



Empirical Analyses of Higher Education and Sustainable Development Goals in Kogi State, Nigeria

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Abstract: The study examined empirical analyses of higher education and sustainable development goals in Kogi State, Nigeria. The purpose of the study was to investigate the analysis of sustainable development goals on higher education in Kogi State, Nigeria. Descriptive Survey research design was adopted for the study. The study was carried out in Kogi State, Nigeria. The population of the study was 5,000 staff of Kogi State University Anyigba, Kogi State Polytechnic Lokoja and Kogi State College of Education Ankpa. The sample size for the study consists of 1,500 staff from the three higher institutions in Kogi State. The instrument for data collection was questionnaire. The instrument was validated by three experts. Cronbach Alpha method was used to establish the reliability of the instrument and a reliability coefficient index of 0.85 was obtained. This was high and reliable for the study. The instrument was administered by the researchers and collected at the spot. The research questions were analyzed using mean and standard deviation while the hypothesis was analyzed using t-test statistic and tested at 0.05 level of significance. The result among others shows that sustainable development had a significance influence on higher education in Kogi State, Nigeria and that there is no significance difference between the Sustainability of higher education male and female human capital development in Kogi State.

Keywords: sustainable development goals, higher education

Introduction

Education is a priority in every community. It is a significant factor in the growth of the economy, the mind, society, and culture, claims Burch (2022). Equal in importance to its capacity to alter human potential for desired development is its significance in bringing about character and attitude change. Nigeria's National Policy on Education (FRN, 2018) defines education as the component of learning that gives its beneficiaries the chance to learn both practical skills and some fundamental scientific information. The World Bank (2022) asserts that investing in physical capital or filling the capital gap are only two components of effective development. Additionally, it involves gaining knowledge, using that knowledge, and filling up knowledge gaps. Therefore, in order to successfully meet the challenges of development, a developing nation must carry out three key tasks, including acquiring, adapting, and producing knowledge locally as well as globally, investing in human capital to improve knowledge absorption and utilization, and developing technologies to facilitate knowledge acquisition and absorption.

The education system is governed by the National Policy on Education, and numerous coordination mechanisms have been set up to guarantee that the highest standards in curriculum, infrastructure, and

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personnel development are upheld. By passing laws and implementing initiatives linked to education, several governments have made an effort to solve the problem of educational development. Higher education has been acknowledged as a necessity to an investment in human capital and economic development for both young and the broader society, according to Education in Africa, 2021. However, it has been determined that education is crucial to achieving sustained development in Kogi State. According to Mohamedbhai (2019), numerous countries and international organizations have prioritized the implementation of "education for sustainable development." Higher education can be a crucial tool in helping to create a more sustainable future because of its central role as a knowledge source (Abanyam & Agbo, 2019). Addressing a range of environmental challenges is one of the most crucial educational initiatives. One of the main goals of education is to address various challenges related to human progress. The importance of higher education in securing a sustainable future is growing as the globe becomes more interdependent and globally connected (Blessinger, Sengupta & Makhanyam, 2018).

Higher education is unquestionably a viable tool for every country's proper economic development. It is also the backbone of a nation's industries and the key to people's moral renewal and rebirth (Abanyam & Agbo, 2019). Ozturk asserts that no nation has experienced ongoing economic growth (2021). Higher education acts as a hub for knowledge and its application as well as an organization that encourages innovation as a result. No nation has seen continuous economic growth without making large investments in human capital, according to Ozturk (2021). Therefore, higher education is a focus of knowledge and its application, an organization that significantly contributes to economic growth and development by encouraging innovation and raising higher skills (Asia News Network, 2018). In order to help accomplish the Sustainable Development Goals, higher education has a special role to play (SDGs).

