Comment: Empty promises: why Declarations on sustainable development often fail to deliver

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Abstract

Over the past decades, many declarations on sustainable development have been produced, various of which led to no real changes or improvements. This Comment discusses the role of declarations on sustainable development and outlines their evolution. It also outlines the reasons why many have failed to meet their targets and describes some measures that may be deployed so that they may yield the expected benefits. To this end, it is recommended that more significant efforts be made on operationalising the commitments established in the declarations. Also, it is important to develop and implement follow-up strategies, once these have agreed upon. The Comment also points out the need to intensify investments in education, science, technology, and innovation while encouraging the expansion of international cooperation

strategies aimed at promoting sustainable development. Moreover, future declarations should ideally have an institution or infrastructure in place to implement the actions called upon.

Introduction

Since the end of the 18th-century mankind has been changing the Earth in an unprecedented way, by radically modifying the landscape, increasing natural resource use, provoking stratospheric ozone depletion, ecosystem loss, ocean acidification, worsening climate change, and threatening the planet's resilience (Bengtsson et al., 2018; Griggs et al., 2013; Steffen et al., 2015). Considering these severe global issues, humanity's current environmental footprint is not sustainable in the long term (Hoekstra & Wiedmann, 2014). This emerging planetary history era has been called 'Anthropocene' (Steffen et al., 2011), 'the great acceleration,' 'thresholds,' or 'tipping points' (Palsson et al., 2013). In the face of increasing human pressures and shocks, there is a growing need for sustainable development (SD) (Geissdoerfer et al., 2018); otherwise, Earth's systems will collapse (Griggs et al., 2013).

Since 1972, several events have tried to deal with the aspects of SD, mainly promoted by the United Nations (UN). Since its establishment after World War II, it plays a coordination role in defining and implementing strategies to manage crises (Bellantuono et al., 2022). Academia has also approached the topic in many ways, resulting in several different opinions concerning definitions. The Brundtland Report definition has been the most widely accepted and cited (Bradley, 2019). The concept of SD is defined by the World Commission on Environment and Development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p. 41). From this definition, SD could be understood as the improvement of the quality of life and well-being of both present and future generations without exhausting natural resources (Biswas et al., 2021). Nevertheless, other global problems affecting SD, such as wars and violence, right-wing and religious extremism, the continued existence of slavery, gender inequalities, racism and xenophobia, displacement an,d forced migration, among others, only played a subordinated role in the Report (Fuchs, 2017).

More recently, in 2015, as a continuation of the Millennium Development Goals (MDGs), the 2030 Agenda and its 17 Sustainable Development Goals (SDGs) were formulated. Governments were expected to use these goals to face the environmental, social, and economic challenges in their respective communities (Choi et al., 2020). However, much like the MDGs, the SDGs have ended up as vague, weak, meaningless, or mere tautologies (Holden et al., 2017; Stafford-Smith, 2014; Stokstad, 2015). The UN calls for international cooperation to advance the global goals, but what happens is that the parties do not even agree on the problems themselves. Then, everyone wants the world to develop in a sustainable way, but when it comes to actions, apparently, everyone thinks about the future in a different way (Kerekes, 2021).

Addressing global issues is challenging since SD must be assessed from a multi-dimensional perspective (Choi et al., 2020). Therefore, without recognising that sustainability challenges are often characterised as perverse, wicked, complex, and transdisciplinary problems (Rittel & Webber, 1973; Klein, 2004; Lawrence & Després, 2004), this transformation cannot be accomplished by individuals acting alone. It has been increasingly relevant that policy, education, and practice support and guide sustainability-oriented societies (Yarime et al., 2012). In this regard, transnational partnerships are necessary for the effective promotion of SD (Beisheim & Liese, 2014; Leal Filho et al., 2022b) and employing a transdisciplinary approach that brings

together academic and non-academic actors (Jacobi et al., 2022). For this purpose, each nation, state, or country has the critical responsibility of mobilising and raising financial resources, in addition to promoting new partnerships between the private sector and civil society (Jayasooria, 2016; Leal Filho et al., 2022b), which may involve governments, universities, companies, and non-governmental organisation (NGOs) (Sachs, 2012). It highlights the need to exploit long-term sustainable multi-stakeholder partnerships for SD (Choi et al., 2020) to address global challenges, promote innovative solutions, and transform society based on the specific skills and outcomes each member can contribute (El-Jardali et al., 2018).

