# How would you describe the role of Higher Education Institutions in Regional Sustainability Transitions?







Unveiling the role of Higher Education Institutions in Regional Sustainability Transitions – a systematic literature review.

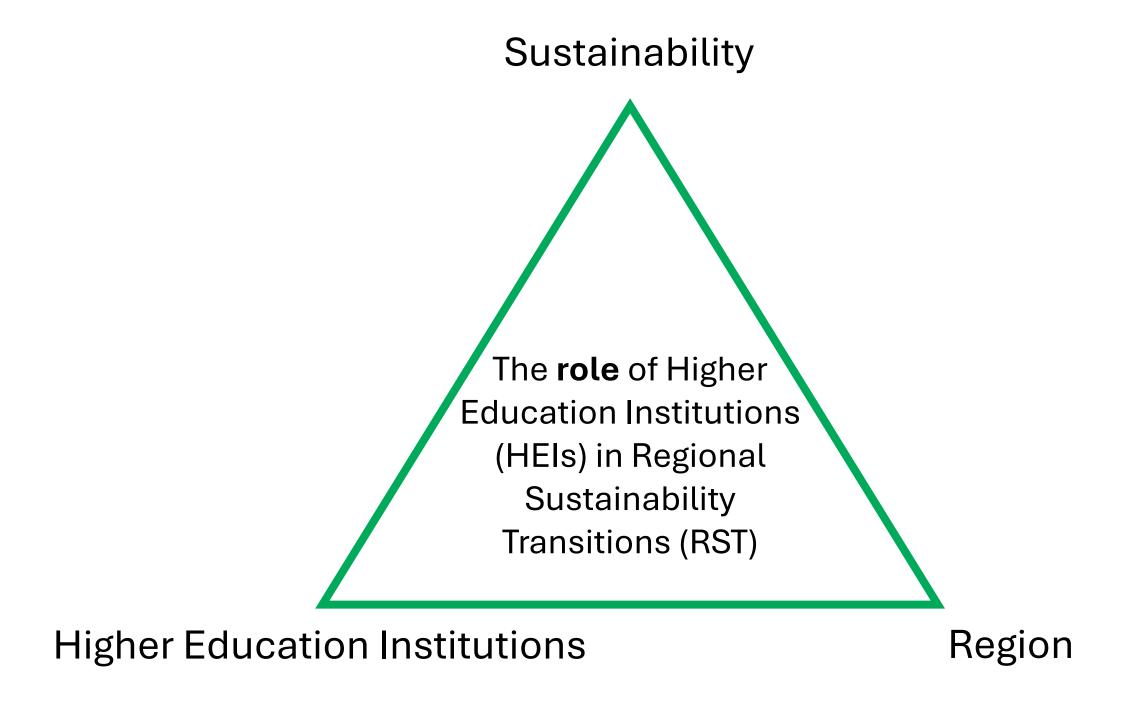
Ines Hinterleitner<sup>1</sup>, Gesa Pflitsch<sup>1</sup>, Verena Radinger-Peer<sup>1</sup>, Marianne Penker<sup>2</sup>, Sabine Sedlacek<sup>3</sup>

<sup>&</sup>lt;sup>1</sup> Institute for Landscape Development, Recreation and Conservation Planning, BOKU University

<sup>&</sup>lt;sup>2</sup> nstitute for Sustainable Economic Development, BOKU University

<sup>&</sup>lt;sup>3</sup> School of Sustainability, Governance and Methods, Modul University Vienna

## **Problem Framing**





### Research Questions

- Which role of HEIs in RST has been theoretically and empirically described in the recent literature?
  - How is this role **conceptualized** and which **theoretical approaches** are employed?
  - How is this role empirically described in terms of actors and activities?
  - Which drivers and challenges have been found regarding this role?
  - Which **impacts** of this role on RST are depicted in the literature?

