























Ministry of Higher Education and Scientific Research Strategy 4.0

"Egypt's higher education and scientific research strategy Opportunities and Challenges"

Prof. Dr. Khaled Abd El- Ghaffar

Minister of Higher Education and Scientific Research



Higher Education and Scientific Research Strategy 4.0

Egypt Seeks **Excellence** in Higher Education and Scientific Research

To be prepared for the

The Fourth Industrial Revolution 1st 2nd 3rd 4th Mechanization, water power, steam power Mass production, assembly line, electricity Computer and automation Cyber Physical Systems

Source: by Christoph Roser at AllAboutLean.com)

Preventive examinations/ Robot-supported caregiving Extending healthy life expectancy/ Reducing the social cost Society 5.0 Stable supply of energy/ GHG emission reduction Optimal value chain/ Optimal home delivery Increasing production of foodstuffs/ Reducing waste Source: www8.cao.go.jp

Addressing Challenges





Scientific Incentives Law
International Branch Campuses
Law

- University Hospitals Law
- Faculties of Medicine Law
- Space Agency Law
- Innovators Support Fund Law



- Smart Cities/Smart Universities
- National DigitizationProgram



Technological Universities

8 New technological universities

New Universities



- El-Galal UniversityKing Salman University
- Al-Alamein University
 - Canadian University European University

New Programs



- Faculties of Medicine
- Faculties of Engineering
- Integrated Learning



Higher Education in Egypt: Facts and Figures

We educate

3 Million

students enrolled in higher education sector.











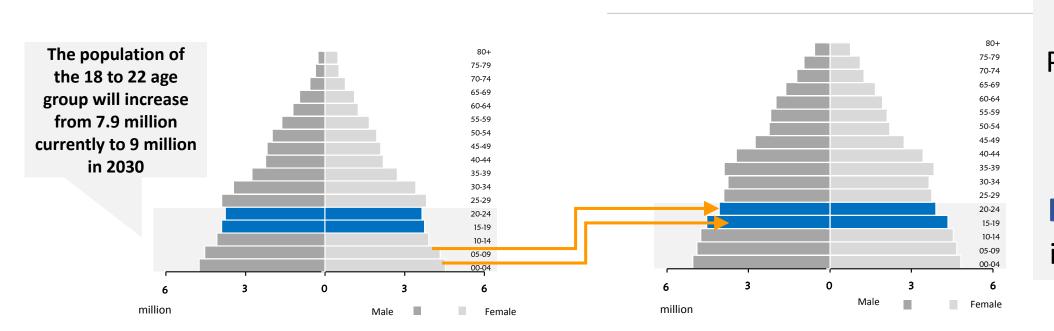
Young population - Projection of Age Group Population

2030 population pyramid



2016 population pyramid

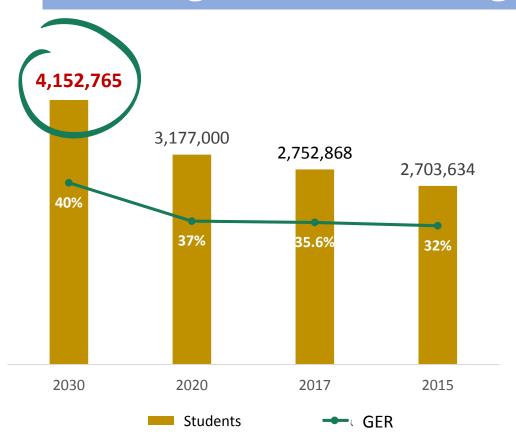




Total
Population
in 2017
104
million
inhabitant



High Demand on higher education Sector in Egypt



To achieve our Target we must provide additional

100 thousand HE opportunity BY 2020.

In addition to

1 Million

from 2020-2030



Higher Education in Egypt: Facts and Figures

26 Public Universities

24 Private Universities

8 Technical Colleges (45 Institutes)

157 Private Higher Institutes

11 Private middle Institutes

Al-Azhar University



35% GER

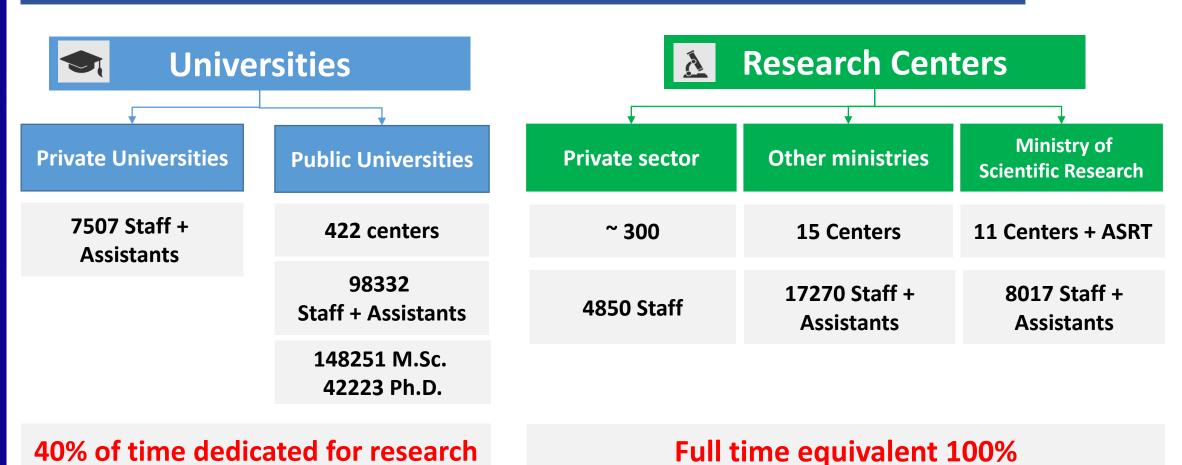
120 Thousand

Teaching Staff

415 Thousand

Postgraduate student





More than 133,923 researchers, teaching staff members and assistants



& Scientific Research

Research Centers affiliated to the Ministry of Scientific Research

National Research Centre

National Institute of Oceanographic and Fisheries

Central Metallurgical Research and Development Institute

Theodor Bilharz Research Institute

Central Metallurgical Research and Development Institute

Research Institute of Ophthalmology

National Research Institute of Astronomy and Geophysics

National Institute of Standards

Central Metallurgical Research and Development Institute

National Authority for Remote Sensing and Space Science

City of Scientific Research and Technological Application



Research
Centers of
Other
Ministries &
Agencies

Ministry of Military Production: Center of Scientific and Technological Excellence

Ministry of Agricultural: Agricultural Research Center, Desert Research Center

Ministry of Agricultural: National Telecommunications Institute

Ministry of Education: National Center for Educational Research & Development

Ministry of Electricity and Energy: Atomic Energy Authority, Nuclear Materials Authority

