Sustainable Development Goals and AI integration into Curricula in the MENA Region

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Abstract

The role of higher education institutions in advancing the Sustainable Development Goals (SDGs) into curricula is more important than ever. The 17 United Nations SDGs have been committed to by 193 countries with the aim to address global challenges and improve socio-economic and environmental outcomes of planetary health. The 2030 Agenda for the United Nations Sustainable Development Goals provides equal prominence to both developed countries and developing countries.

To transform our societies to reach the 1.5-degrees path recommended by the Paris Agreement, UNESCO at the COP28 in the United Arab Emirates (UAE) stressed the importance of education and highlighted that there is a growing call for education to enable individuals, as agents of change, to acquire knowledge, skills, values, and attitudes that lead to green transition of our societies, as enshrined in SDG Target 4.7 (SDG 4 – Quality Education), and, indeed, in the entire 2030 Agenda. However, there has been little focus on SDG integration into curricula in the Middle East and North Africa (MENA) region.

This article examines the efforts of higher education institutions in the MENA region to embed SDGs into their curricula, emphasizing the need for improved course descriptions and curricular alignment with sustainability and climate goals. Particularly, the efforts toward SDGs of Prince Sultan University (PSU), the first Saudi-based private university, are highlighted. It also showcases the initiatives of countries such as Saudi Arabia, Bahrain, and the UAE, which have integrated sustainability into their education systems, as evident in their Voluntary National Reports.

Furthermore, the article explores the role of Artificial Intelligence (AI) as a transformative tool in achieving Quality Education (SDG 4). Policymakers in the MENA region should use local and regional quality assurance frameworks, including course descriptions that could be revised to link better to the SDGs and climate. Similar efforts are needed to address ongoing ethical debates effectively to show how AI could be embedded into curricula since the pressing issues on ethics are a continual debate on the regulatory framework.

Introduction

> "[Through COP28] we can look at what is required. Those requirements are complex but clear. We need to collectively, globally, reduce our emissions. There are things we can do now and there are things we can invest in the future… It is no longer an option to be an ostrich and put your head in the sand."
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> H.E. Razan Al Mubarak - President of the International Union for Conservation of Nature (IUCN), UN Climate Change High-Level Champion of the UAE, UN Climate Change High-Level Champion 2023 at COP 28[1]

At the core of the 2030 Agenda are 17 Sustainable Development Goals (SDGs). The universal, transformational and inclusive SDGs describe major development challenges for humanity to secure a sustainable and equitable life on earth for everyone now and in the future.

Target 4.7 of the SDGs

> By 2030, ensure that all learners acquire knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development. Source: United Nations, 2015

> At COP 28,
> 38 countries signed the UNESCO Greening Education Partnership, Declaration on the common agenda for education and climate change, committing to incorporate climate education into their Nationally Determined Contributions and National Adaptation Plans. This represents 20% of the total number of nations in the UNFCCC.

Higher education institutions (HEIs) are crucial players in promoting SDGs and climate education. They help people understand and address the impacts of the climate crisis, empowering them with the knowledge, skills, values and attitudes needed to act as agents of change. For instance, the Vision Statement by the Secretary-General on Transforming Education, 'Transforming Education: an urgent political imperative for our collective future', notes that education is a great enabler, but today, in many cases, it is also the great divider. HEIs have a responsibility to ensure the quality of education that they offer in terms of incorporating sustainability measures and AI into curricula practices. Over the past two

decades, the MENA region has taken great strides in this regard. In particular, HEIs are working to support the achievement of SDGs.

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[1] https://www.cop28.com/en/

The challenge of climate change is daunting. HEIs need to incorporate creative solutions to address the SDGs into their curricula and research ways of using AI to help the world overcome these challenges. This brief report gives a synopsis of what institutions are striving to achieve within the MENA region in terms of supporting the achievement of SDGs, greening the curricula, and integrating AI into education.

During the United Nations Conference on Climate Change (COP28) in Dubai, UAE, **from November 30 to 12 December 2023, UNESCO called for** securing commitments and actions from countries regarding climate change education. The Declaration on the Common Agenda for Education and Climate Change at COP28 is shown in Box 1.