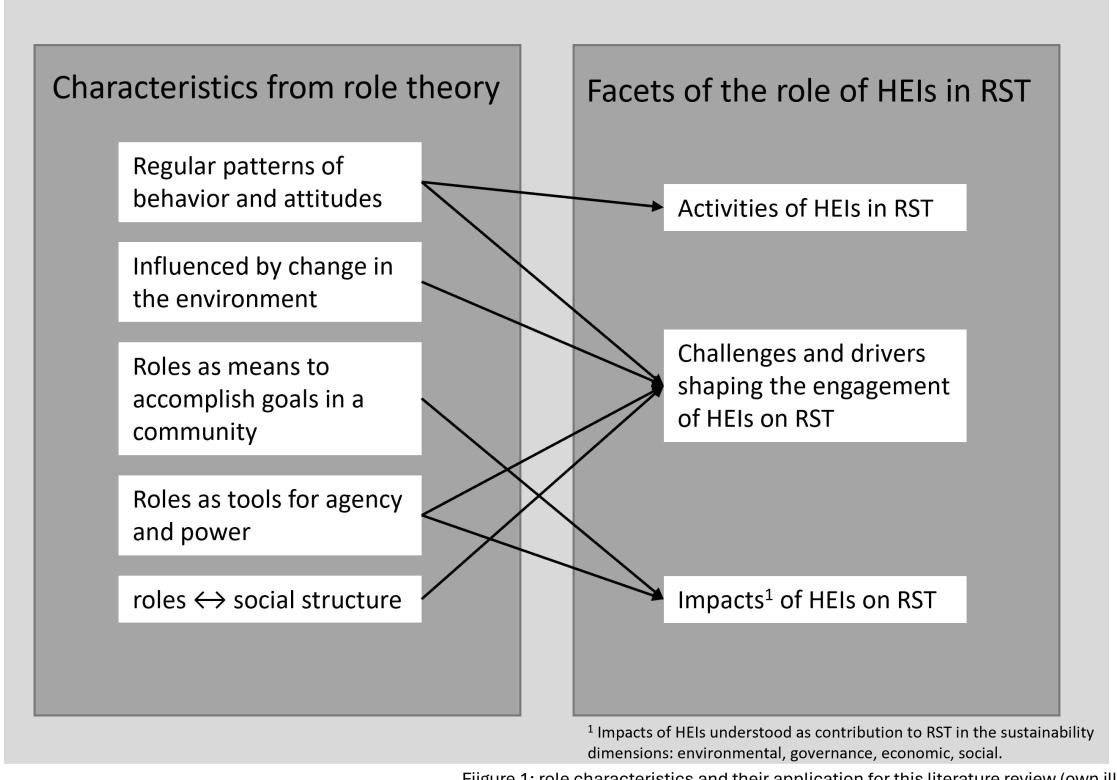


### Analytical Framework (I): role theory

- Characteristics of role theory:
  - Roles are understood as **certain regular patterns of behavior and attitudes** for dealing with recurring sets of situations (Turner, 1990).
  - Roles are defined in relation to other roles (Lynch, 2007), meaning that roles can change when the environment around them changes.
  - Roles are "are recognized, accepted, and used to accomplish pragmatic interactive goals in a community" (Callero, 1994, p. 232).
  - Roles are used to gain access to cultural, social or material resources (Callero, 1994; Hilbert, 1981).
  - Roles contribute to the **creation of social structures** while social structures influence the construction of social roles (Callero, 1994).



# **Analytical Framework (II)**



Fiigure 1: role characteristics and their application for this literature review (own illustration)



#### Material and Methods (I): liter Scopus and Web of Science Identification of studies via databases and regi Search string components: ies via other methods **HEI terms AND** Records rem sustainability terms AND region terms AND Records identified from: Databases $^{1}$ (n = 2) Records marked interaction terms by automation took Records removed for o reasons (n = 0) Records screened Records excluded $(n = 468 + 40^2)$ (n = 387)Records sought for retrieval Records sought for retrieval Records not retrieved Records not retrieved $(n = 81 + 40^2)$ (n = 60)(n = 0)(n = 0)Records assessed for eligibility Records assessed for eligibility $(n = 81 + 40^2)$ (n = 60)Studies included in review

