

An Extended Abstract Submitted to the NBM Conference 2024

Strategic symbiosis between Academia, Public and Private Sector in Uruguay: case of the Eco Park "Polo de Economía Circular de Canelones", a hybrid proposal with virtually and physically associated companies

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Extended abstract

1. Introduction

In South America, the transition to a circular economy (CE) is developing more slowly than in Europe. Some countries in the region, such as Argentina (2019), Brazil (2021), Chile (2021), Colombia (2019), Ecuador (2021), Peru (2020) and Uruguay (2019) have Circular Economy Roadmaps. In April 2023, Uruguay published its National Circular Economy Strategy. These public policies encompass governance, financing, and encourage innovation in CE, seeking to change consumption and production.

In Pando, Canelones, Uruguay, an ecopark called Circular Economy Pole (PEC) was installed in 2022. It is housed in an old cardboard factory closed due to pollution. The project is led by the local government through the Directorate of Cooperative Development and Support for the Solidarity Economy of the Municipality of Canelones. The academy, represented by the Faculty of Economic Sciences and Administration, University of the Republic, was summoned to accompany in the definition of the strategy and its execution. In addition, it aims to report the process qualitatively through systematic observation, and quantitatively through the defined metrics. This paper reports the actions and results of this unprecedented experience in Uruguay.

2. Methodology

The case of the PEC is selected because it is the first ecosystem experience in Uruguay and aligned with the quadruple helix strategy, focused on the interaction between university, business, government, and society. The interaction between multiple and diverse actors, each with its own organizational dynamics, is a challenge. The expectation is to obtain promising and sustainable results in the long term, achieving the alignment of those involved, facing the entropy of complex systems by fulfilling joint tasks and facing great challenges at the practical level (Alfaro-Sifontes, M., 2023). Systematic observation of the process is expected to yield interesting conclusions.

The qualitative data collection methodology takes into account the characteristics of the inductive method. That is, observing the environment and context, seeing the scenario and people from a holistic perspective, and being aware of the effects that researchers have on research (Taylor & Bogdan, 1987, p. 20).

The quantitative survey is carried out through the annual monitoring of the main circular metrics at the micro-operational level (based on ISO TC 323, future ISO 59004, 59010 and 59020) and strategic (CIRCULAR TRANS, ECSI, Mondragon University).

The intermediate level includes the number of enterprises trained, the number of affiliates to the PEC's virtual network, those that are physically hosted, and the analysis of data from micro indicators.

3. Objectives

- a) Collaborate in the process of establishing sustainable and comprehensive strategic planning for the JEP that involves public policy, academia, private companies, and civil society.
- b) Foster Synergies and Sustainable Business Models by collaborating to create socially, economically and environmentally sustainable business models.

- c) Align the Structure and Operation of the JEP so that the cost structure, resources, partnerships, communication, and policy are aligned with the sustainable value proposition.
- d) Facilitate balanced development between the Social, Economic and Environmental Dimensions, generating positive impacts on the community and the environment.
- e) Fostering Innovation and Paradigm Shift: Promoting the adoption of innovative and sustainable business models, contributing to the paradigm shift towards the circular economy.
- f) Systematize the monitoring of the process with qualitative survey and defined metrics.

4. Process

The strategic planning of the PEC has been the result of the synergy between public policies (Directorate of Cooperatives and Support for the Solidarity Economy, Government of Canelones, Uruguay), academia (Faculty of Economic and Administrative Sciences, University of the Republic coordinated with the Technological University of Uruguay) and the private companies installed and adhered to the CE network promoted by the PEC. This synergy is based on a socially, economically, and environmentally sustainable business model (Guo et al., 2022; Lüdeke-Freund et al., 2019; Shepherd & Patzelt, 2011). The cost structure, resources, partnerships, proposal translation, communication and pricing policy must be aligned with the generation of a sustainable value proposition (H. Amit & Zott, 2010; Hagel and Singer, 1999; Osterwalder and Pigneur, 2013; Teece, 2010b; Zott et al., 2011; Zufall et al., 2020). This is likely to facilitate development in all three dimensions: social, economic, and environmental (de Langen, 2023; Salinger et al., 2024; Toniolo et al., 2023). Paradigm shift requires sustainable and innovative business models (França et al., 2017; Mancuso et al., 2023; Sancak, 2023; Teece, 2010a; Zott & Amit, 2010). The ecosystem also contributes as a key tool in promoting this innovation (Barth et al., 2017; Bessant, 2019; Gomes et al., 2023; Guo et al., 2022; Horvath, 2001).