Box 1: The Declaration on the Common Agenda for Education and Climate Change at COP28

Building on the achievements at COP26 and COP27, we, as *committed member states, adopt this declaration on the common agenda for education and climate change in advance of/at the 28th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP28) in Dubai, United Arab Emirates.*

- **Recognizing** that the climate crisis disproportionately impacts children, especially girls and marginalized groups, and weather-related disasters are already causing mass disruption to learning, education systems must urgently adapt to ensure children and young people can survive and thrive in our changing world.
- **Emphasising** that Education for Sustainable Development as part of SDG 4 on quality education from early childhood to lifelong learning provides the knowledge and skills required for a changing world and plays an essential role to powering the shift at scale to more sustainable, equitable, just, and climate-resilient societies, as highlighted in the Berlin Declaration on Education for Sustainable Development, we must maximize the co-benefits of efforts to achieve inclusive quality education for all and advance environmental sustainability.
- **Recalling** Article 6 of the United Nations Framework Convention on Climate Change and Article 12 of the Paris Agreement, we call upon countries to enhance climate change education to support transitions to low-carbon and climate-resilient economies and societies.
- **Acknowledging** the concerning funding gap in climate education and emergency preparedness planning compromising the ability to develop adequate education strategies to tackle the climate emergency, we welcome existing efforts of international education funds and climate education mechanisms – including multilateral development banks, the Global Partnership for Education, Education Cannot Wait, and the UN-Multi Partner Trust Fund for the Greening Education Partnership - in supporting sustainable education systems and getting every learner climate ready.
- **Recognizing** the focus on education, youth, and skills at COP28 and future COPs, we mobilize opportunities to redress the above issues by driving cohesion, deepening collaboration, and securing tangible commitments on education as a tool to mitigate the climate crisis on a global scale.

SDGs in the MENA Region

In the past five years, key Middle Eastern countries such as Saudi Arabia, Bahrain, Qatar, the UAE, Kuwait, and Jordan have submitted Voluntary National Reports (VNRs) at least twice to share progress and insights into the implementation of the Sustainable Development Goals (SDGs), particularly, SDG 4 – Quality Education (HLPF, 2023). From 2021 to 2023, selected VNRs provided detailed analyses of educational initiatives and outcomes, aligning with the 2030 Agenda for Sustainable Development. For instance, Saudi Arabia's VNR showcased Prince Sultan University's commitment to sustainability, including its ambition to become a net-zero campus. Similarly, the UAE's report highlighted its Sustainable Development Research Programs.

Based on a review of VNRs (Middle Eastern countries have spotlighted various educational institutions and themes related to the SDGs), significant highlights include Saudi Arabia's focus on lifelong learning through the UNESCO Global Network of Learning Cities, Bahrain's digital transformation via the UNESCO Associated Schools Network (ASPnet), and the UAE's use of smart information technology systems in its SDGs Research Program. Other countries such as Kuwait, Jordan, and Lebanon emphasized skilled-based labor, human resources development, and the quality and relevance of technical and vocational education and training (TVET), respectively.

The VNRs from 2022 reflected strategies for COVID-19 recovery, particularly in the UAE and Jordan. In contrast, the 2023 reports emphasized digital transformation and life-long learning skills in sustainability and technology, especially in Saudi Arabia and the UAE. However, these reports often needed more detailed discussions on emerging quality assurance reforms, including micro-credentials, cooperative education, and pathways for recognizing various forms of learning. Furthermore, the 2023 Education, Training, and Evaluation Commission (ETEC) Quality Day served as a platform for discussing quality assurance and accreditation in higher education.

Notably, the forum focused on Saudi Arabia's 'Jahezia' (Readiness) program, which mandates an exit exam for undergraduate students to ensure their readiness for the job market and the relevance of their education. Additionally, the event facilitated discussions on the growing importance of micro-credentials and their potential impact on the value of traditional higher education degrees.

Greening the Curricula to Support the SDGs in the MENA Region

The drive for incorporating SDGs into curricula in higher education has increased significantly over the past
5–10 years. This drive stems from the UN's approval of the 2030 Sustainable Development Agenda (UN, 2015). SDG 4 focuses on the quality of education. This SDG implies that HEIs need to be committed and play an active role in supporting the educational focus on sustainable development that addresses the current societal challenges around sustainability.