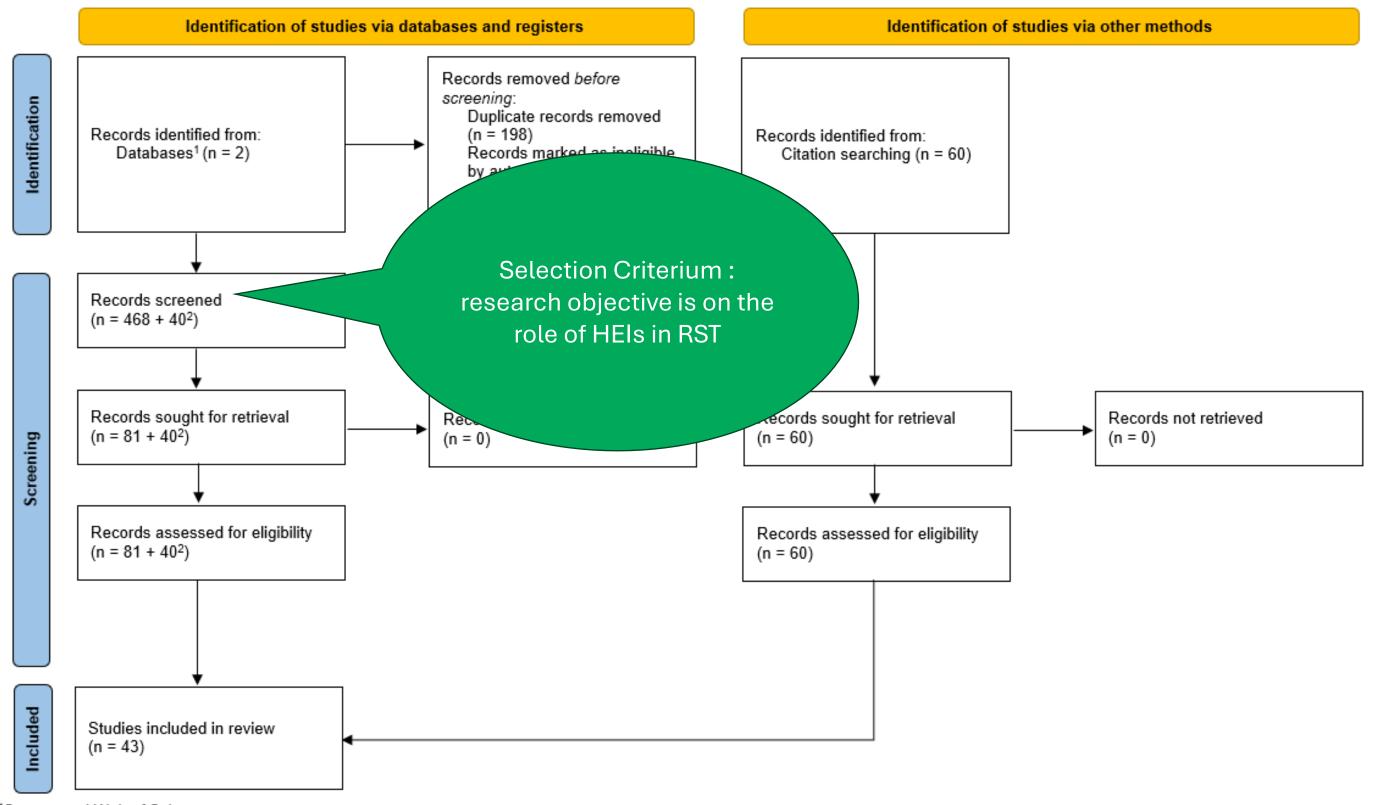
(n = 43)



<sup>&</sup>lt;sup>1</sup>Scopus and Web of Science

<sup>&</sup>lt;sup>2</sup>The "+" indicates records found through <u>a second literature research</u> which was conducted with slightly modified search strings.

### Material and Method (I): literature search



<sup>&</sup>lt;sup>1</sup>Scopus and Web of Science



<sup>&</sup>lt;sup>2</sup>The "+" indicates records found through <u>a second literature research</u> which was conducted with slightly modified search strings.

# Method (II): analysis of the literature

#### Coding

- Based on the operationalization of role theory of Wittmayer et al. (2017)
- Pre-defined coding categories

Table 1: Overview on the main and sub-coding categories (own illustration)

Conceptualization of role	Expression of role	Drivers and framework conditions
Theoretical approaches	Activities	Drivers
Conceptualization of role	Involved actors	Challenges
Definition of role	Impacts	



