

Communication

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Scopus-Based Study of Sustainability in the Syrian Higher Education Focusing on the Largest University

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Abstract: Achieving an effective sustainable developmental policy is considered a primary goal in a large number of institutions around the world. The application of this policy in universities is reflected throughout the country, especially in developing and low-income countries. This research aims to analyse the sustainability policies adopted at Damascus University during the past 5 years of the Syrian crisis through several factors, with a focus on the analysis based on the SciVal and Scopus databases. We consider Damascus University as an example of an institution of a developing country. We use the method of extracting and analysing the data of the 16 sustainable development goals (SDGs) of Damascus University within Scopus. Based on Scopus and SciVal data, we find that Damascus University made a significant leap in the number of its research related to sustainable development in the year 2022, as these research studies constituted 46.0% of all published, abstracted, and indexed research studies in Scopus by Damascus University researchers. Also, by analysing the citation data which the SDG documents have received, we find that the citations resulted from these documents represent about 53% of the total citation of the university during the same time.

Keywords: scopus, developing country, sustainability, sustainable development goals, Damascus University, future

1 Introduction

The sustainable development approach is considered one of the most important policies followed in order to increase economic growth and knowledge in the world. This policy is particularly reflected in low-income and developing countries. Perhaps the use of this approach in the universities and research centres in those countries is an important indication of the beginning of rapid steps for the economic, knowledge, and financial growth of these countries. The Syrian Arab Republic is an example of a low-income country in which people have suffered from the scourge of the Syrian crisis, which was reflected in the economic and educational aspects. Therefore, universities and research centres in the Syrian Arab Republic began to follow the approach of achieving the sustainable development goals (SDGs) launched by the United Nations in recent years. In the year 2015, the United Nations, through its General Assembly, launched the global goals or the SDGs. These goals included 17 different goals that focus on sustainable future development over all parts of the world. Each goal of the 17 goals has its main aims or indicators which must be reached for achieving the goal. In Table 1, we include the 17 SDGs with the basic aims or indicators of each one, and an example of a study that discusses that goal.

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Table 1: The 17 SDGs with the basic aims or indicators

SDG	Basic aims	Example reference
GG-1 or SDG-1	“No poverty”	(Omachi, van Onselen, & Kolanisi, 2022)
GG-2 or SDG-2	“Zero hunger”	(Iduseri, Izunobi, & Oyelami, 2022)
GG-3 or SDG-3	“Well-being” and “good health”	(Al-Raei, 2023b)
GG-4 or SDG-4	“Quality education”	(Azmeh, 2022)
GG-5 or SDG-5	“Gender equality”	(Tazinya, Hajjar, & Yaya, 2022)
GG-6 or SDG-6	“Clean water” and “sanitation”	(Valverde-Ortiz, Gutiérrez-Calderón, Duarte, & Gutiérrez, 2021)
GG-7 or SDG-7	“Affordable” and “clean energy”	(Srivastava et al., 2022)
GG-8 or SDG-8	“Decent work” and “economic growth”	(Bangura et al., 2022)
GG-9 or SDG-9	“Industry,” “innovation,” and “infrastructure”	(Mahajan, Singh, Kaur, & Gupta, 2022)
GG-10 or SDG-10	“Reduce inequality”	(Uzochukwu et al., 2020)
GG-11 or SDG-11	“Sustainable cities” and “Sustainable communities”	(Masekesa, 2022)
GG-12 or SDG-12	“Responsible consumption” and “production”	(Bianchet, Provin, Beattie, & de Andrade Guerra, 2021)
GG-13 or SDG-13	“Climate action”	(McLean et al., 2022)
GG-14 or SDG-14	“Life” below “water”	(Sivadas et al., 2021)
GG-15 or SDG-15	“Life” on “land”	(Wood et al., 2019)
GG-16 or SDG-16	“Peace,” “justice,” and “strong institutions”	(Cook et al., 2022)
GG-17 or SDG-17	“Partnerships for the goals”	(Baker et al., 2023)

The goals are defined by the terms SDG-1, SDG-2, SDG-3, SDG-4, SDG-5, SDG-6, SDG-7, SDG-8, SDG-9, SDG-10, SDG-11, SDG-12, SDG-13, SDG-14, SDG-15, SDG-16, and SDG-17.

