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Policy Proposal on Sustainable Development

Increasing Transparency: Introducing a Product Passport

Brussels, 13-04-2014

Working Group: Sustainable Development

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INTRODUCTION

Natural resource depletion is set to be one of the major environmental and economic challenges of this century: if we follow our current extraction rates, stocks of materials as essential as oil, silver, or tungsten will be depleted within the next decades. This scarcity, along with the increased extraction costs associated with it, drives up resource prices and increases price volatility, pressuring companies and consumers alike. This trend will be greatly aggravated by an increase in demand due to demographic and consumption growth, as well as an increased product material intensity, particularly in emerging and developing countries. Simultaneously, after products have been used, they are, for the most part, landfilled, resulting in their resources being lost forever, while recycling still accounts for a relatively reduced proportion of produced waste.

Throughout the 20th century, easier access to resources has been the major engine of economic growth. As a consequence, our current economic model is based on intensive resource throughput. Most consumer goods have abundant packaging, relatively short lifespans and are designed for single use. This linear economy, despite attempts to increase resource efficiency and the so far limited implementation of recycling measures, clearly appears as an unsustainable paradigm resulting in significant losses of environmental and economic value.

EXECUTIVE SUMMARY

The increasing scarcity of natural resources and the necessity of the European Union (EU) to move from a resource-intensive economy to a more sustainable model serve as the basis for the proposal to introduce a product passport. Over the last decade the European Union has generated a significant body of regulations, which cover various aspects of resource extraction, production and recycling. In this context, the product passport can serve as an overarching means to enhance the

transparency and comprehensiveness of the information on the ingredients of each product. The proposed policy options are formulated by drawing lessons from the specific sector and ideal practices such as the principles of a circular economy enshrined in the End-of-Life Vehicles Directive and the Eco-design directive.

The policy options under consideration are the following. First, introducing an electronic product passport, in order to provide detailed information about the materials used for producing the specific item. Second, creating a new “sustainaLabel” as a resourceful logo tailored for consumers’ and companies’ needs. The label would promote the implementation of the circular economy principles by providing the interested party with crucial information on how to reuse the product or its packaging. The last option is continuing the existing practice of resource exploitation, thus maintaining the status quo. This does not imply a completely static situation, as the long-term estimates of resource depletion serve as an argument to predict gradual voluntary transition of companies towards the introduction of supply loops.

The EU legislation introducing the product passport and the “sustainaLabel” would push for earlier mainstreaming of supplier-led recycling practices, as well as provide consumers with everyday incentives to adopt consumption practices according to the principles of the circular economy. However, the product passport demands the creation of an extensive reporting regime with considerable financial and administrative implications for companies, to come into force by 2024. On the other hand, it would boost the resilience of the European market and serve as a timely, even preventive measure against the loss of competitiveness of (primarily) European companies in the wake of critical resource shortages.

Problem statement

There are significant obstacles to improving the resource efficiency in product life cycles in Europe. Nowadays, product manufacturing often involves complex supply chains, with components being successively produced and assembled in different sites around the world by several tiers of suppliers. This geographical and institutional dispersion often renders the tracing of components and their raw materials a difficult task, even for the seller of the finished product. Moreover, there is a process of proliferation of the materials themselves, particularly in the field of plastics, with new materials being continuously created and combined in order to address evolving market demands.

This double increase in complexity, of supply chains and of component materials, creates a knowledge gap which often leads to difficulties in end-of-use treatment of products. Due to it, recycling processes often end up mixing and processing different materials together, becoming a

process of down cycling that leads to a loss of purity and quality. Hence, also a loss of economic value, for the recycled material, which can no longer be used for the same purpose as the original material, especially after repeated cycles. This issue manifests itself more significantly among different plastics, which recycling entities are often unable to sort due to them having similar physical properties despite their distinct chemical compositions. Recycling thus fails to reinsert materials into their supply loops and to attenuate demand for new resources.

In this way, the lack of thorough knowledge on products' material compositions becomes a factor of resource inefficiency. If this information were to be registered and maintained for each manufactured product, opportunities for closing and optimizing material loops throughout production processes would emerge.

Current policies

The end-of-life treatment of products and the lack of thorough knowledge on products' material compositions represent an active obstacle. Although different European legislative instruments are already in place, we believe that they are incomplete and insufficient for achieving a well-functioning model of circular economy in the EU. The environmental policies of the European Union address the issue from two different perspectives - waste reduction and efficiency on one hand, and sustainable production and consumption on the other hand.