Is there a limit to how many declarations are necessary for sustainable development?

SD, anchoring environment, economy and society pillars (Mensah & Ricart Casadevall, 2019), has in the past been considered a vague political goal. However, although the debates on sustainability reflect the growing awareness that human activity's negative impact on the environment goes back a long time (Konold & Schwietring, 2021), there has been no real significant advancement. Over the past five decades, numerous initiatives, declarations, and international agreements have been made public for many years to promote SD.

Over time, SD has evolved from a single-factor element concentrating on ecological sustainability to the MDGs and SDGs today, becoming broader and more universal (Shi et al., 2019). More recently, the implementation of the SDGs calls for accelerating sustainable solutions (United Nations, 2021c), with a current on the climate emergency, partly guided by the recent Intergovernmental Panel on Climate Change (IPCC, 2021) report. IPCC now uses the so-called shared socio-economic pathways to investigate how global society, demographics, and economics will evolve in the coming century, influencing the world. Motivated by the COVID-19 pandemic and its disrupting effects on the worldwide economy, there seems to be a sense of urgency that calls for immediate action towards fostering sustainability and tackling climate change. Countries are being asked to work towards carbon emission reduction targets in order to achieve net-zero emissions by the middle of the century (United Nations, 2021b).

While the number of SD institutional declarations, intentions or agreements produced until now is considered significant (see Figure 1), the progress achieved so far is clearly not so, due to the reasons explored in this commentary. The scrutinization of efforts to effectively implement the declarations to advance SD needs to be made effective, relying on promoting sustainability change in a broader societal context, while simultaneously advancing global learning for SD. This also includes investing more in non-formal and adult learning (Nordén & Avery, 2021). To move towards sustainability, it is equally essential to consider the fundamental need to distribute and control power within societies, more than investing in empty discourses of change. Substantial changes also need to be pursued by the key players and stakeholders, such as the UN, governments, the private sector and society, to foster a broader consciousness of SD, translating its concepts into action and increasing public participation (Mensah & Ricart Casadevall, 2019).

Among the many efforts made to pursue SD, declarations - nearly always connected with events - have been a popular tool over the past five decades. There have been two primary sorts of declarations in the field of SD:

Category 1 - Macro Declarations: these are wide-ranging declarations with an enormous scope.

Category 2 - Declarations on education for SD with a more specific remit

Declarations are issued for various reasons: to capitalise on the enthusiasm of those attending an event to make it "historical", to draw attention to important issues, or generate media interest. Often, as a combination of these motivations. Nevertheless, despite the popularity of declarations, a critical assessment of their effectiveness shows that many of such documents failed to implement what they have asked for.

