from printers. E-waste items are not disposed of in the normal trash due to their high concentrations of toxic chemicals and heavy metals. They are stored in the university for proper disposal. Also minimum use of paper is encouraged through developing software programs for internal correspondence. All correspondence is carried out on line internally.

[3.2] Program to Reduce the Use of Paper and Plastic on Campus

Waste Sorting Program



Human Resources Managent System – Software Applocation

Compost Project

Paper Shredder for paper reuse

Example of Program to Reduce the Use of Paper and Plastic in Campus (PTUK)

Description

The university works with a local paper recycling company. The waste paper including exams (After a certain period) are collected by the company for recycling. The university has a Human Resources management electronic corresponding system virtually cutting the use of paper by 70%. This system was built internally by university programmers. All correspondence is sent by this system. Students Also have more than 60 forms on line they can fill covering all their needs and requests. Staff are required to print on both sides of the paper including exams.

In order to further reduce paper, the university carries some of its largest exams on line. It also hosts awareness campaigns, seminars and exhibitions in order to emphasize the importance of recycling and thus introduce best practice a among the students.

The university provides separate bins for plastics, paper and glass encouraging students to use this separation. The plastics are collected by a recycling company.

[3.3] Total volume organic waste produced and treated-2022

Type of waste	amuount (ton)				
	total	reduced	reused	down-cycled	up-cycled
organic	201	49	84.6		
- food waste	121	24	54.3		
- leaf, etc.	62	18	22.1		
- etc	18	7	8.2		

Description:

The cafeteria is encouraged to reduce overbuying by keeping an accurate stock of the pantry and by planning what meals are available on what days beforehand. Creating meal plans gives the cafeteria a long term plant on the amounts needed for each plan. The university provides the cafeteria with an appropriate number of freezers and refrigerators to be used for storage.

The university looks to expand these initiatives in all three campuses and to further engage the local community.

[3.4] Total volume inorganic waste produced and treated-2022

Type of waste	amuount (ton)				
	total	**reduced**	**reused**	**down-cycled**	**up-cycled**
inorganic non-toxic	276	26	226		
- paper	138	17	118		
- soft plastic	64	6	59		
- hard plastic	62	3	49		
- etc	12	-	-		

Description:

Achieving this Percentage of reduction of inorganic waste comes through the university's tireless efforts to spread the culture of reducing dependence on non-organic materials in daily practices through:

- Raise awareness about the importance to decrease the dependency on inorganic waste.
- Using reusable alternatives (water bottles, containers, shopping bags,…)
- Using products that minimize using packaging waste
- Depending on electronic exams instead of paper based exams.
- Depending on durable products that can easily be repaired.
- Depending on products that lasts for long time.
- Trying to depend on products that can be recycled especially for electrical appliances.
- Limiting the dependency on single use plastic products.
- Using cleaning products that packaged in recyclable containers.
- Depending on products that manufactured from companies that have commitment to reduce waste.

The inorganic treatment procedures adopted by the university focus mainly on the reuse culture of the waste especially for bottles, containers, and bags. In addition the following adopted procedure contribute to reuse (treat) of inorganic waste:

- Using separate containers for inorganic waste products (Paper, Plastic, metals, glass,..) in order to recycle these materials by turning them into new products. They are sold to scrap dealers and facilities that recycle these materials.

- Using inorganic waste materials for other purposes like art projects.
- Reusing some inorganic waste materials mainly concrete in other construction projects (basement material).
- Some of lab equipment that are replaced by other more recent equipment that should suit and be in-line with the recent technologies are denoted to schools centers that benefit from these equipment instead of landfilling them.
- Denoting some of constructional building materials (doors and windows) that are replaced by other to the local community that can benefit from them.

[3.5] Inorganic Waste Treatment

Waste Sorting Program

Waste Sorting Program

Plastic recycling

Description:

The inorganic treatment procedures adopted by the university focus mainly on the reuse culture of the waste especially for bottles, containers, and bags. In addition the following adopted procedure contribute to reuse (treat) of inorganic waste:

- Collecting the inorganic waste by a local company for recycling, the waste is separated in the university as daily waste. This includes paper, plastic, glass etc. and electronic toxic waste such as ink cartridges, laboratory equipment's, printers etc. The electronic waste is stored in the university and at certain times of the year is collected by a company while the daily waste is collected by a recycling company or the municipality.
- Using separate containers for inorganic waste products (Paper, Plastic, metals, glass,..) in order to recycle these materials by turning them into new products. They are sold to scrap dealers and facilities that recycle these materials.
- Using inorganic waste materials for other purposes like art projects.
- Reusing some inorganic waste materials mainly concrete in other construction projects (basement material).
- Some of lab equipment that are replaced by other more recent equipment that should suit and be in-line with the recent technologies are denoted to schools centers that benefit from these equipment instead of landfilling them.
- Denoting some of constructional building materials (doors and windows) that are replaced by other to the local community that can benefit from them.

[3.6] Total volume toxic waste produced and treated-2022

Treatment of chemical materials

Treatment of chemical materials

Treatment of chemical materials

Treatment of chemical materials

Type of waste	amuount (ton)				
	total	**reduced**	**reused**	**down-cycled**	**up-cycled**
toxic	0.99	0.77 (treated)			
- electronics	0.34	0.22			
- lab. Chemicals	0.65	0.55			
- etc					

Description:

The toxic waste is divided into two parts. Electronic waste collected by a specialist company every few months. The second is waste from chemical labs.

The toxic waste from chemical labs is treated and got rid off according to international standards. For example, low concentration acid bases are further diluted in water until its concentration is no longer harmful the wasted

Highly toxic unsafe material such as mercury we add sulfur (international protocol) before getting rid of it

Brome remains are mixed with sodium before getting rid of it

Brocken glasses, empty chemical bottles are stored in special university stores and then the university administration gets rid of it through a local company

Electronic waste is stored in a safe storage facility and then got rid off by the administration through a local company. Being a government university these companies are contracted with the government.

[3.7] Toxic Waste Treatment-2022

Treatement of chemical toxic materials

Treatement of chemical toxic materials

Description:

The toxic waste from chemical labs is treated and got rid off according to international standards. For example, low concentration acid bases are further diluted in water until its concentration is no longer harmful the wasted

Highly toxic unsafe material such as mercury we add sulfur (international protocol) before getting rid of it

Brome remains are mixed with sodium before getting rid of it

Brocken glasses, empty chemical bottles are stored in special university stores and then the university administration gets rid of it through a local company

Electronic waste is stored in a safe storage facility and then got rid off by the administration through a local company. Being a government university these companies are contracted with the government.

[3.8] Sewage Disposal

Sewage Disposal (PTUK)

Sewage Disposal (PTUK)

Description:

The university regularly carries out sewage maintenance. The water is sent to a treatment plant on campus. The treated water is used for forest irrigation. There is a water well on campus, it is used to water the vegetables planted on campus.

The university has several ambitious projects in this area. These include creation of a solar power station for the water treatment plant and for the irrigation system from the well. Another project is to increase the amount of rain water collected in ponds to be used for irrigation.

The university is applying for funds to update the water treatment and increase the amount of water treated.

[4] Water (WR)

[4.1] Water Conservation Program Implementation

Water research

Description:

The university aims to have all its buildings with separated sewerage system, for waste water and for clean water (rainwater). Rain water is collectedHarvested from the roofs of the buildings and is then discharged into the local ponds and wells around the campus. The university currently has on pond and a deep well used for plant irrigation and is looking for funding to increase the number of bonds and wells.

The university also hopes in the future when some of these bonds can supply the buildings for toilet flushing and general cleaning.

Through an international project the university began to experiment water plantation and smart irrigation using water droplets. The source of the water is from the wells and the bonds also . the university has currently several international projects on water conservation and farming these include

1. Innovation in water education. Enhancing water security and socio-economic development in the eastern Mediterranean under climate changes 2021

2. Introduction feasible and sustainable hydro-agriculture systems to benefit poor people in urban Palestinian areas

[4.2] Water Recycling Program Implementation

Description:

The university has a treatment plant for sewage recycling The treated water is used for forest irrigation There is a rain water well on campus, it is used to water the vegetables planted on campus. The university is also working on creating new bonds for rain water collection to be used for cleaning, flushing and irrigation

[4.3] Water Efficient Appliances Usage (e.g. hand washing taps, toilet flush, etc.)

