Sustainability in Universities:
A framework for monitoring the United Nations' Sustainable Development Goals of Agenda 2030

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Abstract:

The United Nations' Sustainable Development Goal 4.7 (SDG 4.7) states: 'by 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education' (Un, 2020). Achieving SDG 4.7 in Higher education institutions (HEIs) will have a direct effect on learning how to achieve other SDGs (Kolb, Fröhlich, & Schmidpeter, 2017). Thus, SDG 4.7 can be considered the driver to all SDGs. HEIs can leverage sustainability only if it is implemented across their entire operations, such as in research, campus operations, outreach, teaching, assessment and sustainability reporting (Lozano, Lozano, Mulder, Huisingh, & Waas, 2013), and leadership and governance (Alghamdi, den Heijer, & de Jonge, 2017). If HEIs want institutional sustainability to be the core of their sustainability strategy, they must orient their operations following the SDGs (Dlouhá & Pospíšilová, 2018).

There are many challenges involved in implementing sustainability in HEIs. HEIs are complex and multifaceted (Lozano, 2006). The dynamic nature of economic, environmental, and social systems requires a cross-systemic understanding (Waas, Verbruggen, & Wright, 2010). The aspect of dynamism makes it difficult to observe communications and interactions between and within HEI stakeholders (Baker-Shelley, van Zeijl-Rozema, & Martens, 2017). This leads to a lack of internal and external stakeholder awareness and engagement (Disterheft, Caeiro, Azeiteiro, & Leal Filho, 2015), which negatively affects the implementation of SDG 4.7 in HEIs and so affects the implementation of the rest of the SDGs.

Lozano et al. (2013) emphasised that, to enable universities to drive changes leading to sustainability, university administration, academic staff, and leaders must be empowered to use a new model that accurately reflects sustainable practices linked to outcomes. Modelling sustainability needs to accomplish a simultaneous dynamic harmony among economic, ecological and social sustainability, which are all inherently multidimensional, embedded and complex (Gan, et al., 2017; Leal Filho, et al., 2019, Wu, 2013). Such modelling can help users understand, communicate and share with clarity exactly how sustainability dimensions in HEI systems can influence each other, how they are linked, and how they may change during the implementation process (Barth, 2013, p. 161). However, the worldwide adoption of integrated sustainability frameworks in HEI systems is still in its infancy (Jorge, Madueño, Cejas, & Peña, 2015; Lazzarini, Perez-Foguet, & Boni, 2018; Lozano et al., 2015).

It has been argued that the implementation models of sustainability in an HEI cannot be completed and utilised without defining suitable monitoring instruments to control and analyse the performance

of sustainability initiatives (Velazquez, Munguia, Platt, & Taddei, 2006). The implementation value of any model that is only hypothetical and has not been validated is weak (Velazquez et al., 2006). Hence, measuring and monitoring a full spectrum of SDGs with their targets by a compact indicator framework is the key prerequisite in achieving goals (Leal Filho, et al., 2019), but needs more exploration (Unesco, 2016). Specifically, "creating a monitoring and evaluation framework for Target 4.7 has been challenging" (Giangrande, et al., 2019, p. 1). For the successful implementation of sustainability, a model must first be built that can identify the dynamics and complexities of interrelationships among KPIs. Second, stakeholder engagement across the strategic, tactical and operational levels of running an HEI should be ensured by monitoring stakeholder progress toward sustainability with a dynamic performance-measurement tool (Leal Filho, et al., 2019).

This paper outlines a monitoring framework based on the concept of dynamic sustainability balanced scorecards (DSBSC). This framework can be utilized to increase stakeholders' understanding of the complexity and dynamic nature of both HEIs and sustainability. This will increase their engagement and help HEIs achieve SDG 4.7, which enables all other SDGs to be achieved. For future research, this framework will be used to build a DSBSC model which will provide a full explanation of sustainability integration in HEIs.

Variables of the model are key performance indicators (KPI) of sustainability in the higher education systems, covering teaching, research, outreach, and campus operations. System thinking will be used to build the whole causal loop diagram between these systems, against the four perspectives of BSC, namely, stakeholders, financial, internal process and learning & growth. The relationships between the KPIs will be verified initially based on the literature. Thus, by the use sustainability KPIs of HEIs systems and distributed among BSC perspectives using system thinking, the DSBSC model will be created. Based on stakeholder theory, in this model, the stakeholder perspective will be at the top of the financial perspective. This because the aim is increasing stakeholders' understanding of the complex interactions and integration of sustainability in HEI and its dynamics. Furthermore, it will help stakeholders to communicate with clarity about how systems are linked and influence each other or change during the implementation process. Consequently, it can enhance SDG 4.7 implementation in the core of HEIs to achieve SDGs HEIs systems. This framework serves as the foundation for developing a dynamic sustainability balanced scorecard model as shown in fig 1.

