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Development of Public Policies that Enhance the Reuse of Materials in the Brazilian Industry

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Academic Work



This study aimed to identify

- factors that might guide the development of **policies aimed at stimulating waste reuse** (Costa et al., 2010),
- policies that offer **incentives** to waste management entities (da Cruz et al., 2012),
- policies that **mitigate the barriers** related to legislation and public bureaucracy that prevent sustainability (Murillo-Luna et al., 2011), and
- actors who enable the **establishment of partnerships** that favour sustainability and that encourage sustainable innovation (Ciliz et al., 2013).



Research design

- Research question:
 - ***“How can we define public policies that lead to environmental sustainability without compromising the revenue of public agents”?***
- Constructs
 - Policies, markets and technologies.
- Study
 - A multiple-case study - 9 Brazilian companies with potential to reuse industrial waste from their own customers in their respective production processes

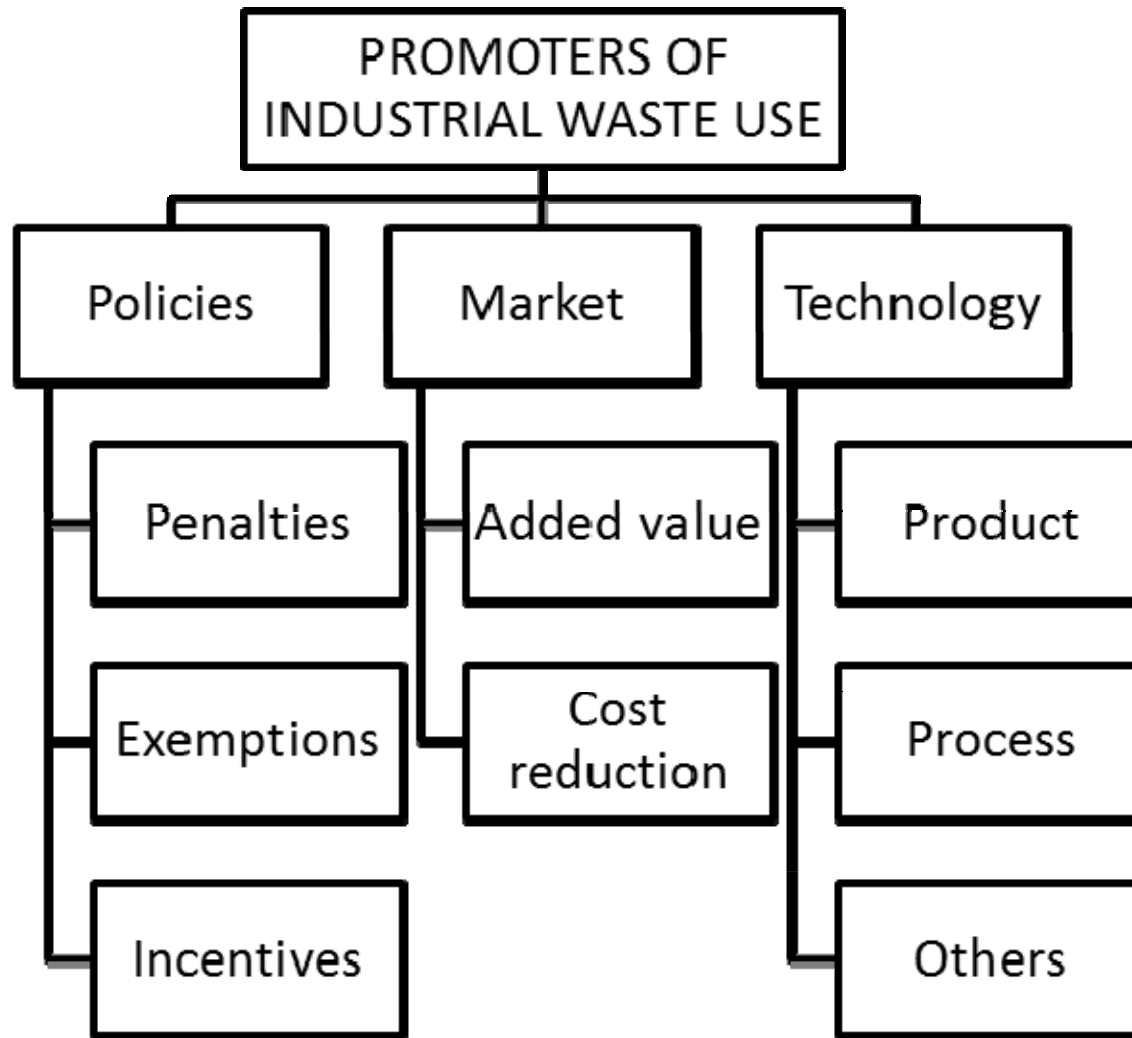


Constructs

- Relationship between public policies and the use of industrial waste (Costa et al., 2010, Testa et al., 2012),
- How policies may restrict waste reuse (Geng et al., 2012, Murillo-Luna et al., 2011)
- Market and technical aspects that encourage or restrict industrial waste reuse include the market value of the reused materials and the production process in which industrial waste is or may be used (El Korchi and Millet, 2011, Murillo-Luna et al., 2011).



Research framework





Findings

POLICIES	CASES	COMMENT
Sanctions as motivating factor	A (fertilisers) and B (steel)	Market and technological factors <u>encourage</u> reuse. Sanctions work as motivating factors. Tax exemptions on waste trading stimulate competitiveness of environmentally sustainable products.
Incentives for technological development	C (polymers), D (zinc), E (refractorie s I) and H (plastic films)	<u>Sporadic incentives</u> for technological development enabled the reuse of waste in those cases in which it was not technically or economically feasible. In case H, <u>sanctions are not effective</u> because of the nature of the waste, the high number of points of production and the small amount found in each point of production.



Findings

POLICIES	CASES	COMMENT
Community awareness campaigns	C (polymers)	<u>Awareness campaigns</u> on proper waste disposal and sorting by the population and the organisation may increase waste reuse.
Generating employment and income for waste pickers	C (polymers)	The <u>training of waste pickers'</u> cooperatives might increase the recycling of economically attractive items. That initiative would also enable generating employment and income among the poorest population.



Discussion

- Sanctions for improper waste disposal **promote the reuse** of materials.
- However, **policymakers must be aware of the limits of sanctions.**
- The **combination of those factors** exempts the development of public policies aimed at encouraging the reuse of materials.