Ministry of Health: General Organization for Teaching Hospitals and Institutes, National Organization for Drug Control & Research

Ministry of Housing: Housing and Building Research Center

Ministry of Investment: Tebbin Institute for Metallurgical Studies

Ministry of Planning: National Planning Institute

Ministry of Social Solidarity: National Center for Social and Criminological Research

Ministry of Water Resources: National Water Research Center

Ministry of Transportation: Transportation Research Institute







21st-Century Skills



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Foundational Literacies

How students apply core skills to everyday tasks



1. Literacy



2. Numeracy



3. Scientific literacy



4. ICT literacy



5. Financial literacy



6. Cultural and civic literacy

Competencies

How students approach complex challenges



Critical thinking/ problem-solving



8. Creativity



9. Communication



10. Collaboration

Character Qualities

How students approach their changing environment



11. Curiosity



12. Initiative



13. Persistence/ grit



14. Adaptability



15. Leadership



16. Social and cultural awareness

Lifelong Learning





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Comprehensive Education System in Egypt



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Skills
Development
Higher

Ils System in School System in School



Skilled leaders and Calibers



Education Reform





Skills Enhancement

Extra curricular activities (arts/sports/cultural)



Government Support: The New Strategic Plan

Higher Education Pillar

- Access to Higher Education.
- Quality of Higher Education.
- International Competitiveness.





HIGHER EDUCATION NEEDS A RETHINK TO TRAIN TOMORROW'S WORKFORCE

- How do we educate for the fourth industrial revolution?
- Are our education systems and programmes relevant to the fourth industrial revolution?
- How do we reconstruct our education systems so that they are relevant?



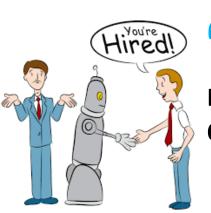


Future Jobs

Employment, skills and workforce strategy of the 4th industrial revolution

35% of jobs will disappear over the next 10 years.





47% of jobs will disappear over the next 25 years as a result of technological development and participatory economy.









INTERNET OF THINGS

A society in which people and objects are linked to create new value



ARTIFICIAL INTELLIGENCE

A Society in which information is exchanged when needed



INNOVATION

Society in capable of responding to the needs of different regions and environments



ROBOTICS

A society that expands human potential through automation

Source: CAO, Japan



& Scientific Research

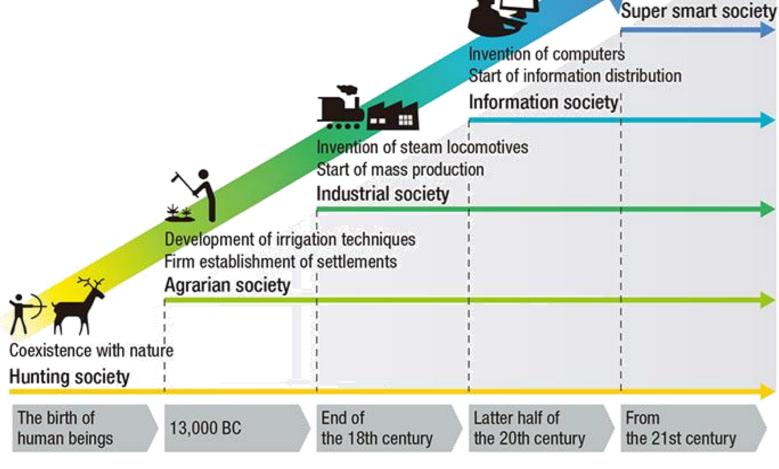


Society 5.0

Economic and

Society 5.0

social innovation by deepening of



Source: Prepared based on materials from the Japan Business Federation (Keidanren)

Society 5.0



Impact of Industry 4.0 on Industry and Internal Labor Market

2015 - 2030

DevelopeCountries

Change of labor market (jobs disappear and others emerge) + increase in products competitiveness

Developing Countries Negative Impact on Developing Countries Industrial Market

2015 - 2025

Developing

Change of labor market needs and increase in competitiveness based on value added products

2025 - 2030



Increase the number of higher Education Institutes

23 National Projects in Higher Education and Scientific Research

International Universities

- 1- El Glala University
- 2- Egyptian Science Academy
- **3- University of Alamein**
- **4- New Mansoura University**
- 5- King Salman University
- **6- Egyptian Japanese University**
- 7- Zewil City for Science and Technology.

Governmental Universities

- 8- Matrouh University.
- 9- Luxor University.
- 10- Red Sea University.
- 11- New Valley University.

Technological Universities

- 12- New Cairo TU
- 13- Quesna TU
- 14- Beni Suief TU

IBCs

- 15- Canadian Universities
- **16- European University**
- **17- American Complex**
- **18- Global University**
- **19- Hungarian Universities**
- **20- UK Universities**

Research Centers

- 21- Egypt Space Agency
- 22- Electronics Research Institute
- 23- National Institute of Astronomical and Geophysical Research.



