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Promoting Sustainable Development by Packaging Manufacturers Within the Regulatory Environments of Finland, the Greater EU, and the U.S.

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Abstract: This chapter seeks to advance the fragmented discourse on the development of the global sustainable packaging sector, focusing on how packaging manufacturing evolves within the rapidly changing and often divergent regulatory landscapes of the European Union (EU)—with particular attention to Finland as a global sustainability leader—and the United States (U.S.). Multinational packaging producers face the ongoing challenge of harmonizing their sustainability activities and operations to meet varying legislative requirements across regions, including EU countries and U.S. states. At the same time, the literature remains quite short on comparisons between these markets despite an intensive flow of goods between these regions. Relying on qualitative interviews with practitioners and policymakers and building on the findings from the Package Heroes research project carried out in Finland, within the greater EU regulatory environment context, this chapter looks further at how packaging manufacturers headquartered in Finland navigate the regulatory environments of the EU and U.S. markets. This chapter further takes a stretch towards package manufacturers headquartered in the U.S. and exporting to or running their operations also in Europe, particularly in the EU. Despite our findings being hardly generalizable with a limited sample, we believe this chapter provides valuable input to the limited body of work overviewing the two Western contexts actively engaged in sustainable packaging developments.

Keywords: Regulatory environment; Finland; EU; United States; Sustainable packaging

1 Introduction

The growing concerns for climate change and environmental sustainability have triggered the packaging industry to step into a sustainability transition. The complexity of the global packaging industry has demanded multiple stakeholder involvement in the process, starting with policymakers and the entire value chain of packaging technology developers, suppliers, packaging producers, brand owners, retailers, customers, consumers (see chapter 4 O’Shea et al. in this book), as well as supportive bodies such as industry associations and consumer rights protection bodies. The European Union (EU) and the United States (U.S.) have been the pioneers in developing legislation for sustainable packaging and these developments have intensified in recent years (Brennan et al. 2021; Szaky 2019). The regulatory environments of both the EU and the U.S. are complex in themselves, and complexity only increases when we approach multinational packaging developers and producers which operate across these regions (Muff 2022; Sanches Pereira and Bechara Elabras-Veiga 2022). In addition to multiple challenges related to the actual packaging development, production, and distribution, sustainability communication has become a challenge in itself for multinationals (Barrowclough and Deere Birkbeck 2020) especially when operating across the diverging environments of the EU and the U.S. (Muff 2022). Despite the high rate of goods exchange between these regions, the complexity of the matter, and the dynamic nature of the legislation itself has limited the ability of researchers and consultants to comprehensively compare these diverse regulatory environments (Smith 2012; Pasonen 2023). This is where this chapter aims to contribute. In this study we closely look at the cases of two regions: Finland – the global leader in achieving sustainable development goals (Sachs et al. 2023) and the member of a broader EU regulatory environment; and the U.S. – the global economic leader by GDP. While Finland’s economy is not directly comparable to that of the U.S., one of the world’s largest economies, this chapter does not aim for a systematic cross-regional comparison. Instead, by examining Finnish companies operating globally, including in the U.S., alongside U.S.-headquartered companies active in the EU, we explore how firms navigate sustainability within regulatory contexts that are economically interconnected but remain diverse. Accordingly, we address the following research question: *How do the regulatory environments of regions like Finland (as part of the broader EU) and the U.S. shape the global sustainable packaging production sector and influence companies’ sustainability communication across these regions?*

The chapter opens with an overview of legislation of the packaging sector in Finland, the greater EU, and the U.S., followed by a reflection on companies’ sustainability activities as well as their communication practices. In establishing the framework of our study, we balance an overview of

the academic publications with statements made by the regions' legislative bodies and related agencies, as the regulative environments are multifaceted and highly dynamic, so the academic literature with its publication timespan has challenges keeping up with the speed of the legislative developments. We then explain our methodological approach and share the findings, conclusions, and implications. Despite our findings being hardly generalizable with its limited sample, we believe this chapter provides valuable input to the growing body of work overviewing the Western contexts actively engaged in sustainable packaging developments.

2 Regulatory Environments in the Packaging Industry Across the EU and the U.S.

2.1 Regulation of the Packaging Industry in the EU, Finland, and the U.S.

In recent years, the global packaging industry has faced fundamental changes, including those related to plastic packaging, as sustainable development came to an agenda across stakeholder groups, especially consumers and regulatory authorities (Feber et al. 2019). Evidence of the evolving and ever more complex regulatory environment can be seen globally, but especially among developed economies of the EU and the U.S. For example, in the EU, the revision of the Packaging and Packaging Waste Directive (PPWD), which sets ambitious goals for the reuse and recyclability of packaging, received general support from both the European Parliament and the Council before Christmas 2023 (European Council 2023). There are no federal-level projects of similar scope in the US (as of April 2024). Instead, several states have implemented, or plan to implement different Extended Producer Responsibility (EPR) legislations, the aim of which is to reduce waste, promote product innovation, and increase the efficiency of recycling processes (National Conference of State Legislatures 2023).

This subchapter aims to highlight the most relevant and impactful initiatives supporting sustainable development within the packaging industry. In examining Finland, which operates under the broader EU regulatory framework, we first focus on directives from the European Commission, while regulations specific to individual member states are not included. Then additionally, we discuss the unique aspects of Finnish packaging regulation, justifying why data primarily sourced from Finland can effectively represent broader EU regulatory trends. The U.S. federal system, in turn, can be considered relatively fragmented (Carter and May 2020; Pasonen 2023), and currently

the more binding regulations related to packaging are made by the individual states (e.g. National Conference of State Legislatures 2023). For that reason, there is a need to review the federal regulations made by, for example, the Food and Drug Administration (FDA), the Environmental Protection Agency (EPA), and the various state-level regulations.

