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Eco-retribution as a new tool to boost Circular Business Models experimentation and upscaling

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Track 1.2: Ecosystems in Support of Sustainability

Abstract

In this article, we describe how, in addition to their traditional eco-design tool, namely eco-modulation, Producer Responsibility Organizations (PRO) can now rely on a new tool, called eco-retribution, in order to create supportive business ecosystems that boost experimentation and scaling of circular business models in an efficient way.

Key words

Circular Business Models, Supportive business ecosystem, Extended Producer Responsibility, Eco-modulation, eco-retribution

Short paper - main text

Addressed problem and first elements of literature review

In this article, we analyze how Producer Responsibility Organizations (PRO) involved in Extended Producer Responsibility (EPR) systems can create ecosystems that stimulate experimentation and scaling of circular business models in an efficient way. More specifically, we conduct a comparative analysis of two tools respectively called eco-modulation and eco-retribution. The former is the most common differentiating fees mechanism used by PROs to promote eco-design in various countries (Eunomia, 2020), while the latter is a new tool, which was developed and launched in 2021 by the French furniture PRO Eco-mobilier. Instead of

focusing solely on product design, it specifically aims to scale up the circular business models of the actors that are part of the PRO's ecosystem.

The concept of EPR was introduced in Europe in the late 90's (Lifset, 1993; Lindhqvist, 2000). It is based on the "polluter-pays" principle. The purpose is to internalize the cost of waste disposal into the cost of the product, theoretically meaning that the producers will improve the waste profile of their products, thus decreasing waste and increasing possibilities for reuse and recycling. Its significance and implementation have constantly evolved since then. To fulfill their responsibility, producers can either implement an individual system or join a collective organization. For economies of scale motives in collection and treatment activities, in most cases producers opted to share their responsibility by joining a Producer Responsibility Organization. PROs are collective organizations that play a major role in the implementation and management of EPR systems. Although their role has varied widely, one of their main traditional objectives is to create, coordinate and monitor on a day-to-day basis ecosystems of actors that will be able to achieve the specific waste collection, recycling and reuse targets set by law. EPR schemes have been increasingly used since the last decades, to the extent that they have become a key policy instrument at the European level (Micheaux et Aggeri, 2019 ; Micheaux, 2019).

The traditional funding method for EPR schemes is a fee paid by consumers when they purchase new products to cover the costs of end-of-life treatment. In collective systems, this fee is collected by manufacturers and retailers and transferred to the PRO. With these funds, the PRO can compensate stakeholders for their collection, sorting, preparation for reuse or recycling services.

Eco-design of products, which aims to improve their environmental impact and facilitate their reuse or recycling, is a fundamental objective of the EPR system (Laubinger et al., 2021). To achieve this objective, some EPRs in some countries differentiate fees according to eco-design criteria (Eunomia, 2020). In France, this mechanism is called eco-modulation. Products that meet specific eco-design criteria benefit from a reduced fee, thereby reducing the financial burden on the manufacturers and retailers involved (Micheaux et Aggeri, 2021).

Nonetheless, while focused on waste management activities, EPR schemes have been criticized for their lack of incentive to change manufacturers' product design (Tojo, 2004; Walls, 2006; Van Rossem, 2008; Mayers et al., 2013) and business models, and the efficiency of the eco-modulation mechanism has been debated (Micheaux et Aggeri, 2021). Related administrative burdens have been highlighted as a critical point (Laubinger, 2021).

In response to these debates, the French furniture PRO Eco-mobilier launched in 2021 a new tool called eco-retribution, as an alternative way to modulate fees (Eco-mobilier, 2021). As an organization in charge of building a supportive business ecosystem for furniture circularity, its goal was to experiment a new tool to try to be more effective in scaling up circular business models based on recycling activities.