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Smart New Universities







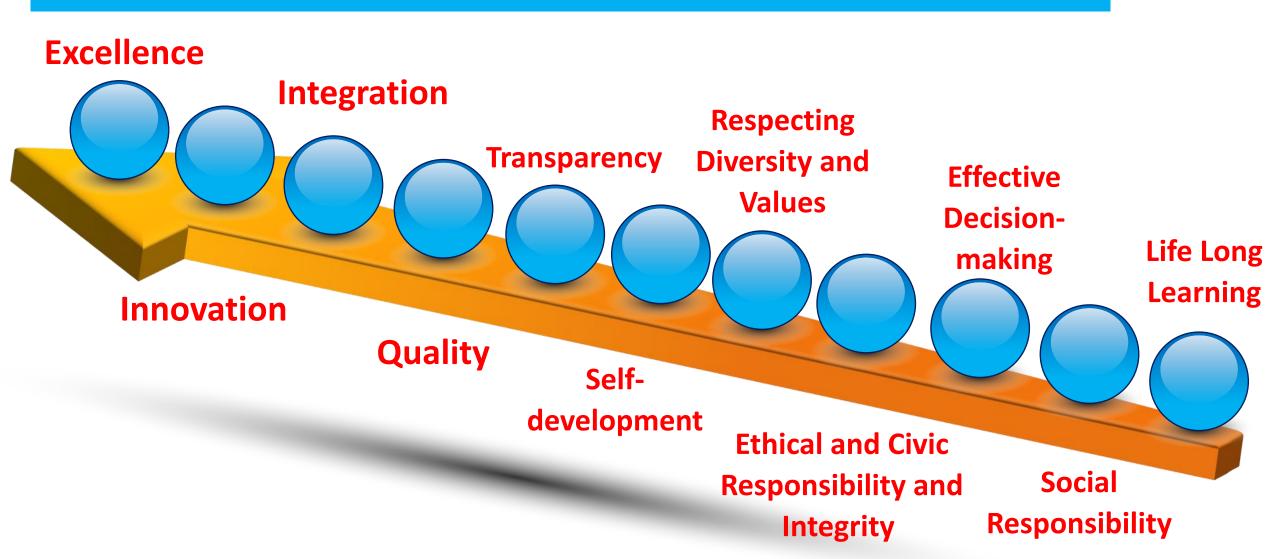








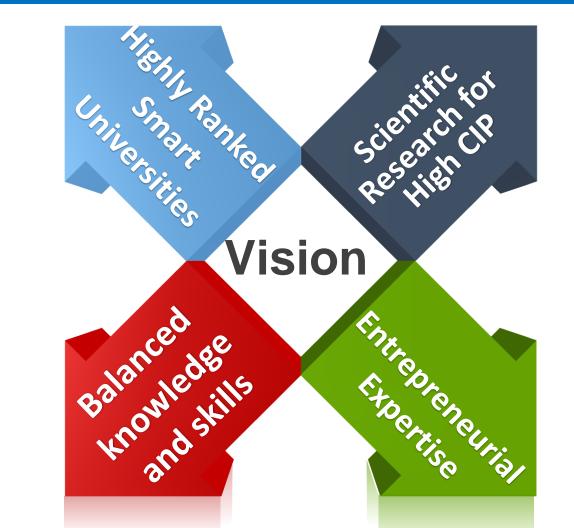
Values and Fundamentals governing the New Universities