Water Efficient Appliances Usage

Appliance	Total Number	Total number water Efficient appliances	Percentage
Toilet	143	106	74%
Wastafel	112	92	82%
Etc.	…	**…**	**…**
		Average Percentage	**78%**

Description:

The university has taps with sensors on campus or and on- off taps. These serve the students and insure that only a specific amount of water is dispensed each time and the cannot be left on. The piping in the university is plastic with monitoring (meters) and thus eliminating the erosion process. Regular maintenance is carried out to reduce water wastage.

[4.4] Consumption of treated water

Description:
The water treated is used for

1. Forest irrigation
2. General Cleaning
3. Fountains

Furthermore, the university is seeking funding to update its treatment plant

[4.5] Water pollution control in campus area

[5] Transportation (TR)

[5.1] The total number of vehicles (cars and motorcycles) divided by total campus' population

No.	Vehicle	Total Number
1	Car managed by the university	5
2	Cars entering the university	183
3	Motorcycles entering the university	3
	Total	191

The ratio is 191(total number of vehicles) / (9125+669) (total population) = 0.02

Description:

The university encourages staff and students to share cars when coming to work. The campus does not need transportation from the city center as it is less than 1 kilometer from the center. Buildings are close to each other eliminating the use of any form of transportation.

The university encourages staff to buy cars with zero emissions by signing agreements with electric cars manufacturers through the worker's union with lower interest rates. It also has a charging station free for all staff.

NOTE:

It is worth to note that no Shuttle Service inside the university campuses since there is no need. the campus buildings are close and the terrain is friendly.

Furthermore the university is currently in the process of purchasing electric carts to be used for work, maintenance and goods movement.

[5.2] Zero Emission Vehicles (ZEV) Policy on Campus

Electrical Bikes

Electrical Vehicles

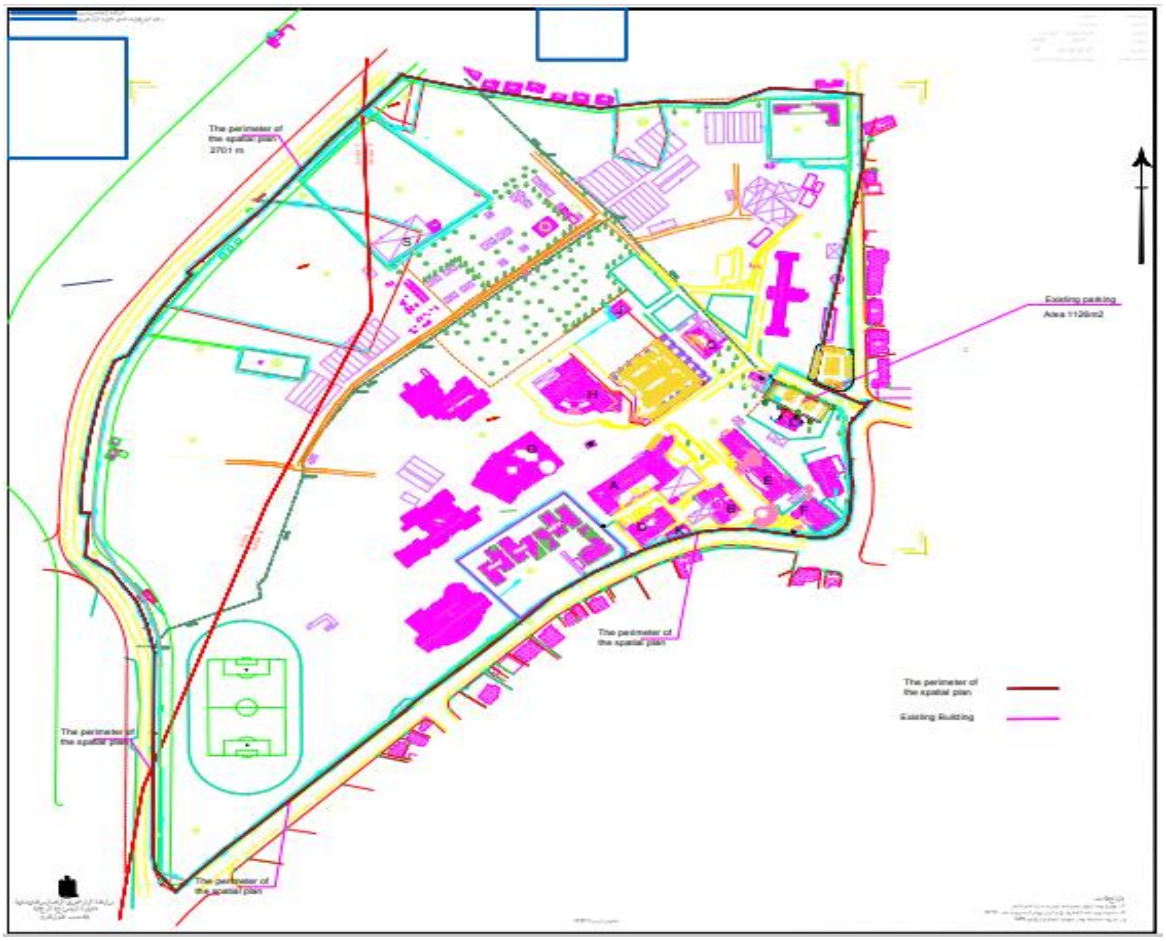
Electrical Vehicles' Batteries Charge point(Palestine Technical University)

Description:

All PTUK campuses are pedestrian friendly with paths for all students and staff. The design of the campus means there is no need to use any form of transportation inside the university.

The university in the process of buying electric carts for moving furniture, goods, appliances around the university. It also has a free charging station for the staff with electric cars thus encouraging the staff to use zero emission cars. Workers union has agreement with electric cars sellers to reduce the interest and extend the period of payment making it easier to buy new zero emission vehicles.

[5. 3] Ratio of Parking Area to Total Campus Area



Description:

Total main campus area: 490,000 m^2

Parking area of main campus is 1126 m^2

Parking area of Ramallah Campus is 320 m^2

Parking area of Ramallah Campus is 229 m^2

Total parking area = 1675m^2 (191 spaces*8.77m^2 per space).

Ratio = 0.0034

It can be seen that the ratio is very small. This is encouraged by the fact that the university is close to the city center which means it is a walking distance from public transportation. The terrain is walk friendly and the weather is acceptable and mild most of the year.

The university also spreads awareness among staff and students of the importance of ride share (carpooling) and also has agreements with local buses so that they can drop students right at the entrance of the university at a discount rate. This discount encourages students to use public transport rather than their own cars.

Also Taxis are allowed to enter the university to drop or pick up staff in groups.

[5.4] Program to limit or decrease the parking area on campus

Description:

There are limited parking areas for students located at the entrance of the university (Outside the campus). This means very few students can use their own cars. Students are not allowed to bring their cars inside the campus while bicycles are allowed. The university encourages staff to share their cars while travelling to the university. The following policies are adopted by the university to encourage the less use of cars

1- Buses give students special rates
2- Buses have space right at the interest of the university to pick up and drop students.
3- Taxis are allowed to enter campus to the main entrance
4- Availability of a car park just outside campus
5- The university is currently seeking funding to build a multi-storey car park outside the campus

[5. 5] Number of Transportation Initiatives to Decrease Private Vehicles on Campus

Vehicles motion control

Workshop about electrical vehicles

Description:

The university does not allow students to enter with their cars, there is a car park designated for students just outside the main campus. The public transport buses can bring students to just outside the main gaits eliminating the need for cars. The campus design is such that there is no need for transportation to travel from one faculty to another.