The process takes place in the following stages:

Stage I: Awareness-raising and planning. The objectives and strategic lines of the PEC were established, the Governance, the Operating Regulations, the Entry Conditions, the Stakeholder Matrix, the Investment and Operating Budget were created, strong ideas were found in communication, the immediate actions necessary to start operations were carried out. Communication, convening and awareness-raising begin. The agreements and planned actions were carried out, more than 30 companies were trained (2022).

Stage II: Infrastructure, installation of companies, construction of the network. Improvement of the general infrastructure, development of procedures for authorizations,

permits and authorizations. The first 5 circular companies were physically installed and a chain of nodes with more than 30 companies was virtually generated (2023).

Stage III: 2024. Network consolidation, definition, and monitoring of metrics. Elaboration of the scorecard and indicators, construction of the network of associated virtual companies (2024).

5. Results

Good sustainability practices are being generated in the business models of the companies that are hosted and in those that are part of the virtual network. To facilitate symbiosis and the ecosystem, a platform was planned to consolidate the network of companies and the incorporation of others. The platform is being designed to collect good practices, lessons learned, and track them through indicators.

In this tour, the exchange with the Research Group on Circular Economy and Industrial Sustainability of the Faculty of Engineering of the University of Mondragon was important, who shared their tools and experiences. This contribution is analysed as a collaboration between the Global North and the Global South, through an exchange of methodology and concrete experiences.

Short Summary

The transition to the circular economy (CE) requires the commitment of the whole of society. The quadruple helix, which involves public policy, business, civil society, and academia, drives CE through open innovation and industrial symbiosis. The Circular Economy Pole (PEC) ecopark in the city of Pando, Canelones, Uruguay, has made remarkable progress. Its unprecedented process in the country involves an integrative governance in accordance with its strategic planning and the definition of monitoring metrics. The participation of academia in this experience allows for systematic monitoring that highlights the effectiveness of ecoparks in promoting CE.

Keywords

Circular Economy, Ecoparks, Circularity indicators, industrial symbiosis, Latin American sustainability

References

Albuquerque, F. (2001). La importancia del enfoque del desarrollo económico local. In *Transformaciones globales, instituciones y políticas de desarrollo local*. Editorial Homo Sapiens. <http://www.cideu.org/data/moodledata/36/FAlbuquerque.pdf>

Alfaro-Sifontes, M. (2023). Procesos microsociales para el desarrollo de alianzas intra e interorganizacionales en un modelo de Cuádruple Hélice en El Salvador. <https://doi.org/10.51528/rp.vol11.id2406https://doi.org/https://doi.org/10.25097/rep.n31.2020.06>

Aguirre Lehendakaria Center for Social and Political Studies. (2020). United Nations Development Programme. Country Support Platforms Assesment. In UNDP.

Alvarado, R., & Jimenez, C. (2020). Relationship between competitiveness and regional development in Introducción. *Revista Economía Política*, 31, 1–17. <https://doi.org/https://doi.org/10.25097/rep.n31.2020.06>

Barth, H., Ulvenblad, P. O., & Ulvenblad, P. (2017). Towards a conceptual framework of sustainable business model innovation in the agri-food sector: A systematic literature review. *Sustainability (Switzerland)*, 9(9). <https://doi.org/10.3390/su9091620>

Bessant, J. (2019a). *El papel de la innovación sostenida en la competitividad y la longevidad de los campeones ocultos*.

