



EGYPT-JAPAN UNIVERSITY OF SCIENCE AND TECHNOLOGY  
الجامعة المصرية اليابانية للعلوم و التكنولوجيا  
エジプト日本科学技術大学



# SUSTAINABILITY Report

## 2020

This report is the product of fruitful collaboration among the **Sustainable Development Committee** members of both academic and administrative staff. We would like to sincerely thank all of them for the hard work and commend them on their relentless effort in putting together all the data presented within these pages.

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**"May 1<sup>st</sup>, 2020"**

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# Sustainability Report 2020

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# List of Acronyms

<b>ACM</b>	Applied and Computational Mathematics Program
<b>BAS</b>	Basic and Applied Sciences Institute
<b>Bio</b>	Biotechnology Program
<b>CSE</b>	Computer Science and engineering
<b>CPE</b>	Chemical & Petrochemical Engineering
<b>DHS</b>	Downflow Hanging Sponge
<b>ECCE</b>	School of Electronics, Communication and Computer Engineering
<b>ECE</b>	Electrical and Computer Engineering
<b>EECE</b>	School of Energy Resources, Environmental, Chemical and Petrochemical Engineering
<b>E-JUST</b>	Egypt-Japan University of Science and Technology
<b>EMA</b>	Energy Materials Program
<b>ENV</b>	Environmental engineering
<b>ERE</b>	Energy Resources Engineering
<b>FIBH</b>	Faculty of International Business and Humanities
<b>FOE</b>	Faculty of Engineering
<b>IDE</b>	school of Innovative Design Engineering
<b>IME</b>	Industrial and Manufacturing Engineering
<b>SDGs</b>	Sustainable Development Goals
<b>MTR</b>	Membrane Technology and Research
<b>MSE</b>	Master of Science in engineering
<b>NAN</b>	Nanoscience Program
<b>SHS</b>	School of Human Sciences
<b>SIB</b>	School of International Business
<b>MSE</b>	Master of Science in engineering
<b>MTR</b>	Membrane Technology and Research
<b>NAN</b>	Nanoscience Program

The concept of sustainable development lies in utilizing resources for the purpose of fulfilling human needs while still being conscious that conserving the environment is essential for the sake of maintaining such resources so that future generations will use them as well. This perception seeks to raise people's awareness on how not to be oblivious to the fact that upcoming generations will stand in need for the same natural resources, and so, even as they are used, they must not be depleted.

Therefore, young generations at E-JUST, and the whole country at large, need to realize that in order to achieve a sustainable life, a balance and equal distribution of natural resources is necessary throughout the world so



that basic needs of each and every living being may be fulfilled. Consequently, we seek to instill such concepts in our students fervently through academic and social practices. As a university driven to improve its country's condition through science and technology, we unceasingly work to make a significant contribution on many of the sustainable development goals with respect to environmental degradation, climate change, education and gender equality. Therefore, sustainable development has gained an increasingly strong hold at E-JUST, and has dominated the approach we adopt in our strategy for combating global challenges.

Today's challenges to sustainable development and human progress demand constant hard work to realize our aspirations. Accordingly, we are contributing to sustainable development in multifaceted ways in various fields of teaching and research. E-JUST is adopting an interdisciplinary and solution-oriented approach towards achieving SDGs, so our efforts are primarily about strengthening and advancing our own competence. Consequently, this report represents our humble efforts to contribute to solving global issues, and hence, assert our role in accomplishing the core principles of SDGs. We seek to leave an illuminating impact to light the way for a bright future to our upcoming generations.

**Professor Ahmed El-Gohary**

**President of Egypt-Japan University of Science and Technology (E-JUST)**



The threats of climate change, insufficiency of water resources, and the major reliance on non-renewable sources, such as fossil fuels have been considered global issues that have had detrimental effects on the environment during the last decades. Adversely, due to the shortage in natural energy resources, severe weather conditions, and overpopulation in Middle Eastern and North African countries, our regions have become the most susceptible to those disastrous impacts. Consequently, sustainable development goals (SDGs), first announced by the UN in 2015, with respect to all issues of global concern, come at the forefront of our priorities at E-JUST. We hold a strong belief that addressing

such a universal challenge requires decisiveness, cooperation and perseverance. We believe that educational institutions such as E-JUST have an undeniable social responsibility to foster an environment protection and conservation plan, raising awareness in their communities. Therefore, innovative research, in all related fields, have been prioritized and given eminence. We have been relentlessly working on developing alternative methods that generate affordable and clean energy, clean water and healthy sanitation for a sustainable environment. Furthermore, innovative methods for energy production, water reuse, and clean technologies have been given precedence in the field of research. This report represents our endeavor to evaluate our university's impact on solving global environmental issues, and thus, consolidating the essence of sustainable development goals. The efforts we have exerted so far along with our future plans, will undoubtedly enable us to improve our environmental impact and leave a positive footprint as an academic establishment.

**Professor Mona Gamal El-Din Ibrahim**

**Dean of Energy Resources, Environmental, Chemical and Petrochemical Engineering School (EECE)**

**Head of Sustainable Development Committee**

**Egypt-Japan University of Science and Technology**



I would like to congratulate E-JUST for the release of this “Sustainability Report 2020” to summarize the effort and challenge of E-JUST to contribute Sustainable Development Goals. This is the tangible evidence of partnership between Egyptian and Japanese sides.

E-JUST was established in 2009 under the agreement between Egyptian and Japanese government. Since the beginning, Japanese Government has been fully supporting E-JUST through JICA (Japan International Cooperation Agency) by using various cooperation methods, such as dispatching Japanese professors, providing state of art equipment, training programs in

Japan and industry collaboration. Currently, 9 Japanese experts are working fulltime at E-JUST. Including two vice presidents.

We also have professors from 13 Japanese universities visiting E-JUST frequently throughout the year for cooperation and enhancing education as well as research.

JICA is Japan’s governmental agency which extends the cooperation to partner countries. JICA puts importance on ensuring sustainability in every aspect of development as reflected in the Development Cooperation Charter of Japan, and so do the SDGs. There is concern over sustainable development that should be well-balanced from the viewpoint of, not only the environment, but also economy and society. Although there was a time when social problems were expected to be solved as a result of economic growth alone, it is now widely recognized that inequalities within countries, vulnerabilities, and various other social problems are not automatically solved by economic growth. JICA will contribute to the achievement of the SDGs through collaborating with local and international partners in hopes to overcome existing challenges.

STI (Science, Technology and Innovation) is one of the strengths of E-JUST. We have to bear in mind that STI should bring benefit to the community and the society. Inclusiveness is the important key word of SDGs. I am sure that E-JUST can contribute to promote inclusive and sustainable society through its STI and JICA will continue to work together with E-JUST to enhance its strength and contribute to achieve SDGs.

**Mr. Watanabe Motoharu,**  
**Chief Advisor, JICA E-JUST Project**



# Executive Summary

## Clean Water and Sanitation

Clean water and sanitation are basic human needs that should be accessible to everyone. There is insufficient water on our planet to achieve this goal, a large number of people suffer from inadequate water supply, poor sanitation and hygiene due to poor infrastructure, investment and planning. The pictures below summarize progress towards improved water and sanitation access by establishing two Downflow Hanging Sponge (DHS) units in New Borg El-Arab city, Alexandria and Senores Town, Fayoum.



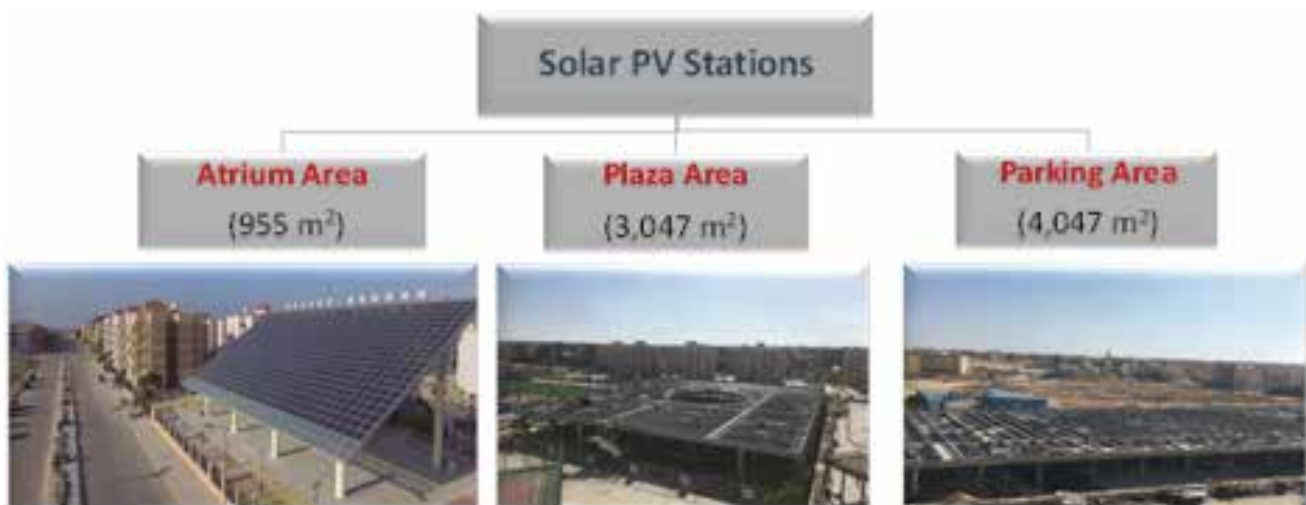
The first DHS unit - New Borg Arab city, Alexandria, Egypt



The second DHS unit – Senores Town, Fayoum, Egypt

## Generating Electricity from Solar Energy

Access to affordable, reliable and sustainable energy is crucial to achieving many of the Sustainable Development Goals – from poverty eradication through advancements in health, education, water supply and industrialization to mitigating climate change. Energy access, however, falls short of what will be required to achieve the Goal. Therefore, doubled efforts are needed for countries with large energy access deficits and high energy consumption. In an effort to achieve this Goal, E-JUST uses solar energy as a clean source for electricity generation. With the collaboration of Japanese partners, a 0.56 MW PV system has been installed in the secondary campus.





