Eco-Innovation and SME Internationalization: Opportunities, Challenges and Policy Implications

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Outline

- Eco-Innovation:
  - What Is It?
  - Drivers, Benefits, and Challenges
- SME Internationalization and Eco-Innovation: A Virtuous Circle?
- Policy Implications

My presentation today is based on joint work with Jana Hojnik and Mitja Ruzzier at the University of Primorska, Slovenia, as follows:

- Hojnik, J., Ruzzier, M., & Manolova, T.S. 2020. Sustainable Development: Predictors of Green Consumerism in Slovenia. **Corporate Social Responsibility and Environmental Management,** 27(4): 1695-1708**.**
- Hojnik, J., Ruzzier, M., & Manolova, T.S. 2018. Internationalization and Economic Performance: The Mediating Role of Eco-Innovation. **Journal of Cleaner Production**, 171: 1312-1323.
- Hojnik, J., Ruzzier, M., & Manolova, T.S. 2017. Eco-Innovation and Firm Efficiency: Empirical Evidence from Slovenia. **Foresight and STI Governance**, 11(3): 103-111.

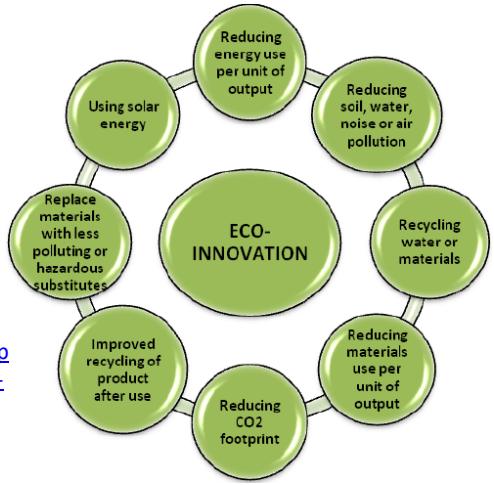
Eco-Innovation: What Is It?

Quotes from: EU Environment (2016). What does eco-innovation mean for you? , https://www.youtube.com/watch?v=hcMIMUiqVF0

The Notion of Eco-Innovation Has Evolved

From:

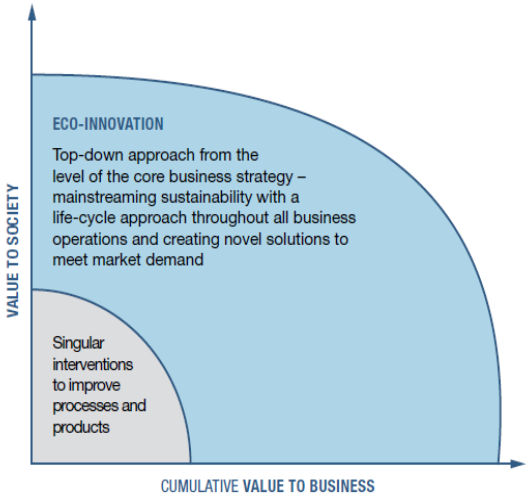
- " the production, application or exploitation of a **good, service, production process, organizational structure, management or business method** that is **novel to the firm or user** and which results, throughout its lifecycle, in a **reduction of environmental risk**, pollution and the negative impacts of resources use (including energy use) compared to relevant alternatives" (*Kemp and Foxon*, 2007:4).



Graphs from: United Nations Environment Programme (UNEP). 2021. The Business Case for Eco-innovation. Available at: http://unep.ecoinnovation.org/wp-content/uploads/2021/02/UNEP-Business-Case-for-Eco-innovation.pdf

To:

- *"*the development and application of a business model, shaped by a new business strategy, which incorporates **sustainability throughout all business operations** based on life cycle thinking and in cooperation with partners across the value chain (*UNEP, 2021*).