It represents a triple paradigm shift for PROs. First, PROs usually have a product-based approach targeting eco-design through the modulation of fees, instead of business model and organizational approaches. Second, its main objective is to encourage economic actors by transferring the administrative burden to the PRO. Third, this new eco-retribution mechanism incentivizes the manufacturers and the retailers who use recycled materials, by proposing them a credit on the fee that they pay to Eco-mobilier for each ton of material bought, with the explicit goal to make recycled material producers' business models more competitive compared to their virgin material competitors. Historically, PROs focused on the previous linkages of recycling value chains, namely collection, massification and sorting, and not

recycled material production and use (Aggeri et al., 2019). Nonetheless, increasing the use of recycled materials at the ecosystem level is an essential condition for scaling up the corresponding circular business models (Beulque et al., 2018).

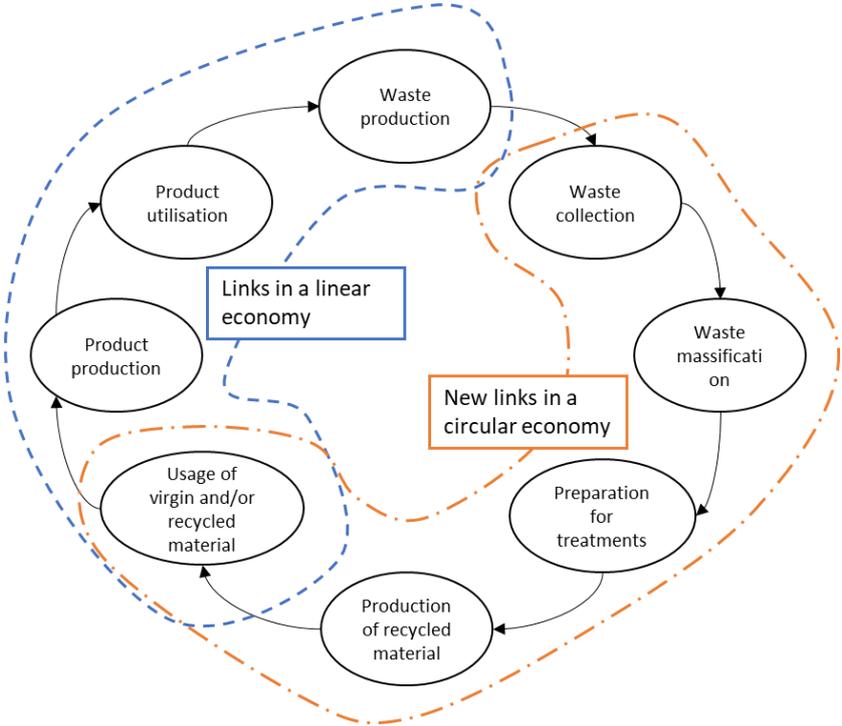


Figure 1: Linkages of recycling value chains (Aggeri et al., 2019)

In this article, we carry out an empirical comparative study of these two mechanisms.

By doing so, we aim at participating in key research paths of the literature on both circular business models and Extended Producer Responsibility to shed light on the organizational conditions and policy instruments required to set up ecosystems that drive producers to implement circular business models (Dentchev et al., 2018; Laukkanen & Patala, 2014; Evans et al., 2017; Peña-Vinces et al., 2021; Tsagarakis et al., 2021). There is an extensive literature on EPR systems that seeks to evaluate their effectiveness in order to improve their performance. Debates are essentially about the lack of incentive for eco-design in a collective model (Tojo, 2004; Walls, 2006; Van Rossem, 2008; Mayers et al., 2013). In this sense, some authors have proposed individualized cost allocation mechanisms based on mathematical models (Mayers et al. 2013; Pires et al. 2015). However, the matter lacks empirical studies. Other research deals with the tension between recyclability and waste prevention objectives (Huang et al. 2019) or the effect of competition between PROs. By discussing two mechanisms, one new and one tested for more than a decade in France, we provide key insights about how to promote eco-design and stimulate circularity business models in Extended Producer Responsibility collective schemes that lack incentives.