### Results (I) – Invovled actors

#### HEI

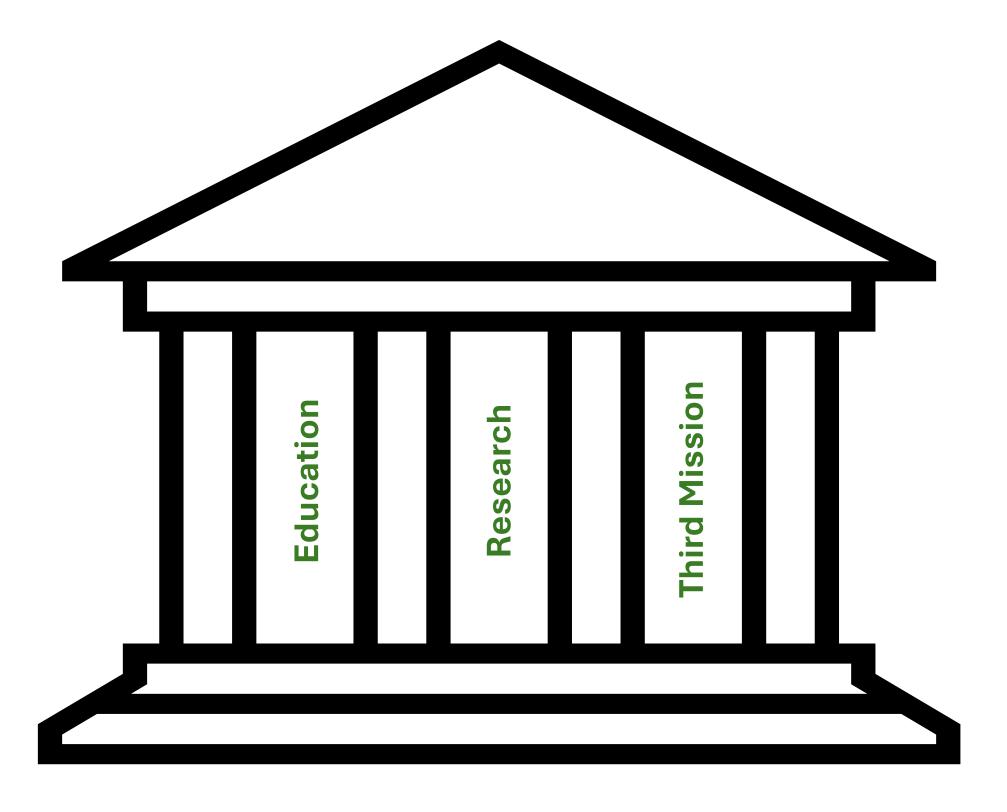
- Students
- Researchers, teachers
- HEI leadership and management
- HEI administration and service centers

#### Region

- Public actors, e.g., administration, politics, schools, church, library, hospitals
- Private actors, e.g., businesses, industry
- Civil society, e.g., citizens, NGOs, associations



# Results (II) – activities





## Results (III) – drivers and challenges

#### **Drivers**

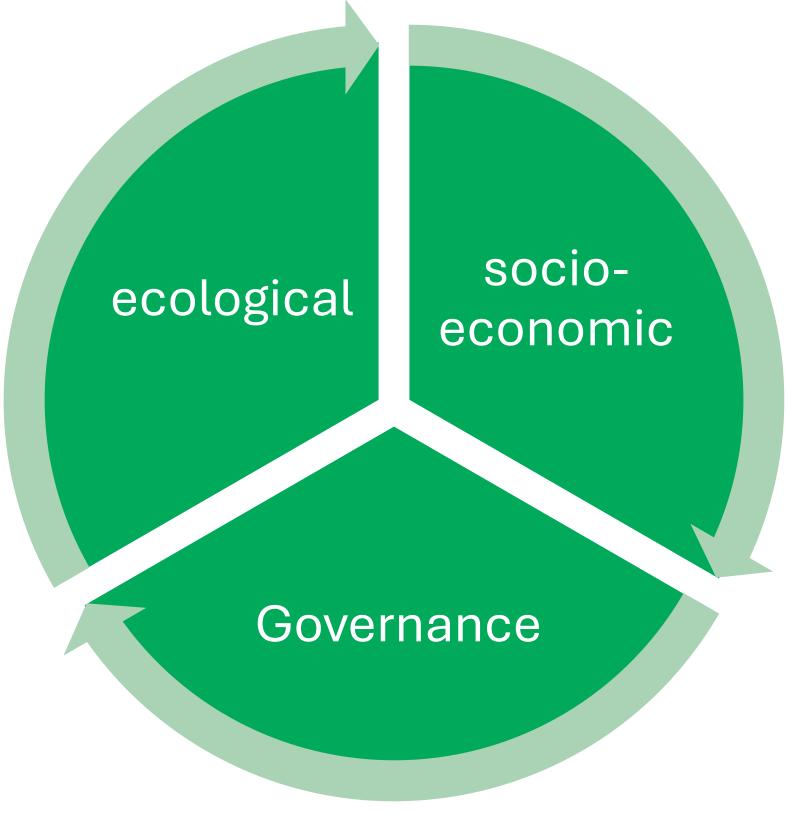
- "Change Agents"
- HEI leadership

#### Challenges

- Lack of institutionalization of HEI-region cooperation
- Lack of resources (time, human, monetary)