According to Sheppard (2015), Higher Education for Sustainable Development (HESD) is a style of education that aims to meet societal needs to address environmental, social, cultural, and economic issues that threaten the sustainability of life on Earth. On the other hand, this inquiry goes far further. Higher education institutions or external stakeholders (governments, industry, and civil society) have developed Higher Education for Sustainable Development (HESD), a high-impact sustainability strategy, to address urgent sustainability issues that arise in the pursuit of the Sustainable Development Goals (SDGs). The importance of higher education for sustainable development (HESD) cannot be overstated. According to Lozano et al. (2015) and LealFilho (2022), higher education institutions are essential to facilitating sustainable social and environmental transformations. Additionally, it is their social duty to help the general public and students develop skills in sustainable development. Therefore, it is crucial to look into SDG success in the context of higher education generally and in Kogi State specifically. Key conclusions from this study include the governance components of HESD, the lack of a governing strategy to HESD, and problems with social and environmental interlink ages. By highlighting similarities, contrasts, and lessons to be learnt and shared among States, regions, especially Nigeria, the Americas, Asia and the Pacific, Africa, and Europe as a whole, this research also adds knowledge to ongoing scholarly discussions on HESD.

Higher Education for Sustainable Development (HESD) is a notion that is gaining traction in academic circles. A growing debate on the function of higher education institutions in addressing the dynamics of human and environmental experiences around the world is taking place in the literature and at the policy level. By the beginning of the UNESCO Decade of Education for Sustainable Development, universities have adopted a

variety of strategies for conceptualizing sustainable development (2014–2021). 2020 (UNESCO). Brundtland's definition of sustainable development in 2022, "meeting the demands of the present without compromising the capacity of future generations to meet their own needs," became the standard for many sustainable development programs. In order to inspire the present generation to meet their needs by preserving constant equilibrium in the economic, social, and environmental spheres, the Triple Bottom Line was eventually included into the field of sustainability and Education for Sustainable Development (ESD), including HESD (Arima, 2019). Later, the Halifax Declaration (Dalhousie University 2017) asked higher education to demonstrate a sincere commitment to sustainability by including sustainable development principles into instruction. So, the decade's overarching objective was to promote behavioral changes toward a more sustainable society by integrating sustainability ideas and policies into all facets of learning (Yarime et al. 2021). Aikens et al. (2018) report a rise in the average number of academic publications addressing HESD from one per year between 1970 and 1989 (20 total), 5.1 per year between 1990 and 2004 (77 total), and 20.2 per year between 2005 and 2022. (130 total). Within these time frames, there appear to be three distinct output peaks: the first in the middle of the 1970s, the second in the late 1990s, and the third from 2005 to the present. This pattern suggests that HESD policy is being actively researched, and in the upcoming years, the number of publications on this subject is likely to keep growing (Vaughter et al. 2022). Contrarily, little attention has been paid to curriculum and HESD practice. There are still unanswered questions on how stakeholders could connect HESD policy, curriculum, and practice with the Global Agenda for Sustainable Development.

Similar studies have been conducted to examine the global context of HESD in scholarship and policy (Molderez & Fonseca, 2018). In their study on the "compilation of transdisciplinary studies across regions," Lozano-Garcia and Huisigh (2021) divided the regions into five (5) categories: faculty-specific applications of sustainability in higher education, teaching sustainable development and environmental education, approaches to and tools for education for sustainable development, implementing sustainable development and reporting within academic institutions, and teaching sustainable development and environmental education. However, none of the global sustainability criteria in this collection fully correlate with the findings of empirical study.

UNESCO (2021) cites the guidelines on "Sustainability Science in Research and Education" as an illustration of policy at the policy level. In accordance with a framework for co-design, co-production, and co-implementation of HESD, these guidelines offer higher education institutions policy recommendations on how to incorporate sustainability science in higher education. A few of the policy recommendations made in this report include strengthening interdependencies, better understanding local contexts and values, expanding the interfaces between science, policy, and society, changing higher education to fully integrate sustainability in policy and practice, and encouraging sustainability partnerships. Based on this assertion, UNESCO (2017) just published "Practical Guidelines to Apply Sustainability Science Frameworks. The recommendations offer a road map for incorporating sustainability science into HESD. The framework serves as a forum for engaging many stakeholders in conversation and applying sustainable science. The five key steps are co-realization of a shared project, co-imagining of a future world, co-shaping into a future society, co-implementation, and monitoring and assessment. All parties participate in a collaborative process to complete the first four phases. This participatory paradigm encourages collaboration and integration to help stakeholders adjust to shifting conditions and develop stakeholder ownership throughout the process of implementing sustainability science.