At the United Nations Transforming Education Summit, it was confirmed that "education must be transformed to respond to the global climate and environmental crisis. Building off of the knowledge and practice accumulated in Education for Sustainable Development (ESD), a new Greening Education Partnership aims to deliver strong, coordinated, and comprehensive action that will prepare every learner to acquire the knowledge, skills, values, and attitudes to tackle climate change and to promote sustainable development" (https://www.un.org/en/transforming-education-summit/transform-the-world). Keeping this in mind, four main quality education measures that can be taken to support sustainable measures need to be taken into account:

- Revise the curricula to prepare professionals and citizens to meet the current and future challenges of converging global environmental problems through increasing levels of "ecological literacy" or "environmental literacy."
- It is also about putting words into action through the various activities in and out of the classroom.
- Sustainability within curricula has to incorporate the development of making ethical choices and social justice, and support the ideology of becoming a responsible and involved citizen.
- After all, sustainability is about valuing and protecting the environment and natural resources through collective learning and action.

The primary role of HEIs is to raise awareness of sustainability matters both locally and globally to encourage and support action with sustainability endeavors. Across the MENA region, there are several key points that are being addressed with respect to faculty and students. The key points to help faculty and students understand are:

- The relevance of environmental issues, e.g., depletion of natural resources, pollution
- How to develop the skills to make responsible choices to protect the environment
- Recognize how sustainability is connected to them and everyone they know
- Educate students about the issues being faced now
- Promote critical thinking skills
- Inspires them to take proactive steps at both individual and societal levels
- Research new ways to be sustainable and incorporate these ideas into the curricula.
- Enrich our knowledge base by establishing quality measures for sustainability incorporated into curricula and higher education institutions.

- HEIs need to develop research that will support the development of new products that do not harm the planet, which will support the planet and community at large.
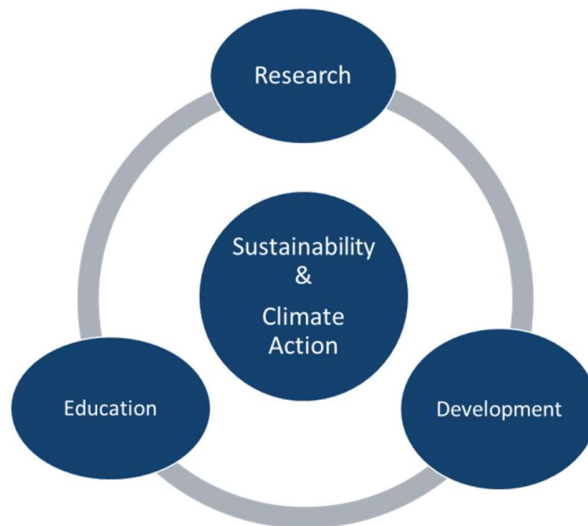

Figure 1: The Sustainability and Climate Action Framework of HEIs

As such, sustainable development deals with not only environmental issues but also economic, social, and cultural issues, given the increased demands placed on societies and the environment due to, among other factors, increased human migration, increased urbanization, and industrialization, as well as the ongoing depletion of non-renewable resources; from this, it is clear that global action is needed to create a more sustainable future. This is why HEIs have taken an active role in educating their stakeholders: faculty, staff, and students. At Prince Sultan University, we have established a center for sustainability and climate as well as an infrastructure of sustainability ambassadors who have provided opportunities for training recently; we had a Carbon Literacy Certification workshop where 20 PSU faculty participated. Further to this, the teaching and learning center has been striving to promote the greening of the curriculum across the colleges by conducting awareness sessions and providing ideas on how the faculty and curriculum review committees can incorporate the SDGs in their curricula. In addition, we have drafted a policy and guidelines for achieving this. We also have the Environment Club, which holds awareness campaigns about going green for all stakeholders at PSU. The key areas that need to be addressed by HEIs in relation to sustainability and SDG 4 are:

- Incorporating sustainability principles and practices into course curricula, such as teaching sustainable development goals, climate change mitigation, and environmental stewardship.
- Offering interdisciplinary courses that address sustainability challenges, such as sustainable agriculture, renewable energy, or sustainable urban planning.
- Providing experiential learning opportunities, such as internships, research projects, or volunteer work, that focus on sustainability practices.

- Encouraging project-based learning, where students work on real-world sustainability projects, such as conducting energy audits, developing sustainable business plans, or designing sustainable infrastructure projects.

Integrating AI in Education: Enhancing Personalization and Inclusivity

In the evolving landscape of education, the integration of Artificial Intelligence (AI) stands out as a transformative force, particularly in alignment with Sustainable Development Goal 4 (SDG 4), which focuses on quality education. This integration not only enhances the educational experience but also propels the ecosystem toward greater inclusion and accessibility of educational resources.