Also, some literature use the other terms of the SDGs which are GG-1, GG-2, GG-3, GG-4, GG-5, GG-6, GG-7, GG-8, GG-9, GG-10, GG-11, GG-12, GG-13, GG-14, GG-15, GG-16, and GG-17. In Figure 1, we illustrate the full list of the SDGs. As we see from the SDG list, the goals are complimentary to each other, which means that achieving one goal may lead to another goal. For instance, if we apply the strategy of using renewable energy sources, we achieve one of the SDG-7 targets, and at the same times we achieve one of the SDG-12 indicators.

Lots of studies have used multiple techniques and procedures for discussing the SDGs in many countries over the world. For instance, Martínez-Virto and Pérez-Eransus discussed reaching the first SDG based on procedures in a specific public institution (Martínez-Virto, & Pérez-Eransus, 2021). Some studies focused on multiple SDGs at the same time (Al-Raei, 2023a; González-Campo, Ico-Brath, & Murillo-Vargas, 2022; Larrondo Ureta, Meso Ayerdi, Peña Fernández, Marauri Castillo, & Pérez Dasilva, 2022; Zenchanka, Gorbachev, Zagoumenov, & Frankenberger, 2022). Also, some studies discussed the relationship between the spreading of SarsCov-2 and the reaching to the SDGs. For example, Idoiaga et al. discussed this relationship and the effects on the fourth and third SDGs (Idoiaga, et al., 2022). Velazquez discussed the effects on the fourth development goal (Velazquez, 2022). Asfaw, Ali, and Ali discussed the effects on social welfare in Ethiopia (Asfaw, Ali, & Ali, 2022).

Applying the SDGs, completely or partially, in developing countries and low-income countries can help with multiple problems in those countries. Based on the Scopus database, we discuss sustainability in an institution from one of the developing and low-income countries, namely the Syrian Arab Republic. We discuss the SDGs in Damascus University which is the largest institution in the Syrian Arab Republic. We study the plans which were executed in the university for reaching many of the sustainability goals in the past 4 years from 2018 to 2022 until the beginning of 2023. In Section 2 of the study, we talk about the main method applied in this study for retrieving Scopus and SciVal data for Damascus University regarding the SDGs of the university in the past 4 years. In Section 3 of the study, we talk about the results of the methods which were applied in the same period. In Section 4, we conclude the study with possible future procedures.

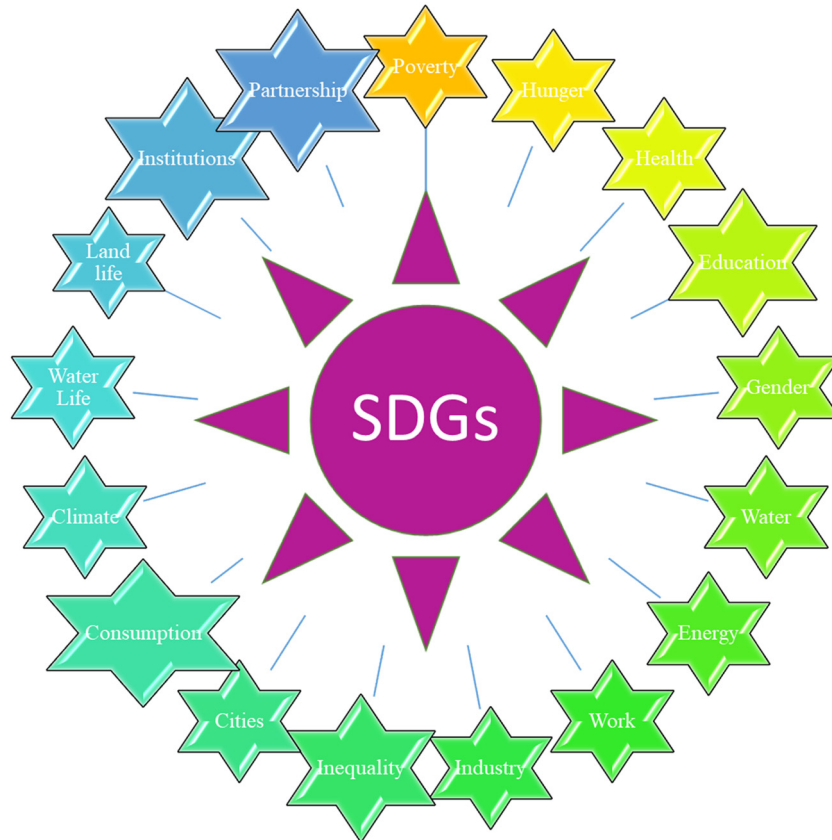


Figure 1: The 17 SDGs.