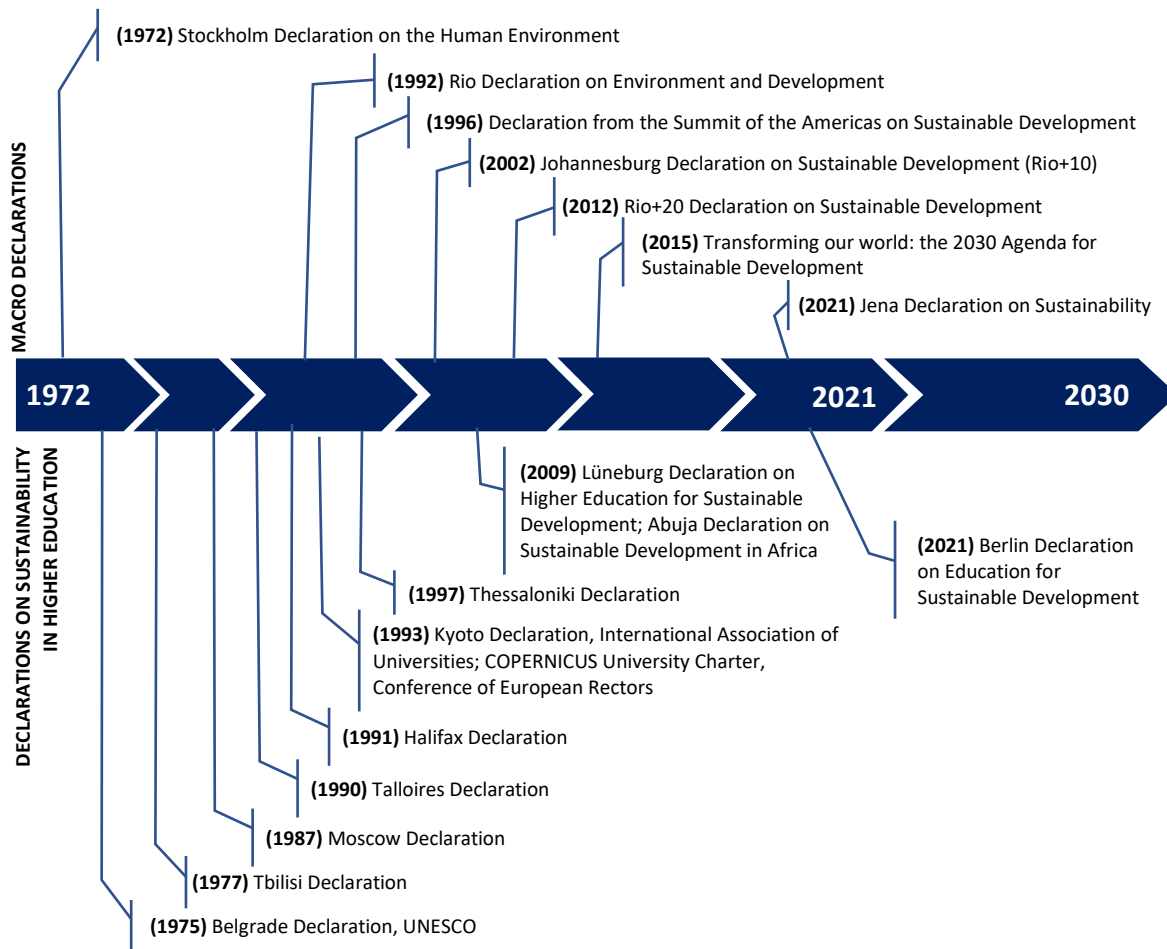Figure 1 presents a set of them.

Figure 1 – Some landmark declarations on Sustainable Development

Taken by their face value, the declarations in Figure 1 could have served the purpose of significantly advancing the cause of sustainability as a whole and sustainability in higher education in particular. Yet, they have largely failed to do so. There are some reasons for this, as summarised in Table 1.

Table 1 - Reasons why sustainable development declarations have largely failed to deliver

Item	Impacts
Wide scope	*Most Declarations have a broad scope making their implementation unrealistic.*
Ambition	*Declarations are often too ambitious and usually call for wide-ranging actions whose implementation is not simple.*
Restricted Information	*Declarations are, on the one hand, agreed upon but not widely disseminated, so the information is often restricted to a small group of people.*
Repetition	*Many Declarations do not significantly differ from previous ones, providing few insights that can be seen as a new contribution to the debate on sustainable development.*
Lack of resources	*Declarations usually do not have a provision of funding or personnel to oversee their implementation.*
Deficiencies in coordination	*Declarations are usually announced but often have no organisational framework to coordinate the implementation of the measures they list*
Limited participation	*Usually deriving from events, many Declarations have not catered for the participation of the relevant stakeholders, especially some key people and organisations, which could have assisted in their implementation.*

Moreover, the fact that many declarations do not draw from previous ones, means that much duplication is seen, and their messages tend to become diluted. On the other hand, a tangible way to move the cause of sustainability forward, is by undertaking research and performing innovation also reflecting in the publication of findings. In this context, a ranking of scientists publishing on sustainability based on Research Gate (https://www.researchgate.net/), a well-known scientific knowledge platform, has shown that a set of 20 authors have been leading the conversation, as presented in Table 2.