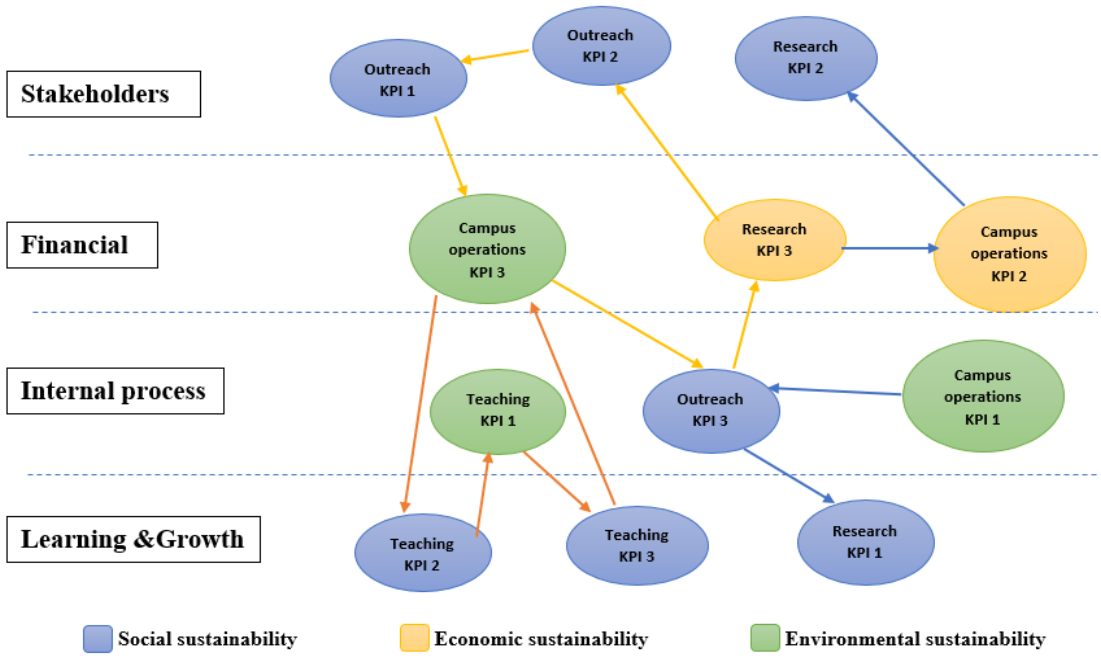

Figure 1: Snapshot of what the DSBSC model can look like after developing

References:

Alghamdi, N., den Heijer, A., & de Jonge, H. (2017). Assessment tools' indicators for sustainability in universities: an analytical overview. *International Journal of Sustainability in Higher Education, 18*(1), 84–115.

Baker-Shelley, A., van Zeijl-Rozema, A., & Martens, P. (2017). A conceptual synthesis of organisational transformation: How to diagnose, and navigate, pathways for sustainability at universities? . *Journal of Cleaner Production, 145*, 262–276.

Barth, M. (2013). Many roads lead to sustainability: a process□oriented analysis of change in higher education. *International Journal of Sustainability in Higher Education, 14*(2), 160–175.

Disterheft, A., Caeiro, S., Azeiteiro, U. M., & Leal Filho, W. (2015). Sustainable universities—A study of critical success factors for participatory approaches. *Journal of Cleaner Production, 106*, 11–21.

Dlouhá, J., & Pospíšilová, V. (2018). Education for Sustainable Development Goals in public debate: The importance of participatory research in reflecting and supporting the consultation process in developing a vision for Czech education. *Journal of Cleaner Production, 172*, 4314–4327.

Giangrande, N., White, R. M., East, M., Jackson, R., Clarke, T., Saloff Coste, M., & Penha-Lopes, G. (2019). A competency framework to assess and activate education for sustainable development: Addressing the UN sustainable development goals 4.7 challenge. *Sustainability, 11*(10), 2832.

Jorge, M. L., Madueño, J. H., Cejas, M. Y., & Peña, F. J. (2015). An approach to the implementation of sustainability practices in Spanish universities. *Journal of Cleaner Production, 106*, 34-44.

Kolb, M., Fröhlich, L., & Schmidpeter, R. (2017). Implementing sustainability as the new normal: Responsible management education—From a private business school's perspective. *The International Journal of Management Education, 15*(2), 280–292.

Lazzarini, B., Pérez-Foguet, A., & Boni, A. (2018). Key characteristics of academics promoting Sustainable Human Development within engineering studies. *Journal of cleaner production*, *188*, 237-252.

Leal Filho, W., Shiel, C., Paço, A., Mifsud, M., Ávila, L. V., Brandli, L. L., & Caeiro, S. (2019). Sustainable Development Goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? *Journal of Cleaner Production*(232), 285-294.

Lozano, R. (2006). A tool for a Graphical Assessment of Sustainability in Universities (GASU). *Journal of Cleaner Production, 14*(9), 963–972.

Lozano, R., Lozano, F. J., Mulder, K., Huisingh, D., & Waas, T. (2013). Advancing higher education for sustainable development: International insights and critical reflections. *Journal of Cleaner Production, 48*, 3–9.

Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., Lozano, F. J., Waas, T., & Hugé, J. (2015). A review of commitment and implementation of sustainable development in higher education: Results from a worldwide survey. *Journal of Cleaner Production, 108*, 1–18.

Un, o. (2020, 1 20). *A/RES/70/1 - Transforming our world: the 2030 Agenda for Sustainable Development.* Retrieved from Sustainable Development knowledge platform: https://sustainabledevelopment.un.org/index.php?page=view&type=111&nr=8496&menu=35

Unesco. (2016). *Global Education Monitoring Report: Education for People and Planet. Creating Sustainable Futures for All.* (2nd, Ed.) Paris, France: UNESCO.

Velazquez, L., Munguia, N., Platt, A., & Taddei, J. (2006). Sustainable university: What can be the matter? . *Journal of Cleaner Production, 14*(9–11), 810–819.

Waas, T., Verbruggen, A., & Wright, T. (2010). University research for sustainable development: Definition and characteristics explored. *Journal of Cleaner Production, 18*(7), 629–636.

Wu, J. (2013). Landscape sustainability science: Ecosystem services and human well-being in changing landscapes. *Landscape Ecology, 28*(6), 999–1023.