2 Methods

In this research, the method that we used involved retrieving the Scopus and SciVal of the SDGs for a specific institution. For this purpose, we used two types of the string search in Scopus as follows:

- 1 –The first search string returns to finding a specific institution, which is Damascus University in our study.
- 2 –The second search string returns to finding a specific SDG from the database.

For the study of the SDGs including the results of the institution, we merge the two search strings using the operators in the Scopus database such as AND operator and OR operator. For example, for Damascus University and for the period between 2017 and 2022, we use the following search string: “AF-ID (“Damascus University” 60072760) OR AF-ID (“Damascus University Faculties of Dentistry” 60072764) OR AF-ID (“University of Damascus School of Medicine” 60072761) AND (LIMIT-TO (PUBYEAR, 2022) OR LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017)).” So, if we need to discuss the 14th SDG of Damascus University, we use the previous search string related to Damascus University in addition to the search string returns to the SDG-14, which is given as: “TITLE-ABS-KEY ((marine OR ocean OR oceans OR sea OR seas OR coast* OR mangrove) AND ({water cycle} OR {water cycles} OR {biogeochemical cycle} OR {biogeochemical cycles} OR {oceanic circulation model} OR {oceanic circulation models} OR {oceanic circulation modelling} OR {oceanic circulation modeling} OR {ice-ocean} OR eutrophicat* OR marine OR {coral bleach} OR {coral bleaching} OR {coastal management} OR {coastal habitat} OR {coastal habitats} OR {marine debris} OR {ocean acidification} OR (acidification AND seawater) OR {fishery} OR {fisheries} OR {overfishing} OR {sustainable yield} OR {marine protected area} OR {marine protected areas} OR {marine conservation} OR {ecotourism} OR {community based conservation} OR {community-based conservation} OR {marine land slide} OR {marine pollution} OR {nutrient runoff} OR

{coastal ecotourism} OR {destructive fishing} OR {local fisheries} OR {artisanal fishers} OR {fisheries rights} OR {species richness} OR {traditional ecological knowledge} OR {small Island development states} OR {marine quota} OR {marine economy} OR {marine policy}) AND NOT (({paleoclimate} OR {paleoceanography} OR {radiocarbon} OR {genetics} OR {medicine} OR {drug} OR {engineering} OR {aerosol})). So, the full search string which we must use for the SDG-14 of Damascus University is: “TITLE-ABS-KEY ((marine OR ocean OR oceans OR sea OR seas OR coast* OR mangrove) AND ((water cycle} OR {water cycles} OR {biogeochemical cycle} OR {biogeochemical cycles} OR {oceanic circulation model} OR {oceanic circulation models} OR {oceanic circulation modelling} OR {oceanic circulation modeling} OR {ice-ocean} OR eutrophicat* OR marine OR {coral bleach} OR {coral bleaching} OR {coastal management} OR {coastal habitat} OR {coastal habitats} OR {marine debris} OR {ocean acidification} OR (acidification AND seawater) OR {fishery} OR {fisheries} OR {overfishing} OR {sustainable yield} OR {marine protected area} OR {marine protected areas} OR {marine conservation} OR {ecotourism} OR {community based conservation} OR {community-based conservation} OR {marine land slide} OR {marine pollution} OR {nutrient runoff} OR {coastal ecotourism} OR {destructive fishing} OR {local fisheries} OR {artisanal fishers} OR {fisheries rights} OR {species richness} OR {traditional ecological knowledge} OR {small Island development states} OR {marine quota} OR {marine economy} OR {marine policy}) AND NOT ({paleoclimate} OR {paleoceanography} OR {radiocarbon} OR {genetics} OR {medicine} OR {drug} OR {engineering} OR {aerosol})) AND AF-ID (“Damascus University” 60072760) OR AF-ID (“Damascus University Faculties of Dentistry” 60072764) OR AF-ID (“University of Damascus School of Medicine” 60072761) AND (LIMIT-TO (PUBYEAR, 2022) OR LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017)).”

As we see from this search string, the search string includes the string returns to the 14th SDG in addition to Damascus University search string. The same procedure is applied for other SDGs. Based on the full searches, we find all bibliometric data related to the sustainability results of the researchers affiliated with Damascus University where we analyse those results in Section 3 of the study.