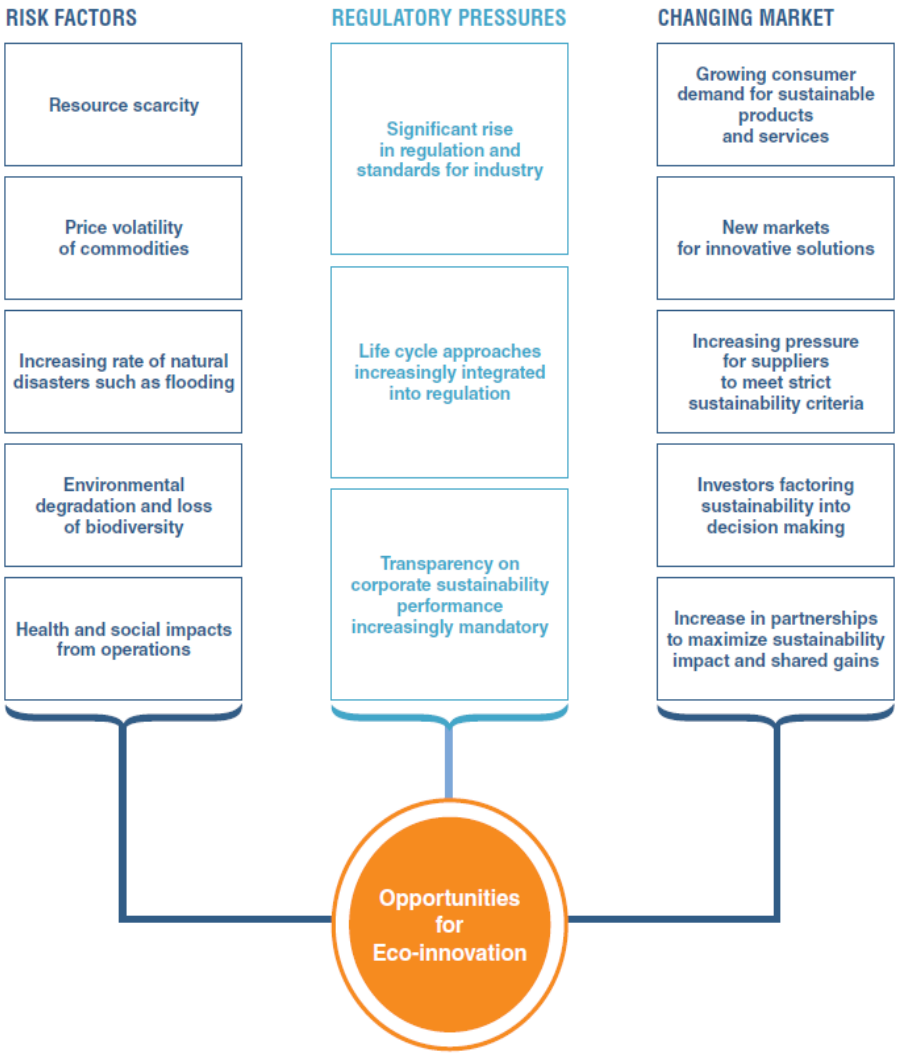


Some Examples

- https://www.clera.one, Koper, Slovenia, established 2020, 2 co-founders, product in pilot phase.
- Supported by the EIT Climate-KIC (The EU's *Institute of Innovation and Technology* and the *Climate Knowledge and Innovation Community*).
- Eco-innovation: A water recycling system for laundry rooms. The device collects the wastewater, puts it through a filtration system to clean it up, and reuses it. Laundries thus save water, energy, money and do not pollute the environment with toxic wastewater.
- Main markets: Germany, Netherlands, France, Denmark, Norway, Spain.