[5. 6] Pedestrian Path Policy on Campus

Example of pedestrian path (PTUK)

Description:

In order to encourage pedestrians, the university makes walking on campus both enjoyable and safe by:

1. Separators between roads for vehicles and pedestrian paths.
2. Ramps and guiding blocks suitable for pedestrian having physical disabilities.
3. Street lamps for pedestrian paths some solar powered

In its pursue to encourage more the use of electric cars in order to reduce the emissions the university signed an agreement with the transportation ministry to open a car inspection center for electric cars since you are required by law to have your car checked by a center before buying it or in order to license it every year. Such a center does not exist in Palestine. The university has an undergraduate course in automotive engineering

[6] Education and Research (ED)

[6.1] Number of Courses/Subjects Related to Sustainability Offered

Course Number	Course Name	Description
12110598	Renewable Energy Technology	This module concentrates on the renewable energy technologies such as solar energy, energy from waste, wind, hydro and biomass. Topics for discussion include: the scale and variability of resources, technologies for exploitation, technical and economic feasibilities, integrated (hybrid) systems and energy storage.
12150310	Sustainable Energy Technology (1)	Introduction to energy systems : conventional and renewable energy resources ; Solar Spectrum, Solar Time and angles, day length, angle of incidence on tilted surface; Sun path diagram; Shadow angle protractor;Solar Radiation ; Extraterrestrial Radiation; Effect of earth atmosphere; Estimation of solar radiation on horizontal and tilted surfaces; Measurement of solar radiation; Solar radiation calculations.Photovoltaic fundamentals; Solar Cell Physics; The Photovoltaic Effect, Dark and illumination characteristics; Figure of merits of solar cell; Efficiency limits; Variation of efficiency with band-gap and temperature; Efficiency measurements; High efficiency cells.Equivalent Circuit of the Solar Cell, Analysis of PV Cells: Types of Solar cells. Solar Cell Fabrication Technology. Solar Photovoltaic System Design; Maximum tracking; Centralized and decentralized SPV systems; Stand alone, hybrid and, grid connected system.The Recent developments in Solar cells, Role of nano-technology in Solar cells.Wind speed analysis; Wind turbine energy, power, torque and speed characteristics.Solar heater systems: Design, amount of heat.
12150430	Energy and Environmental Technology	Energy production and consumption, with some national statistics; Energy resources, including fossil fuels and Renewable Energy resources; Extraction, conversion, and transmission technologies (e.g., engines, turbines, generators); Environmental impacts of fuel consumption; Some current national and international policies, climate change.Pollution due to thermal power station and their control. Pollution due to nuclear power generation, radioactive waste and its disposal. Effect of hydroelectric power stations on ecology and environment. Effect of Hydro-electric power stations on

		ecology and environment. Primary and secondary pollution, air, thermal and water pollution, depletion of ozone layer, global warming, acid rain biological damage due to environmental degradation. Technology Assessment / Environmental Audit; Ecological Impact Assessment; Social Impact Assessment; Strategic Impact Assessment; Modeling in EIA and conclude with a Case Study.
12150531	Smart-Grid Power Systems	The course will provide students with a working knowledge of fundamentals, design, analysis and development of Smart Grid. The course offers an introduction to the basic concepts of power systems along with the inherent elements of computational intelligence, communication technology and decision support system. The automation and computational techniques needed to ensure that the Smart Grid guarantees adaptability and capability of handling new systems and components are discussed. The interoperability of different renewable energy sources are included to ensure that there will be minimum changes in the existing legacy system. Standards and requirements needed for designing new devices, systems and products for the Smart Grid are discussed. Power flow analysis and optimization schemes needed for the generation, transmission, distribution, demand response, and reconfiguration is explained in detail and simulation tools such as Matlab and Paladin are used.
12150533	Sustainable Buildings and Systems	The fundamentals of conventional energy sources used in buildings; renewable technology; policies and drivers that are leading to the more widespread uptake of low carbon building technologies; low carbon building codes, global policies and planning from the past, present and future. Integrated design: urban microclimate design, passive architectural interventions, active interventions. Low carbon buildings design and operation.
12150540	Energy Policy	Government, corporate, and public perspectives on the analysis, formulation, implementation, and impacts of energy-related policies, regulations, and initiatives. Energy policy development, implementation, and assessment at multiple governmental and corporate scales are also of the topics that covered in this course. The course includes case studies from real-world energy problems and the corresponding actions. This is to provide the student with context for the drivers, frameworks, and assumptions of energy policy. Climate change and its relation with energy policy is one of the topics covered in this course. International agreements, national Legislation including the National Energy Policy Act, and statewide energy legislation will be reviewed in this course.
12150541	Sustainability in	Interconnections between food, energy, and water with

	Energy, Water and Food	respect to sustainable development. Sustainable energy systems and energy security. Food security and sustainability assessments of food production systems and food consumption patterns. Analysis and discussion concepts of strong and weak sustainability to primary energy supply, agriculture, and water supply.Society development and policies (energy security and emission reductions) are discussed in terms of food, energy and water needs. Natural resources and their impact on energy, food, and water. Qualitative and quantitative indicators for sustainability. Energy, food, and water resources availability and how they can be localized and developed to achieve society needs. Infrastructure requirements and risks related with energy, food, and water. Technological and cultural drivers on energy, food, and water system.Energy efficiency technologies for sustainable agriculture and food processing. Energy in crop production systems. Sustainable energy options in agriculture.
12230210	Introduction to fire and safety	Introduction to fire behavior, Concepts in fire protection engineering, fire safety systems, effect of fire on people, the effect of fire on property and environment, concepts on safety engineering
12230405	Safety engineering	The course focuses on tools, techniques and methodologies needed for prevention of occurrences of unsafe operations and accidents under different industrial settings. Additionally it covers; the fundamentals of chemical release, dispersion, toxicity, fire, and explosion. Process safety design to mitigate consequences of catastrophic fire and explosion.
12310580	Water and Wastewater Treatment Technologies	This course is an overview of engineering approaches to protecting water quality with an emphasis on fundamental principals. Theory and conceptual design of systems for treating municipal wastewater and drinking water are discussed, as well as reactor theory, process kinetics, and models. Physical, chemical, and biological processes are presented, including sedimentation, filtration, biological treatment, disinfection, and sludge processing. Finally, there is discussion of engineered and natural processes for wastewater treatment, standards and specifications, techniques.
12410220	Introduction to Sustainable Systems	Introducing the importance and role of technological, social, and sustainable systems in the modern world. Provides a framework for the theory and practice of sustainable engineering.
12410323	Sustainable Energy Systems	how they are evaluated quantitatively, their economics and their impacts on the environment. In addition, the ever changing context in which these technologies (and emerging technologies) are being implemented will be outlined.

		Systems approaches including life cycle assessment will be refined and applied to evaluate energy systems. A particular focus will be placed on analysis of energy alternatives within a carbon constrained economy.
12410442	Sustainable Ground Water Engineering	Characteristics of groundwater aquifers, groundwater flow in aquifers, groundwater flow to wells, pumping tests, hydrochemistry, introduction to groundwater modeling, groundwater pollution, sustainable groundwater resources management, investigations of groundwater, artificial recharge of groundwater, well design, intrinsic vulnerability.
12410444	Sustainable Solid Waste Treatment & Management	This course will address the following topics: Strategy for Waste & Resource Management and Drivers for Change. Biological Treatment of Wastes. Landfill for Waste Management and Landfill leachate. Energy from Waste & Value Recovery from Waste. Producer Responsibility and Sustainable Products. Secondary Raw Materials and the Circular Economy. Current Waste Management Practice and the Change in Business Model for Waste Management in the Future. Advances in waste recycling and recovery technologies to deliver added-value products.Interface of waste and resource management and civil engineering in the context of sustainable waste management in global cities and developing countries.
12410469	Green Buildings	Students are introduced to the key principles of green building, including current standards and considerations for regional factors. They are also introduced to the five components of green building that include energy, water, sustainable sites, materials and resources, and indoor environmental quality. The hands-on audit provides students with an opportunity to gather basic information about their school building and grounds to prepare them to do more in-depth audits related to energy, water, and more
12410533	Infrastructure for Sustainable & Smart Cities	Developing infrastructure for sustainable cities entails understanding the connection between urban morphology and physiology. This course uses a systems approach to analyzing anthropogenic material flow and other components of urban metabolism, linking them to the design of urban infrastructure. Elements of sustainable transportation, green buildings, urban climatology, urban vegetation, water systems and local energy supply are integrated in the design of sustainable urban neighborhoods.
12280403	Green Architecture	Introduction to the various forces that shape the human environment with a particular focus on ecological determinants; Integration and internalization of environmental considerations aimed toward sustainable environments; Various issues are studied, including, successful use of open