## Eco-friendly campus

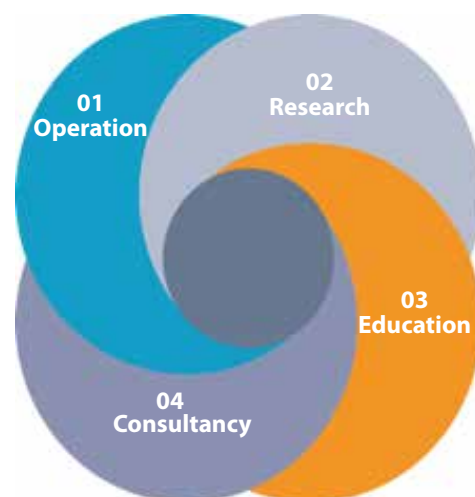
E-JUST Permanent Headquarters is established on an area of 200 acres, and the buildings occupy only 17% of the total area. Not only are the designs environmentally friendly, but they also have the latest international systems and modern technologies.



E-JUST eco-friendly campus designed by Arata Isozaki and Associates.

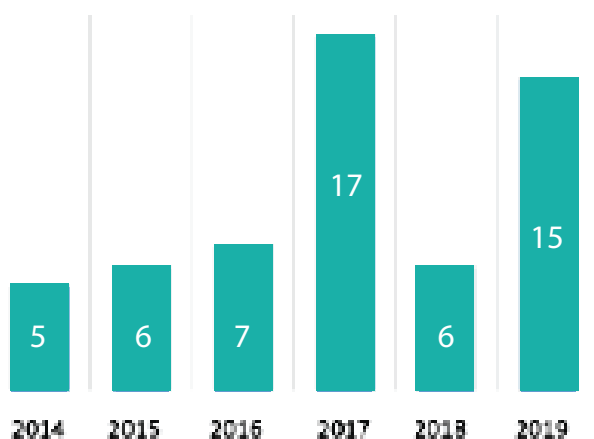
## Climate Action

Climate change is moving faster than we are. Therefore, E-JUST has recognized the urgent need for a sustainable development plan to combat the challenges inherent in global climatic changes. The plan is mainly concerned with four milestones: Operation, Research, Education, and Consultancy.



## Active Research Grants

### HISTORY (2014-2019)



**Total number of grants started in 2019  
= 15**

**Total budget of grants of 2019  
= 23.365.599 LE (Active & Accepted).**

**Total budget of active grants  
= 21.163.926 LE**

Data until **October, 2019**

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## Conferences and Workshops

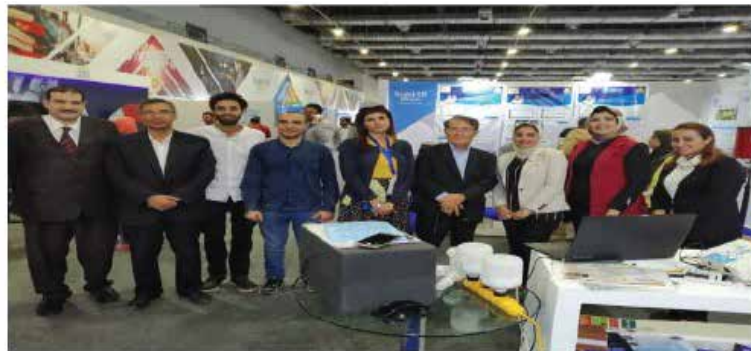
E-JUST organized the following international conference.

The 2<sup>nd</sup> ICCEEE Conference on chemical, Energy and Environmental Engineering was held at E-JUST from 16<sup>th</sup>- 18<sup>th</sup> July cooperated by Tokyo Tech.



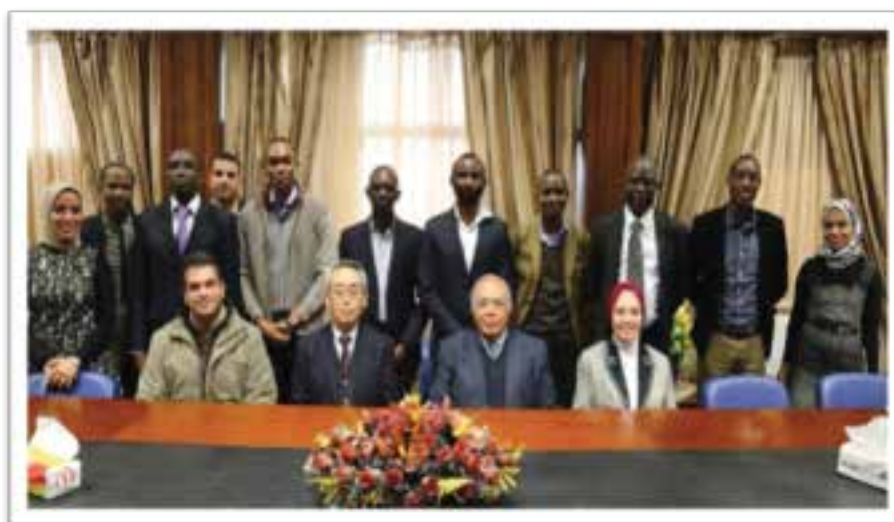
E-JUST participated in the 6<sup>th</sup> Cairo International Exhibition for Innovation from 24-25/10/2019 at Egypt Conference Center.

Five projects were exhibited by E-JUST.



## International students from low income nations with aid: African Students (Fall, 2019)

Egypt and Japan governments agreed during the TICAD 2019-7 to co-sponsor 150 African students to study their Master degree in E-JUST during the coming three years.





### Public access to ancient Egyptian obelisk replica landscape in secondary campus



### Public access to Art Exhibition (Mahmoud Said Exhibition at E-JUST main campus)



### Egypt Japan Science Forum: "Sustainability in Scientific Research"

Egypt-Japan University of Science and Technology (E-JUST) organized a forum entitled "Sustainability in Scientific Research" in cooperation with the Japanese Association for the Promotion of Science with the aim of enhancing cooperation in the field of higher education and scientific research between Egypt and Japan. Its activities included workshops to discuss many scientific issues, developing scientific research and its applications in various fields in Egypt, such as modern cancer treatment technologies, solar energy, asymmetric materials and their applications in the biomedical field as well as sustainability in water treatment.





# Introduction

This report is a product of collaboration between eminent professors, researchers, as well as administrative staff. Each chapter encompasses a series of sustainable development Goals that best represent E-JUST's commitment to achieving global sustainability. It emphasizes the critical role that education has in delivering the Sustainable Development Goals and the value it brings to governments, business and wider society, thus, reaffirming the University's commitment to make a significant, sustainable and socially responsible contribution to Egypt and the world.

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to work towards ending poverty, protecting the environment and ensuring that all people enjoy peace and prosperity by 2030. Through its research, learning and teaching, operations and community of staff, and students, the University is committed to delivering these Goals. However, the following report only sheds light on the SDGs lying within the scope of E-JUST and which the university has made fundamental advances in their regard. As part of its commitment to the Sustainable Development Goals Accord, the University will highlight projects and initiatives that directly contribute to each of the Goals within its scope.

Among the Goals which E-JUST is dedicated to is providing quality education. Obtaining a quality education is the foundation to creating sustainable development. In addition to improving quality of life, access to inclusive education can help equip students with the tools required to develop innovative solutions to the world's greatest problems. Our university has sought to reach this Goal through providing lifelong learning opportunities and granting students access to all facilities required to excel in their fields.

Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world. Therefore, E-JUST works towards ensuring gender equality by offering equal opportunities for both males and females in education (undergraduate and postgraduate studies) as well as on employment level.

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Furthermore, clean water and healthy sanitation are among the Goals that E-JUST is committed to accomplishing, not to mention its unceasing effort to secure affordable and clean energy sources through projects and national/international collaborations.

Employment practice also comes at the university's top priorities. Workshops, training and language enhancement courses have been conducted to help enhance staff skills and qualifications, in addition to the internships.

Industry, innovation and infrastructure projects pertaining to Goal 9 represent a substantial segment of the university's effort to commit to sustainability. This section in the report demonstrates the revolutionary industrial project which E-JUST has funded, and it also illustrates the statistics of filed patents and industrial collaborations.

Among the other Goals, which Egypt Japan university of Science and Technology is working towards, is having sustainable cities and communities through showcasing our heritage, history and culture, while integrating the Japanese factor. Giving public access to Ancient Egyptian landscapes along with modern art exhibitions are a solid proof of E-JUST's relentless effort. Also, integrating Japanese culture in all its aspects with the Egyptian culture enables students and staff alike to experience the cosmopolitan atmosphere on campus.

Moreover, a climate action was adopted by E-JUST for the sake of combating global environmental issues with due focus on climate change. The action plan is concerned with four milestones; operation, research, education and consultancy.

Furthermore, we cannot hope for sustainable development without peace, stability, human rights and effective governance, based on the rule of law, yet our world is increasingly divided. Some regions enjoy peace, security and prosperity, while others fall into seemingly endless cycles of conflict and violence. This is not inevitable and must be addressed.