Discussion

- The marketplace can take care of reuse under well designed sanctions. This situation **renders the provision of funds or waiving of revenue** (with exemptions) unnecessary for the government.
- The combination **favours spontaneous corporate symbiosis** (Costa et al., 2010) and indicates **criteria that may be applied** in granting incentives to companies (da Cruz et al., 2012). Findings indicated that **not all waste demands stimulus** to sustainable innovation (Ciliz et al., 2013).



Discussion

- **Sanctions on companies are ineffective** in those cases in which there is no economically viable technology for the reuse of materials.
- The feasibility of reusing materials in those scenarios **demands public investments** that fund the development of technologies for the economic reuse of such materials. **Those investments are sporadic**, and they may be suspended once the technology is developed.



Discussion

- The combination of **technical and economic viability may not suffice to encourage the reuse** of materials in certain cases, such as with polymeric waste (case C).
- **Sanctions are also not applicable to that waste** because small amounts may be found in thousands of different points (from homes to businesses).



Discussion

- The findings indicate that **public policies for this type of waste should focus on community awareness and generate employment and income** for waste pickers in countries such as Brazil.



Discussion

- **Community awareness** attempts to improve the quality of waste and thus facilitates its future reuse.
- Policies that generate **employment and income** should improve existing conditions by enabling many people to turn collection and sorting into a livelihood.



Discussion

- Those findings highlight the **relevance of entities responsible for waste management** and the actions they demand from the Brazilian government (da Cruz et al., 2012, Ciliz et al., 2013).



Discussion

- **Sanctions are also not viable for cases G (cardboard) and I (glass) waste.** The reasons for that ineffectiveness were described in case C (polymers).
- **However, this waste reuse does not demand any type of political or public resource.** As noted, the market value of this waste, the existence of accessible reuse technology and a broad collection network outweigh the effects of public resources directed at their reuse.



Discussion

- This observation indicates that a combination of these factors may be a **powerful promoter** of spontaneous symbiosis between companies (Costa et al., 2010), which may **remove existing barriers** (Murillo-Luna et al., 2011) and reveal factors to be considered upon the **implementation of sustainability in the form of partnerships** (Ciliz et al., 2013).



Conclusion

- These findings may indicate that defining public policies that encourage the reuse of recyclable materials must consider the **value** of the waste material, the economic viability of the recycling **technology** and the existence of a **labour network** for collection and separation, as appropriate.
- **Sanctions should be applied** when recycling is possible and companies do not reuse the materials.