Bocken, N., & Gerdt, T. . (29 de octubre de 2019).. Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities. *Elsevier Long Range Plannig*. Disponible en: <https://doi.org/10.106/j.lrp.2019.101950>

Coffay, M. & Bocken, N. (octubre 2023). Sustainable by design: an organizational design tool for sustainable business model innovation. *ELSEVIER Journal of Cleaner Production* 139294. Disponible: <https://doi.org/10.1016/j.jclepro.2023.139294>

Cotler, J. (2018). DESCOMPOSICIÓN Y REDEFINICIONES POLÍTICAS EN PERÚ. In *Transformaciones sociales y acciones colectivas*. <https://doi.org/10.2307/j.ctv6jmx2w.11>

Chesbrough, H. (2010). Business Model Innovation: Opportunities and Barriers. *Long Range Planning*, 43(2–3), 354–363. <https://doi.org/10.1016/J.LRP.2009.07.010>

Da Gosta, P., & Cosme, C. (diciembre de 2021). La Economía Circular como eje de desarrollo de los países latinoamericanos. *Economía y Política Redalyc* No. 35. Disponible

en: <https://orcid.org/0000-0003-3169-3519> Redalyc:
<https://www.redalyc.org/articulo.oa?id=571169753001>

European Commission. (2023). *EU Regional Competitiveness Index 2.0. 2022 edition* (Issue May).

Facultad Politecnica Mondragón, Agencia GAIA, E - coordina. (s.f.). *netcircularplus*.
Recuperado el 17 de octubre de 2023, de <https://www.netcircularplus.eus>

Gomes, L. A. de V., Farago, F. E., Facin, A. L. F., Flechas, X. A., & Silva, L. E. N. (2023). From open business model to ecosystem business model: A processes view. *Technological Forecasting and Social Change*, 194, 122668.
<https://doi.org/10.1016/J.TECHFORE.2023.122668>

Guo, L., Cao, Y., Qu, Y., & Tseng, M. L. (2022). Developing sustainable business model innovation through stakeholder management and dynamic capability: A longitudinal case study. *Journal of Cleaner Production*, 372, 133626.
<https://doi.org/10.1016/J.JCLEPRO.2022.133626>

H. Amit, R., & Zott, C. (2010). *Business Model Innovation: Creating Value in Times of Change* (No. 870). [https://doi.org/Amit, Raphael H. and Zott, Christoph, Business Model Innovation: Creating Value in Times of Change \(July 2, 2010\). IESE Business School Working Paper No. 870, Available at SSRN: <https://ssrn.chhttp://dx.doi.org/10.2139/ssrn.1701660>](https://doi.org/Amit, Raphael H. and Zott, Christoph, Business Model Innovation: Creating Value in Times of Change (July 2, 2010). IESE Business School Working Paper No. 870, Available at SSRN: https://ssrn.chhttp://dx.doi.org/10.2139/ssrn.1701660)

Habn, P. V. de J. (2020). *Trabajando juntos por el futuro de la comunidad de Citrofruit*.

Hagel, J., & Singer, M. (1999). Unbundling the corporation. *Harvard Business Review*, 77(2), 133–141, 188. <http://www.ncbi.nlm.nih.gov/pubmed/10387769>

Horvath, L. (2001a). Collaboration: The key to value creation in supply chain management. *Supply Chain Management: An International Journal*.
<https://doi.org/10.1108/EUM000000006039>

Imaz, O., & Eizagirre, A. (30 de julio de 2020). Responsible innovation for sustainable development: goals in business, an agenda for cooperatives firms. *Sustainability MDPI*.
Disponible en: <https://doi.10.3390/su12176948>

Kamp, B., Ruiz De Apodaca, I., Murciego, A., Zubizarreta, M., & Sisti, E. (2017). *Mapeo y caracterización de líderes en nichos de mercado internacionales en la Comunidad*

Autónoma del País Vasco (Issue II).

<https://www.orquestra.deusto.es/images/investigacion/publicaciones/cuadernos/2017-22.pdf>

Lüdeke-Freund, F., Massa, L., Bocken, N., Brent, A. C., & Musango, J. (2016). Business Models for Shared Value. In *Network for Business Sustainability South Africa*.