Table 2 - The top 20 sustainability authors

No.	Name	Organization	Country	Research Gate´s Index (Publications)
1	Leal Filho, Walter	HAW Hamburg & Manchester Metropolitan University	Germany/UK	709
2	Dinis, Maria Alzira Pimenta	UFP Energy, Environment and Health Research Unit (FP-ENAS), University Fernando Pessoa (UFP)	Portugal	367
3	Bilali, Hamid El	International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM- Bari)	Italy	318
4	Vasant, Pandian	Modeling Evolutionary Algorithms Simulation and Artificial Intelligence,	Vietnam	289
5	Klavins, Maris	University of Latvia	Latvia	269
6	Rieckmann, Marco	University of Vechta	Germany	260
7	Mulder, Karel	The Hague University of Applied Science/Delft University of Technology	Netherlands	213
8	Wu, Yenchun Jim	National Taiwan Normal University	Taiwan	188
9	Dabija, Dan-Cristian	Babes-Bolyai University Cluj- Napoca	Romania	187
10	Ferro De Guimarães, Julio Cesar	Federal University of Pernambuco	Brazil	184
11	Leitão, João Carlos Correia	University of Beira Interior, NECE & University of Lisbon, CEG-IST & Instituto de Ciências Sociais, ICS	Portugal	183

No.	Name	Organization	Country	Research Gate´s Index (Publications)
12	Alves, Fatima	Universidade Aberta (Portuguese Open University) & Centre for Functional Ecology, Science for People and the Planet, University of Coimbra	Portugal	177
13	Guerra, José Baltazar Salgueirinho Osório de Andrade	Universidade do Sul de Santa Catarina	Brazil	165
14	Ribeiro, Priscilla Cristina Cabral	Fluminense Federal University	Brazil	163
15	Wall, Tony	University of Chester	United Kingdom	163
16	Fischer, Daniel	Wageningen University & Research	Netherlands	160
17	Caeiro, Sandra Sofia Ferreira da Silva	Universidade Aberta	Portugal	145
18	Vidal, Diogo Guedes	UFP Energy, Environment and Health Research Unit (FP-ENAS), University Fernando Pessoa (UFP)	Portugal	139
19	Theodossiou, Nicolaos	Aristotle University of Thessaloniki	Greece	129
20	Bartke, Stephan	German Environment Agency	Germany	126

Evidence suggests that sustainability topics addressed by the above-mentioned authors-among others-, such as science education, research, and innovation advances, can help deliver the actions required to meet SDGs, while enhancing economic growth, reducing environmental impacts, and developing more sustainable products and services (Adenle et al., 2020; Sachs et al., 2019).

The role played by international cooperation in sustainable development

No single country can handle problems such as global climate change, biodiversity preservation, and ecosystem services, water and food shortages, transboundary pollution and waste accumulation, and rapid population expansion, on its own, without the commitment of international collaboration through the constitution of networks or in the form of international accords, such as environmental protection and other environmental treaties and declarations. The establishment and operation of appropriate international organisations and initiatives, as well as the harmonisation of national legislation, can contribute to achieving the SDGs (Safonov & Piskulova, 2018). The global operationalisation of the 2030 Agenda requires an engaged and collaborative global partnership that includes international governments, markets, civil societies, scientific communities, and the United Nations, to cite a few actors considered critical to maintaining the momentum on the SDGs Agenda (Georgeson & Maslin, 2018; Sachs et al., 2019; UN, 2015).