E-JUST has decided to address Goal 16: "Peace, justice and strong institutions" by selecting representatives from all university sectors to represent it on different axes ensuring the integration of all groups in the decision-making process.

Strengthening means of implementation and revitalizing the global partnership for sustainable development is widely seen in E-JUST's efforts to form collaborations on national and international levels to help eradicate poverty, tackle inequality and combat climate change through holding and participating in national/international conferences, forums, and symposiums.





## Goal. 4 Quality Education



- **Aim**

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

- **Actions**

E-JUST adopts a state-of-the-art educational system that is based on Japanese academic concepts and mainly relying on a project-based education and problem-solving learning techniques. The University offers unique academic programs with close interaction with the industry, as well as multidisciplinary research. We aim to become a role model for educational and research institutions in Egypt by fostering the Japanese educational standards, policies, and systems. In this regard, the university seeks to strengthen the ties of collaboration between Egyptian and Japanese academic institutions. Therefore, in line with Goal 4; "Quality Education", E-JUST strives to contribute to the enhancement and improvement of human resources in the region, by providing a high-level educational system and offering pragmatic and innovative solutions to human needs. Moreover, by building partnerships with key Japanese academic and research institutions as well as industrial companies, we aim at conducting applied research that would expose students and faculty members to real life research activities, and acquaint them with the Japanese systems, know-how and advanced technologies.

### Cultural Salon open for Public "Scan the Pyramids" by Prof. Hany Helal – 2020





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**Cultural Salon open for Public “My Experience during Japan Visit” by Prof. Osama El-Ghazaly Harb – 2020**



**STEM School students visiting E-JUST and attending community educational event as part of the LifeLong Learning efforts**



**Heritage Science training course “Museum Preparedness in Crises and Community Engagement” for school students as part of the Children University activities in collaboration with the Egyptian Academy of Scientific Research (ASRT) .**





## Goal. 5 Gender Equality



### • Aim

Achieve gender equality and empower all women and girls. Empowering women and promoting gender equality is crucial to accelerating sustainable development. Ending all forms of discrimination against women and girls is not only a basic human right, but it also has a multiplier effect across all other development areas.

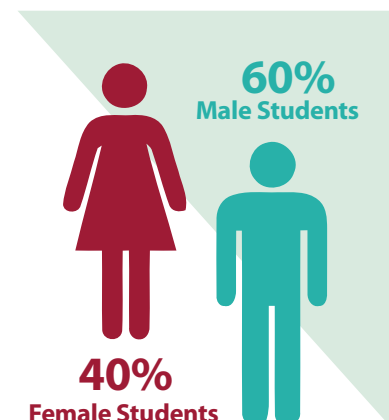
### • Actions

The total number of registered postgraduate students is currently 199.

151 enrolled in FoE, 24 enrolled in BAS, 21 in Heritage Science program and 3 in Accounting and Information Systems.

40% are female students while 60% are male students.

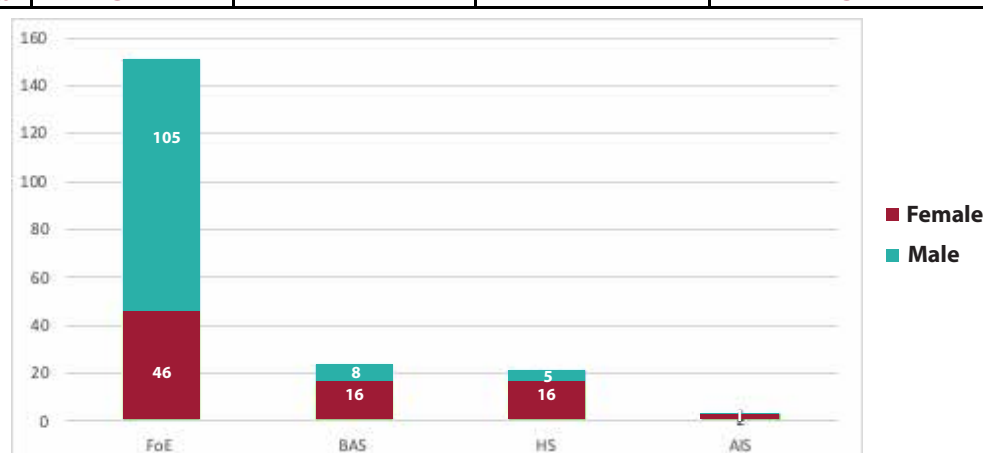
230 undergraduate students are enrolled in FoE while 80 are enrolled in FIBH. 31% are female students while 69% are male students.





### Total of current postgraduate students in all faculties:

Gender	Engineering	Basic and Applied Science	Heritage Science Program	Accounting Information System and Data Security	Grand Total
Female	46	16	16	2	80
Male	105	8	5	1	119
<b>Grand Total</b>	<b>151</b>	<b>24</b>	<b>21</b>	<b>3</b>	<b>199</b>

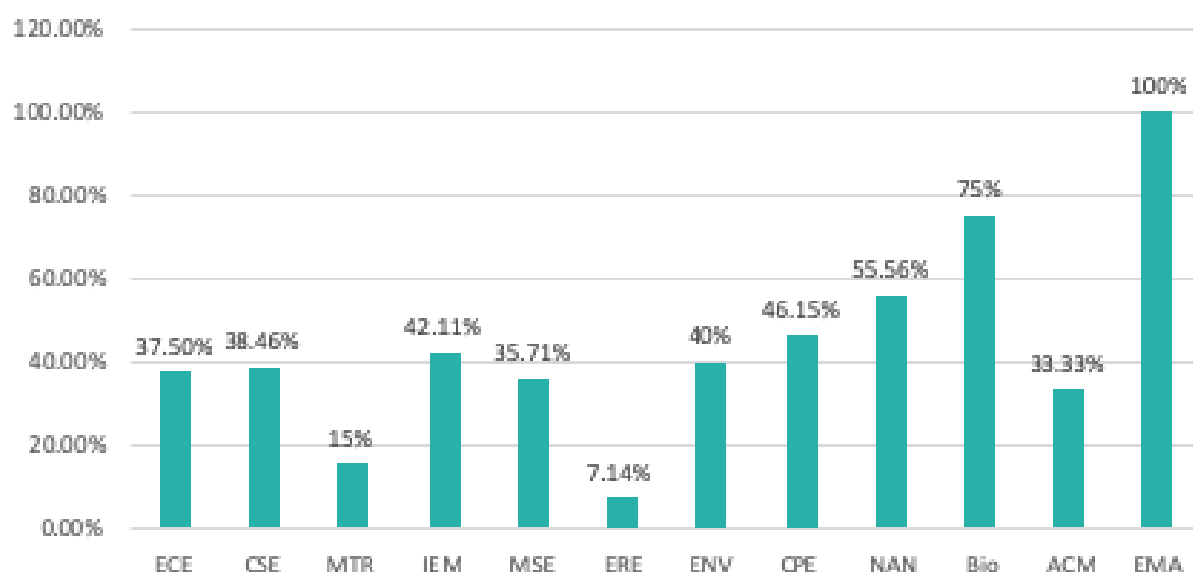


### Current postgraduate students / Gender/ program (FoE and BAS) until March, 2020

Programs	Female	Male	Grand Total	Spring 2020, Female percentage	December, 2019 BoT Female percentage
ECE	9	15	24	%37.50	%38.46
CSE	5	8	13	%38.46	%42.11
MTR	3	17	20	%15.00	%15.79
IME	8	11	19	%42.11	%43.75
MSE	5	9	14	%35.71	%35.71
ERE	2	26	28	%7.14	%6.90
ENV	8	12	20	%40.00	%52.63
CPE	6	7	13	%46.15	%38.89
NAN	5	4	9	%55.56	%50.00
Bio	6	2	8	%75.00	%75.00
ACM	1	2	3	%33.33	%33.33
EMA	4		4	%100.00	%100.00
<b>Grand Total</b>	<b>62</b>	<b>113</b>	<b>175</b>	<b>%35.43</b>	<b>%36.11</b>

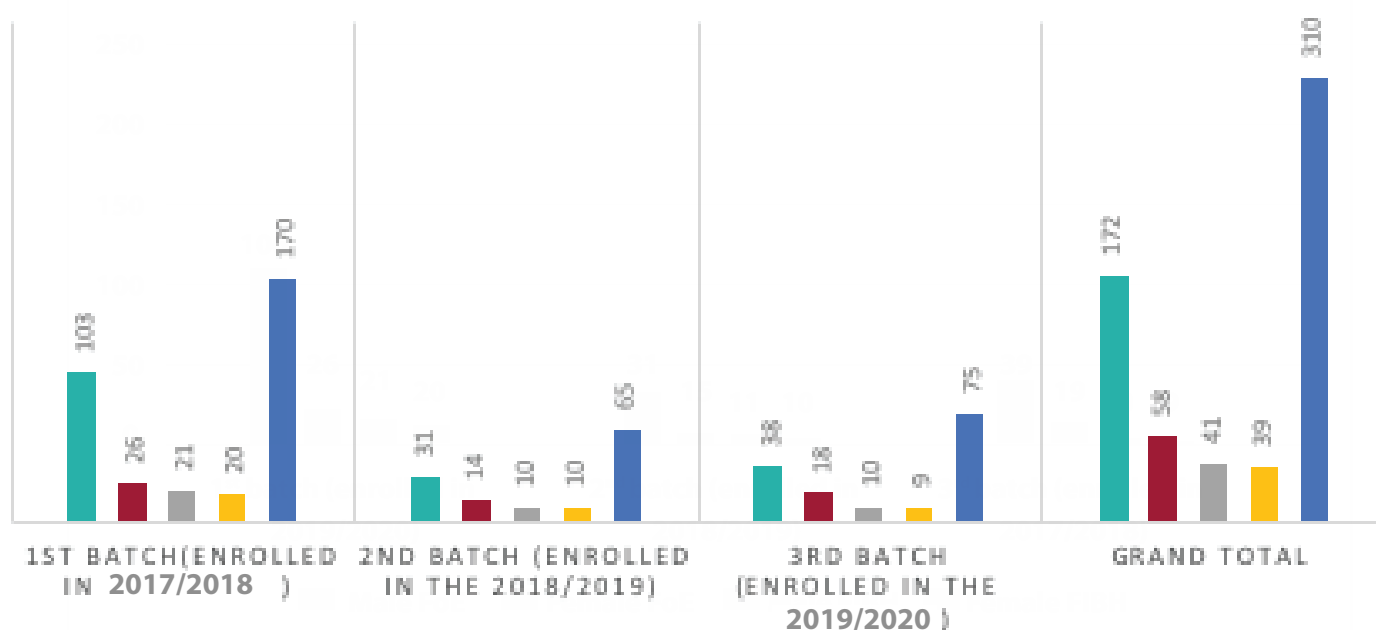
According to the table shown above, the ratio of female students increased in ERE - CPE, achieved a gender balance in nanotechnology, decreased in ECE - CSE - IME - ENV, and is the same in MSE - BIO - ACM - EMA - MTR programs comparing to the last semester.