Despite a plethora of policy suggestions and studies, higher education institutions confront considerable

difficulties converting HESD language into policy, curriculum, and practice. Higher education institutions in Canada are "firmly incorporating the aims of sustainability in the institution's overall planning framework," according to Vaughter et al. (2022). This strategy, however, has been critiqued, as sustainability policy should focus on "solutions to environmental and socio-cultural deterioration" as well as environmental goals (Aikens et al. 2018). "Higher education does not completely appreciate the true scale of the challenge," Milutinovi & Nikoli (2014) continue, "and sustainable development is still considered as a new idea in most universities, having not yet permeated all fields, researchers, and practitioners." Despite the fact that higher education for sustainable development (HESD) is a hot topic, questions about how to translate HESD rhetoric into policy, curriculum, and practice that is in line with the global sustainability agenda remain unanswered. These prompt the researchers to investigate on empirical analyses of higher education and sustainable development goals in kogi state, Nigeria.

The following research questions guided the study;

1. What is the impact of sustainable development goal on higher education's in Kogi State?
2. What are the challenges facing the attainment of sustainable development goal in higher education of Kogi State?
3. What are the factors affecting human capital development in higher education in Kogi State?

One null hypothesis was formulated and tested at 0.05 level of significance;

Ho₁: There is no significant difference between the Sustainability of higher education male and female human capital development in Kogi State.

Methodology

The design used for the study is a descriptive survey research design. The population for this study consists of 5,000 staff of Kogi State University Anyigba, Kogi State Polytechnic Lokoja and Kogi State College of Education Ankpa. The sample size for the study was 1,500 staff of higher education in kogi state. Proportionate stratified random sampling technique was used to select 1,500 staff from the three higher educations in the state. That is (500 staff each from the institutions). These three higher educations were selected because they are existing for the past 8 years and the staff's are more knowledgeable on the topic. A 30-item structured questionnaire was developed by the researchers for the study. The instrument was titled 'Empirical analyses of higher education and sustainable development goals in Kogi State (EAHESDGKS)'. The instrument was rated on a four point modified likert scale, that is Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The instrument was face validated by three experts and the reliability was tested using Cronbach's Alpha with a result of 0.85 which is high and reliable for the study. The instrument was administered to the respondents by the researchers. Mean and standard deviation was used to answer research questions while t-test statistic was used to test research hypothesis.

Results

1. Research Question 1

What is the impact of sustainable development goal on higher education's in Kogi State?

Table 1: Mean responses on the impact of sustainable development goal on higher education in Kogi State (n =

1,500)

Higher Educational institutions in Kogi State	Mean	SD
Kogi State University, Anyigba	3.00	0.25
Kogi State Polytechnics, Lokoja	2.84	0.28
Kogi State College of Education, Ankpa	2.75	0.38

The mean ratings set as a criterion for accepting are within the range of 2.50 – 3.49

Result in Table 1 shows the mean and standard deviation of the impact of sustainable development goal on higher education in Kogi State. The Table shows that Kogi State University, Anyigba had mean ratings of 3.00 and standard deviation of 0.25, with its counterpart Kogi State Polytechnics, Lokoja had mean ratings of 2.84 and standard deviation of 0.28 and Kogi State College of Education, Ankpa had mean ratings of 2.75 with standard deviation of 0.38. The mean ratings are within the range of 2.50 – 3.49 set as criterion for accepting an item. The result implies that, sustainable development goal on higher education in Kogi State had higher mean ratings. This means that, sustainable development goal had an impact on higher education in Kogi State.

2. Research Question 2

What are the challenges facing sustainable development goal in higher education of Kogi State?

Table 2: Mean responses on the challenges facing sustainable development goal in higher education in Kogi State (n= 1,500)

Challenges	Mean	SD
Environmental	2.65	0.35
Economic	3.45	0.48
Social	2.55	0.30
Cultural	2.95	0.40

The mean ratings set as a criterion for accepting are within the range of 2.50 – 3.49

Result in Table 2 shows the mean and standard deviation of the challenges facing sustainable development goal in higher education of Kogi State. The Table shows that environmental challenges had mean ratings of 2.65 and standard deviation of 0.35, economic challenges had mean ratings of 3.45 and standard deviation of 0.48, social challenges had mean ratings of 2.55 and standard deviation of 0.30 and cultural challenges had mean ratings of 2.95 with standard deviation of 0.40. The mean ratings are within the range of 2.50 – 3.49 set as criterion for accepting an item. The result implies that, challenges facing sustainable development goal in higher education of Kogi State had higher mean ratings especially economic challenges. This means that, the various challenges facing sustainable development goal had an impact on higher education in Kogi State.