The achievement of the SDGs needs to rely on international cooperation at all levels, in order to advance. International collaborative partnerships (Leal Filho, Vidal, et al., 2022) are vital in this respect because they are able to foster cooperation between public, private and third sectors and involve local and regional associations, addressing inequality growing deficits (Leal Filho et al., 2022b). Despite the sustainability motto of "think globally, act locally" and widespread agreement on the importance of bottom-up action for attaining the SDGs, there is less agreement on how to initiate and implement local efforts. Mobilising new change agents for the SDGs requires

governance, science, technology and innovation based on a critical examination of experiences gleaned from decades of work in the field of SD, where international partnership collaborations play an essential role (Leal Filho et al., 2022b). Adenle et al. (2020, p. 3) outline that "new policies that recognise the benefits of science, technology, and innovation (STI) and their potential risks are needed to implement the SDG agenda successfully by 2030." These authors also acknowledge the several challenges and barriers involved in implementing SDGs. However, they stress the need for the global community to induce STI across multiple sectors, providing new investments in research and innovation and policy design, to assist society in overcoming the existing barriers. According to Moallemi et al. (2019), a participative and inclusive government agenda, called Local Agenda 2030, is required, relying on international cooperation to downscaling the SDGs by defining locally relevant indicators and setting sustainable targets, then laying out solid plans to face barriers.

Education and research may definitely be considered the basis of SD worldwide. Aiming to advance toward wide dissemination of knowledge and innovation, the education area has been assisting the use of massive open online courses (MOOC) as a strategy to address a framework of international cooperation focused on achieving the SDGs. What this allows us to provide the possibility to adopt a high-quality education schedule for people who do not have the financial, travel, or temporary availability to do so. While adapting to innovative approaches with active learning strategies that enable students to develop professional skills in response to current demands, the role of non-governmental development organisations in implementing this educational model within their education projects is crucial. Specifically in developing countries, looking for common ground from various angles, thus contributing to eradicating the barrier of educational abandonment (Sosa-Diaz & Fernandez-Sanchez, 2020), a recognised human right worldwide in the Declaration of Human Rights.

The Declaration on the Right to Development says in article 3 that "States have the primary responsibility for the creation of national and international conditions favourable to the realisation of the right to development" (United Nations, 1986). Ocampo (2015) states that it is possible to differentiate three basic objectives of international cooperation in the economic and social spheres: (1) manage the interdependence between countries; (2) promote standard social norms and criteria and the associated provision of a minimum level of social services for all citizens of the world, and (3) reduce international inequalities, in particular, the different levels of economic development between countries.

The consolidation of international cooperation can only be achieved with a serious effort in planning and investments. According to Cristina Lagarde, a former Managing Director of the International Monetary Fund, the SDGs must be funded for economic and ethical reasons, with significant tax consequences (Organisation for Economic Co-operation and Development ((OECD), 2018). Countries must raise more revenue in a more equitable manner. Furthermore, the international community as a whole must work to eliminate tax evasion and avoidance. However, the signs in this respect indicate that although SD raises global interest, countries do not seem to move forward and the financial system's shift to sustainability is not taking place on the required scale (Inter-Agency Task Force on Financing for Development, 2022). Ziolo and Sergi (2019, p. 1) state that adequate financing is a necessary condition to carry out an affluent operationalisation of the 2030 Agenda and admit that "Financial markets face challenges in matching financial

products and services to the needs of SD". The future of SD depends on these resource gaps being fully addressed to combat the present worldwide imbalances (Leal Filho et al., 2022a).

Conclusions: moving ahead

The past lessons show that, in order to yield the expected benefits, future declarations on SD should avoid the mistakes of previous ones, especially in respect of their scope and the means to oversee their implementation. It makes little sense to pursue the preparation of declarations at events, which are likely to fade away with time. Instead, it may be more appropriate to take into account the pitfalls listed in Table 1, so that these are not repeated. In particular:

i) reflect if a declaration is really the best tool to address specific issues or document an event and if it does not repeat what previous declarations have stated;

ii) if deemed necessary, have a clear goal and remit in mind, as opposed to an expansive ambition;

iii) consult and engage the right actors in conceiving a document to ensure its robustness and that there is support for the implementation;

iv) identify potential sources of support for the goals set in the declarations.

Moreover, future declarations should ideally have an institution or at least infrastructure in place to implement the actions called upon. Beyond that, schedules for the delivery - or at least to monitor progress - should be taken into account so as to add a sense of commitment to their implementation. Previous experiences suggest that the deployment of the above measures can ensure that SD-related declarations will in fact deliver and will be, in the end, more than just a set of **empty promises**.