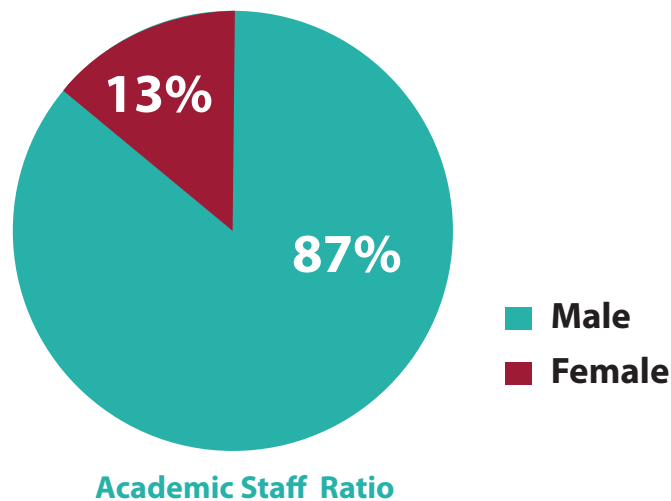
**Percentage of Female Postgraduate Students to Total Students  
Per Program (Spring 2020)**



**Undergraduate Students' Gender**

Male FOE Female FOE Male FIBH Female FIBH Grand Total





Since engineering is traditionally considered a male-dominated field, women may choose to avoid studying it due to their lack of confidence in their skills and abilities, even when performing equally to men. At a young age, girls do not express the same level of interest in engineering as boys, and this is partly because of gender stereotypes in our societies.

There are many factors leading to why they don't go into engineering, such as being judged about going into a difficult major such as engineering, or working in difficult workplace conditions. As is evident from the graph, the number of male undergraduate students is remarkably higher than females starting from Spring 2016 till spring 2020.

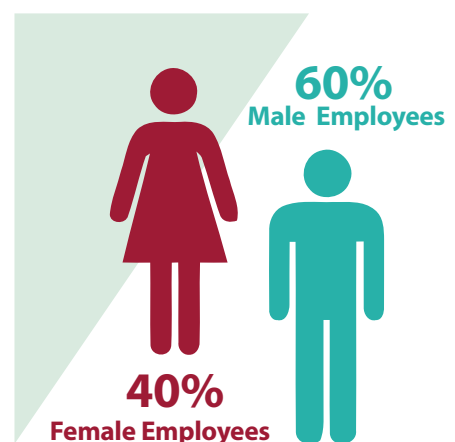
Therefore, E-JUST has been exerting unyielding efforts to encourage females to join STEM programs.

Prof. Mona Gamal El-Din has actively participated in Pro Girls Program. This program is initiated by GIZ and Goethe Institute with the remarkable cooperation of Prof. Mona, who represents E-JUST, mentoring young females to encourage them to take a career path in STEM fields. A number of -14 year-old girls from Alexandria have received career orientation focusing on Science, Technology, Engineering and Mathematics (STEM). Several female students were further introduced to different academic disciplines and research fields, especially management and STEM programs in an effort to motivate them to pursue such careers in the future.

### Employees gender ratio

E-JUST strives to create a supportive work environment that promotes equal opportunities and gender equity.

We view our diverse work force as a key asset and an essential factor to our competitiveness and growth.







## Goal. 6 Clean Water and Sanitation

### • Aim

Achieving sustainable management of water and sanitation

### • Actions

- E-JUST provides M.Sc. and Ph.D. in water management.
- A series of workshops on “Conservation of Natural Resources, the individual role” were organized for STEM School Students. The workshops discussed the role of the individual to save water, energy and food.
- E-JUST enjoys a wide range of local, national and global cooperative relations on establishing the Down Flow Hanging Sponge (DHS) Unit with full support from the local authority in Borg El-Arab. Furthermore, E-JUST professors participated with Alexandria Water Company in water conservation awareness seminars. It is noteworthy that E-JUST also hosted, in collaboration with Global Institute for Water Environment and Health (GIWEH), the 5<sup>th</sup> International Conference on Water Environment and Climate Change, and cooperated with Arab Water Council on the regional level. The university was invited to the kick-off meeting for the 9th World Water Forum « Dakar 2021 » on the global level. Also, Mr. Abdoulaye Sene, president of the organizing committee of the water world forum "Dakar 2021" has participated in the 5<sup>th</sup> GIWEH conference organized and hosted by E-JUST.

### Wastewater Treatment, Downflow Hanging Sponge Technology, DHS Project

#### Summary

The DHS system is designed, in accordance with the Egyptian code, to process/treat waste water to be reused in irrigation without consuming energy nor mechanical ventilation. This model produces a very small amount of sludge. Moreover, it is highly effective in removing organic and inorganic pollutants. It can also remove pathogenic bacteria, viruses, and parasites with high efficiency by adding chlorine at the final phase of treatment. Therefore, the reuse of treated wastewater provides both an additional supply of water for irrigation and a low-cost source of nutrients (N&P), in addition to the stabilized sludge, which can act as crop fertilizer and soil conditioner in Egypt and Africa.

#### DHS Technology Advantages Compared to other technologies:

- Low power consumption
- No need for an external ventilation source
- Very little amount of sludge after processing
- High efficiency in removing organic and inorganic pollutants, pathogenic bacteria and viruses
- Small area needed for the project to be established

#### E-JUST has constructed two DHS units as follows:

- The first unit fully operated in 2017 at New Borg Arab city, Alexandria, Egypt with a capacity of 200 cubic meters per day.
- Another unit was constructed in 2019 at El-Adel village, Senores Town – El-Fayoum, Egypt with a capacity of 400 cubic meters per day.



The first DHS unit - New Borg Arab city, Alexandria, Egypt



The second DHS unit – Senores Town, Fayoum, Egypt







## Goal. 7 Affordable and Clean Energy

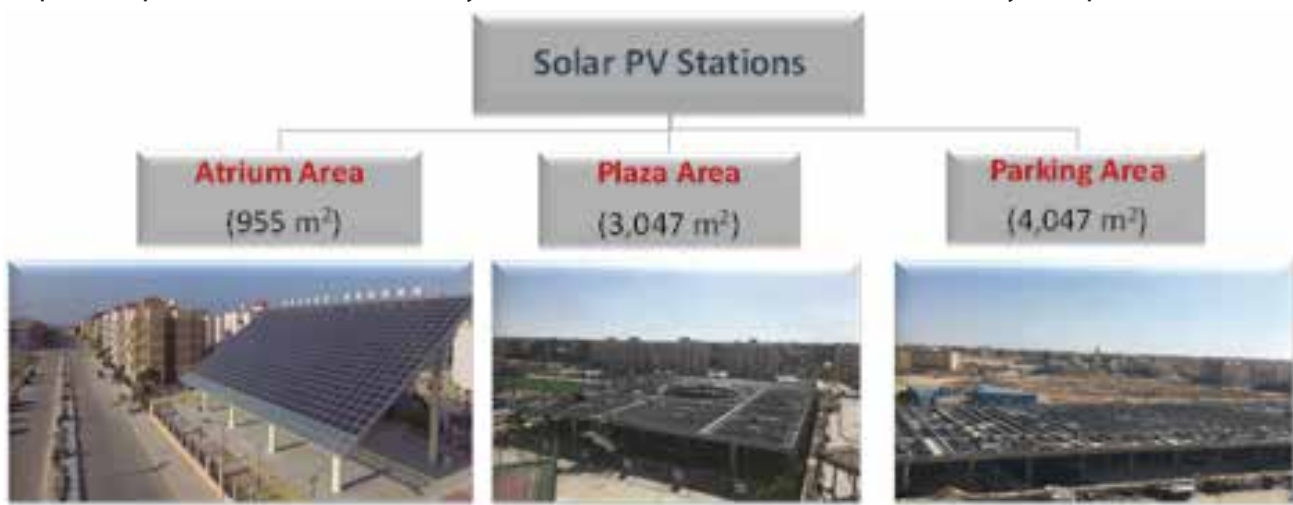
### • Aim

Increasing the use of clean and renewable energy and reducing electricity consumption

### • Actions

#### • Generating Electricity from Solar Energy

E-JUST uses solar energy as a clean source for electricity generation. With the collaboration of Japanese partners, a 0.56 MW PV system has been installed in the secondary campus.