		spaces, indoor environmental qualities, as well as economic derivatives and human health matters; Natural Elements (air, sun and water) are examined as they interact with human needs within buildings or building complexes.
14120316	Strategic management	The course deals with the concepts and basics of strategic management, formulation of the organization's mission and strategic objectives. The course deals with strategic management processes that include analysis of the external and internal environment of the organization using strategic analysis and discusses alternatives and strategic options, implementation, and control.
14160481	E- Supply Chain Management & Logistic Services	This course introduces the applications related to electronic customer relationship management that enable business organizations to attract customers, meet their needs, and retain them while ensuring reasonable profitability. Topics include customer relationship management theories, the interaction between business strategy, organizational structure, value chain, and customer relationships, measuring and managing customer satisfaction and loyalty, tracking their profitability, using analytical tools in electronic customer relationship management, and best practices for companies with extensive experience in this field.
14190402	Green and Reverse logistics	This course aims to enhance students' knowledge in the major green logistics principles, practices, and its environmental impact on logistical operations from lean production to reverse logistics. It introduces students to the basic concepts of green logistics practices including an analysis of a green applications and carbon footprint credits for companies. This course encompasses a discussion in the role of regulations concerning product take back policies, life cycle assessment, international environmental standard such as ISO 14000, and the impact of legislations and policies on logistics practices and reverse logistics network design. Closed-Loop Supply Chains (CLSC) may offer companies a unique opportunity to improve their profits on one hand and to serve societal responsibility on the other hand. The management of CLSC differs in a number of ways exploring supply chains management in general.
15030413	Environmental pollution and human health	It includes the studying of types of chemical, physical and biological pollution in environment. Its effect on human health, methods of detection and ways to reduce its effects
15030430	Environmental cleanup and waste Management	Methods in cleaning and Managements of waste products from environments by chemical and biological methods. It covers bioremediation today: an overview of bioremediation process, key terms and definitions, the chemical transformation, microbial ecology, metabolism and the

		required conditions for optimum bioremediation rate.
16010202	Agricultural Pollution	"This course is designed to have a comprehensive understanding of modern agricultural practicing and ecosystems. It deals with major problems of pollution of the environment due to agriculture and how we can reduce the negative effects The effect of farming practices such as irrigation, plowing, fertilization, and pesticide application on the environment. How to reduce the effects of agricultural pollution. Further, to understand the concept and the importance of organic farming.
16010203	Water and Air Pollution	This course is designed to enable students to have a comprehensive understanding of water and air pollution. It deals with an overview of the hydrological cycle, water resources and use, resources of water pollution, major problems of pollution of the atmosphere, water, the land surface, and the food chain. And the kinds of aquatic pollutants. The course focuses also on air pollution, taking into account the kinds of air pollutants and their natural and industrial resources. Physic-chemical factors that can affect the emission of these pollutants. It covers processes responsible for the occurrence and release of pollutants in the environment, the hazards associated with different types of pollutant, problems of accumulation of toxic substances, and procedures for the reduction of emissions and remediation of contaminated environments.
16010204	Introduction to Sustainable Agriculture	Introduction to contemporary sustainable farming systems through a study of the history of food production in the world and its link to the development of ecological agriculture. Students will learn about the ethical, economic, environmental and social dimensions of agricultural sustainability. It will identify sustainable food production systems such as organic agriculture, bio-agriculture, and sustainable agriculture.
16010301	Solid Waste Management	This course is designed to provide students with the knowledge and understanding of the concept of solid waste management. The course deals with municipal solid waste composition and characteristics, collection methods, storage, transformation, and treatment methods including landfilling waste to energy and recycling. Further, it introduces the students the solid waste management policy and the means to implement it (legislation, planning, etc.).The course provides tools of solid waste management activities associated with generation, storage, collection, transfer and transport, reuse and recycling, processing and disposal which should be environmentally compatible, adapting to the principles of economy, aesthetics, and energy conservation.

16010302	Environmental Impact Assessment	This course explores interactions between human activities and natural or man-made systems, linking them to the concept of environmental sustainability and to Environmental Impact Assessment (EIA) procedures. It focuses both on strategic EIA and project EIA and discusses examples of EIA systems used in different countries.
16010303	Wastewater Treatment	The course is designed to give an overview of typical wastewater characteristics, how this may affect relevant treatment processes, will be given, in addition to treatment and effluent requirements. The course will cover the theoretical foundation, and practical configurations, design, and operation of relevant wastewater treatment processes, including physical-, chemical- and biological processes. It also focuses on how to combine different treatment processes to meet present and future effluent requirements.
16010305	Sustainable Farm Management	This course gives the student the principles and practices of sustainable farm management using farm planning. Introduce students to develop and understand sustainable farm management on a farm scale and to start a new farm business plan using the entire principles of agricultural planning including goal setting, resource assessment, project analysis, crop production, livestock, soil health, pest control, and marketing.
Example of Courses/Subjects Related to Sustainability (Palestine Technical University)		

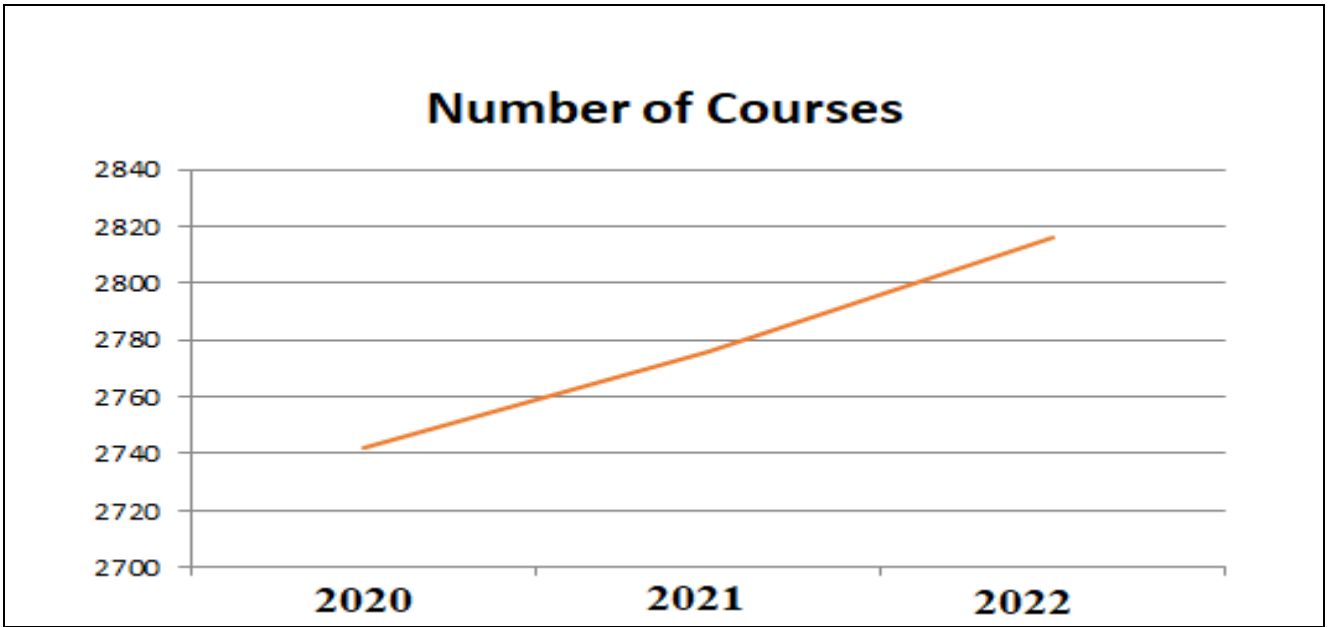
Description:

Above is a list of the courses that aims to embed sustainability into all course and module content offered by the University.

The list also includes courses with sustainability already embedded, and those that include the Sustainability in Practice Certificate.

The university has quality academic committees at the level of departments, And a main quality academic committee at the university level. This committee works to continually design and improve course content specially related to sustainability and water usage. The committee makes sure that the courses intended learning outcomes are directly related to sustainability where appropriate economically, socially and environmentally.

[6.2] Total Number of Courses/Subjects Offered



Example of Total Courses Offered in 2020-2022

Description:

YEAR	Offered Courses
2020	2742
2021	2776
2022	2816

Total number of courses offered in 2022 = 2816 courses

The university has many quality academic committees at the level of departments, And a main quality academic committee at the university level. This committee works to continually design and improve course content specially related to sustainability and water usage. The committee makes sure that the courses intended learning outcomes are directly related to sustainability where appropriate economically, socially and environmentally.