fic Research

New Universities



New Subjects



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Biophysics

Biomedical Engineering

Cybernetics

Artificial Intelligence

Ergonomics

Modelling

Nanotechnology

Genomics

Quantum Mechanics

3D Printing

Big Data

Nuclear Engineering

Internet of Things

Mobile Supercomputing

Self-driving vehicles

Biometrics

Genetic Editing

Data Science

Business Analysis

Mechatronics

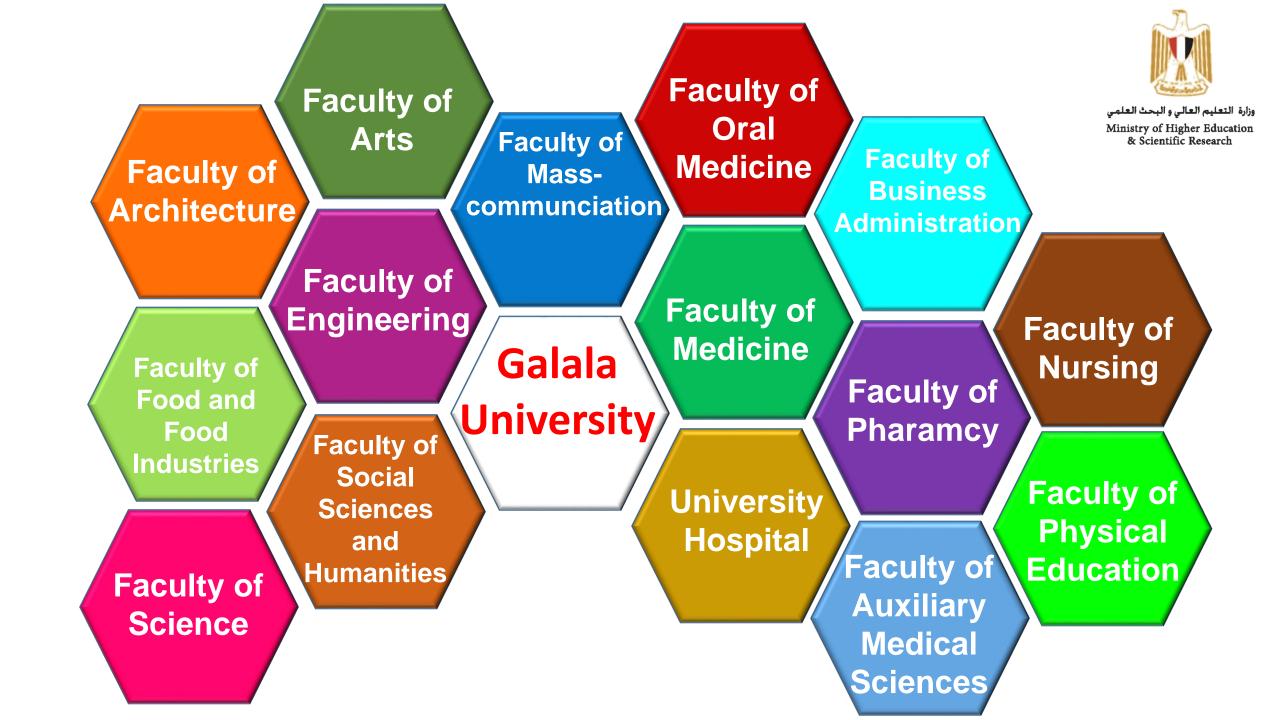








President El-Sisi's weekly visit



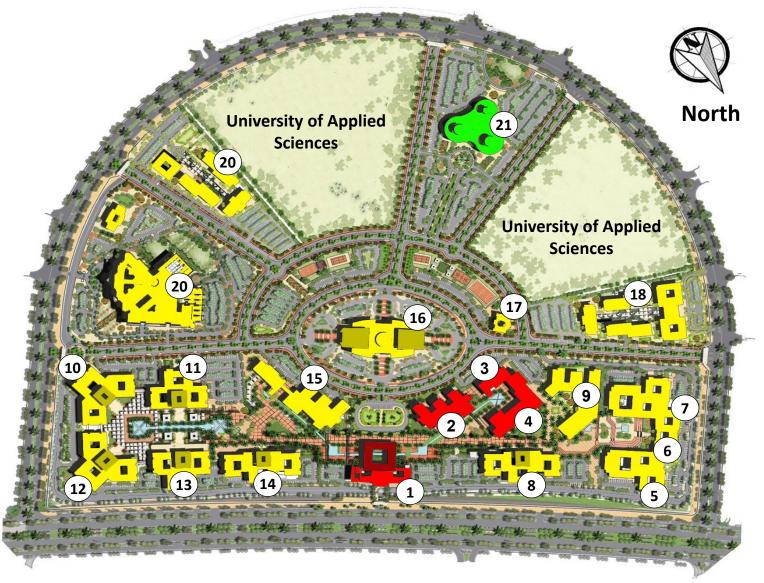






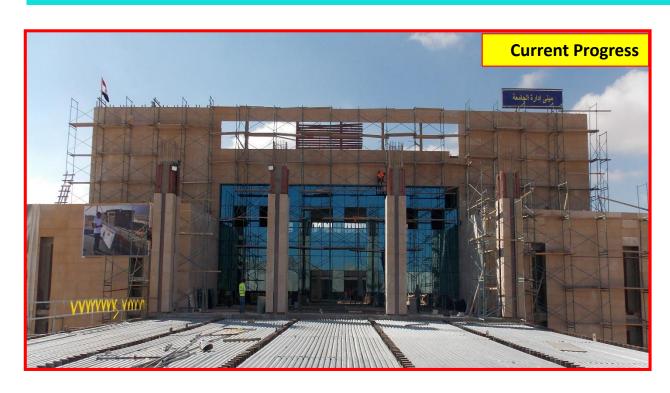
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1	University main building
2	Faculty of Business
	Administration and Public
	Policies
3	Faculty of Social Sciences &
	Humanities
4	Faculty of Mass-Communication
5	Faculty of Engineering
6	Faculty of Architecture
7	Faculty of Arts
8	Faculty of Science
9	Faculty of Food and Food
	Industries
10	Faculty of Medicine
11	Faculty of Nursing
12	Faculty of Dentistry
13	Faculty of Physiotherapy
14	Faculty of Auxiliary Medical
	Sciences
15	Faculty of Pharmacy and
	Pharmaceutical Industries
16	Convention Centre
17	Mosque
18	Students and Professors Hostels
	(Males)
19	Students and Professors Hostels
	(Females)
20	University Hospital (400 bed)
21	Academy of Sciences





University Main Building







Faculty of Business Administration







Faculty of Mass-Communication





Academy of Sciences at Galala



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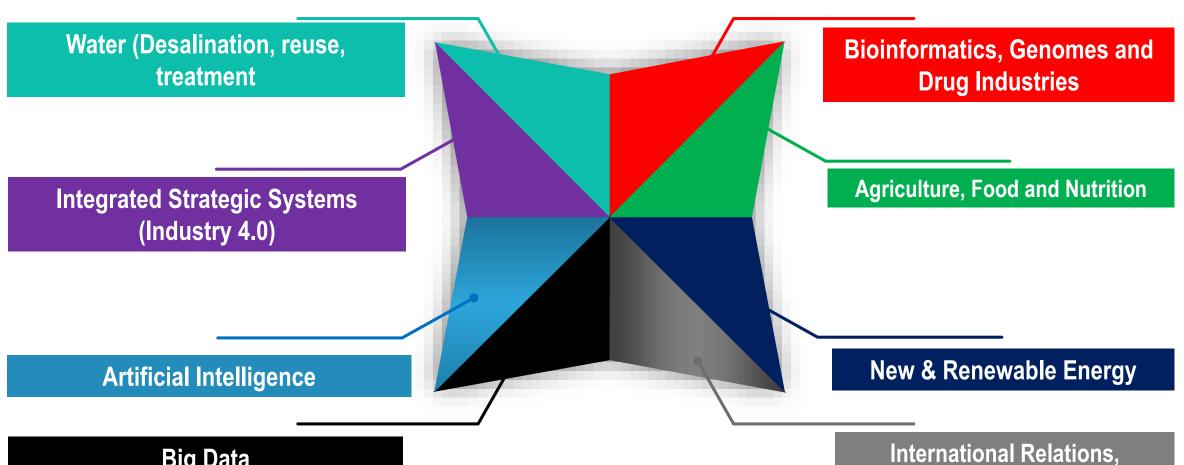
Faculty of Post- graduate Studies

Centers of Excellences

Technology Valley (Incubators and Startups)



Main Focus of Academy of Sciences at Galala



Big Data

International Laws, Economics



















King Salman University in South Sinai



King Salman University in South Sinai





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Ministry of Higher Education

King Salman University in South Sinai (Sharm El-Sheikh 64%)

Students Dorms



Faculty of Tourism







University Main Building

























Faculty of Computer and Information Sciences and Faculty of Engineering













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



Egypt-Japan University of Science and Technology (Phase 1 & 2)





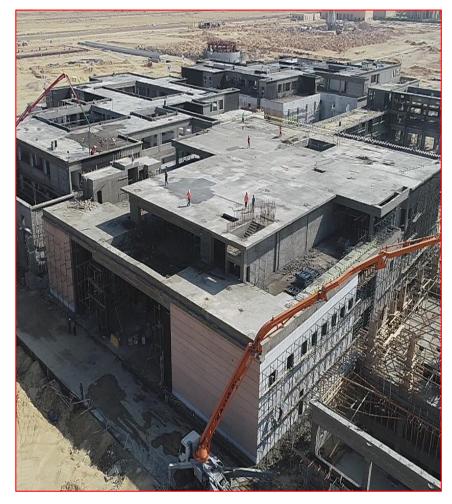
Phase 2

Students Affairs Building 5 4 Faculties of Engineering 3 Centers of c Excellences 1
4 Auditoriums 6 The Library 4 Administrative Building 2
Main Gate 7



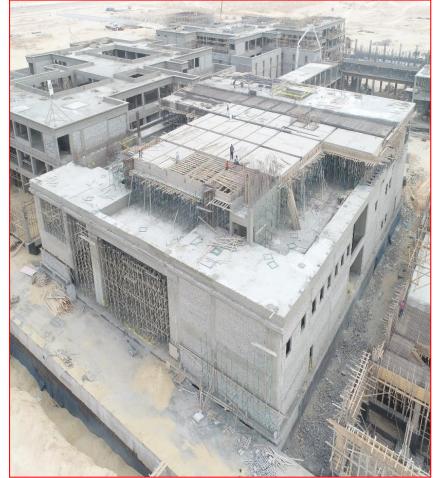
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Egypt-Japan University of Science and Technology (Phase 1 & 2)





The Library





Zeweil City for Science and Technology



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Ministry of Higher Education & Scientific Research

Zeweil City for Science and Technology (Phase 2)

















Zeweil City for Science and Technology (Phase 2)











Zeweil City for Science and Technology (Phase 2)













Electronic Research Institute

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- S Services and Infrastructure Building
- A Environmental Research
- **B** Robotics
- Power electronics and photovoltaic cells
- Informatics and Computer Sciences
- E High frequency Circuits and microwaves
- **Clean Room**
- **G** Microelectronics
- H Central Technical Services
- Management
- **K** Library
- M Convention and Training Centre













International Branch Campuses



Canadian Universities Complex











European Universities Complex



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European Universities Complex



الاتفاقات الاكاديمية مع الجامعات الدولية الاوروبيه









جامعة لندن

مدرسة لندن للاقتصاد والعلوم السياسية



THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

جامعة يوهانس كبلر







جامعة يو ليتيكنيك كاتالونيا



جامعة ايست لندن

جامعة سنترال لانكشاير





جامعة كونست kunstuniversitätlinz Universität für künstlerische und industrielle Gestaltur



Universität für Bodenkultur Wien

Catalonia University Poly-technique چاري التفاوض

El-Sweedy Knoledge Hub







أعمال صب اعمدة الدور الأول



Egyptian University Ranking Worldwide













Universities' Ranking

"Times Higher Education":