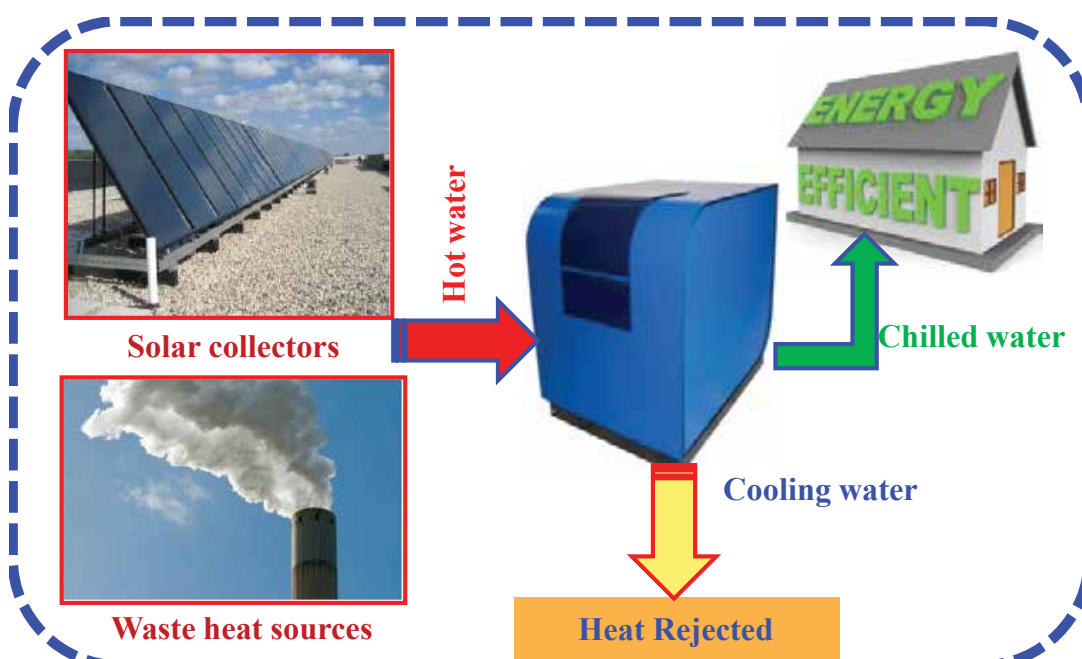
#### • Education

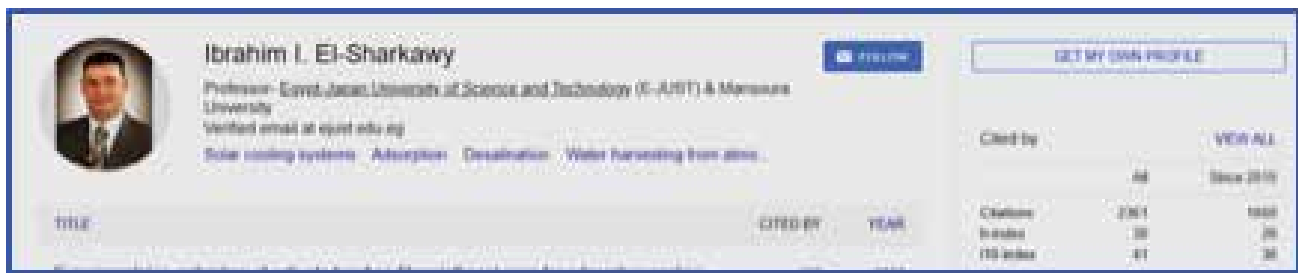
E-JUST offers undergraduate and postgraduate programs in Energy Resources Engineering, which deal with all types of energy including solar and wind as clean energy resources.

#### • Research

##### Green Cooling

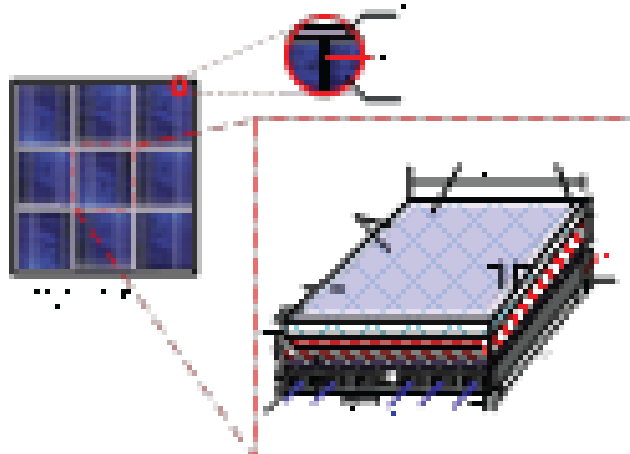
E-JUST pays special attention to the research area of green cooling using solar-powered sorption chillers. Some of E-JUST professors are well-known scholars in this area.





## Renewable Energy Applications

E-JUST staff and researchers are conducting extensive researches on photovoltaic systems, wind energy and other applications of renewable energy.



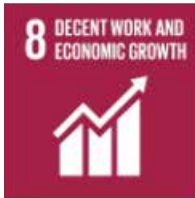
### • Collaboration with the New and Renewable Energy Authority (NREA)

Several meetings with different industries and academics, as well as meetings and discussions with the New and Renewable Energy Authority (NREA), have been conducted to promote renewable energy and energy saving. A memorandum of understanding (MOU) is prepared to be signed with NREA, which targets using renewable energy in industries. Alexandria (where E-JUST is located) includes 35% of all industries all over Egypt and 65% of petrochemical industries all over Egypt.

### • Eco-friendly campus

E-JUST Permanent Headquarters is established on an area of 200 acres, and the buildings occupy only 17% of the total area. Not only are the designs environmentally friendly, but they also have the latest modern technologies.





## Goal. 8 Decent work and economic growth

### • Aim

To achieve full and productive employment, and decent work, for all women and men. Higher levels of productivity and technological innovation. Encouraging entrepreneurship and job creation.

### • Actions

#### Languages

- English Language – 2 course with the participation of 30 employees.
- English Language - 4 workshops with the average participation of 20 employees.
- French Language – started level 9) 2 participants
- Japanese Language - 3 course for the administrative staff and 1 for the academic staff

#### Workshops

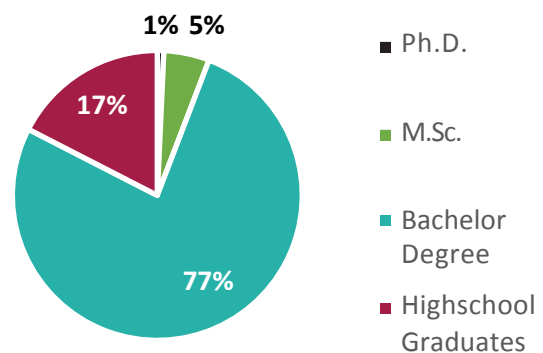
- Financial Analysis Workshop in Cooperation with EAAC – 7 Participants from the finance department
- Organizational Communication Workshop in Cooperation with FIBH – 10 participants
- Logical thinking workshop in cooperation with the LACC- 22 employees participated in the workshop.
- Kaizen workshop in cooperation with Prof. Handa - 16 employees participated in the workshop.

#### Courses

- Computer Aided Translation Tools (CAT Tools) – 14 participants

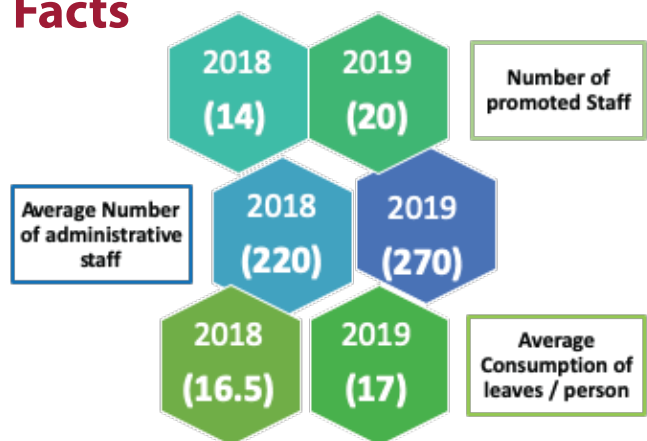
- The seniority level in E-JUST increased by 42% compared to last year.
- Although the number of administrative staff increased by 20% compared to last year, the average leave consumption rate increased only half day till October, 2019.

#### Admin. Staff Qualifications



Most of our administrative staff holds a bachelor degree although our service worker represents 43% of the total number of administrative staff.  
50% of service workers hold a bachelor degree

### Facts



83% of the administrative staff are young people (Generation Y) who were born between 1982 and 2000. They are characterized by being ambitious, achievement oriented and challenging.'