From an empirical perspective, this debate has a key importance for practitioners and policy makers (Laubinger, 2021). As evoked, Extended Producer Responsibility is increasingly used as an environmental policy instrument and since 2018, the revised version of the Waste Framework Directive (2018/851) includes fee modulation amongst the general minimum requirements of any EPR scheme. This topic has been much debated during the consultation process launched by the European Commission (European Commission, 2020).

Methodological approach

From a methodological perspective, we base our work on two longitudinal case studies carried out with two French PROs. The first one is Eco-mobilier and deals with waste produced by the furniture sector, and the other one is ecosystem, which is responsible for the EEE (Electronic and Electrical Equipment) sector in France.

We have chosen to conduct a longitudinal analysis as it is well adapted for case studies, allowing us to explore “the contexts, content, and process of change together with their interconnections through time” (Pettigrew, 1990).

Regarding Eco-mobilier, one of the authors carried out a four-year longitudinal action research in Eco-mobilier’s Innovation Department, with the mission to promote material recycling and End-of-Life products reuse. One of his missions was to imagine new incentive mechanisms to promote related markets and business models. As such, he spent four years imagining, designing and implementing the eco-retribution scheme. As part of this process, he conducted 76 interviews and working sessions with key stakeholders. Another author has spent over five years studying ecosystem and the French model’s governance, carrying 68 interviews and participating in workshops with many stakeholders on major issues facing PROs, such as the modulation of producers’ fees. In parallel, the three authors undertook additional interviews with a set of key stakeholders.

As advised by Howard-Grenville (2020), and in continuation of our previous work on circular business models, we adopt a multilevel perspective that combines analysis of system and organizational levels.

Amongst the key stakeholders that have been interviewed, the authors exchanged with several firms that are members of PROs and launched eco-design initiatives in order to understand the effects of the eco-modulation mechanism (Micheaux et Aggeri, 2021). Indeed, both eco-modulation and eco-retribution are ecosystem level tools, since they are implemented by all the firms of a given country that belong to the sector under an EPR scheme and that they can impact all the recyclers of the related industries.

However, these mechanisms need also to be analyzed at an organizational level. As a matter of fact, they are implemented by the PRO itself, as well as by the recyclers, manufacturers and retailers who are members of the scheme. At this level, we proceed to a thorough study of how these two mechanisms are concretely implemented in firms, through organizational processes and data management systems that impacts several of their departments.

First results

In this section, we highlight the key differences between eco-modulation and eco-retribution.

First, as evoked, these mechanisms do not target the same objects. Eco-modulation aims at improving product eco-design. On the other hand, eco-retribution aims at increasing recycled materials use by manufacturers and retailers. In doing so, it seeks to increase the size of the market for recycled materials in order to stimulate the growth of secondary material producers’ sales, allowing them to expand their business models. In this optic, eco-retribution provides a financial incentive to manufacturers and retailers for each ton of recycled materials that they buy. As such, as implemented by Eco-mobilier, for each ton of recycled polyurethane that a producer would use in a mattress, he would receive 50 €.

The second key difference relates to the organizational implications of these two mechanisms. Therefore, in this section, we also describe the organizational challenges that hamper the efficiency of eco-modulation as a tool that can boost eco-design in an efficient way, and the organizational characteristics that make eco-retribution attractive to manufacturers and retailers.

Fees are an additional price paid by customers to manufacturers and retailers when they buy products and they are used to finance the end of life of the products. Within each given EPR scheme, different families of products are identified by specific codes, which are created by the PRO and are composed of a dozen digits. Each manufacturer, a member of the EPR scheme, needs to associate these codes to each of its products and components, and to the different internal codes that enables him to identify them, within its design, manufacturing, sales data management systems. Inside each firm, a single component – or product – has different codes in each data management system. The same operations must be carried out at the level of the retailers' management systems.