- Egypt is 7th most represented country.
- In 2019, 19 ranked Universities out of 1200 total ranked universities with 111% increase from 2018 (9 ranked universities)

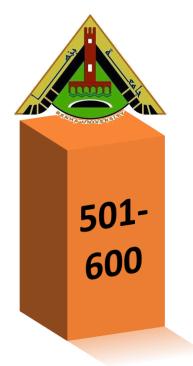


Egypt's ranked universities

Egypt's proportion



Universities' Ranking



Engineering & Technology



Engineering & Technology



Computer Sciences



Universities' Ranking



Cairo University

101-150: Pharmacy and Public Health

151-200: Veterinary Sciences

201-300: Dentistry & Oral Sciences

301-400: Clinical Medicine



401-500: Electrical & Electronic Engineering, Chemical Engineering and Energy Sciences nd Engineering



Universities' Ranking



Ain Shams University

201-300: Pharmacy and Pharmaceutical Sceinces

401-500: Chemical Engineering and Electrical & Electronic Engineering





Universities' Ranking



Mansoura University

101-150: Veterinary Sciences

201-300: Pharmacy & Pharmaceutical Sciences
And Dentistry & Oral Sciences

401-500: Clinical Medicine





Universities' Ranking



Alexandria University

201-300: Veterinary Sciences And Dentistry & Oral Sciences

301-400: Pharmacy & Pharmaceutical Sciences And Electronical and Electronic Engineering

401-500: Chemical Engineering and Energy Sciences & Engineering





Universities' Ranking



Beni Sueif University

201-300: Vetrinary Sciences

401-500: Pharmacy and Pharmaceutical Sceinces





Universities' Ranking



Assiut University

201-300: Vetrinary Sciences

401-500: Pharmacy and Pharmaceutical Sceinces





Universities' Ranking



Zagazig University

151-200: Vetrinary Sciences

401-500: Pharmacy and Pharmaceutical Sceinces





Universities' Ranking



401-500:
Pharmacy and
Pharmaceutical
Sceinces



401-500:
Pharmacy and
Pharmaceutical
Sceinces



151-200: Veterinary Sciences



University Ranking of Emerging Economies "2019"

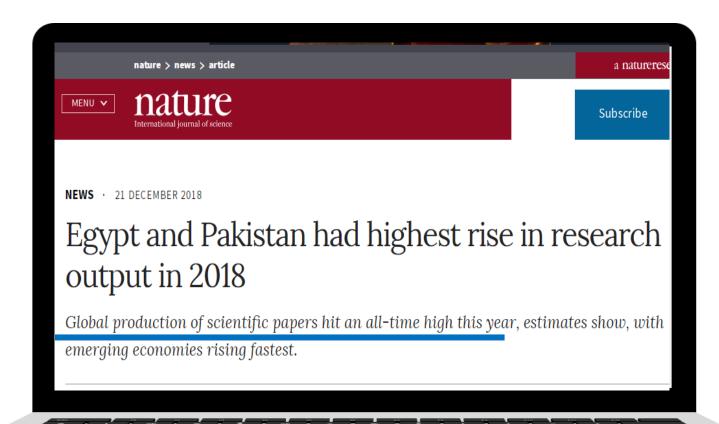


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Research Output of Emerging Economies "2018"





Emerging Economies with the largest increases in research output in 2018



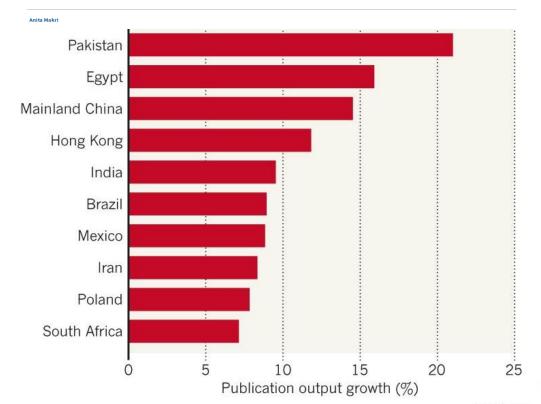
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NEWS · 21 DECEMBER 2018

Egypt and Pakistan had highest rise in research output in 2018

Global production of scientific papers hit an all-time high this year, estimates show, with emerging economies rising fastest.

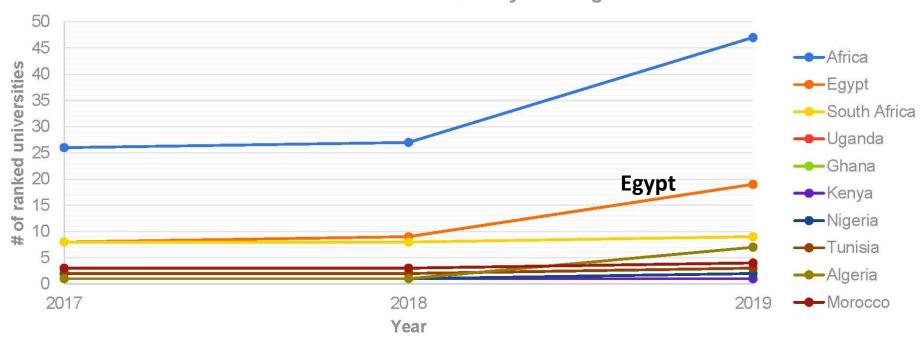






Facts & Figures: Egyptian Universities Ranking (Africa)







& Scientific Research

Comprehensive STI Strategy

-			
	ra		76
	ш	<u> </u>	7.5

Pillars

Effective Environment for Science, Technology and Innovation

- 1- legislations
- 2-Scientific Base
- 3-STI system
- 4-Basic & converging sciences
- 5-Link academia/Industry
- **6- International Cooperation**
- 7- Science & society
- 8- Capacity Building for human resources.