## Goal. 9 Industry, Innovation and Infrastructure

### • Aim

Promote inclusive and sustainable industrialization and foster innovation

### • Actions

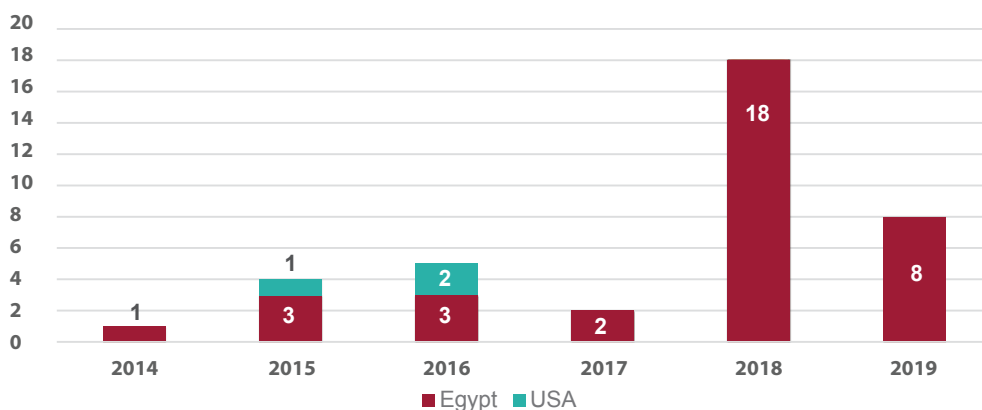
#### Industrial Robot

The existing industrial robots in the market are mainly divided into two categories; serial and parallel robots which have opposite advantages and disadvantages. The proposed industrial robot (non-serial non-parallel) has a new interconnected structure that combines serial and parallel ones. Therefore, the proposed new robot has, to a great extent, the advantages of both serial and parallel robots without their disadvantages. The proposed robot is the only interconnected one in the world that can produce 3D translational motion within a free-interior-singularity workspace using solely rotary joints and 3 rotary actuators. The university has a funded project, Blink, from ITIDA with a company, BENA. Upon successful result of the project, the owner of the company decided to establish a new company with the same name of the project, BlinkApp Inc.

#### Filed Patents

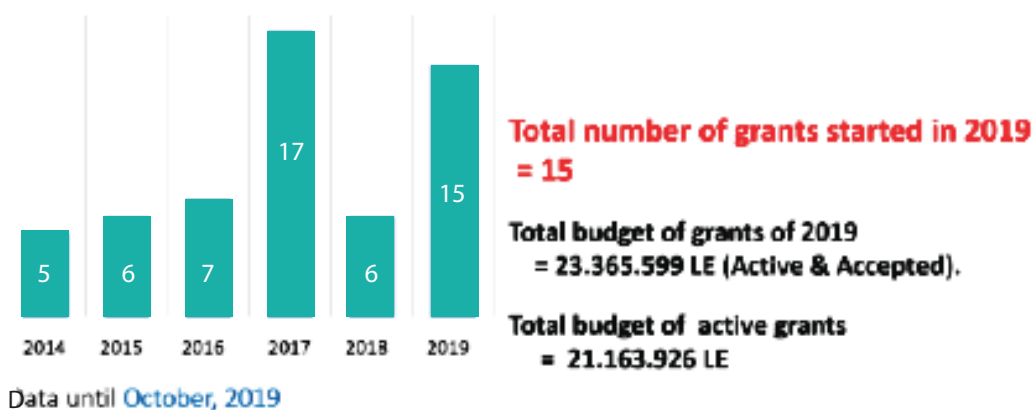
The following figure illustrates the history of patents filed by E-JUST researchers.

41 patents were filed up to September 2019. Among them, 38 national patents and 3 USA ones. E-JUST received the first granted patent in January 2019

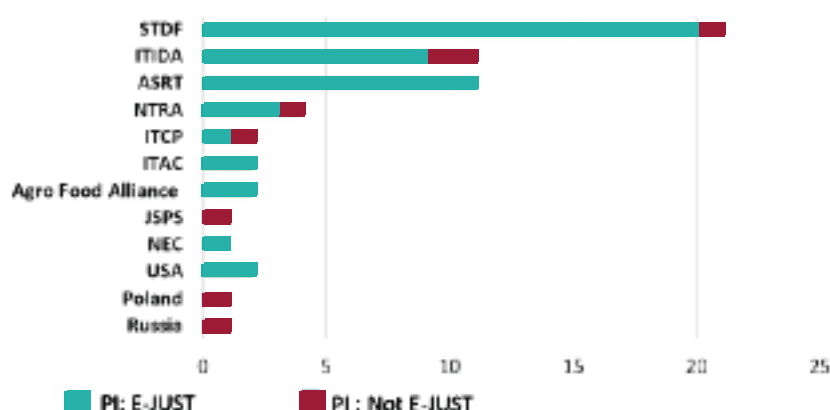


#### Active Research Grants

##### HISTORY (2014-2019)



The current active grants are supported by the following agencies.



- The chart shows data until [October, 2019](#).
- The total number of active/accepted grants is 58. 51 is by PI(E-JUST) and 8 is not PI(E-JUST)
- The number of Grants from Japan is 2. One is from NEC and one from JSPS

NEC	Software-Defined Networking for future smart campus network infrastructure.	Satoshi Goto
JSPS	Toward a Multi Gait Analysis Recognition System	Walid Gomaa
ITAC	A Robust Wearable Activity Recognition system based on IMU Signals	Walid Gomaa
ITAC	Classification and prediction of lung cancer using both genomic and CT scan Image Analyses	Moataz Abdelwahab
STDF	Exceptional Hollow Nanoporous Hybrid Carbons by Thermal Conversion of Metal-Organic Frameworks for Enhanced Energy Storage	Mohamad Ayad
ASRT	Developing White Light emitting Diode Devices	Mohsen Ghali
Agro-Food	Automated Oranges Sorting Line	Mohamed Sayed
Agro-Food	New Industrial Robot for Food Industries	Mohamed Fannni

## Industrial Collaborations

E-JUST formed joint ventures with several industries. The following is a list of company names:



## Research Collaboration with industries

Current Collaboration	In progress Collaboration
Fresh Company	Elsabah for Dairy Products
Trend Micro	Al Asdekaa for Dairy Product
EGAS	Almarai-Beyti
Ezz Steel	Uniliver
Modern Motors	Bedaya for meat processing
ENPPI	Ammco Foods
Ezz steel	Nile Sugar
Mega Factory	Mega trust for software
NEC	Spirula
Blink App	Enozom
Pharco	Rubex

Collaboration started with industries in Japan:

- Research contract was signed with NEC, Tokyo, Japan.
- NEC provides grants for the research on designing a new communication network.

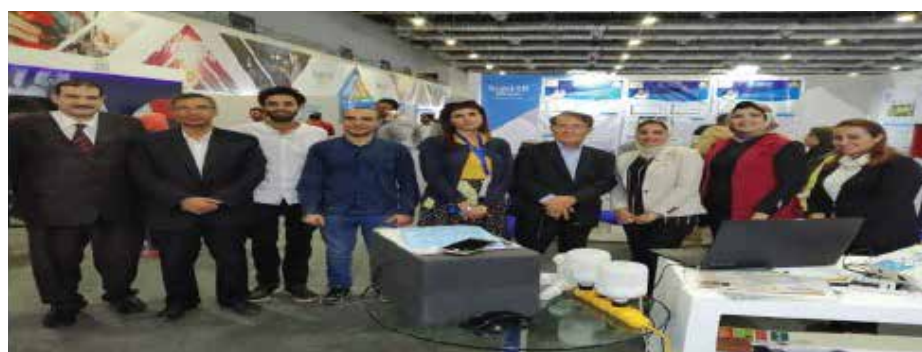
### Conference and Workshops

E-JUST organized the following international conference.

2<sup>nd</sup> ICCEEE Conference on chemical, Energy and Environmental Engineering was held at E-JUST from 16<sup>th</sup>- 18<sup>th</sup> July, 2019 cooperated by Tokyo Tech.



E-JUST participated in the 6<sup>th</sup> Cairo International Exhibition for Innovation from 24<sup>th</sup> - 25<sup>th</sup> October, 2019 at Egypt Conference Center. 5 projects were exhibited by E-JUST.







## Goal. 10 Reduced Inequalities

### • Aim

Reducing inequalities and ensuring no one is left behind are integral to achieving the Sustainable Development Goals.

Reduce inequalities in income, access to services and opportunities based on age, gender, religious or social background since it has been widening globally.

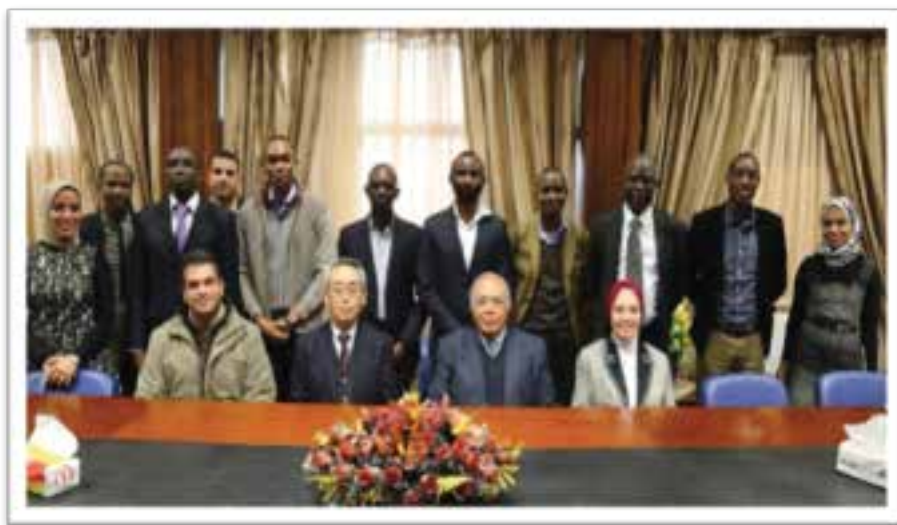
### • Actions

The Egyptian Constitution and Egyptian Labor Law stipulate non-discrimination in employment opportunities and wages based on age, gender, religious beliefs, national origin, or ethnicity. Therefore, E-JUST complies with the principle of transparency and upholding equality in applying for jobs and students' admission to the university and does not accept favoritism at the expense of competence in its job recruitment or student admission policies. Consequently, all announcements related to applying for undergraduate/postgraduate student admission as well as job postings are published in the most transparent manner on the university's website and Facebook page. The university aspires to lay down the rules for equality among members of society by providing equal opportunities as the university considers it among its social responsibilities. E-JUST believes that all institutions should engage their governments as well in a transparent and accountable way through public policy dialogue. Relationships between educational institutions and governments are increasingly recognized as having a significant impact on human rights, and thus, improving equality outcomes.