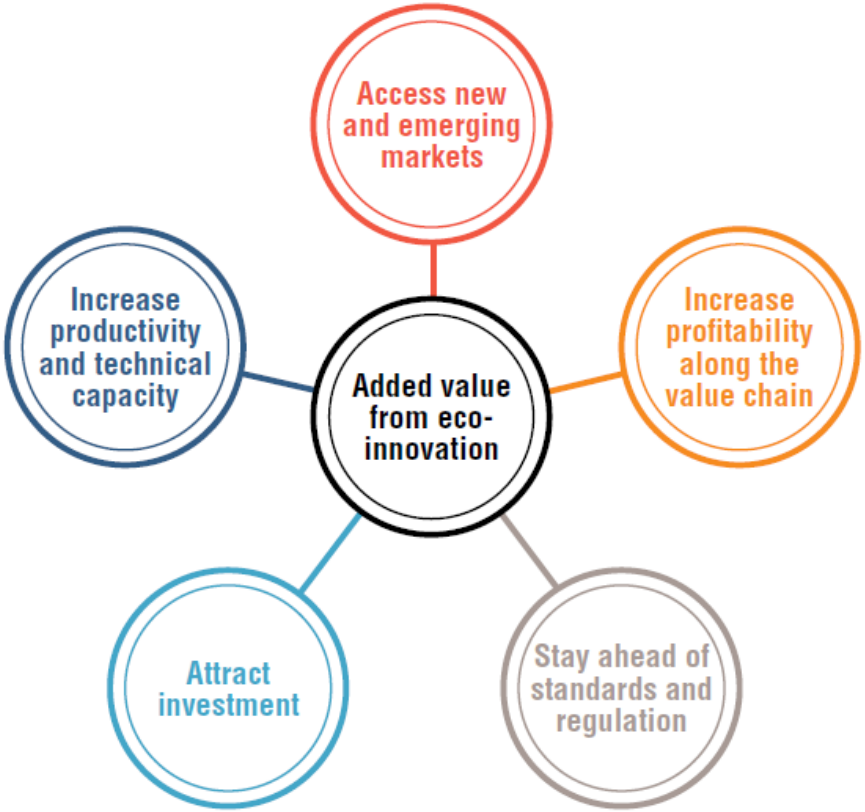
- http://www.naturesse.co, Cali, Colombia, established in 2010 by Natalia Osorio, 30 employees, 2020 sales $ 915,000 (592% growth since 2013)
- Participant in the 2014 UNEP Eco-Innovation project
- Eco-innovation: 100% sustainability-certified natural raw materials, paper packaging derived from local sugarcane, collects bar soap waste from hotel customers to reuse into liquid detergent manufacturing.
- Main markets: starting with hotel chains, now sells in major supermarkets, hospitals, clinics, and DTC using their online store.

SME Eco-Innovation Drivers



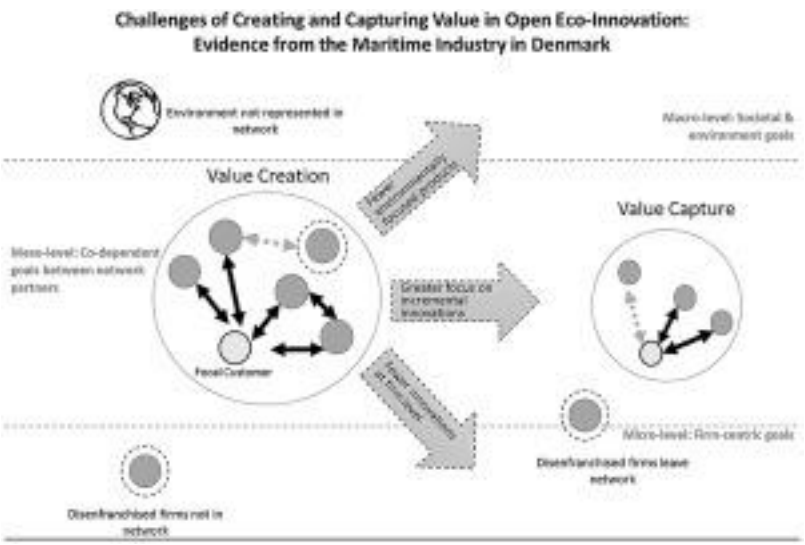
- SMEs, particularly these in emerging markets, operate in penurious, **resource-thin** environments (*Tsilika et al., 2020; Loon and Chik, 2019*), are extremely **vulnerable to exogenous shocks** (*Doern et al., 2016*) and are disproportionately **burdened by regulatory pressures** (*Mallett et al., 2019; Vershinina et al., 2020*)
- At the same time, SMEs are **more flexible in response to market conditions** because they are closer to the market and more in tune with customers' changing needs (*Latham and Braun, 2011*)