Knowledge and Technology Transfer

1-Health and well being

2- New & Renewable Energy

3- Water

4-Food and Agriculture

5-Environment

6- Applied Technologies

7- Strategic Industries(Textile, Pharmaceuticals, Electronics)

8- Tourism

9-ICT

10- Emerging

Technologies

11-Education

12-Media

13-Politcal sciences

14-Transportation

15-Social sciences

and Humanities

Tools

Fund, STI Policies, Follow Up, Monitoring and Impact Assessment











Nanotechnology





Nanotechnology

	07	Scholarly	Views Count 🗸	Field-Weigh	Citation Cou
	Countries & territories	Output	<u> </u>		
1.	United States	5,139	180,878	1.77	82,198
2.	China	3,022	98,398	1.60	48,359
3.	India	2,462	80,035	1.18	20,263
4.	■ ■ Italy	1,115	54,049	1.74	13,931
5.	Germany	1,071	38,438	1.70	16,102
6.	United Kingdom	1,057	44,163	1.92	18,305
7.	Iran	834	35,103	1.53	7,935
8.	Spain Spain	799	37,823	1.64	10,845
9.	France	721	26,716	1.52	7,932
10.	South Korea	687	27,864	1.48	8,871
11.	Brazil	668	24,135	1.15	5,787
12.	 Japan 	657	18,911	1.38	8,718
13.	Canada	569	25,645	1.54	9,115
14.	Russian Federation	553	15,009	0.88	3,072
15.	Australia	528	23,796	2.15	11,267
16.	Saudi Arabia	391	20,004	1.90	5,378
17.	Malaysia	347	16,986	1.41	4,157
18.	Singapore	327	18,043	2.57	9,087
19.	Poland	325	12,017	1.06	2,479
20.	Switzerland	294	13,324	1.95	5,187
21.	Portugal	289	13,262	1.64	3,655
22.	■ Netherlands	273	13,745	1.95	5,099
23.	≡ Egypt	266	8,930	1.35	2,495
24.	■ Turkey	261	9,139	1.32	1,706
25.	Taiwan	251	9,098	1.10	2,284



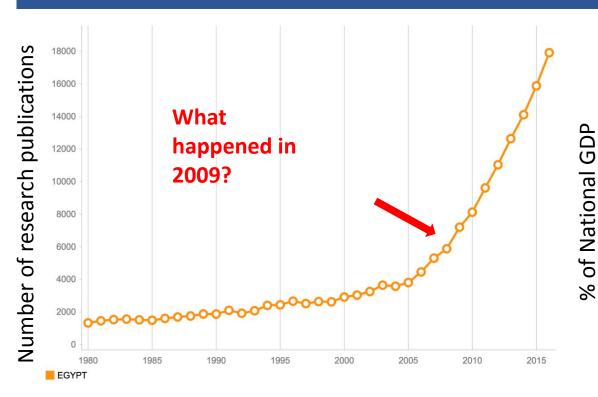
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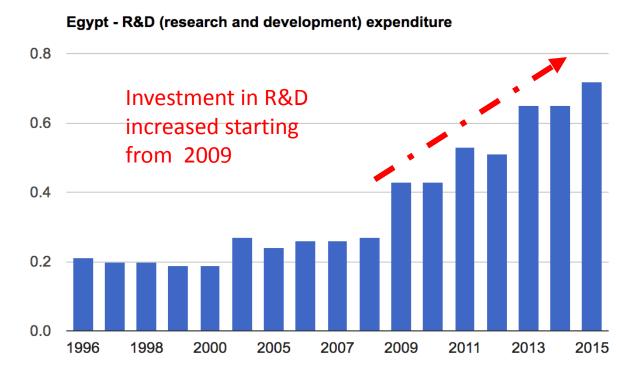