### International students from low income nations with aid: African Students (Fall, 2019)

Egypt and Japan governments agreed during the TICAD 7-2019 to co-sponsor 150 African students to study their Master degree in E-JUST during the coming three years.



Current African graduate Students	JICA	EGYPT	Grand Total
		MoP	
Kenya	2		2
Nigeria	1	2	3
Ghana	2	2	4
Cameroon		1	1
Grand Total	5	5	10

Graduated Students	No	Country	No
Kenya	5	Uganda	3
Nigeria	6	Zimbabwe	1
Ghana	1		
Grand Total			16



## Goal. 11 Sustainable Cities and Communities

- **Aim**

Make cities and human settlements inclusive, safe, resilient and sustainable

- **Public access to ancient Egyptian obelisk replica landscape in secondary campus**



- **Public access to the green hill landscape in main campus**





- Public access to Japanese restaurants with traditional Japanese food and decoration



- Public access to Art Exhibition (Mahmoud Saïd Exhibition at E-JUST main campus)



- Affordable housing for E-JUST EMPLOYEES



- Public Access to Exhibition (Tohoku Hand Crafts)





## Goal. 13 Climate Action

### Aims

There is no country that is not experiencing the drastic effects of climate change. Greenhouse gas emissions are more than 50 percent higher than in 1990. Global warming is causing long-lasting changes to our climate system, which threatens irreversible consequences if we do not act.

### Actions

Climate change is moving faster than we are. Therefore, E-JUST has recognized the urgent need for a sustainable development plan to combat the challenges inherent in global climatic changes. The plan is mainly concerned with four milestones: Operation, Research, Education, and Consultancy.

### Operation

The Introduction of clean energy by solar electricity generation system Grant agreement was signed on February 11<sup>th</sup>, 2010. The solar electricity system generates 560 KW of solar energy. JICA extends a grant of 970 million Japanese Yen to the Egyptian Government to establish a solar electricity generation system at the university.

### Research

E-JUST is committed to research as an integral part of its mission. Many research tracks have been investigated such as solar systems, climate observation, meteorology, ground, and space born instrumentation. It places great emphasis on teaching students through problem-solving and critical thinking techniques by adopting a project-based approach through its collaboration with governmental entities and NGOs to equip students with essential skills for their later research career.

### Education

The university provides M.Sc. and Ph.D. programs in Climate Change through the environmental engineering department. The syllabus of the courses includes, studies of impact, mitigation and adaptation of climate change.

### Consultancy

The university has a joint agreement with the Egyptian Meteorological Authority including the collaboration in educational and research topics related to Climate Change. The Egyptian Meteorological Authority (EMA) is a governmental authority responsible for meteorological and climate change monitoring. The university has a joint agreement with EMA including the collaboration in educational and research topics related to Climate Change. E-JUST university, as an educational entity, collaborates with NGOs on climate adaptation. The university has collaborated with International Development, Environment and Culture Association, IDECA, Alexandria Business Association ABA and Inner wheel Alexandria East on climate adaptation.







## Goal. 16 Peace, Justice and Strong Institutions

### Aims:

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Students representatives attending E-JUST Board of Trustees and University council meetings



Private Sector involvement manifested by the membership of Dr Sherine Helmy (Pharco Pharmaceuticals CEO) and Mr Medhat Elaraby (Elaraby Group) in E-JUST Board of Trustees



E-JUST president – member of the Ministry of Higher Education' committee for National Projects







## Goal. 17

# Partnerships for the Goals

### • Aim

Strengthening means of implementation and revitalizing the global partnership for sustainable development

In 2015, world leaders adopted the 2030 Agenda for Sustainable Development, which aims to eradicate poverty, tackle inequality, and combat climate change.

A successful sustainable development agenda requires partnerships among governments, the private sector and civil society. These comprehensive partnerships are built on rules, values, a shared vision and common goals, which achieve the enhancement of the means of implementation and the revitalization of the global partnership aiming for technological advancements.

- Promoting regional and international cooperation between the North and the South, as well as within the countries of the South in addition to the triangular cooperation in the area of science, technology and innovation and their accessibility
- Enhancing knowledge exchange on agreed terms, through improved coordination among existing mechanisms, particularly at the United Nations level, and through a global mechanism to facilitate technology
- Promoting the development, transfer, spreading and diffusion of environmentally safe technologies to developing countries on favorable terms, including concessional and preferential terms, as agreed
- Fully operationalizing the Technology Bank and the mechanism of capacity building in the fields of science and technology for LDCs by 2017, and promoting the use of enabling technologies, especially information and communications technology.

This came in harmony with the Egyptian government's actions in setting the sustainable development strategy, "Egypt Vision 2030". The importance of this strategy comes especially in light of the current conditions in which Egypt is living in its local, regional and global dimensions, which requires a review of the development vision to keep up with these advancements and to develop in the best way possible; thus, enabling the Egyptian society to rise against all stumbling blocks, and move to the ranks of developed countries, achieving the desired development goals for the country.

The strategy adopted the concept of sustainable development as a general framework intended to improve the quality of life today, without prejudice to the rights of future generations to a better life.

Hence, the concept of development adopted by the strategy is based on three main dimensions; economic, social and environmental keeping pace with the axes of the United Nations for sustainable development, in the forefront of which is to achieve the leadership position of the Egyptian state through enhancing its place regionally and internationally and strengthening partnerships regionally and internationally. Egypt Japan University of Science and Technology seeks to participate strongly in the support of sustainable- development-related scientific advancements, as well as contribution in research and technology to face the challenges related to sustainability, building strong interaction mechanisms with NGOs, regional and national government and education.

### • Actions

in an effort to participate and contribute to the development of the sustainable development goals of the national government, including identifying problems, and developing policies and strategies, E-JUST has taken the following steps:

[The launch of the second international conference in the fields of chemistry, energy, and environment from July 16<sup>th</sup>-18<sup>th</sup>, 2019.](#)

The school of Energy and Environmental Resources as well as Chemical and Petrochemical Engineering school at Egypt Japan University of Science and Technology concluded on July 16<sup>th</sup>-18<sup>th</sup>, 2019, its second international conference, which was held at the headquarters of Egypt Japan University in Borg El Arab over a period of three days in the fields of chemistry, energy and environment. The conference was sponsored by the Ministry of Higher Education and Scientific Research, the Ministry of Environment, the Ministry of Electricity and Renewable Energy and the Ministry of Trade and Industry.

The conference witnessed a great initiative of cooperation with Tokyo Institute of Technology in Japan, many universities and research institutes, as well as some industrial companies.

Two workshops were held on the sidelines of the conference sessions; the first workshop on the uses of solar energy in coordination with the African Solar Energy Network, and the second workshop on desalination technology in cooperation with Cranfield University.

Several sustainable development goals were discussed, including water, health, energy, sustainable cities and climate change.



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### The launch of the scientific conference "The Egyptian-Japanese Conference on Electronics, Communications and Computers" 15<sup>th</sup> December, 2019

Egypt-Japan University launched the scientific conference "The Egyptian-Japanese Conference on Electronics, Communications and Computer Engineering" which was organized by electronics, communications and computer engineering school at Egypt Japan University. Kyushu University and (E-JUST) co-organized the two-day International Conference (JAC-ECC) that concluded on Monday, December 2019, 16 at the University's headquarters along with the participation of many Egyptian, African and Japanese universities. The conference discussed a number of axes including artificial intelligence, IoT applications and biomedical engineering.



### A Delegated Visit from Ministry of Planning to the Main University Campus in December, 2018

A delegation from the Ministry of Planning, Monitoring and Administrative Reform visited the construction site of the university main campus.

The Minister of Planning stressed the fact that such development projects contributes to the growth of its society and individuals, in addition to being a means of cooperation among governments or between the government and NGOs, as well as work to diversify and develop financial resources.

They added that Egypt Japan University is a distinguished model for smart government universities which apply all the criteria of sustainable development integrating the practical application of the dimensions of sustainable development into the educational programs that the university is currently implementing, and the 13 programs that benefit about 500 students, indicating that the university depends on the Japanese standards in the educational, research and administrative aspects.

The Vice Minister of Planning, Monitoring and Administrative Reform also indicated that 98% of the work of the first stage, and 66% of the work of the second stage have been completed, at a total cost of about 4.5 billion Egyptian pounds, explaining that consideration was taken when establishing the university with regard to Energy efficiency standards in all university buildings, in addition to working on establishing a clean energy production plant.

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### Participation in TICAD 7 Conference

In order for the university to participate in international cooperation and research efforts by reviewing comparisons and developing international best practices in an effort to address sustainable development goals, the President of Egypt Japan University of Science and Technology, Prof. Ahmed El-Gohary participated in the Tokyo International Conference for African Development (TICAD 7). An international symposium was presented on the sidelines of the conference, entitled: "Human Resources Development and Science Promotion Technology and innovation among Universities in Africa "

This comes in light of the Egyptian-Japanese initiative for education, which was launched in March 2016, with the aim of cooperation between the two countries in the fields of education, higher education, health and scientific research.