References

Adenle, A. A., Chertow, M. R., Moors, E. H. M., & Pannell, D. J. (2020). What Can Science, Technology, and Innovation Offer in the Achievement of Sustainable Development Goals? In A. A. Adenle, M. R. Chertow, E. H. M. Moors, & D. J. Pannell (Eds.), *Science, Technology, and Innovation for Sustainable Development Goals: Insights from Agriculture, Health, Environment, and Energy*. Oxford University Press. https://doi.org/10.1093/oso/9780190949501.003.0001

Beisheim, M., & Liese, A. (2014). *Transnational Partnerships: Effectively Providing for Sustainable Development?* (Marianne Beisheim & A. Liese (eds.)). Palgrave Macmillan UK. https://doi.org/10.1057/9781137359537

Bellantuono, L., Monaco, A., Amoroso, N., Aquaro, V., Lombardi, A., Tangaro, S., & Bellotti, R. (2022). Sustainable development goals: conceptualization, communication and achievement synergies in a complex network framework. *Applied Network Science*, *7*(1), 1-21. https://doi.org/10.1007/s41109-022-00455-1

Bengtsson, M., Alfredsson, E., Cohen, M., Lorek, S., & Schroeder, P. (2018). Transforming

systems of consumption and production for achieving the sustainable development goals: moving beyond efficiency. *Sustainability Science*, *13*(6), 1533–1547. https://doi.org/10.1007/s11625-018-0582-1

Biswas, S. S., Ahad, M. A., Nafis, M. T., Alam, M. A., & Biswas, R. (2021). Introducing "α-Sustainable Development" for transforming our world: A proposal for the 2030 agenda. *Journal of Cleaner Production*, *321*, 1-15. https://doi.org/10.1016/j.jclepro.2021.129030

Bradley, P. (2019). Integrating sustainable development into economics curriculum: A case study analysis and sector wide survey of barriers. *Journal of Cleaner Production*, *209*, 333–352. https://doi.org/10.1016/j.jclepro.2018.10.184

Choi, G., Jin, T., Jeong, Y., & Lee, S. K. (2020). Evolution of Partnerships for Sustainable Development: The Case of P4G. *Sustainability*, *12*(16), 1-13. https://doi.org/10.3390/su12166485

El-Jardali, F., Ataya, N., & Fadlallah, R. (2018). Changing roles of universities in the era of SDGs: rising up to the global challenge through institutionalising partnerships with governments and communities. *Health Research Policy and Systems*, *16*(1), 1-5. https://doi.org/10.1186/s12961-018-0318-9

Fuchs, C. (2017). Critical Social Theory and Sustainable Development: The Role of Class, Capitalism and Domination in a Dialectical Analysis of Un/Sustainability. *Sustainable Development*, *25*(5), 443–458. https://doi.org/10.1002/sd.1673

Geissdoerfer, M., Vladimirova, D., & Evans, S. (2018). Sustainable business model innovation: A review. *Journal of Cleaner Production*, *198*, 401–416. https://doi.org/10.1016/j.jclepro.2018.06.240

Georgeson, L., & Maslin, M. (2018). Putting the United Nations Sustainable Development Goals into practice: A review of implementation, monitoring, and finance. *Geo: Geography and Environment*, *5*(1), e00049. https://doi.org/10.1002/geo2.49

Griggs, D., Stafford-Smith, M., Gaffney, O., Rockström, J., Öhman, M. C., Shyamsundar, P., Steffen, W., Glaser, G., Kanie, N., & Noble, I. (2013). Sustainable development goals for people and planet. *Nature*, *495*(7441), 305–307. https://doi.org/10.1038/495305a

Hoekstra, A. Y., & Wiedmann, T. O. (2014). Humanity's unsustainable environmental footprint. *Science*, *344*(6188), 1114–1117. https://doi.org/10.1126/science.1248365

Holden, E., Linnerud, K., & Banister, D. (2017). The Imperatives of Sustainable Development. *Sustainable Development*, *25*(3), 213–226. https://doi.org/10.1002/sd.1647