In December 2019, the European Commission presented the European Green Deal (EUGD), which is a roadmap to create the world's first climate-neutral continent by 2050 and to make the environment in Europe's area of influence toxic-free (European Commission 2019). The EUGD consists of multiple initiatives, of which the Circular Economy Action Plan (CEAP), which especially addresses the packaging industry, was presented in March 2020, and it is an updated version of a similar plan from 2015 (European Commission 2020). It includes strategies, proposals, and regulatory frameworks regarding, for example, the use of plastics, overpackaging, waste treatment, recycling, and composting (European Commission 2020). As part of the EUGD and CEAP, in November 2022, the Commission revised the previously mentioned PPWD, which, (in addition to reuse and recycling), addresses, for example, EPR, extensive packaging, and harmful materials (Ragonnaud 2024). In June 2019, as a part of the 2018 European Strategy for Plastics, the Single-Use Plastics Directive (SUPD) entered into force (OJ L 155/1 2019). It is a separate directive from the EUGD stream of directives, but certainly as important, as it has strict restrictions on different single-use plastics, to tackle marine pollution and develop a circular economy (European 2021). These directives and regulations are in different phases and are receiving constant updates, but they form a sufficiently broad picture of the current initiatives affecting the EU's packaging industry.

As a member of the EU, Finland builds its packaging regulation on top of the EU regulation, but in some cases, as is common with national regulations, they may contain clarifications and additional requirements (see Waste Act 2011/646 2011). Due to the principle of the primacy of EU law, if national and EU law are in conflict, EU law will prevail (EUR-Lex 2022). Finland is actively aligning its national regulations with EU directives, for example by recently harmonizing its EPR legislation by removing the exemption from recycling fees of companies with an annual turnover of less than one million euros (Centre for Economic Development, Transport and the Environment 2024). A comparison between a small Nordic country like Finland and the U.S. can be problematic, for example, due to the significant differences in economic scale and structure (Burg 2021). While comparing a small Nordic country like Finland with the U.S. can be challenging—given their vast

differences in economic scale and structure (Burg 2021)—Finland’s packaging regulation largely reflects recent EU directives (e.g., Finnish Food and Drink Industries’ Federation 2024; Finnish Commerce Federation 2024). This makes the Finnish context a reasonable proxy for examining EU regulatory impacts on a broader scale, particularly concerning globally operating companies, and supports a cross-regional comparison with the U.S. context.

In the U.S., the EPA is one of the federal regulatory agencies, and it has the authority to regulate, for example, sustainable waste disposal, including landfill management and incineration of packaging. The EPA administers multiple federal laws, such as the Clean Water Act (CWA), the Clean Air Act (CAA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and the Resource Conservation and Recovery Act (RCRA), but the agency still tends to give a lot of the regulating power to the states and local authorities (Keller and Heckman LLP’s Packaging Practice Group 2002). The FDA then regulates packaging that is in contact with food, through the authorization of, for example, the Food, Drug, and Cosmetic Act (FDCA) (Lam and Patel 2023, p. 1). The FDA also regulates fair package labeling and the transparent communication of manufacturers in collaboration with the Federal Trade Commission (FTC) (FTC n.d.). The role of the FTC will be further discussed in section 2.3. On the state level, the previously mentioned trend of EPR legislation can be seen in states such as California, Maine, Hawaii, Maryland, New York, Oregon, and Washington, and these laws are addressing, for example, single-use plastics, recyclability, producer fees, and material restrictions (Tumu et al. 2023). The fragmentation of regulations is evident in this overview, but these examples form an overall picture of the regulatory environment for the U.S. packaging industry.

2.2 Towards Sustainability in the Packaging Sector

The global packaging industry has seen steady growth in recent decades (Feber et al. 2022) due to the growth of the global population and the rising need for various packaging solutions (Monteiro et al. 2019). The industry has been addressing the evolving legislation, as well as overall different demands (Bor et al. 2024), for example, by trying to replace and reduce the use of fossil-based packaging materials (Keränen et al. 2023). However, some companies have only limited interest in developing more environmentally friendly packaging products than they currently offer (Monteiro et al. 2019).

Many consumers tend to believe that companies are not doing enough to address various sustainability issues, and particularly overpackaging is causing concerns (Guttmann 2023). From a consumer perspective, one of the most noticeable sustainability features of packaging is the ecolabelling of products (Thøgersen et al. 2010), which nowadays is reported to be controversial and thus demands more strict regulation (Meis-Harris et al. 2021). Ecolabels have an important role in educating and raising customer awareness of the environmental and ethical performance of packaging (Donato and D’Aniello 2022). Certified and credible ecolabels are aiming to change consumer behavior and post-purchase actions by providing information and advice on how to recycle and reuse products, but there is still only limited evidence to what extent this approach supports, for example, the transition towards a circular economy (Meis-Harris et al. 2021). Meis-Harris et al. (2021) also argue that the labels cannot be effective in isolation, as they need governmental support such as tax policies, standardization, restrictive actions of unlabelled alternatives, and other regulative tools to reach the desired impact. Naturally, the sustainability dialogue must also reach stakeholders other than just customers. Empirical studies show that companies have been working beyond their corporate boundaries in sustainability initiatives and strive to motivate environmental development also at the supply chain level (e.g., García-Arca et al. 2014; Molina-Besch and Pålsson 2016).