Prof. Ahmed El-Gohary pointed out the necessity of strengthening cooperation relations among universities in the field of scientific research, by delegating academic professors to contribute to the educational and research process among different universities in addition to the delegation of African students accordingly achieving a sustainable plan for the development of the African continent by promoting education, higher education and scientific research.

During the conference, it was announced that 150 scholarships would be allocated for African youth to study at Egypt Japan University, funded in cooperation with Japan International Cooperation Agency and the Egyptian government represented in the Ministry of Higher Education and Scientific Research.



### E-JUST TICAD7 announces opening of African Scholarship for STI

Egypt-Japan University of Science and Technology announced the opening of the scholarship program for African countries starting in September 2020 in cooperation with the Egyptian and Japanese governments with the aim of obtaining 150 excellent human resources from Africa in post graduate studies to work on developing high-quality human resources in the field of STI toward future African STI network and beyond.

This scholarship program is one of the activities aimed at developing STI skills in human resources that will contribute to the development of African countries, which was discussed in the Yokohama Action Plan 2019 in August 2019.

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### Hosting the Fifth International Conference on Water, Environment and Climate Change on April ,6 2019

Egypt-Japan University hosted the Fifth International Conference on Water, Environment and Climate Change. This event is organized by the School of Energy Resources, Environment, Chemical and Petrochemical Engineering (EECE) in coordination with the Global Institute for Water, Environment and Health (GIWEH), also the Arab Water Council, the European Institute for Renewable Energy in the Netherlands and the International Water Management Institute in Sri Lanka. Professor Mona Gamal El-Din, Dean of the EECE School, announced that the conference aims to identify the challenges of adapting to the effects of climate change and water scarcity. She also stated that the conference seeks to provide creative solutions to reduce the negative consequences of climate change and attain environmental security by benefiting from the implementation of international practices. Prof. Mona announced that the university implemented a wastewater treatment plant in Borg Al-Arab. This plant is considered the first of its kind in Egypt, Africa and the Middle East as it operated on the Down Flow Hanging Sponge technology.

### Participation of Egypt Japan University in the First International Forum on Technology of Education and Scientific Research on Thursday, 28 March 2019

The main theme of the events of the international forum "Higher Education and Scientific Research" was linking the present and the future. Among the distinguished attendees were President Abdel-Fattah El-Sisi and Minister Khaled Abdul Ghaffar - Minister of Higher Education and Scientific Research.

Prof. Ahmed El-Gohary, President of Egypt Japan University of Science and Technology, affirmed that the university is engaged in scientific research in more than 8 specializations, ranging from electronics, communications and computer engineering, in addition to nanoscience and biotechnology. Furthermore, several patents are filed, the most important of which is the project of gas generation from the wastewater treatment plant.

Prof. El-Gohary also explained that E-JUST offers unique study programs, thus attracting students from different countries for study purposes. Moreover, E-JUST aimed to forge many partnerships with different international universities during the Higher Education Forum. He also stressed that this special event helped to enhance the classification of Egyptian universities within international standards.

### The Launching of the e-science forum

This event was launched in an effort of cooperation between E-JUST and Japan International Cooperation Agency (JICA), at the university's headquarters. This forum comes in celebration of the Egyptian flag month, and aims to increase the awareness of society towards the role of science and its impact on raising the level of community and the development of the country. The event presented different scientific awareness activities to the public as well as relevant events for researchers, and school and university students. It is worth mentioning that fifteen different universities participated in this distinguished forum in addition to schools of science, technology, engineering, and mathematics with the participation of civil society organizations and NGOs.



### Egypt Japan Science Forum: "Sustainability in Scientific Research"

Egypt-Japan University of Science and Technology (E-JUST) organized a forum entitled "Sustainability in Scientific Research" at the headquarters of the University in Borg El-Arab. This event was held in cooperation with the Japanese Association for the Promotion of Science with the aim of enhancing cooperation in the field of higher education and scientific research between Egypt and Japan

250 faculty members at Egyptian universities participated in the forum. Its activities included workshops to discuss many scientific issues affecting developing scientific research and its applications in various fields in Egypt, such as modern cancer treatment technologies, solar energy, asymmetric materials and their applications in the biomedical field as well as sustainability in water treatment.



### Orientations for Heritage Science Program

#### 1) Orientation day at the Museum of Fine Arts in Alexandria:

In an effort to participate in a joint dialogue between the government sectors and the NGOs on the sustainable development goals, periodic visits are paid in courtesy between Egypt Japan University and other universities and bodies to discuss cooperation opportunities in the field of scientific research and the development of the educational and research process, and also provide an opportunity for the participation of both students and academic staff members in research activities directly related to the needs of the labor market; on June 2019 ,26, the School of International Business and Humanities at Egypt Japan University organized an open day at the Museum of Fine Arts in Alexandria.

#### 2) Orientation day at Grand Egyptian Museum:

On the 3<sup>rd</sup> of July 2019, the School of International Business and Humanities (FIBH) organized an open day at the Grand Egyptian Museum.

Luxor University has received a delegation of undergraduate students from the University of Tsukuba in Tokyo, Japan. Students were hosted by Egypt Japan University of Science and Technology, with the aim of spreading awareness of Egyptian culture and civilization, learning the Arabic language, communicating with students of Luxor University and exchanging academic, cultural and linguistic experiences, as well as introducing the depth of Egyptian Japanese relations.

On Tuesday, October 15<sup>th</sup>, 2019, Faculty of Basic and Applied Sciences - Damanhur University, held an introductory session, with the aim of presenting various postgraduate programs for the Faculty of Science in both Egyptian and Japanese universities; consequently, creating multiple opportunities and possible future joint cooperative relations between the Faculty of Science - Damanhur University and E-JUST.

On Tuesday, October 1<sup>st</sup>, 2019, the Faculty of Science, Alexandria University, held an introductory seminar seeking to provide different programs for postgraduate studies for the Faculty of Science in both Egyptian and Japanese universities, thus, creating multiple opportunities for joint cooperation.

In October 2019, a delegation from E-JUST visited Menoufia University. The delegation included Prof. Ahmed Abdel Moneim - Dean of School of Basic and Applied Sciences and Prof. Mohamed Ayad in addition to Prof. Muhammad Al-Khouli - Professor of Physical Chemistry, and Prof. Waheed Zahra - Professor of Mathematics, with the presence of Prof. Adel Nassar - Dean of the Faculty of Science, Menoufia University and Prof. Magdy Matar - Dean of school of Graduate Studies and Research.

### Open Campus Day for high school students, July 2019

Egypt Japan University of Science and Technology organized a free open day for high school students and their parents. This was held at the university's headquarters in Borg El-Arab, Alexandria.



### Organizing the Third Science Café

Egypt Japan University of Science and Technology organized the Third Science Cafe for students of science and mathematics in secondary schools. This event was held in cooperation with the Japanese Embassy in Cairo. 250 students, representing 15 schools from Alexandria and Cairo, participated in this distinguished forum. Students were introduced to Japanese learning techniques and technologies Applied in (E-JUST) in order to help them develop future career plans.





### Participation in the sixth Cairo International Innovation Exhibition

during the period from 24-25 October 2019, E-JUST participated in the sixth Cairo International Innovation Exhibition in the International Exhibition and Conference Center, under the patronage of his Excellency, the Minister of Higher Education and Scientific Research. The guests included a number of ministers, statesmen, investors, businessmen and representatives of banks and civil society organizations as well.



Approximately 600 exhibitors from Egypt, Malaysia, China, Arab, African and Asian countries in addition to more than 5000 visitors interested in science, technology and innovation attended the event.

### Participation in the International Business Exhibition (BiznEX 2019)

Egypt-Japan University of Science and Technology participated in the International Business Exhibition (BiznEX 2019) which took place at the Cairo International Exhibition from 9-7 November 2019, under the auspices of the Council of Ministers, the Ministry of Trade and Industry as well as the Ministry of Investment and International Cooperation. This event aimed to establish a partnership with the industrial sector and provide consulting services and training.



### Egypt Japan University offers several scholarships for outstanding athletic students

A student at Egypt Japan University qualified for the Tokyo Olympics 2020. The student, Kholoud Mansi – currently a third-year student at the Faculty of Engineering - Department of Industrial Engineering and Design at Egypt Japan University of Science and Technology, qualified for the Tokyo Olympics 2020, after receiving a silver medal in the African Sailing Championship, which was held in Algeria.

It is worth noting that the university has an activity hub building for student activities at the university's headquarters in Borg El Arab, Alexandria, built on an area of 1300 square meters, and includes a squash court, an indoor pool, a gymnasium, billiard hall, table tennis hall, in addition to two tennis courts and three five-a-side football courts.

# Concluding Remarks

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By including and addressing the Sustainable Development Goals (SDGs) which lie within the scope of our university, this report consolidates E-JUST's commitment to global sustainability efforts.

It demonstrates that progress is being made in some critical areas, and that some favorable trends are evident.

Consequently, it reinforces both a more comprehensive understanding of which areas of sustainable development are being addressed by E-JUST efforts, as well as which areas need further consideration or action.

The figures and data highlighted in this report bring with them varying challenges to build on current success and transform our ideas into reality. It is abundantly clear that a much faster and more ambitious progress is necessary to unleash the social and economic transformation needed to accomplish our goals in accordance with SDGs.

Evidently, the report has highlighted areas that can drive progress across different SDGs: climate change, clean energy, healthy sanitation, more effective education; gender equality, revitalizing global partnership and much more.

We look forward to working hard toward achieving more advances for the University, Egypt, Middle East, and Africa.