SME Eco-Innovation Benefits



- **Reach new markets**
  - Directly, through domestic market expansion and exports
  - Indirectly, through access to MNEs' supply chains
- **Generate efficiencies from better resource use**
  - "Lean and Green"
- **Attract financial support and investment both domestically and internationally**
  - Grants
  - Crowd-funding
  - Impact investment
  - Domestic and international partnerships and joint ventures
  - Exit through merger/acquisition
- **Better respond to evolving environmental support and regulations, both domestically and internationally**

SME Eco-Innovation Challenges



Source of graph: Garcia, R., Wigger, K., & Hermann, R. R. (2019). Challenges of creating and capturing value in open eco-innovation: Evidence from the maritime industry in Denmark. *Journal of Cleaner Production*, *220*: 642-654.

Many factors can act as both drivers and barriers to SME eco-innovation

- **Resource constraints** (*Tsilika et al., 2020; Loon and Chik, 2019*)
- **Uncertain demand, regulations, and return on investment** (*Hrabynskyi et al., 2017*)
- **Inadequate innovation capabilities** (*Hojnik et al., 2017; Salim et al., 2019*)
- **Lack of managerial capacity** (*Qi et al., 2010*)
- **Lack of access to open innovation networks** and conservative decision-making in the networks (*Chistov et al., 2021; Garcia et al., 2019*)

Eco-Innovation and SME Performance

- In a survey-based study of 223 Slovenian SMEs, we documented that:
  - **organizational eco-innovation** positively affects firm efficiency in both more innovative and less innovative companies
  - **process eco-innovation** is positively associated with firm efficiency only among more innovative companies
  - **product eco-innovation** is not significantly associated with firm efficiency in either of the groups (*Hojnik et al., 2017)*
- The **opportunity to realize cost savings** (e.g., cost of materials, energy and services; cost of capital; cost of labor; risk management and relations with external stakeholders) is one of the main reasons for investing in eco-innovation (*Belin et al., 2011; Govindan et al., 2014; Horbach, 2008; Montabon et al., 2007)*
- Companies engaged in eco-innovation were found to be **more resilient to external shocks**, including the COVID-19 pandemic (*UNEP, 2021*).

SME Internationalization, Eco-Innovation, and Performance (I)

- In a survey-based study of 151 Slovenian internationalized companies, we found that the degree of internationalization is positively associated with firm-level performance, and that eco-innovation partially mediates this effect (*Hojnik et al., 2018*).

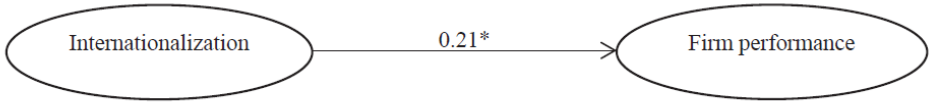


Fig. 2. The results of the direct model (relationship between internationalization and firm performance). Note: Chi-square = 19.589 (11 df); p = 0.051; Goodness-of-fit indices: NNFI = 0.975; CFI = 0.987; IFI = 0.987; SRMR = 0.034; RMSEA = 0.072; Reliability coefficients: Cronbach's alpha = 0.757; RHO = 0.871.

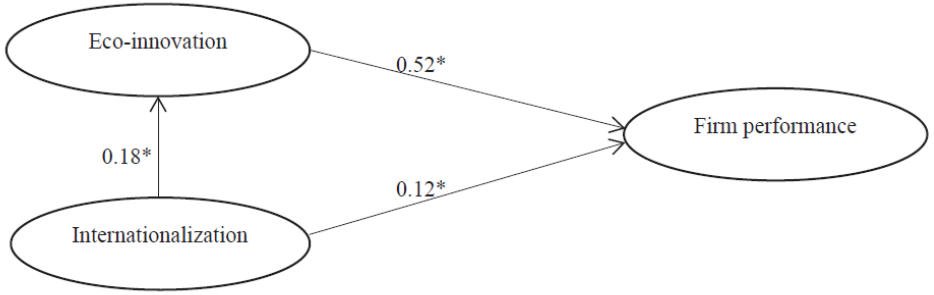


Fig. 3. The results of the mediation model (eco-innovation as mediator between internationalization and firm performance). Note: Chi-square = 329.585 (197 df); p = 0.000; Good-fit indices: NNFI = 0.941; CFI = 0.950; IFI = 0.951; SRMR = 0.070; RMSEA = 0.067; Reliability coefficients: Cronbach's alpha = 0.936; RHO = 0.963.