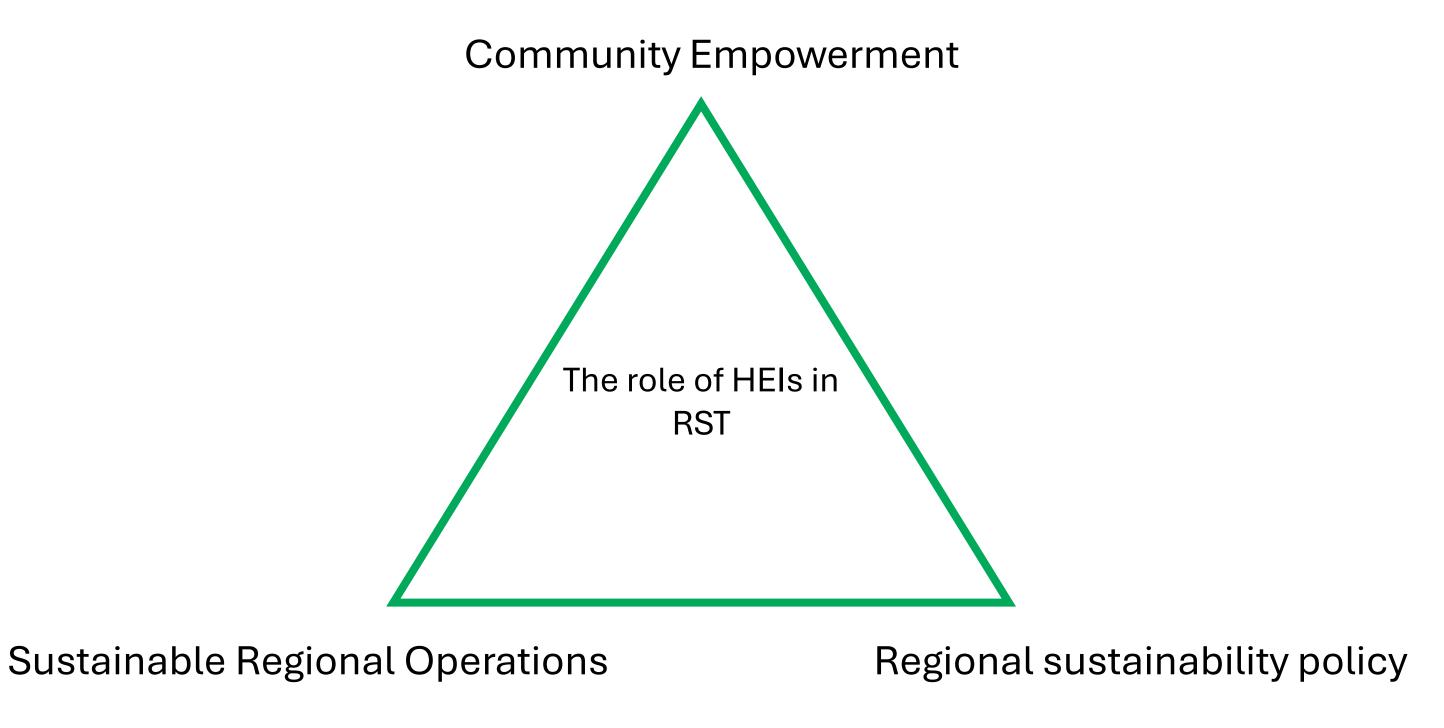


Results (IV) – Impacts





#### Discussion: The role of HEIs in RST?





#### Further research avenues

#### Further avenues of research:

- Who (from both the regional and HEI side) decides whether a HEI takes on the role of contributing to RST and which dimension(s) is/are enacted?
- Why do seemingly similar HEI-region setting diverge from each other?
  - Which role do path dependencies play here?
- How does the roles of HEIs in RST change over time?
- Who are the drivers of the engagement of HEIs with RST?













#### Thank you for your attention! Questions?

Ines Hinterleitner Linked in Institut für Landschaftsentwicklung, Erholungs- und Naturschutzplanung, Department für Landschaft, Wasser und Infrastruktur

+43 1 47654-85313 ines.hinterleitner@boku.ac.at

BOKU University Peter-Jordan-Straße 65, 1180 Wien

boku.ac.at





#### References

- Callero, P. L. (1994). From Role-Playing to Role-Using: Understanding Role as Resource. Social Psychology Quarterly, 57(3), 228.
  <a href="https://doi.org/10.2307/2786878">https://doi.org/10.2307/2786878</a>
- Hilbert, R. A. (1981). Toward an improved understanding of "role." *Theory and Society*, 10(2), 207–226. <a href="https://doi.org/10.1007/BF00139892">https://doi.org/10.1007/BF00139892</a>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, n71. <a href="https://doi.org/10.1136/bmj.n71">https://doi.org/10.1136/bmj.n71</a>
- Scholz, R. W. (2020). Transdisciplinarity: Science for and with society in light of the university's roles and functions. Sustainability Science, 15(4), 1033–1049. <a href="https://doi.org/10.1007/s11625-020-00794-x">https://doi.org/10.1007/s11625-020-00794-x</a>
- Turner, R. H. (1990). Role Change. Annual Review of Sociology, 16(1), 87–110. https://doi.org/10.1146/annurev.so.16.080190.000511
- Wittmayer, J. M., Avelino, F., Van Steenbergen, F., & Loorbach, D. (2017). Actor roles in transition: Insights from sociological perspectives. *Environmental Innovation and Societal Transitions*, 24, 45–56. <a href="https://doi.org/10.1016/j.eist.2016.10.003">https://doi.org/10.1016/j.eist.2016.10.003</a>