[6.3] Total Research Funds Dedicated to Sustainability Research (in US Dollars)

Description:

Total research fund dedicated to sustainability research in 2020 = 502375 US Dollars

Total research fund dedicated to sustainability research in 2021 = 530216 US Dollars

Total research fund dedicated to sustainability research in 2022 = 560313 US Dollars

The averaged annum last 3 years of research fund dedicated to sustainability research = 530968 US Dollars

[6.4] Total Research Funds (in US Dollars)

Description:

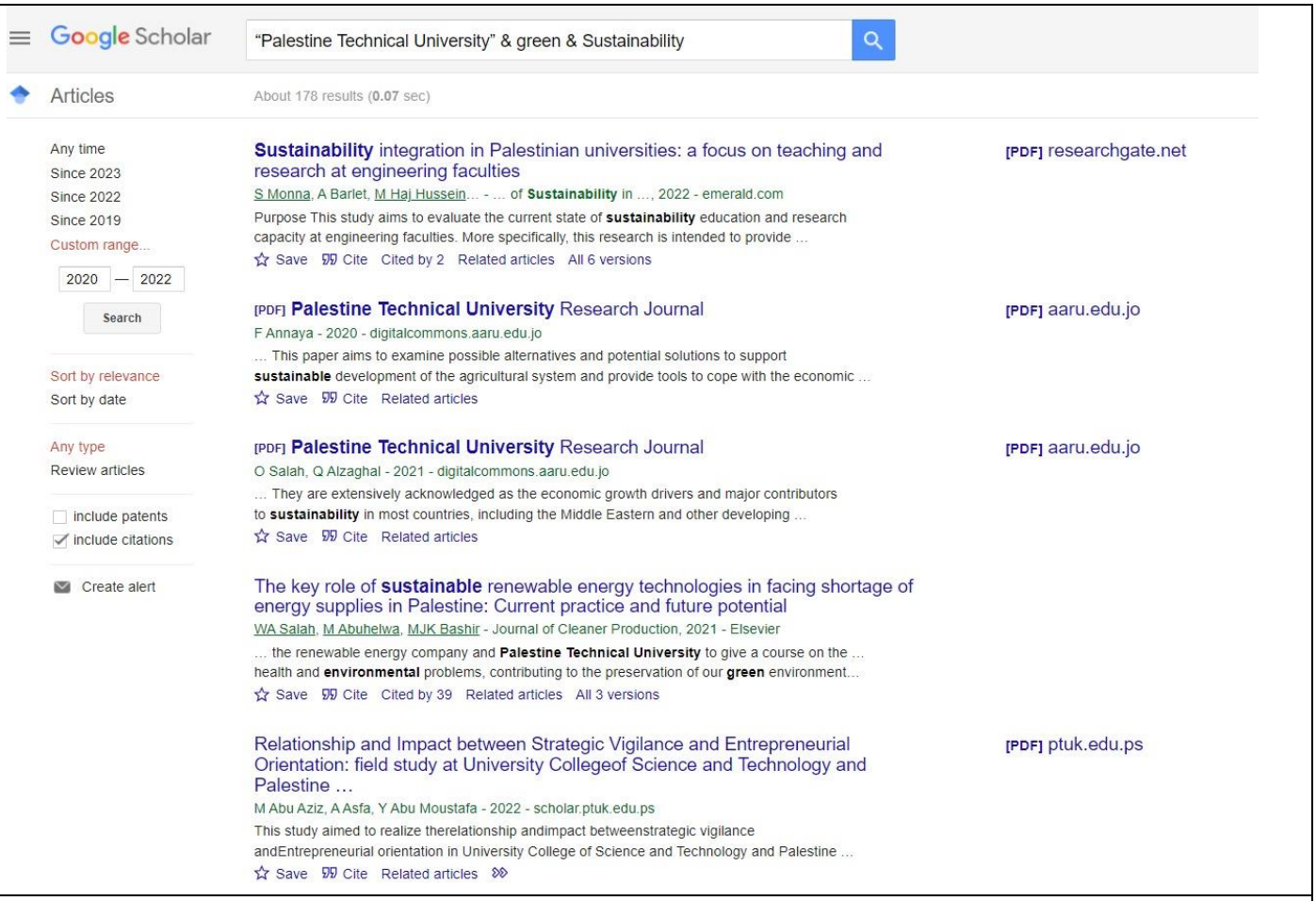
Total research fund in 2020 = 1043789 US Dollars

Total research fund in 2021 = 1161456 US Dollars

Total research fund in 2022 = 1271676 US Dollars

The averaged annum last 3 years of research fund = 1158974 US Dollars

[6.5] Number of scholarly publications on sustainability



scholarly publications on sustainability (Palestine Technical University- Palestine)

Description:

Example of events scholarly publications on sustainability in the academic year 2020-2022.

A total average per annum over the last 3 years of 59 publications

[6.6] Number of Events Related to Sustainability

Environmental day

Environmental day

Environmental Exhibition


PENGON
شبكة المنظمات البيئية الاهلية الفلسطينية
تحت رعاية محافظ محافظة طولكرم اللواء عصام أبو بكر
تتشرف جامعة فلسطين التقنية- خضوري
بالتعاون مع الإغاثة الزراعية وشبكة المنظمات
البيئية بدعوتكم للمشاركة في إحياء فعاليات
يوم الأرض
التي ستعقد في منطقة أحراش عنبتا - بلعا وسيتخلل الفعالية زراعة أشجار
وذلك يوم الأربعاء الموافق ٢٠٢٢/٣/٣٠ الساعة العاشرة صباحا


حفل تخريج مشروع الوظائف الخضراء - الفاو
تحت رعاية رئيس جامعة فلسطين التقنية- خضوري أ.د. نور الدين أبو الرب
يسر كلية العلوم والتكنولوجيا الزراعية في جامعة فلسطين التقنية- خضوري دعوتكم لحضور
حفل تخريج المتدربين وتكريم الشركات والمؤسسات الشريكة في
مشروع الوظائف الخضراء
الممول من منظمة الأغذية والزراعة للأمم المتحدة (الفاو) وبدعم سخي من الحكومة الدنماركية
وذلك يوم الثلاثاء الموافق 2022/2/22 في تمام الساعة 10:00 صباحاً
في حرم الجامعة في طولكرم- مبنى المكتبة- مدرج G011
عميدة كلية العلوم والتكنولوجيا الزراعية
د . نسرين التميمي


DECOST
نشرة ارشادية
حول وحدات انتاج الكمبوست المنزلي
Compost الكمبوست
(الدبال)
بقايا
طعامك
«حياة»
لتربتك
أسئلة و أجوبة شائعة حول الكمبوست:
❖ للخليط رائحة كريهة تشبه البيض؟
– التهوية غير كافية، قم بتقليب الكومبوست بشكل أكثر.
❖ للخليط رائحة تشبه النشادر؟
– نسبة المواد الخضراء عالية، قم بإضافة المواد البنية.
❖ الخليط رطب جداً؟
– نسبة الخضراوات عالية مقارنةً بالخليط الجاف.
❖ يوجد حشرات داخل حاوية الكومبوست؟
– قم بإضافة مواد بنية جافة للخليط.
❖ هل يعتبر الكومبوست جاهزاً بالرغم من تواجد قطع كبيرة داخل الكمبوست؟
– نعم، يعتبر جاهزاً، حيث يمكن تفتيت القطع الكبيرة للاستفادة منها.
❖ ما هو المقدار المناسب من الكمبوست الواجب إضافته للتربة؟
– يفضل إضافة الكمبوست بسماكة ٢ سم تقريباً للتربة و خلطه جيداً، ليتجانس مع الطبقات السفلية من التربة.
للمزيد من المعلومات الإتصال على قسم الصحة والبيئة/ بلدية عيبا/ 2673401 داخلي 213
مراحل تشكل الكمبوست:
١- المرحلة الأولى: في الأسابيع الأولى تبدأ المخلفات بالتحلل، و ترتفع درجة الحرارة إلى ٤٥-٥٥ درجة مئوية (مشابهة لحرارة المياه الدافئة).
٢- المرحلة الثانية: في الأسابيع التالية، ترتفع درجة الحرارة الى 60-65 درجة مئوية (حرارة الماء الساخن)، و تدوم هذه الفترة لوقت قصير جداً، في حال ارتفاع الحرارة لأعلى من الدرجات المذكورة، حينها قم بتقليب الخليط بشكل أكبر، لمنع قتل البكتيريا المفيدة.
٣- المرحلة الثالثة: تبدأ درجة الحرارة بالهبوط، و يتم تحلل المكونات الأكثر تعقيداً، و تستمر هذه المرحلة لمدة شهرين تقريباً (تعتمد طول الفترة على درجة حرارة الجو).
٤- اذا كنت غير قادرٍ على تمييز المحتويات الأصلية، و تكوّن تراب لونه بني داكن برائحة الأرض الميللة، عندها يكون الكمبوست جاهز للاستخدام، و يمكنك عندها البدء بدورة جديدة. حيث تفرغ المحتويات، و تغربل لاستعمال الكمبوست الناتج، و يتم إعادة استعمال القطع الكبيرة لخلطات الكمبوست الجديدة.
مكب النفايات VS الكمبوست
النفايات العضوية
مكب النفايات
غازات ضارة منبعثة باستمرار
تحلل لا هوائي
2 / 2