3 Results and Discussion

Herein, we analyse the bibliometric data rederived from the SciVal and database. First, we collect the Scopus and SciVal data for Damascus University for the authors affiliated with Damascus University from 2017 to 2022. As we mentioned in Section 2 of the article, we find the Scopus data by applying two types of the search strings. We find the total number of the published documents which return to the SDGs for each one of the documents published by the authors from Damascus University. Based on those documents, we find that some years have no published document for a specific sustainable goal. For instance, for the full period, there are no documents published by the Damascus University researchers on the fourth SDG. Also, there are no documents published by the Damascus University researchers on the tenth SDG during that period. We represent the total number of the published documents by the researchers from Damascus University on the SDGs. We represent the total number of the published documents of the SDGs, which indexed and abstracted in the Scopus database, during the period from 2017 to 2022 and published by research studies from Damascus university in Figure 2 which includes the published SDG documents versus year of the publishing.

As we see from Figure 2, the publishing of the SDG research studies by the Damascus University researchers increases with the time. We see that the total number of published documents in the 16 SDGs reaches 211. Also, we represent the SDG published documents by the researchers from Damascus University in 2022 because that year was the year with highest number of published SDG documents which indexed and abstracted in the Scopus database.

As we can see from Figure 3, the SDG with the highest published documents is SDG-3, which represents the good health targets. We see that we have 155 published documents about the good health SDG in 2022 out of the total number of 211 published documents by researchers from Damascus University that year. This means that SDG-3 represents more than a half of the total published documents on SDGs in Damascus University. This is the result of publishing in the Faculty of Medicine in Damascus University and the encouraging of health care,

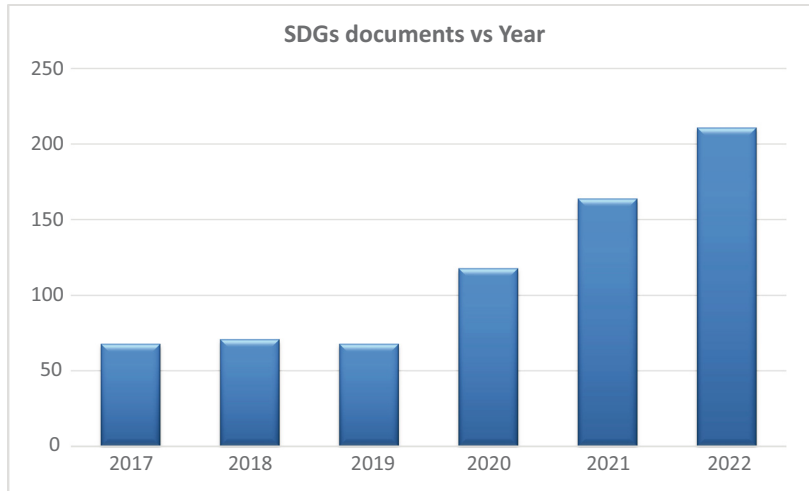


Figure 2: The total SDG documents published by researchers affiliated with Damascus University using Scopus and SciVal data.

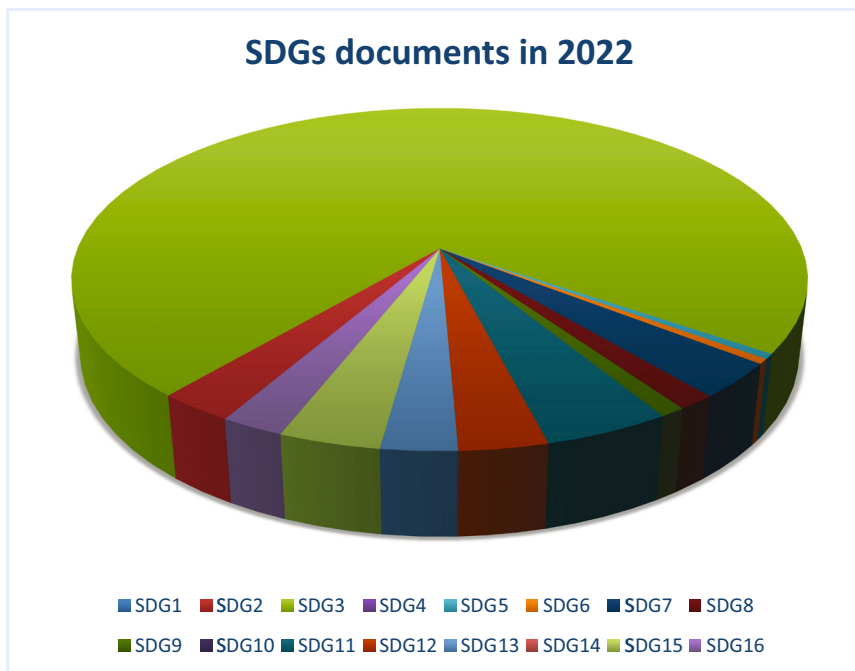


Figure 3: The SDG documents published by researchers from Damascus University in 2022 for the 16 SDGs.