Efforts are also taken to make the physical properties of packaging more sustainable, via e.g., transforming multi-material packaging to mono-material, as the latter seems to perform well in environmental impact assessments and has good properties for recycling (Maga et al. 2019). Companies are exploring the possibilities of mono-materials, but there are still challenges related to the product-protecting properties (De Mello Soares et al. 2022), costs, underdeveloped infrastructure, incoherent legislation, and product functionality (Ma et al. 2020). As humankind’s dependency on non-biodegradable plastics is still extremely high (Mangal et al. 2023), there is an urgent need for an efficient collaboration of all possible stakeholders to overcome these barriers to change. As plastics have many irreplaceable properties, efforts must be made in the packaging development process and its legislation to maintain the value of already created products. The key to this is the end-of-life product management related to packaging reuse and recycling (Radhakrishnan 2016, p. 171). There are differing viewpoints on whether reuse is a better option (Ross and Evans 2003), and especially in the paper packaging sector there are arguments against reuse, as the process has many non-evident energy-consuming steps (Aigner and Mauro 2021).

These varying viewpoints also pose challenges to communicating sustainability to customers and its regulation across the packaging value chain.

2.3 Sustainability Communication

In this chapter, sustainability communication serves as an umbrella term and it covers all observable corporate communication to stakeholders, including corporate social responsibility – CSR; environmental, social and governance – ESG (Mishra and Sant 2023), and sustainability marketing (Vaccaro 2009; European Commission 2023a). We examine how this corporate communication is encouraged and regulated in the regions – Finland/broader EU and the U.S.

Many of the largest packaging companies are handling various environmental topics in their sustainability reporting, such as waste management, recycling, climate change and renewable materials, but every company tends to have their own interpretation of what is important for the industry's sustainable development. Accordingly, there is a need in aligning industry's reporting practices (Hillier et al. 2017). The EU has addressed these issues in the Corporate Sustainability Reporting Directive, which entered into force on January 5, 2023 (OJ L 322/15 2022). Now all large and most of the listed companies in the EU must disclose information about their social and environmental risks and goals in a standardized manner (European Commission 2023b). In the U.S., this type of communication is voluntary in the federal level regulation, probably because the authorities believe that the non-binding approach will increase the amount of sustainability disclosure, even though empirical evidence does not necessarily support this view (Rezaee et al. 2023).

One of the relevant topics in the field of corporate sustainability communication in recent years has been greenwashing, which has received particular attention following the Volkswagen emissions scandal (Yang et al. 2020). Greenwashing generally refers to organizations' deceptive or fraudulent sustainability communication practices, especially in environmental matters (Qayyum et al. 2023). Greenwashing is not always a deliberate action, as an organization may also unknowingly be part of greenwashing at the supply chain level (Szabo and Webster 2021), or by accidentally sharing false or imprecise information (Pizzetti et al. 2021).

Both the EU and the U.S. regulatory authorities have taken measures to tackle the greenwashing phenomenon. In the EU, the Commission has adopted a proposal for a Directive on Green Claims in May 2023, the aim of which is, for example, to protect consumers from greenwashing, standardize and monitor labelling and environmental performance claims, and promote fair and green competition (European Commission 2023a). In the U.S., the FTC has had a similar approach since 1992 in the form of the Guides for the Use of Environmental Marketing Claims (Green Guides) (Clark 2012). The Green Guides help organizations avoid deceptive and unfair environmental claims and consumers to make environmentally educated purchasing decisions (FTC 2022). Even though it is not currently mandatory for companies to follow the Green Guides, they have been incorporated into the legislation of several states, which makes it safer for companies to simply comply with them (Vincent et al. 2022). There has also recently been a discussion of whether the Guides should be turned into binding regulations (Tabor 2022). In a previous study, the Green Guides emerged as a defining factor in the appropriate sustainability communication of a packaging manufacturer's subsidiary operating in the U.S. (Pasonen 2023).

3 Methodology

This research work builds on the Package Heroes project's ¹ initial findings about sustainable food packaging in Finland and goes beyond it with further data collection and ambition to understand the differences between the packaging sectors of Finland and the U.S. Understanding how the packaging landscape is aligned or differs between the regions is essential to further aid the sustainability of international goods exchange.

3.1 Sampling and Data Collection

The data used in this study represent two waves, see Table 1.

The first wave consists of data collected by the Package Heroes consortium in 2019, to gain an in-depth understanding of the Finnish sustainable food packaging sector and market. In that wave, a

¹ Package-Heroes is a research project funded by the Strategic Research Council functioning under the Academy of Finland, for more information see: www.packageheroes.fi/en/

maximum variation sampling (Patton 1990) was followed with target interviewees representing diverse stakeholders. The first wave provided an initial understanding of the packaging industry in Finland and pointed out potential differences in regulatory environments and thus, organizations' communication strategies on sustainable packaging across the EU and the U.S.

Table 1 Summary of the analyzed interviews

Interviewee	Headquarter/Interviewee location	Position	Years in the company (current role)/Sector	Interview length, min
2nd interview wave				
1.	U.S./U.S.	Sustainability Manager	10(3)	31
2.	U.S./Europe	Manager in Sustainability	3(3)	54
3.	Finland/Finland	Manager, Lifecycle Services	2(2)	50
4.	Finland/Finland	Key Account Manager	1(1)/8	22
5.	Finland/U.S.	VP, Sustainability1	<1(<1)/37	23
6.	Finland/UK	VP, Sustainability2	<1(<1)/15	15
1st interview wave				
	Type of organization	Role		Interview length, min
7.	Retailer chain	Unspecified		71
8.	Fast food chain	Communications Manager		70
9.	Food manufacturer	Packaging Development Manager		59
10.	Industry association	Unspecified		93
11.	Food industry federation	Unspecified		61
12.	Ministry	Unspecified		52
13.	Food manufacturer	Unspecified		53
14.	Forest industry company	Unspecified		60
15.	Packaging manufacturer	Unspecified		41
16.	Retailing organization	Unspecified		45
17.	Dairy product manufacturer	Unspecified		56
18.	Forest industry company	Unspecified		12
19.	Plastic industry federation	CEO		74
20.	Packaging manufacturer	Sustainability Director		115
21.	NGO	Consumer Educator		47
22.	Forest industry advocacy organization	Environmental Specialist		59
23.	Fiber product manufacturer	Unspecified		Email