Save the Children.
تعلن دائرة التعليم المستمر
عن فتح باب استقبال طلبات منح التدريب في الدورات المهنية ضمن مشروع (نجاحها)
المنفذ من إنقاذ الطفل، بالشراكة مع مركز العمل التنموي – معا – وجمعية التنمية الزراعية – الإغاثة الزراعية – والممول من الحكومة الكندية. والذي يستهدف دعم الفتيات الشابات الرياديات في قطاعي الزراعة والاقتصاد الأخضر. هذه المرحلة تشمل دعم الفتيات الشابات في الحصول على تعليم مهني تقني يساعدهن في تطوير امكانياتهن من خلال الدورات التالية:
1-تربية النحل
2- اكوابونيك وسائط النمو
3- الزراعة المحمية والذكية
4-اداره الأسمدة في البيوت المحميه
5- استخدام المياه المعالجة وادارتها في الزراعة
6- زراعة الفطر وتصنيع الصابون والكريمات
7-ادارة المزرعة والسجلات المزرعية
8-التسويق الزراعي
9-الجدوى الاقتصادية للمشروعات الصغيرة
10- المحاسبة وتمويل المشاريع الزراعية
11- تقدير الاحتياجات المائية لنبات
facebook.com/ce.ptuk
0599211712

Environmental Path


وزارة التعليم العالي والبحث العلمي
The Fifth International Conference on Olive in Palestine
جامعة فلسطين التقنية
Palestine Technical University
دعوة للمشاركة بأوراق علمية
تعلن جامعة فلسطين التقنية عن تنظيمها
المؤتمر الدولي الخامس للزيتون في فلسطين
وذلك في حرم الجامعة في مدينة طولكرم خلال الفترة الواقعة
ما بين ٢١—٢٢ نوفمبر ٢٠٢٢
فعلى من يرغب في تقديم أوراق علمية للمشاركة في المؤتمر
زيارة الرابط المرفق


محافظة طولكرم
سلطة جودة البيئة
تحت رعاية دولة رئيس الوزراء د. محمد اشتية
تتشرف محافظة طولكرم وسلطة جودة البيئة وجامعة فلسطين التقنية- خضوري
بدعوتكم لحضور الاحتفال المركزي باليوم الوطني للبيئة الفلسطينية
تحت شعار
"معاً لوقف تهريب النفايات"
الذي سيعقد في مسرح جامعة فلسطين التقنية- خضوري في محافظة طولكرم
وافتتاح المعرض البيئي في ساحة المكتبة
يوم الثلاثاء الموافق ١٥/٠٣/٢٠٢٢م، في تمام الساعة التاسعة والنصف صباحاً
حضوركم دعم للبيئة الفلسطينية

Description:

Example of events related to environment and sustainability hosted or organized by the University in the academic year 2020-2022.

Total number of sustainability/environment related events in:

2020: 16

2021: 18

2022: 26

A total average per annum over the last 3 years of 20 events (e.g. conferences, workshops, awareness raising, practical training, etc.).

The university prides its self in the number of events related to sustainability which it hosts. These events include seminars, conferences, exhibitions and posters. They usually are carried out by staff, students and the local community thus engaging experts in the field from the university and industry. These include

1. Lands day
2. International cleaning day
3. Green jobs day (funded by the food and agriculture organization UN)
4. Compost day
5. PTUK products day
6. Olive trees conference.

[6.7] Number of activities organized by student organizations related to sustainability per year

دعوة

تتشرف جامعة فلسطين التقنية- خضوري ومجلس اتحاد
طلبتها وشرطة محافظة طولكرم
بدعوتكم لحضور اللقاء التوعوي بعنوان :

كيف أحمي نفسي من الجرائم الإلكترونية

وذلك يوم الخميس الموافق ٢٠٢٢/٥/٢٦
من الساعة ١٠:٠٠ - ١١:٠٠ في مدرج المكتبة (G٠١١)

دعوة

تتشرف جامعة فلسطين التقنية- خضوري ومجلس اتحاد
طلبتها وشرطة محافظة طولكرم
بدعوتكم لحضور اللقاء التوعوي بعنوان :

كيف أحمي نفسي من الجرائم الإلكترونية

وذلك يوم الخميس الموافق ٢٠٢٢/٥/٢٦
من الساعة ١٠:٠٠ - ١١:٠٠ في مدرج المكتبة (G٠١١)

دعوة

تدعوكم كلية العلوم والتكنولوجيا الزراعية بالتعاون مع الإغاثة الزراعية إلى حضور ورشة عمل بعنوان

مشروع تعزيز وتشجيع روح الريادة

ضمن مشروع المجتمعات المرنة الممول من الوزارة الفيدرالية الألمانية للتعاون والتنمية والمنفذ من قبل جمعية التنمية الزراعية ومؤسسة أوكسفام، وتهدف الورشة إلى تعريف طلبة الجامعة على اختلاف تخصصاتهم بالمشروع وكيفية الاستفادة منه لتمويل مشاريعهم الفردية والريادية.

وذلك اليوم الأربعاء، ٢٣-١١-٢٠٢٢ من الساعة: ١١ إلى ١٣:٣٠ في مدرج المكتبة.

تحت رعاية وزير التربية والتعليم أ.د. مروان عورتاني
ومحافظ محافظة طولكرم اللواء عصام أبو بكر

الملتقى الأول في محافظة طولكرم
بعنوان
أثر المرأة الفلسطينية في المجتمع وسوق العمل الفلسطيني

٢٠٢٢/٥/١٢

Environmental Path

Description:

As can be seen students are extremely active when it comes to holding events related to sustainability and other issues. The university encourages students to participate in such events hoping it would slowly increase the awareness and encourage the change of culture towards sustainability. These events are financially supported by the university. These events include

1. Open day for medical checkup and blood donation
2. How to protect yourself from electronic crimes
3. Breast cancer awareness day
4. Leadership and innovation day
5. Palestinian women effect on society
6. Land day

[6.8] Number of cultural activities on campus (e.g.Cultural Festival) including virtual activities (if any)


ورشة عمل
ICRC
حول عمل اللجنة الدولية للصليب الأحمر الإنساني ودور وسائل الإعلام في تعزيز الإعلام الإنساني لطلبة قسم تكنولوجيا الإعلام في جامعة فلسطين التقنية - خضوري
٢٠٢٢/١٠/٢٤


تنظم عمادة شؤون التنمية وخدمة المجتمع وبالتعاون
مع شركة بيجو ستروين محاضرة بعنوان
السيارة الكهربائية
وايجابياتها
علما بانه سسيتاح للمشاركين فرصة لتجربة قيادة السيارة Test Drive
وذلك يوم الأحد الموافق 20/11/2022 الساعة 10:30 قاعة G011 / مبنى المكتبة


دعوة شرف
نتشرف بدعوتكم
لحضور الفعالية الوطنية بمناسبة
اليوم العالمي للمرأة
على شرف الثامن من أذار
الذي تستضيفه الجامعة بالشراكة مع وزارة المرأة ومحافظة طولكرم
واقليم حركة فتح في طولكرم
وذلك يوم الأربعاء الموافق ٩-٣-٢٠٢٢ في تمام الساعة ١١:٣٠ صباحا
في حرم الجامعة- مدرج الاحتفالات الخارجي
مشاركتكم دعما للمرأة الفلسطينية