3. Research Question 3

What are the factors affecting human capital development in higher education in Kogi State?

Table 3: Mean responses on the factors affecting human capital development in higher education in Kogi State (n= 1,500)

Challenges	Mean	SD
Skills and competencies	3.40	0.36
Formal Education and Knowledge	2.50	0.18
Organizational Training	3.00	0.50
Creativity and Innovation Capability	3.48	0.60
Job Experience	2.80	0.70

The mean ratings set as a criterion for accepting are within the range of 2.50 – 3.49

Result in Table 3 shows the mean and standard deviation of the factors affecting human capital development in higher education in Kogi State. The Table shows that Skills and competencies had mean ratings of 3.40 and standard deviation of 0.36, Formal Education and Knowledge had mean ratings of 2.50 and standard deviation of 0.18, Organizational Training had mean ratings of 3.00 and standard deviation of 0.50, Creativity and Innovation Capability had mean ratings of 3.48 with standard deviation of 0.60 and Job Experience had mean ratings of 2.80 with standard deviation of 0.70. The mean ratings are within the range of 2.50 – 3.49 set as criterion for accepting an item. The result implies that, factors affecting human capital development in higher education in Kogi State had higher mean ratings especially Skills and competencies and Creativity and Innovation Capability. This means that, the various factors affecting human capital development had an impact on higher education in Kogi State.

H₀₁: there is no significance difference in the Sustainability of higher education between male and female human capital development in Kogi State

Table 4: t-test analysis of the significant difference between the Sustainability of higher education male and female human capital development in Kogi State

Gender	N	Mean	SD	Df	t-value	p-value
Male	750	3.20	0.25	1498	6.37	0.31
Female	750	3.01	0.28			

Result in Table 4 shows the t-test result of the difference between the mean ratings of Sustainability of higher education male and female human capital development in Kogi State. Result shows that t-test of 6.37 was obtained with a probability value of 0.31. This probability value was compared with 0.05 set as level of significance and it was found not to be significant. Thus, the null hypothesis was accepted. Inference drawn therefore is that ‘there is no significance difference between the Sustainability of higher education male and female human capital development in Kogi State.

Discussion of the Findings

Table 1 revealed the mean and standard deviation of the impact of sustainable development goal on higher education in Kogi State. The result implies that the impact of, sustainable development goal on higher education in Kogi State had higher mean ratings. This means that, sustainable development goal had an impact on higher education in Kogi State. This finding is in line with the finding of State of Education in Africa Report, (2015) that higher education has been recognized as a necessity to an investment in human capital and economic development for both youth and the entire society.

The result in Table 2 revealed the challenges facing sustainable development goal in higher education of Kogi State. The result implies that, challenges facing sustainable development goal in higher education in Kogi State had higher mean ratings especially economic challenges. This means that, the various challenges facing sustainable development goal had an impact on higher education in Kogi State. The finding is also in line with the finding of State of Education in Africa Report, (2015) that higher education has been recognized as a necessity to an investment in human capital and economic development for both youth and the entire society. The study is also in agreement with LealFilho (2011) that; higher education institutions are playing a key role in fostering sustainable social and environmental transformations.

The result in Table 3 revealed the factors affecting human capital development in higher education in Kogi

State. The result implies that, factors affecting human capital development in higher education in Kogi State had higher mean ratings especially Skills and competencies and Creativity and Innovation Capability. This means that, the various factors affecting human capital development had an impact on higher education in Kogi State. The study is in agreement with Lozano et al. (2015) that social responsibility to help students and the broader community at large to acquire competences for sustainable development.

Table 4 revealed the t-test analysis of the difference in the mean ratings of Sustainability of higher education male and female human capital development in Kogi State. Result shows that ‘there is no significance difference in the Sustainability of higher education male and female human capital development in Kogi State. This study is not agreed with Milutinović and Nikolić (2014) who studied and concluded that “higher education does not fully understand the true nature of the challenge and that sustainable development is still considered as an innovative idea in most universities, and has not yet permeated all disciplines, scholars, and university leaders’. The result agree with Abanyam & Agbo, (2019), who concluded that higher education is the primary role for knowledge provider and serve as a powerful means to help create a more sustainable future for human capacity development in respect of gender.