Emerging Generative AI Techniques

Generative AI techniques have begun revolutionizing the way educational content is created and disseminated. These technologies enable the development of tailored educational materials, making learning more inclusive and accessible to a diverse range of learners. AI fosters a more engaging and effective learning environment by adapting to individual learning styles and needs. This personalization is crucial in meeting the diverse needs of students, thereby promoting equitable education for all, a core tenet of SDG 4.

Automated Evaluation and Feedback

One of the most promising applications of AI in education is its ability to automatically evaluate and grade exams, including those requiring written responses and reasoning. This capability not only streamlines the grading process but also provides students with timely, detailed feedback that is essential for their learning and improvement. Such systems can identify areas where students struggle, offering tailored recommendations for enhancement. This instant feedback mechanism is pivotal in maintaining a high quality of education, directly contributing to SDG 4's goals.

Generative AI in Academic Advising

Generative AI, notably Large Language Models (LLMs), is reshaping academic advising, aligning with SDG 4's focus on quality education. These advanced models offer personalized course and career guidance by analyzing individual student data. This bespoke advice is crucial for tailored educational pathways. Additionally, LLMs provide 24/7 support, ensuring constant accessibility for students, a significant step toward inclusive education. By identifying potential academic challenges early, these AI systems facilitate proactive interventions, enhancing student success. This technological aid not only streamlines the advising process but also empowers human advisors to focus on complex, personalized student interactions.

AI for Personalized Tutoring

AI's role in providing private and personalized tutoring is a significant leap forward in education. Such systems can offer individualized attention and support, previously limited by resource constraints. This personalized approach ensures that students receive the help they need when they need it, making education more accessible and inclusive, in line with SDG 4's emphasis on equitable quality education.

A Case Study on SDGs in Curricula – Prince Sultan University

Prince Sultan University became the first university in Saudi Arabia to pledge to be a net-zero campus by 2060, and to coordinate related events and agreements[2]. The Race to Zero for Universities and Colleges campaign is run in partnership with the EAUC (the Alliance for Sustainability Leadership in Education), Second Nature and the UN Environment Programme; EAUC are the secretariat. As a stakeholder, Prince Sultan University has been added to the UNFCCC Race to Zero campaign. The campaign mobilizes a coalition of leading net zero initiatives, representing 733 cities, 31 regions, 3,067 businesses, 173 of the biggest investors, and 622 HEIs. These 'real economy' actors join 120 countries in the largest ever alliance committed to achieving net zero carbon emissions by 2050 at the latest. Collectively, these actors now cover nearly 25% of global CO_2 emissions and over 50% of GDP.

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[2] https://www.psu.edu.sa/en/news/373

Then, we became the first university in the Middle East and Saudi Arabia to become a CarbonNeutral Certified University[3] (5000 tonnes CO_2e). Prince Sultan University is the only university in Saudi Arabia that has been recognized as a case study in the Report to the UN 2023[4].

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[3] https://www.psu.edu.sa/en/news/524

[4] http://hlpf.un.org/countries/saudi-arabia/voluntary-national-reviews-2023

SDG 4 Quality Education:
Prince Sultan University

IN-DEPTH CASE

SUMMARY

There are around 8.4 million students in Saudi Arabia, approximately 25% of the Kingdom's total population. These students will form the heart of a more sustainable world. PSU, the government Of Saudi Arabia, Vision 2030 and the UN's SDG agenda all have the same ultimate ambition: to create a world that works for all-both now and in the future.

Prince Sultan University (PSU) is the first Carbon Neutral Certified University in the MENA Region, in accordance with the carbon Neutral Protocol, the leading global framework for Carbon neutrality.

As part of youth engagement strategy, the PSU SDG Club, being part of the PSU center for Sustainability and Climate (CSC), coordinates social and educational events to spread awareness and advocate for sustainable initiatives at the university and among the student population.

Students participated in international conferences such as Harvard MUN, Prague MUN, winning numerous awards. Since 2019, PSUMUN has been organizing its own conference. CSC hosted workshops alongside United Nations Global Compact (UNGC).

IMPACT

The list of ongoing initiative and campaigns include:

- GO GREEN initiative
- Zero Waste Campaign
- Earth day
- UN SDG and Climate Week
- Youth Sustainability
- Leadership Certification Volunteering at (CSC)

The exemplary zero waste initiative focuses on driving circularity on campus through:

- Creating awareness about achieving the zero waste goal within the PSU campus.
- Incentivizing students to ideate and initiate projects that help reduce waste on campus.