As a result, changes in a PRO's eco-modulation policy are generally not welcomed by its members, if not opposed altogether. Indeed, it causes an extensive recodification work, which is considered to be a costly and time-consuming administrative burden. This characteristic often leads PRO teams to abandon proposed changes, since these changes must be validated not only by their board of directors, but also by their administration council, which is composed of the country's major manufacturers and retailers.

It is on the basis of this analysis that the eco-retribution was proposed, with the main objective of creating a tool in which traceability would not be ensured by manufacturers and retailers, but directly by the PRO, as a collective organization in charge of creating and managing the whole ecosystem.

As evoked, in this mechanism, manufacturers and retailers receive financial assistance based on the number of tons of recycled materials they buy. Therefore, they have very limited information to provide in order to identify their suppliers, and the quantities they have bought over a given period of time. The last additional information to know is the percentage of recycled material that is contained in the material that they bought from each of their suppliers.

In this section, we will highlight how, thanks to their collective nature, PROs are in a key position to create this knowledge and control its veracity. Indeed, through the collection network that they monitor, they know the amount of End-of-Life products collected in a given country. One of their missions is to recycle the materials that compose them thanks to a network of recyclers. Therefore, they also know the amount of sorted materials that are sold by these actors to the producers of recycled materials.

Nonetheless, if eco-retribution appears to be able to alleviate manufacturers and retailers' administrative burden, its implementation raises other traceability and confidentiality challenges. In this section, we will describe them thoroughly.

Preliminary conclusions

In this article, we contribute to key research paths of the literature on both circular business models, business ecosystems and Extended Producer Responsibility. This is especially the case regarding the role of public actors in the design of policy instruments supporting the development and diffusion of sustainable business models (Dentchev et al., 2018; Laukkanen & Patala, 2014; Evans et al., 2017).

At first, we will enhance the current comprehension of the organizational challenges that hamper eco-modulation's effectiveness as a tool that is designed to promote eco-design. We also identify eco-retribution as a new mechanism to boost experimentation and scaling up of circular business models based on recycling activity, and as a complementary tool to eco-modulation in order to stimulate eco-design and increase circularity in EPR schemes.

Nonetheless, our work still faces limits at its current stage. Indeed, more time is needed for definitive conclusions, since eco-retribution was only launched in 2021. Moreover, this mechanism has initially been launched primarily to boost circular business models based on recycling activities, which is the last strategy according to the waste management hierarchy. Therefore, its ability to promote other circular targets and business models (reuse, eco-design, product as a service, etc.) still remains to be proved.

Summary

In this article, we analyze how Producer Responsibility Organizations (PROs) can create ecosystems that stimulate experimentation and scaling of circular business models in an efficient way (Dentchev et al., 2018). More specifically, based on the two case studies of the French PRO ecosystem and Eco-mobilier, we conduct a comparative analysis of two tools respectively called eco-modulation and eco-retribution.

The former is the most common one. However, its efficiency has been debated and its administrative complexity pointed out (Mayers et al., 2013; Laubinger, 2021). As a response, the latter was proposed in 2021 by the French furniture PRO Eco-mobilier. Its main objective is to create a tool in which traceability related administrative work would not be ensured by manufacturers and retailers, but directly by the PRO, as a collective organization in charge of creating and managing the whole ecosystem. Instead of product design, it specifically targets to scale up the circular business models of the actors of the ecosystem.

Through this article, we contribute to key research paths of the literature on circular business models, business ecosystems and Extended Producer Responsibility. At first, we enhance the current comprehension of the organizational challenges that hamper eco-modulation's effectiveness as a tool that is designed to promote eco-design. We also identify eco-retribution as a new mechanism to boost experimentation and scaling up of the circular business models, and as a complementary tool to eco-modulation in order to stimulate eco-design and increase circularity in EPR schemes.

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