We started the second wave (in 2023) where we implied a criteria-based sampling (Patton 1990). This wave began in the work by Pasonen (2023), in which a large packaging producer with headquarters in Finland was approached. Accordingly, we tested the sampling strategy using just a single company but interviewing representatives from multiple subsidiaries. We then further targeted multinational packaging producers – global companies with headquarters in either Finland or the U.S. but operating globally, and then being exposed directly or indirectly to regulatory environments and communication arenas across different regions of interest. In selecting the specific companies, we followed the public lists of the most sustainable packaging producers globally, in Finland, and the U.S. We especially looked for professionals responsible for sustainability actions, sustainability strategy, and communication with some experience in the sector in general. Out of about twenty requests for personal interviews, we received six positive responses. The interviews were recorded and transcribed for further analysis.

3.2 Data Analysis

The data were analyzed manually with several rounds of thematic coding. It started with in-vivo coding of each interview, and then comparison and aggregation within each wave were done. Then several rounds of comparison, code revising and aggregating took place across the waves – see Fig. 1 illustrating the flow of the data coding process and resulting coding structure.

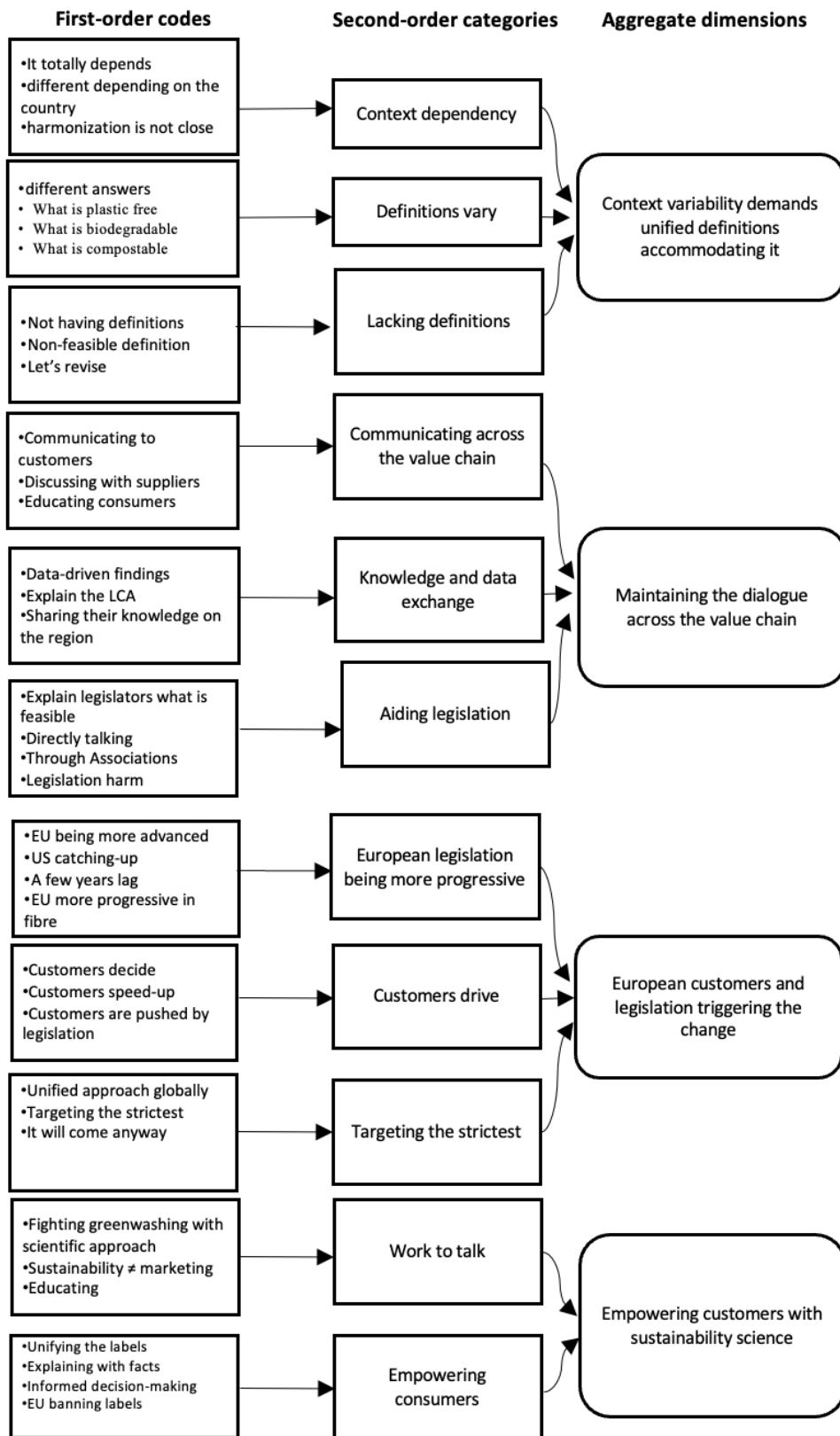


Fig. 1 The flow of the data coding process

4 Sustainable Packaging Across the Regulatory Environments

4.1 Key Definitions

Our interviewees commonly suggest that before rushing into comparing sustainability legislations, one needs to look for a shared understanding of terms and definitions, which seems to be yet developed. In the packaging sector, the terms are highly dependent on e.g., what is being packed and how long it needs to survive in transportation. Accommodating such contextual variabilities has been a challenging task for all the value chain actors, which results in definitions and interpretations varying across and within regions, countries, and value chains. See illustrative quotes from our interviewees:

...plastic-free is... a concept that... even in Europe... totally depends... [on] which criteria you consider... (Interviewee 2)

...you probably asked 10 different people what sustainability means. You get 10 different answers... (Interviewee 1)

Packaging for food products is a specific packaging field as it has its safety requirements in terms of e.g., safety of packaging contact with food and a barrier layer required for food containing liquids. The related aspect of the food packaging sector is a single-use versus reuse debate. According to our interviewees the comparative impact of reuse-type packaging versus single-use packaging heavily depends on the contextual factors:

We're conscious of the pressures that are coming from a reuse perspective versus a single-use. We have commissioned reports and compared these models and some of the information that we've received is that there's a discrepancy in terms of energy and water from a reuse market. While there are external comments which say that reuse and refill are a better solution from an overall energy, carbon, and ESG perspective, that's not necessarily true. (Interviewee 6)

... it's much worse than if you have a single-use paper-based solution and maybe it's the case in food service where you have a model that maybe doesn't fit totally reuse, but that doesn't mean reuse doesn't serve in another context.... I think... we should really avoid generalization... (Interviewee 2)

At the same, continuing the same topic of balancing single use and reuse practices, there is a notion that a change what is simply pushed by the policymakers without enough consideration given to the contextual settings, will face a lot of confusion if not resistance from the industry side:

...for years there's been an effort to make packaging look like a positive thing to the [EU] regulation scene. Now when they [lobbyers] have jumped to there through... SUP [Single-Use Plastics Directive], we've been spinning in a washing machine for three years. Regulation is coming from every direction, and no one... comprehends the whole picture... (Interviewee 10)

...[industry representative] was reading the EU regulation, and... pointed out that... if you put that out as is, you are... banning packing material from 90 percent of all food products in the EU market. So, then the EU guys: 'Oh..., not that, let's write it again!' (Interviewee 9)

... reuse has been... a topic that... industry has lobbied... strongly against...based on LCA [Life-Cycle Assessment] results (Interviewee 2)

Accordingly, in addition to the need for comprehensive definitions and legislation which accommodate for the context varying across regions, countries, and use cases of the packaging lifecycle, a dialogue between actors across the packaging value chain is essential to make the sustainability transition possible, feasible, and transparent.

4.2 Maintaining a Dialogue Across the Value Chain

Observing the patterns of some legislative decisions being non-feasible or lacking grounding, the packaging producers not only see the legislators as suppliers of rules to learn from, but they also see the need and ways to help legislators by providing them with enough information and data, clarifying the facts and discussing the legislation, as well as helping to review the legislation. The interviewees commented on this matter in the following way:

...they [legislators] should hear from the industry what is really the performance in terms of recyclability of different fiber-based packaging rather than themselves come up with [it] or [with a] Red List or blacklist... (Interviewee 2)

... there has to be the interaction within companies talking to the legislators to help them understand what technical limits are... (Interviewee 1)

... if we see... a specific development and we don't... agree with the data presented or with the proposals of the legislation, we are trying to collect facts and data from our production,... our products to make sure that this data can be utilized when making policy... (Interviewee 3)

Some of the interviewed industry players have been noticing a direct dialogue with legislators: “*we have lots of people within our teams that speak to various legislators...*” (Interviewee 6). However, others, even if they are not necessarily directly involved in conversations with legislation due to e.g., some ethical reasons, engage indirectly – through discussion forums, upon request for feedback, or through associations to maintain the dialogue, and exchange knowledge for transparency, see their opinions on this:

...there has to be a dialogue... we're not necessarily engaged directly, but where these regulators are seeking feedback from companies..., where we can bring people into our facilities – those are... activities we engage in... [Associations], whether it be in the EU, Asia,... [or] the United States, are really the ways that we communicate... [our] position... We... rely on them heavily... to make sure... our position is getting communicated up the chain... (Interviewee 1)

...we don't have a person fully dedicated to lobbying..., advocacy or public affair ... All the technical work to bring facts and figures that we do... is indirectly very useful to show policymaker[s] that there is [an] alignment... We use our associations also...; they... dedicate... much more [resources] to come up with those white papers that you know, they push into the offices... at the Commission or the Parliament. (Interviewee 2)

The discussions, again, cover an entire value chain, also particularly, suppliers and customers:

You can't do this by yourself, you have to have a very open and... constant dialogue with the food sector and the packaging sector... that's the work we are doing together

with the suppliers... discussing the requirements and looking... how we can achieve the goals that we have set, or is it feasible.... (Interviewee 16)

[In] our rigid plastics business, we're helping our customers incorporate recycled content... the levels of recycled content, the types of recycled content, whether it be chemical recycling or mechanical or recycling material, we're helping them understand... the limits..., the technical feasibility... from a flexible packaging standpoint. (Interviewee 1)

Even when certain actors are observed to play a more powerful role than others – as, for example, the brand owners as per quotes below, a discussion seems to be in place, and not only as an instrument of reaching a consensus but also as a tool for peer-to-peer learning:

It's... our brand owners, customers who decide what they want... on the package... Still... when they come up and say... 'I want to say that it's biodegradable'... you're like '...maybe I should at least tell them why I don't think... it's the best idea...'. Because... we could provide them some technical data to show if this particular material is or not biodegradable, but... we still have our opinion. It's... about guiding when we feel we should guide and... at the end of the day that's also their decision [on e.g., whether it should be] plastic free... (Interviewee 2)

... the brand owners are... leading the discussions and giving the ideas where to target at...; the rest of the value chain have to listen.... On the other hand, we are having a possibility to learn and teach both ways... There... [are] challenges of course because... some company might have a totally different... view on things... that's why we have to align ourselves with the targets which... [are] common enough for all the participants. And the circularity is for sure... (Interviewee 14))

4.3 EU vs. U.S.: European Legislation and Europe-based Customers Running the 'Show'

Overall, legislation on sustainable packaging has been developing a lot in the past decades and our informants find that it has been particularly pushed forward in the European Union. In line with the prior studies (Carter and May 2020; Pasonen 2023), most of our interviews, whether directly or not point out that the European legislation and the European market, have been the strictest, or the most

demanding, or the most proactive – depending on the perspective. Here are the quotes on a comparison of the EU and the U.S. legislation serving as a driver of the company's activities and choices:

the US is far less advanced in sustainability and especially, I would say in terms of packaging sustainability... There are several years of difference [in] the policies and regulation... [This is] the main reason why we [here in Europe] are more advanced... In Europe the fibre-based packaging is a little bit more progressive.... (Interviewee 2)

I think in the US, most of the activity has... been around the recyclability of products, not necessarily the compostability at this point. The compostability side of things are still fairly embryonic... from an operational standpoint. (Interviewee 5)

The legislation in the U.S. seems to be yet quite diverse and fragmented. Although some patterns are observed across the states it takes an effort from a packaging producer to accommodate the diversity:

... a regulatory landscape is being driven by states that have introduced EPR [Extended Producer Responsibility]. I think there's California, Ohio, Maine, and Delaware. There are a number of states that are rolling out EPR... (Interviewee 6)

Our [US] regulatory environment is very fragmented, and it's really on a state-by-state basis... At the state level, they're more involved with the environmental side of things, plastic, waste, and pollution reduction. We are trying to figure out how do we handle EPR and Post-Consumer Recycling legislation on a state level... what the policies are and then we're bringing those back... [to the company], because... our packaging has to be appropriate for 50 states when there may only be one or two states who are legislating [it in] a specific way... (Interviewee 5)

U.S. federal policy places a stronger emphasis on broader environmental protection activities, such as energy and waste reduction, rather than on the more specific regulation of packaging. It has also been reflected in our U.S.-based interviewees emphasizing energy efficiency of their facilities when discussing sustainability activities while the interviewees operating on the EU market rather took those for granted and went deeper into discussing fiber-based packaging, mono-material, plastic-free topics, and ecolabels more in-depth. In terms of diversity within the same region, despite the

EU-wide legislation, the EU regulatory environment still faces the same challenge of accommodating diversity across countries as the U.S. does across states, a challenge that was reported to have deepened due to the recent pandemic:

[In] Europe... every country will have its own [laws]..., interpretation and guidelines... It's more difficult to progress quickly when you have such a complex approach, whereas the guidelines in US may be more federal depending on the topic... (Interviewee 2)

...in Europe, even though we have these common directives, countries are starting to go towards a more national way of thinking in material politics. Italy... they favour biodegradables..., make biodegradable plastics... France has their own direction. Germany has their own. I feel like the pandemic has made this line of thinking stronger. The national way is considered to be more important.... The national fragmentation is amplified through the waste systems and waste disposal systems. There are differences between European countries and in the US between states. (Interviewee 20)

However, despite the legislation playing a role in both regions, in terms of its direct effects on packaging producers, it is rather '*shaping* [the companies' activities] *a little bit*' (Interviewee 2), while the real direct drivers of the change are customers (especially the Europe-based ones), which are in turn driven by legislation to a big extent. So, although those go hand-in-hand, customers often come first:

...often the customer... [is] the driver to... accelerate [the transition]... There are... pledges, like the plastic pacts..., which... have been... strong drivers for some of the global corporates and even some of them headquartered in US to really start moving even if there were no local policies for them... [because of] this commitment which they have to report... [to] our customers in Europe... often [the ones] headquarter[ed] in Europe were really a big trigger to tell us, no, you need to align..., to do more..., to do faster ... (Interviewee 2)

I'm working mostly with LCA and carbon footprint... the customers are asking a way more for this data in Europe than perhaps anywhere else in the world. (Interviewee 3)

The higher demands of Europe-based customers make the packaging producers follow the EU regulation proactively since they assume that similar strict rules will eventually spread. Even if their current target markets do not have as strict requirements, the packaging producers prefer to keep it all unified and aligned with the EU regulations (see more details on this finding in Pasonen 2023):

Whatever regulations there are in different regions of operations, we have a very similar approach, no matter where the subsidiary is located. We always aim for sustainability... different regions are at different “timelines” in relation to certain regulations, but we do have a similar approach in the company regardless of the region... (Interviewee 4)

The other side of this coin is the gap in legislation, approaches, and practices between the EU and the U.S. creating further challenges for multinationals when they might need to invest additional effort in communicating the reasoning for certain policy- or customer-driven requests between the U.S. and the EU sides even within a single company:

it takes effort to make the US [side better] understand why we [the European side] are asking for given request (Interviewee 2)

Furthermore, the strict EU regulation could make industry players hesitant to enter the European market:

... in a webinar... it was... said the EU becomes so overly regulated... that some... suppliers in the US are thinking ‘is it worth to supply their products to Europe?’, because... to supply... [they] have to report on that, and that... So, they would think it can actually be easier to export it to another region... (Interviewee 3)

Finally, the legislation and the actual implementation are two different things. While Europe has quite commonly been observed to be among the leaders in sustainable packaging legislation, the implementation of it and particularly the speed of it is yet to be improved:

If China decides something, it can come for us next week... if India... it’s coming next month... if we think... Europe... everybody’s following [it], but... the implementation stage here is quite slow. We also have otherwise slow processes, so if we, for example, have... innovations or products, it takes time before we can get the

acceptance here... everything is kind of slower in here... when you go somewhere else, you can... fix things... overnight.... (Interviewee 20)

Even though there are benefits in faster decision-making, the quality of outcomes is not less important in the long run. Our next sections stress this matter of speed versus quality or depth, in regard to responsibility-taking and sustainability communication.