especially after the new coronavirus disease crisis which also affects this point. Another important point that can be observed from Figure 3 is about SDG-14, SDG-10, SDG-4, and SDG-1. We see that there is no research published by the authors from Damascus University that deals with any one of the four aforementioned SDGs in 2022.

Also, by analysing the SDG data for Damascus University during the same period, we see that the number of the published documents which return to the third SDG is the highest compared to the other SDGs. For this reason, in Figure 4, we plotted the number of published documents by researchers affiliated with Damascus University from 2017 to 2022. Figure 4 includes the total number of the documents which indexed and abstracted in the Scopus database and return to the SDG research studies versus the year of the publishing.

As we can see from Figure 4, the total number of published documents which return to the SDG-3 goal and which was published by the authors from Damascus University approximately increases and reaches its

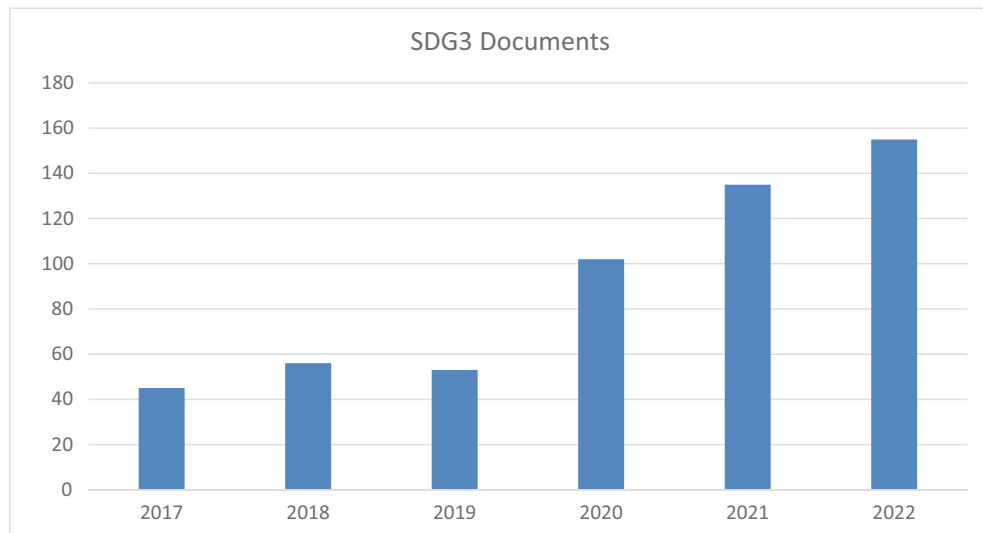


Figure 4: SDG-3 documents published by researchers from Damascus University from 2017 to 2022 for the 16 SDGs.

highest value in 2022 with 155 published documents. This return, as we mentioned earlier, is due to increased publishing in the Faculty of Medicine in Damascus University and the encouraging of health care, especially after the new coronavirus disease crisis. Also, for the study of the citation effects of the documents published by Syrian researchers from Damascus University on the total output of the citations of all documents published by Syrian research studies affiliated with Damascus University, we plotted the total number of citations from the SDG documents in Figure 5 between the same previous period. The data of the citations have been collected based on the same method of the search string for both the SDGs and the institution. We found the total number of citations for each goal of the SDGs based on the documents abstracted and indexed in Scopus database and authored by Syrian researchers affiliated with Damascus University.

Also, for the purpose of showing the effects of the SDG documents, in Table 2, we have provided the total number of the citations of all documents published by the researchers of Damascus University compared to the total number of citations resulted from the SDG documents.

