



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

Alexandria University's Carbon Footprint (2021/2022)

During the very few past years, the climate change and the global warming facing the entire universe have gained much more attention due to their direct effects on the human life on earth. As a result, countries, organizations, and people have noticed that it is now the time to face these challenges and as an initial step, we must first determine or calculate the amount of pollution that we cause to our planet, then we shall work on ourselves to minimize this pollution. One of the most famous methods to monitor the climate change is to determine what is known by Carbon Footprint.

The term "Carbon Footprint" is usually used as shorthand for the amount of emitted carbon (in tons) by an organization or country. This footprint is also an important component of the Ecological Footprint, since it is one competing demand for biologically productive space. Carbon emissions from burning fossil fuel usually accumulate in the atmosphere if there is not enough biocapacity dedicated to absorb these emissions. Therefore, when the carbon footprint is reported within the context of the total Ecological Footprint, the tons of carbon dioxide emissions are expressed as the amount of productive land area required to sequester those CO₂ emissions, which tells us how much biocapacity is necessary to neutralize these emissions.

Measuring Carbon Footprint in a certain area just shows us how much biocapacity is needed to take care of our untreated carbon waste and to prevent carbon accumulation in the atmosphere, which as a consequent can enable us to address the climate change challenge in a clearer way. In fact, the climate problem emerges because the planet does not have enough biocapacity to neutralize all these emissions. Humanity's carbon Footprint has increased 11-fold since 1961. Reducing humanity's carbon Footprint is the most essential step we can take to end overshoot and live within the means of our planet.

The climate pact approved in Paris in December 2015 represented an important step in re-imagining a fossil-free future for our planet. Nearly 200 countries around the world, including Egypt, agreed to keep global temperature rise well below 2°C. According to the known data from (Intergovernmental Panel on Climate Change) IPCC's 2014 report that a concentration of greenhouse gases in the atmosphere of 450 ppm CO₂ equivalent gives us a 66% chance to comply with the Paris Agreement's (2°C) goal. In contrast, the National Oceanic and Atmospheric Administration of the United States Department of Commerce (or NOAA) reports that in 2020 we were already at 504 ppm CO₂ equivalent. This confirms that the problem is increasing and there is a critical demand to rapidly solve it. Although Egypt contributes with a small portion in the global emissions of greenhouse gases, but this small portion is growing with time. In addition, Egypt is also expected to suffer from shortage of water, decrease in agricultural crops, rising sea levels due to increase in temperature and change in rainfall patterns.

In the light of the above mentioned information and according to the "Sustainable Development Strategy: Egypt's Vision 2030", Alexandria University, as a very important educational institution, has taken the first steps to work on reducing carbon emissions as one of the most important sources of greenhouse gases and has implemented a plan to monitor and calculate the "Carbon Footprint since

the academic year 2018 / 2019” for all its faculties, institutes and its administrative buildings in order to aid in decision-making.

When calculating the Carbon Footprint for all Alexandria University buildings for the Academic year (2021/2022), the approximate amount of emitted CO₂ was **4,715.1992 CO₂e**.

The total carbon footprint of the Faculties and Institutes of Alexandria University (Ton CO₂e)

Faculty/Institute	The total carbon footprint (Ton CO ₂ e)		
	2018/2019	2020/2021	2021/2022
University Administration Building	186.2	NA	186.330
Faculty of Arts	66.46	235.887	179.299
Faculty of Commerce	47.29	412.128	29.3102
Faculty of Education	27.048	21.807	9.264
Faculty of Medicine	7445.993	1817.232	433.984
Faculty of Dentistry	69.278	705.702	29.379
Faculty of Engineering	521.076	693.748	675.702
Faculty of Agriculture	4875.12	1326.267	1066.346
Faculty of Pharmacy	394.462	318.059	306.118
Faculty of Science	749.7	317.362	218.947
Faculty of Nursing	169.912	122.79	161.580
Faculty of Veterinary Medicine	106.611	186.221	172.431
Higher Institute of Public Health	20.616	12.646	59.204
Medical Research Institute	203.7	555.478	186.894
Institute of Graduate Studies and Research	21.629	10.92	7.246
Faculty of Physical Education for girls	543.296	277.671	380.872
Faculty of Physical Education for boys	1679.1	214.835	319.100
Faculty of Specific Education	15.866	12.069	3.613
Saba Pasha Faculty of Agriculture	214.748	92.785	109.632
Faculty of Education for Early Childhood	13.403	33.4747	4.745
Faculty of Fine Arts	126.219	22.654	19.541
Faculty of Tourism and Hotels	47.420	9.924	4.525
Faculty of Law	26.313	141.668	151.137
Total	24,148 CO₂e	7,541.33 CO₂e	4,715.1992 CO₂e

Carbon footprint per square meters = 4715.11992 /4284495.26 m² (total area of Alec. Univ.)=110052co2e/m²

This report came out as a result of the concerted efforts of the academic community of Alexandria University during the academic year 2021-2022 in collecting, analyzing and editing this report in accordance with international standards and controls for carbon footprint calculations.

In order to allocate the specific position of Alexandria University regarding the extent of its contribution to carbon emissions among similar institutions, it was necessary to compare these emissions with other universities around the world.

University	Last Carbon Footprint Report	Carbon Footprint Total value (metric tons)
American University in Cairo (AUC)	2019/2020	34,391.3 CO _{2e}
Cape Town University (Republic of South Africa)	2018	75,187 CO _{2e}
Arizona University (USA)	2017	258,088 CO _{2e}
Alexandria University (Egypt)	2021/2022	4,715.1992 CO _{2e}

Conclusion:

According to the Carbon Footprint for all Alexandria University buildings for the Academic year (2021/2022), which is approximately 4,715.1992 CO_{2e}, one can conclude that the sustainability program of Alexandria University was very successful. The total electricity usage of Alexandria University Campus in 2021/2022 is 7106641 kWh. The total electricity usage decreased by 18.5% compared to year 2020/2021. On the other hand, a significant decrease in the consumption of paper packages is observed. The paper packages used in all Alexandria University buildings for the Academic year (2021/2022) is 47911 packages, while in the previous year (2020/2021) the consumed paper packages were 84689 paper packages (approximately 43% decrease).

Factors for conversion from consumption to Ton CO₂ a:

The conversion factor for electrical consumption according to the study of the American University in Cairo (2017)		0.5791 to (metric tons CO_{2e})
The conversion factor of gasoline and diesel according to the study of the American University in Cairo (2017)		0.2408 (Gasoline) to (metric tons CO_{2e}) 0.3696 (Diesel) to (metric tons CO_{2e})
International conversion factor (corresponding to the same value that was obtained from the officials of the Egyptian Drinking and Water Company Authority)		0.5791 to (metric tons CO_{2e})
Use of paper	The amount of consumption of copying and printing papers (A4/70gm) for the college for one academic	Number of packages per year *Package weight = Total weight of packages per year

	year from the reality of the college purchases.	
	Conversion factor according to the study of the American University in Cairo (2017).	2.8 to (metric tons CO₂e)

Additional evidence link:

https://alexu.edu.eg/index.php/?option=com_content&view=article&id=5933&catid=21&lang=ar-AA

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