### Literature from the literature search (I)

- Adamakou, M., Niavis, S., Kallioras, D., & Petrakos, G. (2021). Understanding the Regional Engagement of Universities from a Stakeholders' Perspective: The Case of the University of Thessaly, Greece. Sustainability, 13(19), 10565. <a href="https://doi.org/10.3390/su131910565">https://doi.org/10.3390/su131910565</a>
- Agusdinata, D. B. (2022). The role of universities in SDGs solution co-creation and implementation: A human-centered design and shared-action learning process. Sustainability Science, 17(4), 1589–1604. https://doi.org/10.1007/s11625-022-01128-9
- Aluko, Y. A., & Okuwa, O. B. (2018). Innovative solutions and women empowerment: Implications for sustainable development goals in Nigeria. *African Journal of Science, Technology, Innovation and Development*, 10(4), 441–449. <a href="https://doi.org/10.1080/20421338.2018.1471028">https://doi.org/10.1080/20421338.2018.1471028</a>
- Anderson, P. M. L., Brown-Luthango, M., Cartwright, A., Farouk, I., & Smit, W. (2013). Brokering communities of knowledge and practice: Reflections on the African Centre for Cities' CityLab programme. Cities, 32, 1–10. <a href="https://doi.org/10.1016/j.cities.2013.02.002">https://doi.org/10.1016/j.cities.2013.02.002</a>
- Bodorkós, B., & Pataki, G. (2009). Linking academic and local knowledge: Community-based research and service learning for sustainable rural development in Hungary. *Journal of Cleaner Production*, 17(12), 1123–1131. <a href="https://doi.org/10.1016/j.jclepro.2009.02.023">https://doi.org/10.1016/j.jclepro.2009.02.023</a>
- Bogedain, A., & Hamm, R. (2020). Strengthening local economy an example of higher education institutions' engagement in "co-creation for sustainability." REGION, 7(2), 9–27. https://doi.org/10.18335/region.v7i2.271
- Budowle, R., Krszjzaniek, E., & Taylor, C. (2021). Students as Change Agents for Community–University Sustainability Transition Partnerships. Sustainability, 13(11), 6036. https://doi.org/10.3390/su13116036
- Chang, H. B. (2022). Developing Companionship with the Left-Behinds: University Social Responsibility and a Collaborative Approach to Rural Regeneration in the Badlands Region of Taiwan. Transactions of the Association of European Schools of Planning, 6(1), 14–29. https://doi.org/10.24306/TrAESOP.2022.01.002
- Cobo-Gómez, J. C. (2024). Social innovation in university-community partnerships in Latin America: Exploring collaborative models. Sustainable Technology and Entrepreneurship, 3(2), 100061. https://doi.org/10.1016/j.stae.2023.100061
- Croese, S., & Duminy, J. (2023). Co-producing urban expertise for SDG localization: The history and practices of urban knowledge production in South Africa. Urban Geography, 44(3), 538–557. https://doi.org/10.1080/02723638.2022.2079868
- Hoinle, B., Roose, I., & Shekhar, H. (2021). Creating Transdisciplinary Teaching Spaces. Cooperation of Universities and Non-University Partners to Design Higher Education for Regional Sustainable Transition. Sustainability, 13(7), 3680. <a href="https://doi.org/10.3390/su13073680">https://doi.org/10.3390/su13073680</a>
- Leal Filho, W., Caughman, L., Pimenta Dinis, M. A., Frankenberger, F., Azul, A. M., & Salvia, A. L. (2022). Towards symbiotic approaches between universities, sustainable development, and cities. Scientific Reports, 12(1), 11433. https://doi.org/10.1038/s41598-022-15717-2
- Leal Filho, W., Vargas, V. R., Salvia, A. L., Brandli, L. L., Pallant, E., Klavins, M., Ray, S., Moggi, S., Maruna, M., Conticelli, E., Ayanore, M. A., Radovic, V., Gupta, B., Sen, S., Paço, A., Michalopoulou, E., Saikim, F. H., Koh, H. L., Frankenberger, F., ... Vaccari, M. (2019). The role of higher education institutions in sustainability initiatives at the local level. *Journal of Cleaner Production*, 233, 1004–1015. <a href="https://doi.org/10.1016/j.jclepro.2019.06.059">https://doi.org/10.1016/j.jclepro.2019.06.059</a>
- Lehmann, M., Christensen, P., Thrane, M., & Jørgensen, T. H. (2009). University engagement and regional sustainability initiatives: Some Danish experiences. Journal of Cleaner Production, 17(12), 1067–1074. https://doi.org/10.1016/j.jclepro.2009.03.013