Inter-Agency Task Force on Financing for Development. (2022). *Financing for Sustainable Development Report*. https://developmentfinance.un.org/

IPCC (2021). Sixth Assessment Report (Vol. 2021). Intergovernmental Panel on Climate Change. https://www.ipcc.ch/assessment-report/ar6/

Jacobi, J., Llanque, A., Mukhovi, S. M., Birachi, E., von Groote, P., Eschen, R., Hilber-Schöb, I., Kiba, D. I., Frossard, E., & Robledo-Abad, C. (2022). Transdisciplinary co-creation increases the utilization of knowledge from sustainable development research. *Environmental Science & Policy*, *129*, 107–115. https://doi.org/10.1016/j.envsci.2021.12.017

Jayasooria, D. (2016). Sustainable Development Goals and Social Work: Opportunities and Challenges for Social Work Practice in Malaysia. *Journal of Human Rights and Social Work*, *1*(1), 19–29. https://doi.org/10.1007/s41134-016-0007-y

Kerekes, S. (2021). Chasing the Impossible. Sustainable Development Is a Wicked Problem, but It Can Be and Should Be Tamed! *World Futures*. 10.1080/02604027.2021.1974263

Klein, J. T. (2004). Prospects for transdisciplinarity. *Futures*, *36*(4), 515–526. https://doi.org/10.1016/j.futures.2003.10.007

Konold, D., & Schwietring, T. (2021). The Great Discrepancy: Political Action, Sustainable Development and Ecological Communication. *Politics and Governance*, *9*(1), 131–140. https://doi.org/10.17645/pag.v9i1.3631

Lawrence, R. J., & Després, C. (2004). Futures of Transdisciplinarity. *Futures*, *36*(4), 397–405. https://doi.org/10.1016/j.futures.2003.10.005

Leal Filho, W., Vidal, D. G., Chen, C., Petrova, M., Dinis, M. A. P., Yang, P., Rogers, S., Álvarez-Castañón, L. del C., Djekic, I., Sharifi, A., & Neiva, S. (2022a). An assessment of requirements in investments, new technologies and infrastructures to achieve the SDGs. *Environmental Sciences Europe*. https://doi.org/10.1186/s12302-022-00629-9

Leal Filho, W., Wall, T., Barbir, J., Alverio, G. N., Dinis, M. A. P., & Ramirez, J. (2022b). Relevance of International Partnerships in the Implementation of the UN Sustainable Development Goals. *Nature Communications*, *13*(1), 1-4. https://doi.org/10.1038/s41467-022-28230-x

Mensah, J., & Ricart Casadevall, S. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Social Sciences*, *5*(1). https://doi.org/10.1080/23311886.2019.1653531

Moallemi, E. A., Malekpour, S., Hadjikakou, M., Raven, R., Szetey, K., Moghadam, M. M., Bandari, R., Lester, R., & Bryan, B. A. (2019). Local Agenda 2030 for sustainable development. *The Lancet Planetary Health*, *3*(6), e240–e241. https://doi.org/10.1016/s2542-5196(19)30087-7

Nordén, B., & Avery, H. (2021). Global Learning for Sustainable Development: A Historical Review. *Sustainability*, *13*(6). https://doi.org/10.3390/su13063451

Ocampo, J. A. (2015). *Gobernanza global y desarrollo: nuevos desafíos y prioridades de la cooperación internacional TT - Global governance and development: new challenges and priorities for international cooperation*. Siglo Veintiuno Editores Argentina SA. internal-pdf://0894481600/GobernanzaGlobalyDesarrollo.pdf

OECD (2018). Countries must strengthen tax systems to meet Sustainable Development Goals. https://www.oecd.org/ctp/countries-must-strengthen-tax-systems-to-meet-sustainable-development-goals.htm

Palsson, G., Szerszynski, B., Sörlin, S., Marks, J., Avril, B., Crumley, C., Hackmann, H., Holm, P., Ingram, J., Kirman, A., Buendía, M. P., & Weehuizen, R. (2013). Reconceptualizing the 'Anthropos' in the Anthropocene: Integrating the social sciences and humanities in global environmental change research. *Environmental Science & Policy*, *28*, 3–13. https://doi.org/10.1016/j.envsci.2012.11.004

Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy*

Sciences, *4*(2), 155–169.