Sources: World Bank

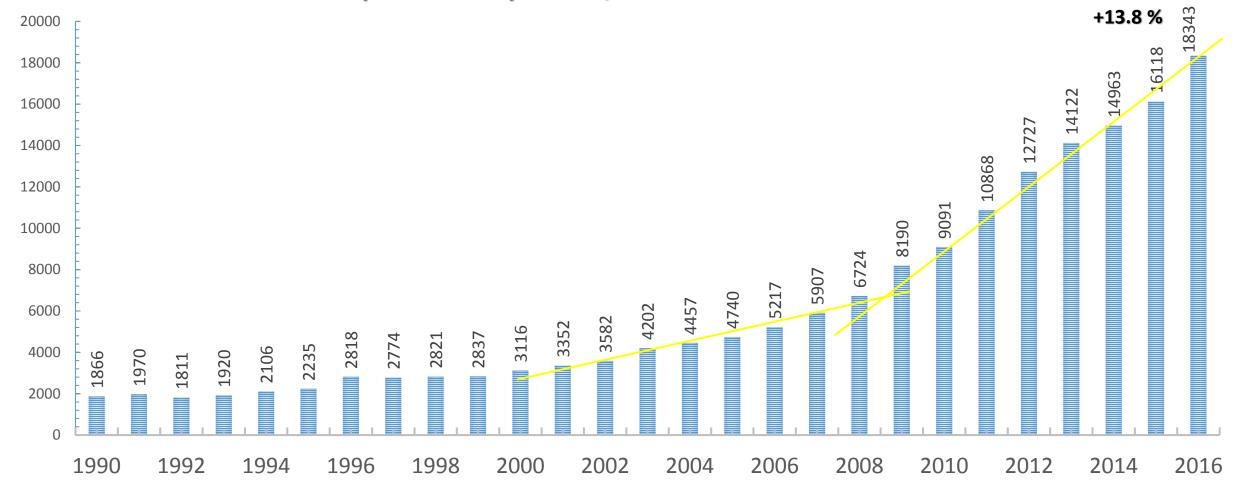
Egypt's R&D Expenditure





NUMBER OF PUBLISHED RESEARCH IN INTERNATIONALLY CITED INDEXED JOURNALS

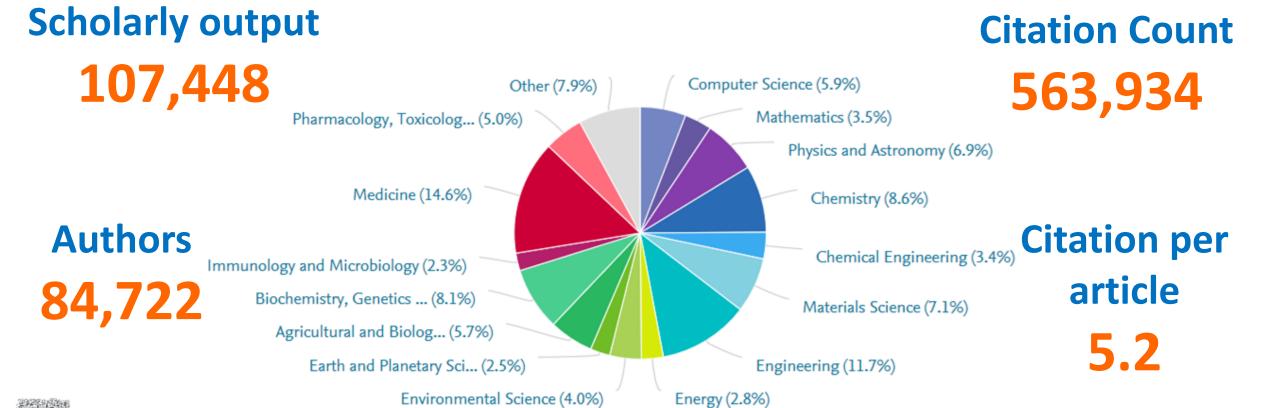
(1925-2017) IS **218,300** PAPERS





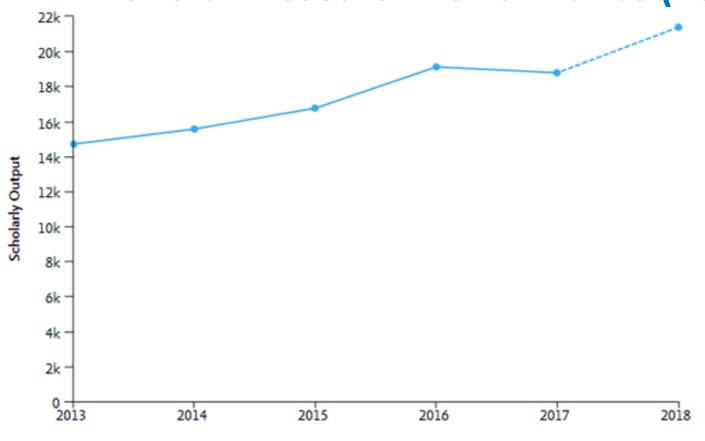
SciVal

Overall Research Performance (2013-2018)





Overall Research Performance (2013-2018)



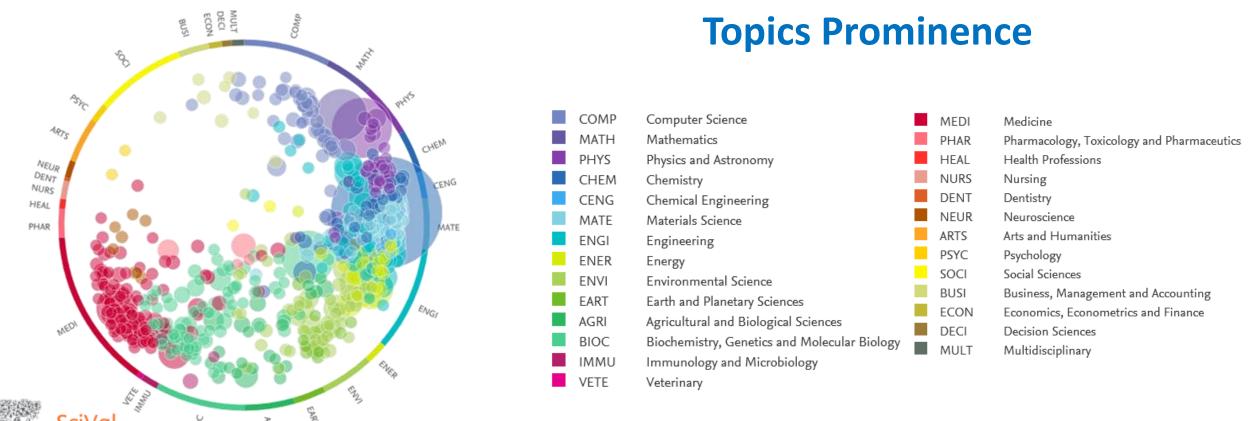
Field weighted
Citation Index
1.00



SciVal

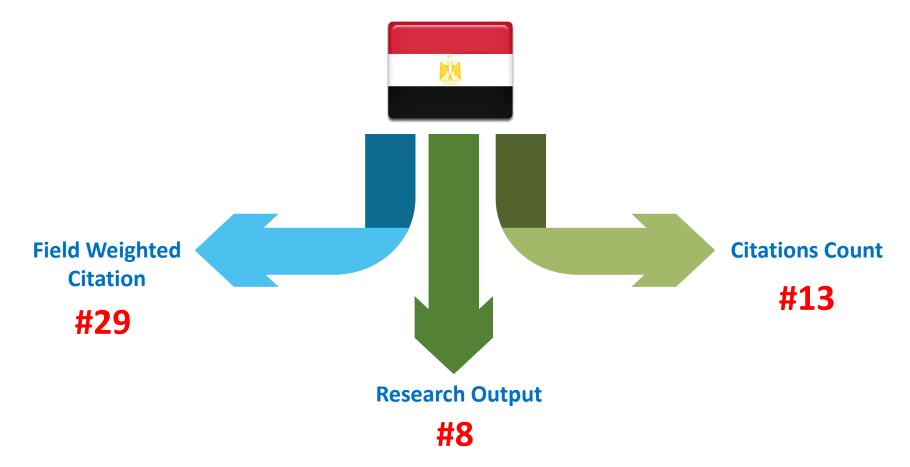


Overall Research Performance (2013-2018)





Water Desalination



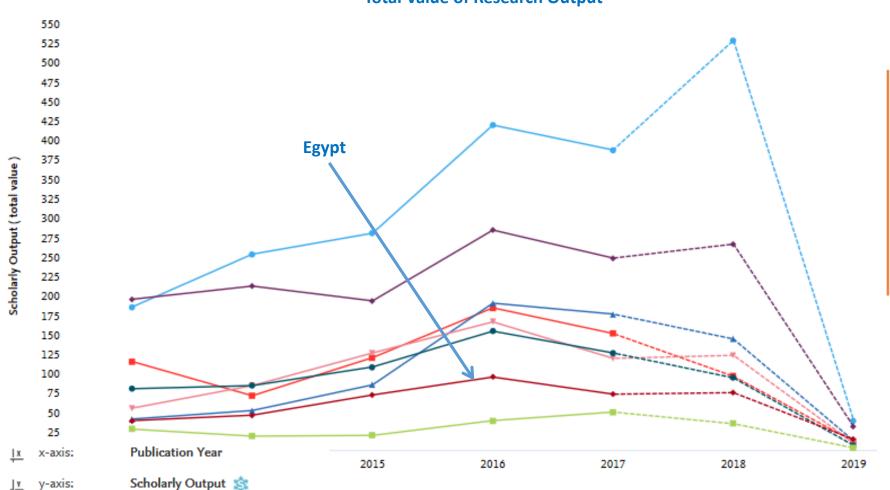


Water Desalination



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Total 100 Countries & Regions in this research area: by Research Output



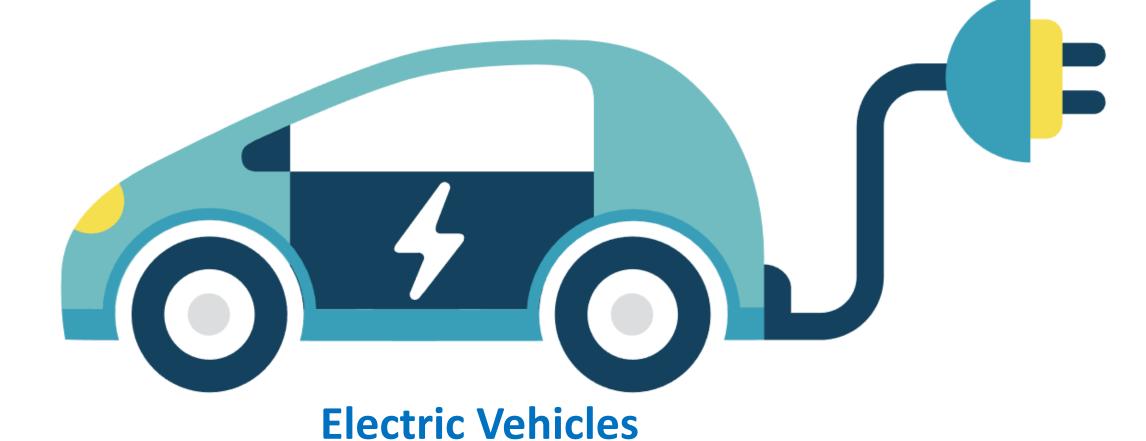




Types of publications included: all.