### Literature from the literature search (II)

Lukman, R., Krajnc, D., & Glavič, P. (2009). Fostering collaboration between universities regarding regional sustainability initiatives – the University of Maribor. Journal of Cleaner Production, 17(12), 1143–1153. https://doi.org/10.1016/j.jclepro.2009.02.018

Mader, C., Zimmermann, F. M., Steiner, G., & Risopoulos, F. (2008). Regional Centre of Expertise (RCE) Graz-Styria: A process of mobilization facing regional challenges. *International Journal of Sustainability in Higher Education*, 9(4), 402–415. <a href="https://doi.org/10.1108/14676370810905517">https://doi.org/10.1108/14676370810905517</a>

Mader, M., Mader, C., Zimmermann, F. M., Görsdorf-Lechevin, E., & Diethart, M. (2013). Monitoring networking between higher education institutions and regional actors. Journal of Cleaner Production, 49, 105–113. https://doi.org/10.1016/j.jclepro.2012.07.046

Málovics, G., Juhász, J., & Bajmócy, Z. (2022). The potential role of university community engagement (UCE) in social justice and sustainability transformation—The case of the University of Szeged (Hungary). DETUROPE - The Central European Journal of Tourism and Regional Development, 14(3), 103–128. https://doi.org/10.32725/det.2022.024

Mancini, M. C., Arfini, F., & Guareschi, M. (2022). When Higher Education Meets Sustainable Development of Rural Areas: Lessons Learned from a Community–University Partnership. Social Sciences, 11(8), 338. https://doi.org/10.3390/socsci11080338

Marchigiani, E., & Garofolo, I. (2023). Italian Universities for Territorial Sustainable Development and Responsible Communities—The Case Study of the University of Trieste. Sustainability, 15(3), 2325. https://doi.org/10.3390/su15032325

Martínez-Acosta, M., Vázquez-Villegas, P., Mejía-Manzano, L. A., Soto-Inzunza, G. V., Ruiz-Aguilar, K. M., Kuhn Cuellar, L., Caratozzolo, P., & Membrillo-Hernández, J. (2023). The implementation of SDG12 in and from higher education institutions: Universities as laboratories for generating sustainable cities. Frontiers in Sustainable Cities, 5, 1158464. https://doi.org/10.3389/frsc.2023.1158464

Mbah, M. (2019). Can local knowledge make the difference? Rethinking universities' community engagement and prospect for sustainable community development. *The Journal of Environmental Education*, 50(1), 11–22. <a href="https://doi.org/10.1080/00958964.2018.1462136">https://doi.org/10.1080/00958964.2018.1462136</a>

Mdleleni, L. (2022). University as a vehicle to achieve social innovation and development: Repositioning the role of the university in the society. Social Enterprise Journal, 18(1), 121–139. https://doi.org/10.1108/SEJ-10-2020-0093

Monk, D., Openjuru, G., Odoch, M., Nono, D., & Ongom, S. (2020). When the guns stopped roaring: Acholi ngec ma gwoko lobo. Gateways: International Journal of Community Research and Engagement, 13(1). https://doi.org/10.5130/ijcre.v13i1.7194

Neary, J., & Osborne, M. (2018). University engagement in achieving sustainable development goals: A synthesis of case studies from the SUEUAA study. Australian Journal of Adult Learning, 58(3), 336–364.

Nkomo, M., & Sehoole, C. (2007). Rural-based universities in South Africa Albatrosses or potential nodes for sustainable development?