دعوة
تتشرف جامعة فلسطين التقنية- خضوري ومجلس اتحاد
طلبتها وشرطة محافظة طولكرم
بدعوتكم لحضور اللقاء التوعوي بعنوان :
كيف أحمي نفسي من الجرائم الإلكترونية
وذلك يوم الخميس الموافق ٢٠٢٢/٥/٢٦
من الساعة ١٠:٠٠ - ١١:٠٠ في مدرج المكتبة (G٠١١)


تعلن عمادة الشؤون الطلابية
وبالتعاون مع مجلس اتحاد الطلبة
ومديرية صحة طولكرم
عن عقد لقاء توعوي صحي خاص حول
مرض الثلاسيميا
وسيتم إجراء فحص(Cbc) للراغبين
وذلك يوم الاثنين الموافق ٢٠٢٢/٥/١٦ في مدرج المكتبة
من الساعة العاشرة لغاية الساعة الحادية عشر
عمادة الشؤون الطلابية


وزارة الصحة الفلسطينية
جامعة فلسطين التقنية - خضوري ومجلس طلبتها
بالتعاون مع مديرية صحة محافظة طولكرم ينظمون
اللقاء التوعوي بأهمية الكشف المبكر عن سرطان الثدي
.. حياتك غالية علينا
أنت الحياة
افحصي وطمنينا

Description:

As can be seen students are extremely active when it comes to holding events related to cultural and other issues. The university encourages students to participate in such events hoping it would slowly increase the awareness and encourage the change of culture towards sustainability. These events are financially supported by the university. These events include

1. A workshop about the role of woman in the society
2. A workshop about Promoting and encouraging the spirit of leadership
3. A workshop about the role of media
4. A workshop about electrical vehicles
5. A workshop about the international woman day
6. How to protect yourself from electronic crimes
7. Thalassemia awareness day
8. Breast cancer awareness day

[6.9] Number of university sustainability program(s) with international collaborations

Description:

List of international programs regarding sustainability issues

#	Title	Start Date	End Date	Partners	Funding Program
1	Narrowband Internet of Things for Remote Healthcare Monitoring	2021-01-12	2023-01-12	Maqdisi - French Government	
2	Poultry house passive cooling technique based on using heat pipe loop.	2022-02-15	2023-02-15		GIZ
3	Training center for utilization of by products as silage and compost making	2023-01-01	2024-01-01		GIZ

4	Boosting Innovation in Education aNd REsearch oF Precision AgriculTure in Palestine	2020-01-15	2023-01-15	Palestine Al Quds Open University . Palestine An Najah National University . Palestine Hebron University . Palestine University College of Applied Sciences Palestine Al Istiqlal University Palestine Palestine Technical University / Kadoorie 6. Bulgaria University of Ruse . Nitra Slovak University of Agriculture . Czech Republic Institute of Technology and Business . Patras University of Patras .	Erasmus+
5	Establshing Early Warning system for the Groundwater in Karst Aquifer	2017-01-01	2018-12-01	UFZ-Germany	
6	Innovations in Water Education Programs: Enhancing Water Security and Socio-economic Development in the Eastern Mediterranean under Climate Change (WaSec)	2019-01-01	2021-12-01	AQU	
7	Evaluation the Groundwater Resources in the North Eastern Basin	2017-01-01	2019-12-01	AQU	
8	Strategies for the management of virus transmission in grapevine leafroll viruses by mealybugs.	2019-01-01	2020-01-01	NARC	
9	Paletinian Agriculture and Academic Cooperation (PAAC)	2015-03-01	2019-06-01	PTUK, ANNU,HU, AQU	

10	Algal-bacterial system for wastewater treatment: nutrient removal and recovery from anaerobically pre-treated food industry wastewater	2018-01-01	2019-06-01	PTUK, IHE -Delft	
11	Natural Induced Resistance in Barley and Wheat Using Palestinian Endogenous Plant Extracts Against plant disease	2017-06-01	2018-06-01	PAAC	
12	Biological Control with Endogenous Natural Enemies against Red Palm Weevil	2017-06-01	2018-06-01	PAAC	
13	Combination of biocontrol agents and chemical Nematicide for the control of Root-Knot Nematode on Tomato.	2017-06-01	2018-06-01	PAAC	
14	Palestinian indigenous plant extract to control barley loose smut Ustilago nuda.	2017-05-01	2018-05-01	ANNU&PARC	
15	Introducing Feasible and Sustainable Hydro-agriculture Systems to Benefit Poor People in Urban Palestinian Areas	2018-01-01	2019-06-30	ARIJ, PTK, Twente, TGS	
16	Using sensors for classification of different fugi species according to their metabolic activities	2018-12-01	2019-12-01		PTUK
17	Using sensors for detecting pathogen	2018-08-01	2019-08-01		PTUK + Mohe
18	Using optical sensor to evaluate the quality parameters of olive oil in Palestine	2018-08-01	2019-08-01		PTUK + Mohe
19	Mobility project for the	2018-12-01	2020-06-20	University of Hohenheim	PALGER

	establishment of joint research partnerships for introducing precision farming to the Palestinian			Institute of Agricultural Engineering, Stuttgart Germany	

In addition, there are number of capacity building international programs.

	Title	Start Date	End Date	Funding Program
1	Flipped Practical Courses VIA Triple learning Environments developed by Triple Experts teams who are empowered through Triple Enhance programs (3EEE)	2022-12-01	2026-12-01	Erasmus+
2	Enhancing ICT Competencies of Early Childhood Educators at HEIs in MENA Countries (EICT)	2022-12-05	2025-12-05	Erasmus+
3	Agrotechnology VET Centers to Network and Train Future Farmers in Jordan and Palestine (AgroTec)	2023-01-01	2026-01-01	Erasmus+
4	3D Garment Design Training (3D-GDT)	2022-12-01	2025-01-12	Erasmus+
5	Youth Initiatives	2020-11-26	2023-01-03	GIZ
6	Her Scuccess	2019-04-22	2021-06-11	Canadian Government
7	Capacity Building of the Youth in PV and Smart Building Management Systems	2022-08-15	2023-08-15	GIZ - DO-TVET Programme
8	Disability as diversity: The inclusion of students with disabilities in higher education (Edu4ALL)	2020-11-15	2023-11-14	Erasmus+
9	Pathway in Forensic Computing (FORC)	2016-10-01	2020-10-01	Erasmus+
10	Development of TVET Pedagogical Competences and Qualification in Palestinian Universities local partners	2019-11-15	2021-11-15	Erasmus+
11	Teaching English as a Foreign Language in Palestinian HEIs: An e-Learning Initiative that Bridges Educational and Socio-Political Gaps (TEFL-ePAL)	2018-11-15	2021-11-15	Erasmus+

12	Research Output Management Through Open Access Institutional Repositories (ROMO)	2016-01-01	2016-01-01	Erasmus+
13	Fostering Entrepreneurship in Science, Technology, Engineering and Math (FESTEM)	2018-04-11	2018-04-11	Erasmus+

[6.10] Number of sustainability community services project organized and/or involving students

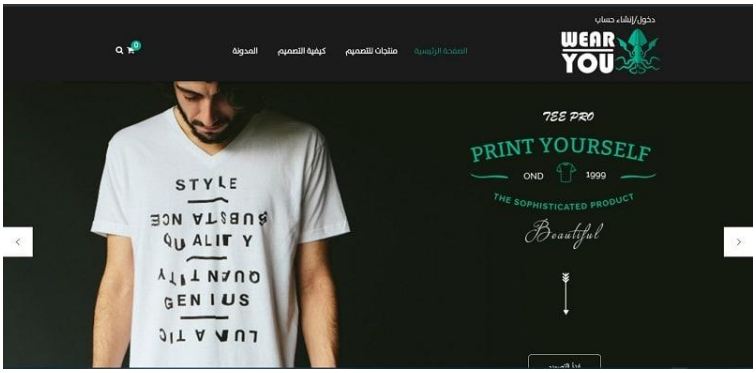
Project name	participants	Project duration	Project area
Narrowband Internet of Things for Remote Healthcare Monitoring	6 researchers + 100 students who benefited from this project	4 years	ED
Poultry house passive cooling technique based on using heat pipe loop	4 researchers + 80 students who benefited from this project	1 year	EC
Training center for utilization of by products as silage and compost making	4 researchers + 150 students and local community who benefited from this project	1 year	WS
Boosting Innovation in Education aNd REsearch oF Precision AgriculTure in Palestine	50 researchers from different national and European universities + about 600 students from the different universities.	3 years	ED;SI
Establishing Early Warning system for the Groundwater in Karst Aquifer	6 researchers + 90 students and local community who benefited from this project	1 year	WR
Innovations in Water Education Programs: Enhancing Water Security and Socio-economic Development in the Eastern Mediterranean under Climate Change (WaSec)	45 researchers from different national and European universities	3 years	ED; WR
Evaluation the Groundwater Resources in the North Eastern Basin	6 researchers + 120 students and local community who benefited from this project	3 years	WR
Strategies for the management of virus transmission in grapevine leafroll viruses by mealybugs.	4 researchers + 140 students who benefited from this project	1 years	EC