4.4 To ‘Talk the Talk’ You Now Need to ‘Work the Work’

In our initial analysis of the first wave interviews, there has been some responsibility diffusion observed, meaning that although the sustainability transition is assumed to be a responsibility of each and every actor following the solidarity principles (Sonck-Rautio et al. 2022), there is still an expectation of a specific actor (or actor group) to take the leading role in responsibility-taking (or to be pushed first by the legislation):

... these EU’s big environmental policy projects or initiatives... are talking about... packaging waste... Produce[r]’ responsibility is now the keyword and now there’s this interesting situation in a way that this producer responsibility hopefully wakes up these big brands to the realization that this responsibility will increase their costs. (Interviewee 10)

In the second wave, when specifically asked about it, our interviewees rather note a grown level of responsibility-taking, and every actor is fulfilling their role at the best possible capacity, often beyond the legislation even with small steps or piloting projects:

... in those big alliances where everyone is represented, it [responsibility diffusion] cannot happen because normally everyone is represented. (Interviewee 2)

...we are dependent on our suppliers, they are dependent on their suppliers... I wouldn't think that us as a company can have an impact...[by]... throwing the ball to the policymakers or consumers. But what we can do and... are doing is... running small pilots where we learn and... test. I strongly believe that other companies are doing the same. (Interviewee 3)

I do think there are a number of companies making commitments that go above and beyond... what they have to do from a strictly legislative perspective... (Interviewee 1)

Such a change in responsibility-taking could be arising from a few years of difference between the waves, as legislation and the roles of different actors across the value chain have been becoming more and more clear. At the same time, as the roles and responsibilities have become clearer, it has become increasingly difficult for the actors to deliver less than they claim, not be transparent, and promise more than they could deliver, as one of our interviews put it: “*To talk the talk [now] you need to [first] work the work*”. This observation has been rather common across both Europe and the U.S. context, although each region still has some peculiarities in this regard.

The discussion on sustainability communication and related practices also showed some interesting findings. When asked to reflect a few years back our interviewees note that in the recent past sustainability used to be somewhat of a marketing function, where the message could have been communicated with a lack of grounding and eventually lead to some form of ‘greenwashing’. That has been actively fought against in both Europe and the U.S. also through legislation and made companies particularly cautious about what they say and what they do not say:

Here in the U.S., our marketing activities are governed by the Federal Trade Commission. They have these green guides. We subscribe fully to these, which prevents companies from overstating their sustainable activities or their product offerings etc. It really prevents a lot of greenwashing. We work within those guidelines of what we can and cannot say... (Interviewee 6)

...we are being very cautious of not being [lean] towards greenwashing, which to some extent... [is] complex. Sustainability is a science; [it] is very... multifaceted... we might not always be equipped in terms of resources and tools to back up everything. So, we would rather remove some of the things... that we... would have been saying in the past possibly. (Interviewee 2)

Accordingly, what our recent interview wave observes is that sustainability has transformed from being a stand-alone business function to penetrating an entire value chain with customers demanding not just high quality but also sustainable products:

...I felt that... when the commercial guys were saying ‘...look... we were not able to provide XYZ or the figures were not convincing for whatever reason’ – it is becoming a business decision parameter [which starts concerning also] the balance sheet.

(Interviewee 2)

Following the famous proverb of ‘what can be measured can be managed’, sustainability indeed became an integral part of the business. Particularly packaging sector experiences a growing number of key performance indicators (KPIs), science-based targets, and a general attitude towards greater transparency and consistency across regional borders, as the lack of those is now highly likely leading to financial losses:

...in the US... the states can make decisions... there are these green claims. Those are punishable. If you put a label to a paper cup that says it is recyclable and it ends up in the neighboring state where there’s no recycling system for them, then the company gets so massive fines that they will stop using these labels. (Interviewee 10)

This attitude towards transparency has another mission along with complying with legislation and customer demands – it is also serving the customer education function.

4.5 Empowering the Consumers with Transparency and Unified Labels

Consumer behavior has been repeatedly found to be varying substantially across regions. See, for example, an experience of one of our interviewees and them comparing Chinese, American, and European consumers when it comes to recycling, reusing as well as the forms of packaging:

...there are huge differences, at least... [between] China or Asia in general and Europe... [In China you could see]... very fancy glitterish... [and] way too much [of] packaging compared to the product that is there [inside]... There's lots of packaging that is... unnecessary... It's only the marketing tool... Europe has gone through this...the US has been there as well previously before we got to... simplistic package environment, [and before we realised] we don't need that much... packaging... we can focus on what is delivered.... (Interviewee 3)

One topic often brought up by our interviewees in terms of educating both business-to-business (B2B) and business-to-consumer (B2C) types of customers is ecolabels and their positive response to the developing initiative of unifying ecolabels and reducing the amount of those on the market to equip the consumers with transparent tools for making decisions on sustainable consumption:

[with]...the EU Green Claims Directive upcoming, we will reduce the number of the [sustainability] labels available on the market. Now there is like hundreds of [them]... you can't... compare one to another... The goal is now to get rid of most of it..., keep the essentials, and ensure that if our packaging says one thing it would be also comparable to another package, so the consumer can... make a choice based on the signs and not simply marketing... That will also affect... which packaging is on the market and how the packaging is marketed. (Interviewee 3)

This initiative has been found already adopted in certain parts of both Europe and the U.S. to avoid misleading the consumers in their choices not only when purchasing the product but also later when deciding on its recycling:

...in Belgium. Now it's illegal to [label] packaging as biodegradable because it's seen... as an incentive for littering [because]... the consumer would see 'oh, biodegradable then I can leave it in the nature'... Compostable is different, but biodegradable is illegal... It's the same in California... (Interviewee 2)

4.6 Future Directions

When it comes to the future, our interviewees seem to agree that a lot of work is still needed on all the fronts – legislation, value chain actors' decision-making and activities, dialogue, and knowledge exchange between those actors – in Europe, the U.S., and globally. The most reoccurring themes of future development directions mentioned among packaging producers have been circularity (as well as related lifecycle assessments) and science-based targets, which were noted to fill in the gaps that are not filled just yet:

...we're focused both on operational sustainability for our factories as well as product sustainability in order to help our customers. So, we're looking from a product

standpoint from the beginning of life through the end of life... our packaging becomes circular... (Interviewee 6)

I think circularity will stay... (Interviewee 3)

...we have some corporate goals and... some products goals... in our... sustainability program... [it] took us a bit of time for example, to move towards science-based targets in terms of decarbonization... voluntary disclosures [are] actually helping us filling the gaps when there are no policies... (Interviewee 2))

Finally, the voluntarily disclosing attitude and an attitude of ‘thinking beyond an immediate legislation’ noted by our interviewees in their value chain also has been reflected by biodiversity being mentioned among other future development directions for the packaging sector:

...we would like to ensure that the wood... is sustainably sourced, sustainably grown, certified and also there are actions taken on improved biodiversity...: high stamps in the forests, protection of the groundwater, keeping the buffer zones, avoiding clear felling... there is a number of actions taken in that area... (Interviewee 3)

We further conclude on our findings and share some implications for policy, practice, and researchers.

5 Discussion and Conclusions

Researching how regulation in the U.S. and Finland as a representative of a greater EU has been shaping the sustainable packaging production sector and its communications we arrived at several implications.

First, analyzing the divergent contexts of the EU and U.S. regulatory environment we observed that for the companies operating across these contexts, there is a need to maintain a fragile balance of ‘unified’ but ‘applicable across the contexts’, where ‘context’ stands for processual context (of what is packed and delivered and what packaging lifecycle is implied) as well as regional legislation context (similar observations specifically in the context of reusable food containers are shared by Schuermann and Woo 2022). For packaging producers, the practice of following the strictest

regulation could become a solution – like Pasonen (2023), we observed companies operating across the EU and the U.S. choosing to follow the so far stricter EU regulations with a possible assumption that similarly strict requirements may eventually arrive to the U.S. too. A sociologist could potentially see some signs of isomorphism in such a strategic choice – where companies are pressured to change by external forces (DiMaggio and Powell 1983), whether those are legislators, societal pressures or customers. Some companies, however, may adopt a path of least effort – and avoid the most demanding markets (like the EU), regions, or customers while they can. As we did not touch on the issue of costs related to such a strategic choice, future research could explore it further.

Customers, according to our study, seem to be a substantial force for packaging manufacturers operating globally and could appear as a decisive force in making companies choose a sustainability strategy following the strictest regional requirements. Accordingly, while the EU-based companies are already directed by arguably the strictest EU regulations due to their headquarters location, the U.S.-market players if not headquartered in the EU could be nudged to do so through their customer demands. Having EU-based branches, in that case, is helpful for an understanding of e.g., the reasoning for certain tough sustainability strategy choices, which may already be normalized in the EU but are yet voluntary in the U.S. While customers nudging packaging producers towards stricter sustainability strategies reflects inter-organizational learning (Van Wijk et al. 2008), the knowledge exchange across EU-U.S. branches reflects intra-organizational learning (ibid), and the two seem to reinforce each other. Such intra-organizational and inter-organizational learnings could become an important source for research, practice, and policy-making in the field of harmonizing the sustainable packaging legislation (and broader sustainability legislation) across the world which is scarce so far (Smith 2012; Pasonen 2023). Accordingly, future research should collect and analyze more evidence from practitioners operating across divergent contexts.

Finally, the era of massive ‘greenwashing’ (Pizzetti et al. 2021) seems to have started passing at least in the circles of packaging-producing manufacturers, and actors across the value chain and the studied regions of the EU and the U.S. seem to embrace transparency, avoiding talking of sustainability for the sake of just talking about it and rather working hard, thoroughly, while following the motto of ‘to talk the talk you need to work the work’. Furthermore, the responsibility diffusion yet recently observed in the packaging sector at least in the Finnish context (see chapter 4 O’Shea et al. in this book) seems to also start dissolving with an attitude of ‘looking at least a little

bit beyond the legislation' getting the pace. Along with these processes, the professionalization of sustainability-related activities is reflected in an increased emphasis on science-based targets, KPIs, and increased transparency in sustainability communication. This leads to sustainability becoming an integral part of profit (or loss) generation, rendering sustainability-focused strategic choices not only desirable for customers or suggested by legislation, but also essential for the essence of private companies, which is profit-making.

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