Paunović, I., Müller, C., & Deimel, K. (2022). Building a Culture of Entrepreneurial Initiative in Rural Regions Based on Sustainable Development Goals: A Case Study of University of Applied Sciences–Municipality Innovation Partnership. Sustainability, 14(19), 12108. https://doi.org/10.3390/su141912108

Peer, V., & Stoeglehner, G. (2013). Universities as change agents for sustainability – framing the role of knowledge transfer and generation in regional development processes. *Journal of Cleaner Production*, 44, 85–95. <a href="https://doi.org/10.1016/j.jclepro.2012.12.003">https://doi.org/10.1016/j.jclepro.2012.12.003</a>

Perales Franco, C., & McCowan, T. (2021). Rewiring higher education for the Sustainable Development Goals: The case of the Intercultural University of Veracruz, Mexico. Higher Education, 81(1), 69–88. https://doi.org/10.1007/s10734-020-00525-2



### Literature from the literature search (III)

- Pflitsch, G., & Radinger-Peer, V. (2018). Developing Boundary-Spanning Capacity for Regional Sustainability Transitions—A Comparative Case Study of the Universities of Augsburg (Germany) and Linz (Austria). Sustainability, 10(4), 918. <a href="https://doi.org/10.3390/su10040918">https://doi.org/10.3390/su10040918</a>
- Purcell, W. M., Henriksen, H., & Spengler, J. D. (2019). Universities as the engine of transformational sustainability toward delivering the sustainable development goals: "Living labs" for sustainability. International Journal of Sustainability in Higher Education, 20(8), 1343–1357. https://doi.org/10.1108/IJSHE-02-2019-0103
- Quest, J., Shiel, C., & Watson, S. (2019). Transitioning towards a sustainable food city. International Journal of Sustainability in Higher Education, 20(7), 1258–1277.
- Ramos, T. B. (2009). Development of regional sustainability indicators and the role of academia in this process: The Portuguese practice. Journal of Cleaner Production, 17(12), 1101–1115. https://doi.org/10.1016/j.jclepro.2009.02.024
- Rosenberg Daneri, D., Trencher, G., & Petersen, J. (2015). Students as change agents in a town-wide sustainability transformation: The Oberlin Project at Oberlin College. Current Opinion in Environmental Sustainability, 16, 14–21. <a href="https://doi.org/10.1016/j.cosust.2015.07.005">https://doi.org/10.1016/j.cosust.2015.07.005</a>
- Sedlacek, S. (2013). The role of universities in fostering sustainable development at the regional level. Journal of Cleaner Production, 48, 74–84. https://doi.org/10.1016/j.jclepro.2013.01.029
- Shabalala, L. P., & Ngcwangu, S. (2021). Accelerating the implementation of SDG 4: Stakeholder perceptions towards initiation of sustainable community engagement projects by higher education institutions. *International Journal of Sustainability in Higher Education*, 22(7), 1573–1591. https://doi.org/10.1108/IJSHE-04-2020-0123
- Shiel, C., Leal Filho, W., Paço, A., & Brandli, L. (2016). Evaluating Universities Engagement in Capacity Building for Sustainable Development in Local Communities. Evaluation and Program Planning, 54, 123–134.
- Trencher, G., Bai, X., Evans, J., McCormick, K., & Yarime, M. (2014). University partnerships for co-designing and co-producing urban sustainability. Global Environmental Change, 28, 153–165. https://doi.org/10.1016/j.gloenycha.2014.06.009
- Trencher, G., Yarime, M., & Kharrazi, A. (2013). Co-creating sustainability: Cross-sector university collaborations for driving sustainable urban transformations. Journal of Cleaner Production, 50, 40–55. https://doi.org/10.1016/j.jclepro.2012.11.047
- Trencher, G., Yarime, M., McCormick, K. B., Doll, C. N. H., & Kraines, S. B. (2014). Beyond the third mission: Exploring the emerging university function of co-creation for sustainability. Science and Public Policy, 41(2), 151–179. <a href="https://doi.org/10.1093/scipol/sct044">https://doi.org/10.1093/scipol/sct044</a>
- Velasco, D., Boni, A., Delgado, C., & Rojas-Forero, G. D. (2021). Exploring the Role of a Colombian University to Promote Just Transitions. An Analysis from the Human Development and the Regional Transition Pathways to Sustainability. Sustainability, 13(11), 6014. https://doi.org/10.3390/su13116014
- Velázquez, L., Munguía, N., Zavala, A., & Navarrete, M. D. L. Á. (2008). Challenges in operating sustainability initiatives in Northwest Mexico. Sustainable Development, 16(6), 401–409. https://doi.org/10.1002/sd.357
- Wakkee, I., Van Der Sijde, P., Vaupell, C., & Ghuman, K. (2019). The university's role in sustainable development: Activating entrepreneurial scholars as agents of change. Technological Forecasting and Social Change, 141, 195–205. <a href="https://doi.org/10.1016/j.techfore.2018.10.013">https://doi.org/10.1016/j.techfore.2018.10.013</a>
- Zilahy, G., & Huisingh, D. (2009). The roles of academia in Regional Sustainability Initiatives. Journal of Cleaner Production, 17(12), 1057–1066. https://doi.org/10.1016/j.jclepro.2009.03.018