The program offers rewards to students of up to SAR 8,000.

Energy generation is one of the biggest emitters of greenhouse gases, and renewable energy investment is a fast and effective solution to reduce these emissions.

Challenge

NEXT STEPS

PSU is one of the universities in Saudi Arabia to pledge net zero carbon emissions by 2060.

The university has signed up to race to zero, a global initiative for a zero-carbon world.

Source: Saudi Arabia's Voluntary National Review 2023[5], page 66.

Prince Sultan University SDG Club[5] is the first student SDG Club in Saudi Arabia. The vision is to educate students about environmental and climate issues and bring students together to discuss pressing issues regarding SDGs and to host events, volunteer and assist in SDG initiatives, and connect with both the local and global community. The individual work will make a collective impact on the challenges posed by integral sustainability. The PSU SDG Club hosted the PepsiCo Zero Waste Campaign and Competition in March 2023[6]. PSU also engaged youth in SDG awareness sessions[7].

PSU is committed to promoting the UN's SDG 2030 agenda as part of its own institutional strategic plan in support of Saudi Arabia's Vision 2030 framework. The Vision 2030 initiative calls on organizations – both private and public – to empower, nurture and inspire young Saudi citizens to fully realize their potential as part of the country's ongoing formative action to combat the climate crisis and its impacts. During a fringe event held as part of the 2022 Global Sustainable Development Congress, hosted by Times Higher Education in partnership with the University of Glasgow, faculty members from PSU, alongside external partners, explored the strong international cooperation that is essential for the creation of a more sustainable world[8].

In terms of collaboration, the Center for Sustainability and Climate (CSC) and their strategic partner, the United Nations Global Compact (UNGC) Saudi Network, held a workshop for the PSU faculty and staff titled "The Values and Understanding of Sustainable Development Goals and its Relation to Saudi Vision 2030."[10]

100% of PSU programs have a commitment to meaningful education around the SDGs[9]

At Prince Sultan University, we have taken major steps toward building an infrastructure that supports sustainable development being incorporated into the curricula and extracurricular activities. **If we ask, how can we infuse sustainability into our courses?** Sustainability can be infused into any course, including general education courses. Several examples of what is currently being practiced can be found below:

- Course content (e.g., COM 201 – arrange debates about environmental issues; ENG 101 – have students write about environmental topics)
- Course assignments
- Finding useful resources or supplementary material
- Have students take part in projects, community activities, or field trips
- Create interdisciplinary courses connected to sustainability
- Create learning outcomes and assessments

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[5] https://www.psu.edu.sa/en/CSC-PSU-SDG-Club
[6] https://www.psu.edu.sa/en/CSC-SDG-initiatives
[7] https://www.arabnews.com/node/2397676/corporate-news
[8] https://www.timeshighereducation.com/hub/global-sustainable-development-congress/p/2022-creatingecosystem-around-higher-education [10] https://www.psu.edu.sa/en/news/508
[9] https://www.psu.edu.sa/en/education-for-SDGs-commitment-to-meaningful-education

If we ask, how can we infuse sustainability into our extracurricular activities? Just as in the previous examples of incorporating sustainability into the curricula, great strides are being made with the student clubs on campus. Several examples of actions that have been taken can be found below:

- Environment Club – the Go Green campaigns, recycling drives, attended environmental competitions, etc.
- Debate Club – attended environmental competition
- PSU MUN Society – addresses the SDGs in their events.

In the MENA region, initiatives are being taken in order to support the unification across HEIs to work to achieve success in order to save the planet and make the world a safer place to live in. If we examine the efforts of Saudi Arabia, the SDGs have been embedded into the country's Vision 2030. Many initiatives have been developed in order to support all 17 SDGs. Other countries in the MENA region have done the same.

At PSU[10], we have also pioneered the use of generative AI in education with two notable developments:

- **ExamGPT:** This platform is designed for the auto-grading of programming exams and can be generalized to various types of assessments. ExamGPT provides instant feedback to students, including grades and recommendations for improvement. This innovation not only enhances the efficiency of the grading process but also ensures that students receive immediate, constructive feedback, aligning with the objectives of SDG 4.
- **PSUGPT:** This ChatGPT-powered chatbot, fine-tuned specifically for PSU, addresses a wide range of queries related to admissions, academics, research, and administration. PSUGPT exemplifies how AI can streamline information dissemination and student support services, making educational resources more accessible and fostering an inclusive learning environment.