Conclusion

The need for a more effective collaborative governance plan inside higher education is one of the study's key findings. Collaboration becomes more important but also more difficult as environmental problems intensify and become more interwoven. According to the findings, major problems with collaborative processes include, but are not limited to, a lack of participation from important stakeholders like educators and students, a lack of communication between stakeholders, low accountability, a lack of funding opportunities, and a limited capacity of stakeholders to successfully operationalize HESD. More consideration and study should be paid to these issues.

Another significant finding is the significance of both the governance strategy and the thematic focus on HESD. Environmental sustainability is heavily prioritized throughout the Americas, Asia, Europe, Nigeria, and Kogi State in particular. In Africa, namely in Nigeria, where social sustainability is a top priority in higher education institutions, different findings were made. Additionally, the African example demonstrates that there is no regulatory approach to HESD, which results in a wide range of inconsistent behaviors. On the other side, this should be seen as a chance to find out more about how the SDGs may be successfully incorporated as a governing approach to HESD policy, curriculum, and practice. Opportunities for additional research include thorough investigation of existing gap areas and factors hindering the attainment of those and greater investigation of the connections between SDGs in HESD.

Global goals, the majority of which call for a thorough redesign of the university system, are more difficult to implement in HESD due to growing environmental concerns. In order to build HESD strategy, curriculum, and practice, it is necessary to take into account important factors including HESD governance dimensions, a governing approach to HESD, and Social and Environmental Interlinkages in HESD.

Recommendations for Higher Education Institutions

The self-assessment and reports from the literature review give one-of-a-kind content for this project. A number of conclusions can be formed about factors that appear to be important for successful SD integration in higher education, and recommendations to HEIs can be made based on these:

1. Establish broad objectives for SD integration and confirm the presence of follow-up procedures: According to the report, general HEI priorities are frequently insufficient, and follow-up practices are significantly more constrained. Nearly all HEIs with higher scores have well-defined objectives and timetables for accomplishing them. SD must be incorporated into the processes used by many HEIs to ensure the quality of their educational programs, which may also include specific objectives.

2. Form a team to work on SD, and make sure they have the resources they need: The presence of an organizational unit with special responsibility for SD and resources is common of those HEIs that earned the higher grade. This administrative entity can help instructors, program directors, and councils by organizing and catalyzing growth.

3. Avoid solutions that just involve a portion of the HEI. Some HEIs have concentrated their sustainability efforts on a single department or subject, which is admirable in and of itself, but has minimal impact on the rest of the institution (s). The findings show that in order to be successful, the effort should be arranged in such a way that it involves a wide range of academic groups.

4. When recruiting leaders, look for understanding and involvement on SD. Because the findings reveal that senior management involvement and leadership are critical to the success of HEI sustainability efforts, it is critical that expertise and interest in sustainability be part of the recruitment process when new leaders are hired. Leadership in the field of sustainability may also necessitate the acquisition of specific skills.

5. Develop durable and robust SD structures and "institutions." The examination of this work revealed that there had been several actions and endeavors to integrate SD into education, but that they had come to a standstill for a variety of reasons. As a result, it is critical to create long-term mechanisms in order to assure continuity. Examples include educational programs, teaching jobs, centers, and departments. Furthermore, accredited environmental management systems can serve as a framework for HEIs to integrate SD.

6. amiliar with SD and SD education, there is a need for new and seasoned teachers to develop their skills. The data reveal that a lack of material, didactic, and pedagogic competence among teachers is a serious issue in HEIs around the world.

7. Pay attention not only to material but also to teaching methods, resulting in transforming learning environments and pedagogic expressions. Most HEIs concentrated on content in their self-assessment reports and included very little about the didactic and pedagogical components of SD. The latter is also critical when combined with the content in the concept of "education for SD." To address the current sustainability concerns in Kogi State (Nigeria) and the world at large, transformative learning may be required.

8. Provide opportunities for cross-disciplinary collaboration. SD education should contain interdisciplinary viewpoints to better prepare students for complex situations that necessitate collaboration across disciplines.