Sachs, J. D. (2012). From Millennium Development Goals to Sustainable Development Goals. *The Lancet*, *379*(9832), 2206–2211. https://doi.org/10.1016/S0140-6736(12)60685-0

Sachs, J. D., Schmidt-Traub, G., Mazzucato, M., Messner, D., Nakicenovic, N., & Rockström, J. (2019). Six Transformations to achieve the Sustainable Development Goals. *Nature Sustainability*, *2*(9), 805–814. https://doi.org/10.1038/s41893-019-0352-9

Safonov, G., & Piskulova, N. (2018). Sustainable development and international cooperation. In V. I. Danilov-Danilyan & N. A. Piskulova (Eds.), *New Challenges in Sustainable Development for Russia and the World*. Cambridge Scholars Publishing. internal-pdf://0031944284/Chapter_Safonov_Piskulova.pdf

Shi, L., Han, L., Yang, F., & Gao, L. (2019). The Evolution of Sustainable Development Theory: Types, Goals, and Research Prospects. *Sustainability*, *11*(24). https://doi.org/10.3390/su11247158

Sosa-Diaz, M. J., & Fernandez-Sanchez, M. R. (2020). Massive Open Online Courses (MOOC) within the Framework of International Developmental Cooperation as a Strategy to Achieve Sustainable Development Goals. *Sustainability*, *12*(23). https://doi.org/10.3390/su122310187

Stafford-Smith, M. (2014). UN sustainability goals need quantified targets. *Nature*, *513*(7518), 281–281. https://doi.org/10.1038/513281a

Steffen, W., Persson, Å., Deutsch, L., Zalasiewicz, J., Williams, M., Richardson, K., Crumley, C., Crutzen, P., Folke, C., Gordon, L., Molina, M., Ramanathan, V., Rockström, J., Scheffer, M., Schellnhuber, H. J., & Svedin, U. (2011). The Anthropocene: From Global Change to Planetary Stewardship. *AMBIO*, *40*(7), 739–761. https://doi.org/10.1007/s13280-011-0185-x

Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter, S. R., de Vries, W., de Wit, C. A., Folke, C., Gerten, D., Heinke, J., Mace, G. M., Persson, L. M., Ramanathan, V., Reyers, B., & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, *347*(6223). https://doi.org/10.1126/science.1259855

Stokstad, E. (2015). Sustainable goals from U.N. under fire. *Science*, *347*(6223), 702–703. https://doi.org/10.1126/science.347.6223.702

UN. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. https://sdgs.un.org/sites/default/files/publications/21252030 Agenda for Sustainable Development web.pdf

United Nations. (2021a). *17 Goals for People, for Planet* (Vol. 2021). United Nations. https://www.un.org/sustainabledevelopment/development-agenda/

United Nations. (2021b). *COP26 Explained* (Vol. 2021). United Nations. https://ukcop26.org/wp-content/uploads/2021/07/COP26-Explained.pdf

United Nations. (2021c). *Sustainable Development Goals* (Vol. 2021). United Nations. https://www.un.org/sustainabledevelopment/

World Commission on Environment and Development. (1987). *Our Common Future:* (H. K.

Gregory G. Lebel (ed.)). Oxford University Press.
https://books.google.pt/books?id=KcwqAAAAYAAJ

Yarime, M., Trencher, G., Mino, T., Scholz, R. W., Olsson, L., Ness, B., Frantzeskaki, N., & Rotmans, J. (2012). Establishing sustainability science in higher education institutions: towards an integration of academic development, institutionalization, and stakeholder collaborations. *Sustainability Science*, *7*(S1), 101–113. https://doi.org/10.1007/s11625-012-0157-5

Ziolo, M., & Sergi, B. S. (2019). *Financing Sustainable Development: Key Challenges and Prospects*. Springer International Publishing.
https://books.google.com.br/books?id=ZMOlDwAAQBAJ