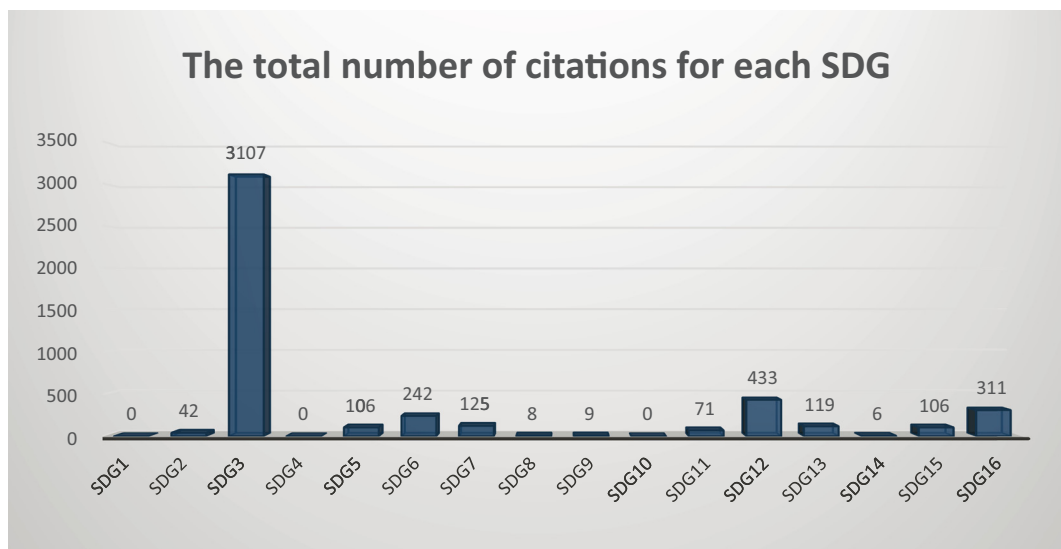


Figure 5: The citations of the SDG documents published by researchers from Damascus University from 2017 to 2022 for the 16 SDGs.

Table 2: The total number of citations for all documents, SDG documents, and SDG-3 documents published by Damascus University researchers from 2017 to 2022

Citations	Citations (SDGs)	Citations (SDG-3)
8,881	4,685	3,107

As we can see from Table 2, the total number of the citations of the SDG documents which was published by Damascus University researchers is 4685 citations. This number represents about 52.75% of the total number of citations of all documents published by Damascus University researchers during the same time. Also, we see from the table that the total number of citations, which the SDG-3 documents have gotten, is 3,107, which means that this number represents 66.32% of the SDG citations. Besides, when we return to Figure 5, we find that the total number of citations of the SDG-3 documents published by Damascus University researchers is the highest compared to other citations of the SDG documents. Another important point that can be read from Figure 5 is zero citations of some published documents of the SDG documents, such as SDG-1, SDG-4, and SDG-10.

4 Conclusions

In this research, we analysed the strategies of reaching the SDGs in one of the Syrian Arab Republic institutions during the past 5 years of the Syrian crisis, which is Damascus University. Damascus University was chosen for several reasons, the most important of which is that it is the largest university in the Syrian Arab Republic, which is an example of a low-income and developing country. We mentioned that the university started implementing sustainable development policies in 2018 in many aspects. In 2018, the university began with a policy of digital transformation that led to a significant reduction in the use of paper and paper publications, by switching to the use of electronic certificates for university graduates, in addition to the use of the open journal system for academic journal publications by the university. Also, in the same year, the university began to implement the policy of renewable energies effectively by using solar electric panels to generate electricity and solar thermal cells to heat water. In the year 2022, this policy led to the generation of clean energy estimated at about 11% of the electrical energy used by the university in that year. We found that the university called for a policy of rationalizing the use of water in various aspects and for a policy of reducing carbon emissions in university buildings. We analysed the bibliometric data of the Scopus and SciVal database for a brief study of the SDGs in Damascus University. Based on the bibliometric analysis of the SDGs based on the Scopus and SciVal data, we found that the SDG-3 targets were the most published documents by the Syrian researchers affiliated with Damascus University and represented more than 55% of the total published documents about the SDGs in 2022.

We found that the citations of the SDG documents which were published by Damascus University researchers play a key role in the citations of the university during the selected time. These citations represents more than 50% of the total citations of all documents published by the university.

As a result of implementing the sustainability policy at the University of Damascus, the university was able to reach indicators related to a good number of SDGs, namely SDG-3, SDG-4, SDG-7, SDG-12, and SDG-13. Also, the university reached SDG-8 partially. As the sustainability strategy of Damascus University states, the university remains committed to reaching the other indicators of the SDGs.

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