9. Encourage student involvement and partnership with businesses and the government. The introduction of real-world concerns and the construction of meaningful links between students and the labor market will be aided by various forms of transdisciplinary collaboration, making SD more relevant and current for students. Students are better prepared to build action competence, which is a crucial component of SD education, when they work transdisciplinary with a variety of actors and stakeholders.

10. Incorporate SD into bachelor's and master's theses. Thesis/project work allows you to use what you've learned and put it to the test on real-world problems. HEIs can use thesis work as a platform for learning about

SD and, as a result, become more engaged in the current social situation.

References

- Abanyam, N.L., & Agbo, M.O. (2019). Examination malpractice as a challenge to national development in Nigeria. *Benue Journal of Sociology*, 7 (1), 283 – 295.
- African Union. (2014). *African Union Outlook on Education Report: 2014 Continental Report*. Retrieved from: <http://www.adeanet.org/portalv2/sites/default/files/au-outlookcontinental-english-2022-w.pdf>.
- Aikens, K., McKenzie, M., Vaughter, P. (2018). Environmental and sustainability education policy research: A systematic review of methodological and thematic trends. *Environ Education Resouces*, 22(3), 333–359
- Arima, A. (2019). A plea for more education for sustainable development. *Sustain Science*, 4(1): 3.
- Blessinger, P. Sengupta, E., & Makhanya, M. (2018). *Higher education's key role in sustainable development*. Retrieved from <https://www.universityworldnews.com>.
- Brundtland, G. H. (2022). *Our common future—The Brundtland Report*. World Commission on Environment and Development
- Burtch, C. (2022). *The theory and practice of educational administration*. London: Columbia.
- Federal Republic of Nigeria. (2018). *New National Policy on Education*. Lagos: Government printers.
- LealFilho, W. (2022). About the role of universities and their contribution to sustainable development. *High Education Policy*, 24(4): 427–438.
- Lozano, R., Ceulemans, K., Alonso-Almeida M, Huisingsh D, Lozano FJ, Waas T, Lambrechts W, Lukman R & Hugé J. (2015). A review of commitment and implementation of sustainable development in higher education: results from a worldwide survey. *Journal of Clean Prod*, 108: 1–18.
- Lozano-Garcia, H & Huisingsh, T. (2021). Sustainability in higher education: what is happening? *Journal of Clean Prod*, 9(11): 757–760.
- Milutinović, S., & Nikolić, V. (2014). Rethinking higher education for sustainable development in Serbia: an assessment of Copernicus charter principles in current higher education practices. *Journal of Clean Prod*, 62: 107–113.
- Mohamedbhai, G. (2019). *What role for higher education in sustaining development*. Global Issue 349. Retrieved from: <http://www.universityworldnews.com/article.php>.
- Molderez, I., & Fonseca, E. (2018). The efficacy of real-world experiences and service learning for fostering competences for sustainable development in higher education. *Journal of Clean Prod*, 172: 4397–4410.
- Ozturk, I. (2021). The role of education in economic development: A theoretical perspective. *Journal of Rural Development and Administration*, 111(1): 39 – 47.
- Pudding, V. (2021). Educational development: Priorities for the Ninetic. *Finance and Development Journal*, 27(1).
- Shephard, K. (2015). *Higher education for sustainable development*. United Kingdom, Palgrave Macmillan
- State of Education in Africa Report (2015). *Overview of the state of education in Africa*: Retrieved on from: <http://www.aaionline.org/wp-content/uploads/2022/06/AAI-SOEReport-2022-final.pdf>.
- UNESCO. (2017). *Education for Sustainable Development Goals: The Global Education 2030 Agenda*. Paris: UNESCO.
- UNESCO. (2021). *Roadmap for implementing the global action programme on education for sustainable development*. UNESCO, Paris
- Vaughter, P., McKenzie, M., Lidstone, L. & Wright, T. (2022). Campus sustainability governance in Canada: a content analysis of postsecondary institutions' sustainability policies. *International Journal of Sustain High Education*, 17(1):16–39.
- World Bank. (2022). *Sustainable development and its challenges in developing countries*. Retrieved from <https://www.iynf.org>.
- Yarime, M., Trencher, G., Mino, T., Scholz, R.W, Olsson, L., Ness, B & Rotmans, J. (2021). Establishing sustainability science in higher education institutions: Towards an integration of academic development, institutionalization, and stakeholder collaborations. *Sustain Science*, 7(1): 101–113.