Mancuso, I., Messeni Petruzzelli, A., & Panniello, U. (2023). Innovating agri-food business models after the Covid-19 pandemic: The impact of digital technologies on the value creation and value capture mechanisms. *Technological Forecasting and Social Change*, 190, 122404. <https://doi.org/10.1016/J.TECHFORE.2023.122404>

Mendoza, J. M. (17 de octubre de 2023). *Exposición de herramientas y resultados de innovación circular y sostenible: Uruguay, Holanda, Chile*. Obtenido de netcircularplus.eus: <https://www.netcircularplus.eus>

Ostewalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers and challengers*. Nueva Jersey: Wiley.

Osterwalder, A., & Pigneur, Y. (2013). *Generación de modelos de negocio (Google eBook)*. <http://books.google.com/books?id=NBSaoWaxeRsC&pgis=1> <https://elpais.com/ccaa/>

Parris, T., & Kates, R.. (14 de agosto de 2003). Characterizing and measuring sustainable development. *Environ Annual Report of Environment and Resources Women* 28 559 - 586. Disponible en: <https://doi:10.1146/annurey.energy.28.050302.105551>.

Porter, M., & Kramer, M. (2011). Creating Shared Value. *Harvard Business Review*.

Porter, M. E., Hills, G., Pfitzer, M., Patscheke, S., Hawkins, E., & Hills, G. (2011). Measuring Shared Value. In *Foundation Strategy Group (FSG)*. https://www.hbs.edu/ris/PublicationFiles/Measuring_Shared_Value_57032487-9e5c-46a1-9bd8-90bd7f1f9cef.pdf

Rammer, C., & Spielkamp, A. (2019). German Hidden Champions : *Ekonomiaz*.

Revilla, I. (2020). *Plan ejecutivo de desarrollo económico de Busturialdea-Urdaibai*.

Syamsu, S., Taruc, R. R., Tela, A., Vakarewa, I., Wilson, A., & Sinharoy, S. S. (2024). "People are now working together for a common good": The effect on social capital of participatory design for community-level sanitation infrastructure in urban informal settlements. *World Development*, 174, 106449.

Samaniego, J., Rondón, E., Herrera, J., & Santori, S. (2022). *Panorama de las hojas de ruta de economía circular en América Latina y el Caribe*. Santiago de Chile: CEPAL.

Sancak, I. E. (2023). Change management in sustainability transformation: A model for business organizations. *Journal of Environmental Management*, 330, 117165.

<https://doi.org/10.1016/J.JENVMAN.2022.117165>

Teece, D. J. (2010a). Business models, business strategy and innovation. *Long Range Planning*. <https://doi.org/10.1016/j.lrp.2009.07.003>

Teece, D. J. (2010b). Business Models, Business Strategy and Innovation. *Long Range Planning*, 43(2–3), 172–194. <https://doi.org/10.1016/J.LRP.2009.07.003>

Toniolo, S., Pieretto, C., & Camana, D. (2023). Improving sustainability in communities: Linking the local scale to the concept of sustainable development. *Environmental Impact Assessment Review*, 101, 107126. <https://doi.org/10.1016/J.EIAR.2023.107126>

Valdaliso, J. M. (2013). Las estrategias de desarrollo económico del País Vasco: una perspectiva histórica. *Ekonomiaz*, 83(02), 147–174.

Ziegler, R., Poirier, C., Lacasse, M., & Murray, E. (enero de 2023). Circular economy and cooperatives - an exploratory survey *Sustainability MDPI*. Disponible en:

<https://doi.org/10.3390/su15032530>.

Zott, Christoph, & Amit, R. (2010). Business Model Design: An Activity System Perspective. *Long Range Planning*, 43(2–3), 216–226. <https://doi.org/10.1016/J.LRP.2009.07.004>

Zott, C, Amit, R., & Massa, L. (2011). The Business Model. *Recent Developments and Future Research*. [https://doi.org/10.1016/S0007-6813\(03\)00085-5](https://doi.org/10.1016/S0007-6813(03)00085-5)

Zufall, J., Norris, S., Schaltegger, S., Revellio, F., & Hansen, E. G. (2020). Business model patterns of sustainability pioneers - Analyzing cases across the smartphone life cycle. *Journal of Cleaner Production*, 244, 118651.

<https://doi.org/10.1016/J.JCLEPRO.2019.118651>