Palestinian Agriculture and Academic Cooperation (PAAC)	6 researchers + 60 students who benefited from this project	4 years	ED; EC
Algal-bacterial system for wastewater treatment: nutrient removal and recovery from anaerobically pre-treated food industry wastewater	4 researchers + 140 students who benefited from this project	2 years	WS
Natural Induced Resistance in Barley and Wheat Using Palestinian Endogenous Plant Extracts Against plant disease	5 researchers + 60 students who benefited from this project	1 years	EC
Biological Control with Endogenous Natural Enemies against Red Palm Weevil	10 researchers + 60 students who benefited from this project	1 years	SI
Combination of biocontrol agents and chemical Nematicide for the control of Root-Knot Nematode on Tomato.	6 researchers + 180 students and local community who benefited from this project	1 years	SI; ED
Palestinian indigenous plant extract to control barley loose smut Ustilago nuda.	8 researchers + 40 students who benefited from this project	1 years	SI
Introducing Feasible and Sustainable Hydro-agriculture Systems to Benefit Poor People in Urban Palestinian Areas	24 researchers + 600 students and local community who benefited from this project	2 years	SI; ED
Using sensors for classification of different fugi species according to their metabolic activities	8 researchers + 60 students who benefited from this project	1 years	ED
Using sensors for detecting pathogen	4 researchers + 30 students who benefited from this project	1 years	ED
Using optical sensor to evaluate the quality parameters of olive oil in Palestine	4 researchers + 30 students who benefited from this project	2 years	ED
Mobility project for the establishment of joint research partnerships for introducing precision farming to the Palestinian	10 researchers + 80 students who benefited from this project	1 years	ED
Almaqdisi Project- Developing power electronic circuits used in renewable energy systems.	10 researchers + 230 students who benefited from this project	2 years	ED

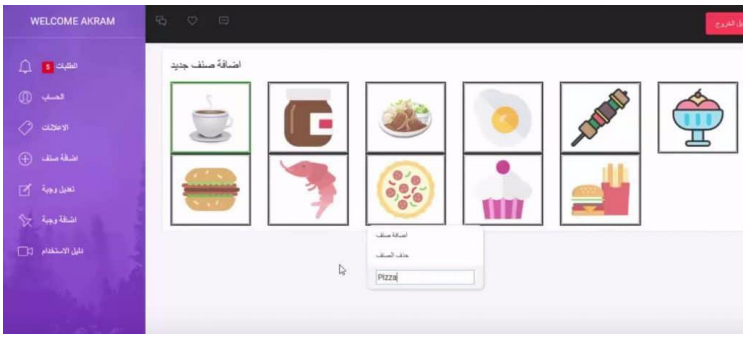
[6.11] Number of sustainability-related startups

No.	Information
1	**Startup name:** Glass in Concrete **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** SI **URL:** https://menassah.net/; https://menassah.net/twogreenprojects_wins/ **Description:** every year there are tons of wasted glass. This startup aims to use this glass to produce concrete with different shapes and colors of glass for decorative purposes.  **Photos**:
2	**Startup name:** Planting Cactus and Aloe Vera **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** EC **URL:** https://menassah.net/; https://menassah.net/twogreenprojects_wins/ **Description: The purpose is to produce gel from the plants which is used foe facial care. The startup produces the gel and also does the packaging ready for the market**  **Photos:**
3	**Startup name: Diamond Advertising** **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** SI **URL:** https://menassah.net/; https://menassah.net/%d8%a7%d8%b7%d9%84%d8%a7%d9%82-

	%d9%85%d8%b4%d8%b1%d9%88%d8%b9- %d8%af%d8%a7%d9%8a%d9%85%d9%88%d9%86%d8%af- %d9%84%d9%84%d8%af%d8%b9%d8%a7%d9%8a%d8%a9- %d9%88%d8%a7%d9%84%d8%a7%d8%b9%d9%84%d8%a7%d9%86/ **Description: Anew starting up company in the area of advertising. The have managed to sign contracts with local companies to carry out advertising for the companies. The startup is run by handicapped person.**  **Photos:**
4	**Startup name: Green AMPs** **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** EC; WS **URL:** https://menassah.net/; https://menassah.net/greenamps-project/ **Description: A startup company which uses bio digesters to produce gas and electricity**  **Photos:**
5	**Startup name: Wear You** **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** SI **URL:** https://menassah.net/; http://wearyou.net **Description: An electronic site allowing the youth to choose a design for their T-shirts. The customer can choose the pictures, colors and fabric he wants then the design he wants.**

	 **Photos:**
6	**Startup name: Fast-prepared Food** **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** WS **URL:** https://menassah.net/; https://menassah.net/%d9%85%d8%b4%d8%b1%d9%88%d8%b9-%d8%a7%d9%84%d9%88%d8%ac%d8%a8%d8%a7%d8%aa-%d8%a7%d9%84%d8%b3%d8%b1%d9%8a%d8%b9%d8%a9/ **Description: A fast food company concerned with producing ready to eat frozen meals. They received 9600 dollars to start up their kitchen.**  **Photos:**
7	**Startup name: Pumkin** **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** TR **URL:** https://menassah.net/; https://menassah.net/%d9%85%d8%b4%d8%b1%d9%88%d8%b9-pumkin/ **Description: A fast deliver company, delivers food, grocery or picks up anything or the customer.**

	 **Photos:**
8	**Startup name: VERSI** **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** TR **URL:** https://menassah.net/; https://menassah.net/%d9%85%d8%b4%d8%b1%d9%88%d8%b9-%d9%81%d9%8a%d8%b1%d8%b3%d9%8a/ **Description: using virtual reality to ride bikes. Anyone can ride the bike without moving and enjoy a thrilling ride using virtual reality**   **Photos:**
9	**Startup name: VINTAGE** **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** EC; WS **URL:** https://menassah.net/; https://menassah.net/vintage-project/ **Description: High quality products from grapes and fruits. THESE INCLUDE MILKY, Molasses, Raisins**

	  الطالبة الريادية جميلة حسين صبارنة **Photos:**
10	Startup name: FASTY Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED): TR; EC URL: https://menassah.net/; https://menassah.net/%d9%85%d8%b4%d8%b1%d9%88%d8%b9-fasty-%d8%b3%d9%8a%d8%b4%d8%a7%d8%b1%d9%83-%d9%81%d9%8a-%d8%a7%d9%84%d9%85%d9%84%d8%aa%d9%82%d9%89-%d8%a7%d9%84%d8%b7%d9%84%d8%a7%d8%a8%d9%8a-%d8%a7%d9%84%d8%a7%d8%a8/ Description: A simple program to help restaurants and fast food companies to easily receive electronic orders  Photos:
11	**Startup name: SAFETECH** **Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED):** SI **URL:** https://menassah.net/; https://menassah.net/student_company_2023/ **Description: A startup to develop and promote safety equipment. It manufactures new safety equipment such as hard hats.**

Photos:

Description:

The university has a Center for Innovation and Entrepreneurship specialized in spreading culture, incubating creative ideas, and managing those ideas to become existing projects, in addition to participating in specialized competitions. It is noteworthy that the center is run by specialists in project management, attracting funding, and sustaining the work of these projects.

Useful links: (Innovation and Entrepreneurship Center website)
https://menassah.net/