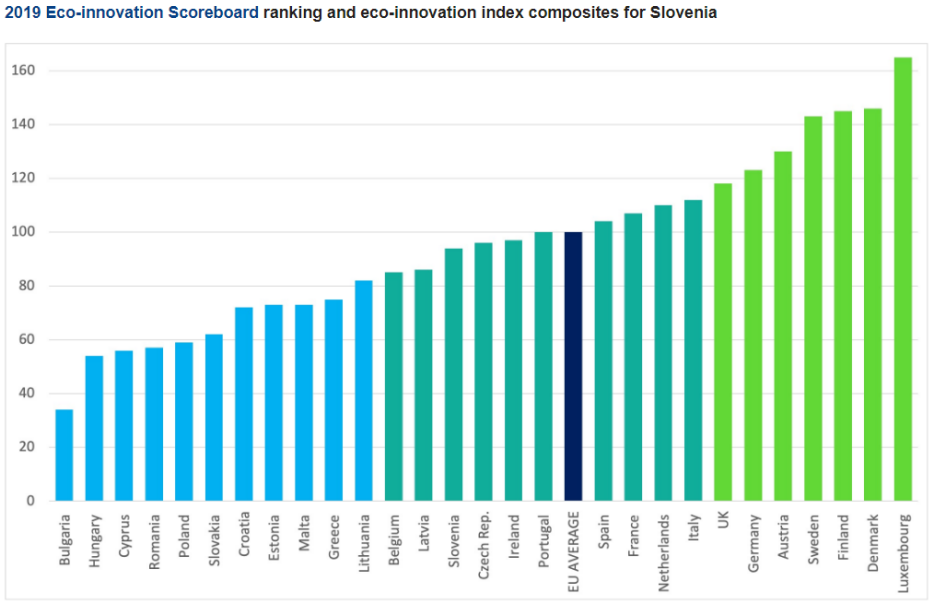
SME Internationalization, Eco-Innovation, and Performance (II)

- **Growing market demand** worldwide for environmentally sustainable production technologies, products and services
  - The global markets for environmental goods and services, designed to reduce resource usage across all aspects of the economy, estimated at € 2.2 trillion in 2020 (*Doranova et al., 2013*)
- **Foreign regulation** ("Green barriers")
  - ISO14001 certification (*Li, 2014; Luan et al., 2016; Zhu et al., 2007*)
- **Organizational learning** ("Learning by exporting")
  - cater to demanding foreign customers (*Love and Ganotakis, 2013*)
  - benefit from observing capable foreign competitors (*Zahra et al., 2000*)
  - collaborate with technologically advanced foreign partners (*Cassiman and Golovko, 2011*)

Are Our Findings Generalizable to Other Contexts?

Our Context

- Innovation-driven, environmentally-conscious, small open economy, EU member



Other Contexts

- Juniati et al. (2019) report a significant mediating effect of eco-innovation on the relationship between internationalization and performance, in a sample of 307 managers in **24 Malaysian MNEs**
- Šumakaris et al. (2020) present the internationalization-eco-innovation-performance link in a **bibliometric analysis of 1677 studies published between 1991 and 2020**.

Policy Implications

- Shift focus from supporting one-off eco-innovations to supporting the "greening" of the entire value chain
- Better align trade, environment, and sustainable development policies and regulations
- Foster public-private partnerships that allow trade and environment to be mutually supportive
  - See also *WTO and UN Environment (2018). Making Trade Work for the Environment, Prosperity and Resilience. Available at* https://www.wto.org/english/res_e/publications_e/unereport2018_e.pdf.