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Electric Vehicles



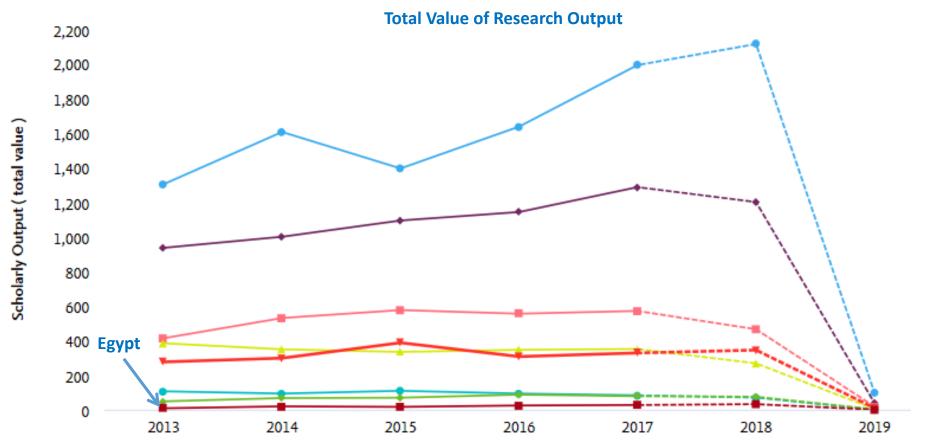


SciVal Total Ranked Countries: 100

Scholarly Research Output: 133 of 39,706

Electric Vehicles





Total 100 Countries & Regions in this research area: by Research Output



Types of publications included: all.







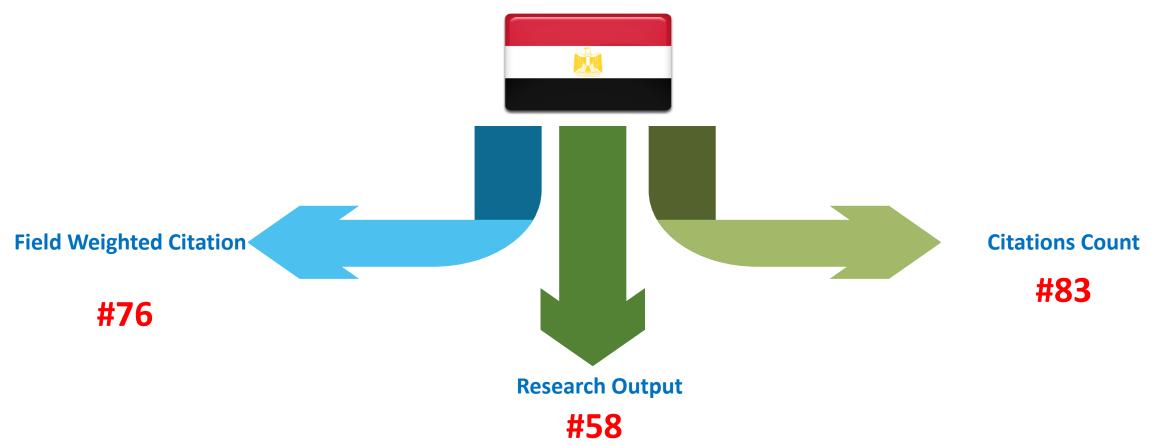
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Smart Agriculture



Smart Agriculture



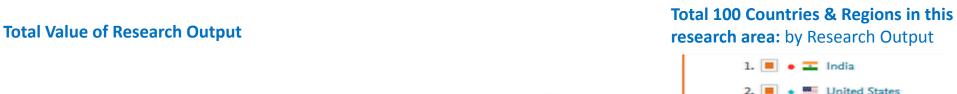


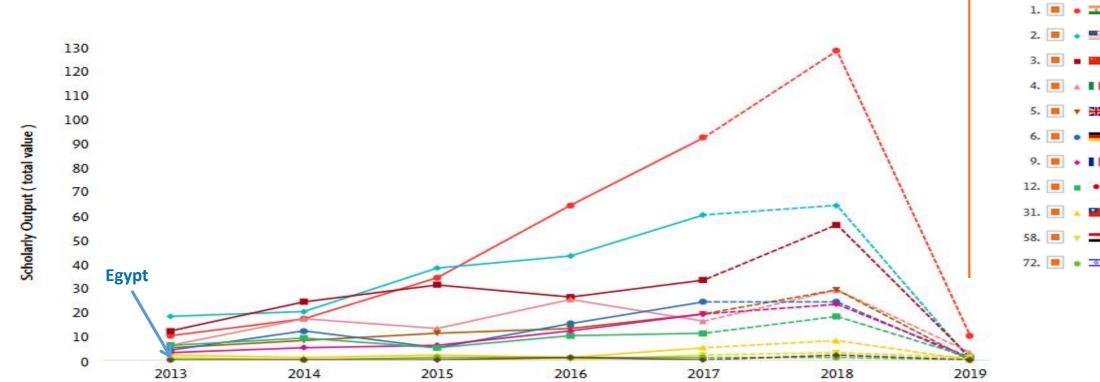
Total Ranked Countries: 100 Starting Year of Publication: 2017

Smart Agriculture



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1. 🔳 • 🔤 India
2. United States
3. 🔳 🔳 China
4. 🔳 🛦 💵 Italy
5. 🔳 🔻 🎇 United Kingdom
6. Germany
9. France
12. 🔳 🔹 Japan
31. Taiwan
58. 🔳 🔻 🚾 Egypt
72.

Metric details

Publication Year

y-axis: Publication Year

Scholarly Output

Scholarly Output Types of publications included: all.







Under the Patronage and Presence of President Abdel Fattah Al Sisi

"المنتدى العالمي للتعليم العالى والبحث العلمي :بين الحاضر

"Global Forum for Higher Education & Scientific Research: **Present and Future**"



El-Massa Capital New Administrative Capital





Thank You

