The integration of AI in education is not just a technological advancement; it is a step toward realizing the ambitions of SDG 4. By personalizing education, streamlining assessment processes, and making learning resources more accessible, AI is playing a pivotal role in transforming the educational landscape. At PSU, our commitment to leveraging generative AI in education is a testament to our dedication to providing quality, inclusive, and equitable education for all.

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[10] https://psugpt.ai/ ; https://ric.psu.edu.sa/chatgpt.php

Recommendations:

"Education can, and must, contribute to a new vision of sustainable global development."

(UNESCO, 2015)

The following urgent actions are needed to achieve the SDGs,

- Higher education institutions must play a vital role in advancing the understanding and implementation of the 2030 Agenda by integrating SDGs and climate into curricula.

- The accreditation agencies should also emphasize the SDGs in their standards, ensuring they become essential accreditation requirements. Additionally, higher education stakeholders should work collaboratively to further advance the Sustainable Development Goals.

- Universities in the MENA region should focus on improving skills related to green issues, SDGs and climate to increase employability since many jobs will disappear due to AI and Tech.

- Universities should also emphasize cross-institutional partnerships for innovative practices within curricula and quality education.

- Higher education students and young people must be actively engaged and given opportunities to voice their ideas and contribute to sustainable development.

- Universities should integrate their strategic plans into the agenda of United Nations Framework Convention on Climate Change (UNFCCC). Articles 6 and 12 of the Paris Agreement call for Action for Climate Empowerment (ACE), which includes the key role of education to facilitate a green societal transformation.

References:

Allen, C., Metternicht, G., & Wiedmann, T. (2018). Initial progress in implementing the Sustainable Development Goals (SDGs): a review of evidence from countries. *Sustainability Science*, *13*, pp.1453–1467. https://doi.org/10.1007/s11625-018-0572-3

Breuer, A., Janetschek, H., & Malerba, D. (2019). Translating sustainable development goal (SDG) interdependencies into policy advice. *Sustainability*, *11*(7), p. 2092. https://doi.org/10.3390/su11072092

High-Level Political Forum (HLPF) (2023). Voluntary National Reviews. https://hlpf.un.org/vnrs

Holden, E., Linnerud, K., & Banister, D. (2014). Sustainable development: Our common future revisited. *Global environmental change*, *26*, pp.130–139. https://doi.org/10.1016/j.gloenvcha.2014.04.006

Kaklauskas, A., & Kaklauskiene, L. (2022). Analysis of the impact of success on three dimensions of sustainability in 173 countries. *Scientific Reports (Nature), 12*, p. 14719. https://doi.org/10.1038/s41598-022-19131-6

Nilsson, M., Griggs, D., & Visbeck, M. (2016). Policy: map the interactions between Sustainable Development Goals. *Nature*, *534*(7607), pp. 320–322. https://doi.org/10.1038/534320a

Sachs, J., Kroll, C., Lafortune, G., Fuller, G., & Woelm, F. (2022). *Sustainable development report 2022*. Cambridge University Press.

UNESCO (2017). Education for Sustainable Development Goals – learning objectives. https://unesdoc.unesco.org/ark:/48223/pf0000247444

United Nations Development Programme (UNDP) (2023). Sustainable Development Goals. Available at: https://www.undp.org/sustainable-development-goals

United Nations (2015). General Assembly Resolution A/RES/70/1. Transforming Our World, the 2030 Agenda for Sustainable Development. Available at: https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf, 21 October 2015.

United Nations (2020). *Shared Responsibility, Global Solidarity: Responding to the Socio-economic Impacts of COVID-19*. UN Executive Office of the Secretary-General (EOSG) Policy Briefs and Papers, 19 May 2020. Available at: https://doi.org/10.18356/5c353f7e-en

Resources:

- https://www.chea.org/quality-international-newsletter-guidelines
- https://www.chea.org/articles-cheacigg-memorandum-affiliation-interview-peter-wells-headunesco-higher-education-section
- https://www.chea.org/dna-converging-diversity-regional-approaches-quality-assurance-highereducation-0
- https://www.un.org/en/transforming-education-summit/transform-the-world
- https://www.gov.uk/government/publications/sustainability-and-climate-changestrategy/sustainability-and-climate-change-a-strategy-for-the-education-and-childrens-servicessystems