Firstly, the EU legal framework on waste management contributes to sustainable development by reducing the negative impacts of the generation and management of waste and by ensuring resource efficiency.

The Waste Management Directive 2008/98 is a central piece of waste legislation, as it establishes the basic concepts, definitions and principles related to waste management. The Directive introduces recovery and recycling targets to be achieved and it incorporates provisions on hazardous waste. Although this may represent an important and impressive initiative, this Waste Framework Directive has raised many concerns regarding its interpretation and application by national authorities and stakeholders.

Decision 2000/532 establishes a common European list of waste and of hazardous waste. Many related instruments have been adopted based on this framework, regulating the management of specific waste types. For example, Directive 2012/19 on Waste of Electrical and Electronic Equipment (WEEE) sets collection, recycling and recovery targets for electrical equipment. Furthermore, Directive 2011/65 restricts the use of certain hazardous substances in the production of various types of electrical and electronic equipment (RoHS).

Directive 2000/53 on End of life vehicles (ELV) introduces the concept of extended Producer Responsibility. This Directive aims for a reduction of waste, but also strives to enforce the reuse, recycling and recovery of the materials.

Moreover, other relevant initiatives have already been introduced in the public discourse. For example, the European Resource Efficiency Platform has developed a relevant policy recommendation (the idea of product passports). This platform provides guidance and high-level advice on policy measures to transform the European economy in a more sustainable way.

Finally, the Environmental Product Declaration is a standardized document (ISO 14025) that contains information on a product's environmental data and Life Cycle Assessment.

The Commission has also developed an Action Plan concerning sustainable production and consumption. The main achievements in the field of consumer information come from the introduction of labelling systems, launched by the instruments discussed below.

An early instrument concerning the matter and also a major step in achieving public awareness was the Energy Labelling Directive (92/75) on energy efficiency of household appliances (which led to the adoption of multiple directives covering various of those products).

The more recent Directives 2009/125 on the setting of ecodesign requirements for energy-using products create a framework for environmental standards on energy-using products, and particularly on their environmental impact with regard to energy efficiency.

Thirdly, Directive 2010/30 on labelling and standard product information relates to the consumption of energy and other resources, and is complemented by other instruments.

Finally, Regulation 66/2010 on the EU Ecolabel introduces a labelling system for certain products, denoting them as less harmful for the environment in their category.

Alternative solution 1: Product passport

Proposal

Our proposal would require all members of a supply chain to produce a “product passport” for every item sold in the European Union. Such passports would be standardized for all products and their (sub-) components sold in the European Union.

The Product Passports should include the following information:

1. A list of the raw materials that all complex/technological products are composed of (this can be modelled according to the Environmental Product Declaration described below); and
2. Instructions for product disassembly, as well as recycling information for specific materials, if needed (i.e. if disposal instructions do not exist yet for that material).

This policy builds on the European Resource Efficiency Platform’s Product Passport recommendations, but goes further by requiring the inclusion of an exhaustive list of raw materials used in addition to instructions for the disassembly and recycling of all components. Moreover, our proposed product passport will differ from the currently-existing Environmental Product Declaration. This declaration is based on optional reporting by companies, and is also limited in scope to basic environmental and life cycle data. The list of raw materials we are proposing would be more exhaustive and provide additional details for suppliers.

Unlike sector-oriented directives such as ELV or WEEE, our proposal, though it includes instructions for product disassembly, does not require manufacturers to take responsibility for product disassembly and disposal.

Policy Strengths

A significant obstacle to effective upcycling is the fact that companies may lack knowledge about the characteristics of externally-sourced (sub-) components. This regulation addresses this

information gap. Firstly, product passports would allow companies to draw up detailed maps of pure material streams and identify the most appropriate opportunities to reintroduce used materials back into the loop. By doing so, it advances companies one step closer to introducing cradle-to-cradle systems.

Secondly, it would allow companies to create more specific and effective supplier-led recycling processes. These would prevent the loss of material purity and value that occurs in the current catch-all recycling programs, allowing companies to recoup their initial investments.

Thirdly, they would encourage companies to correct current inefficiencies by continuously adjusting and optimizing product composition and design, in order to take advantage of enhanced recycling processes, thus enabling a long-term transition towards designing out waste altogether, eliminating new resource input.

Furthermore, an exhaustive list of raw material components can be used to facilitate effective enforcement of substance bans, guide the substitution of toxic substances with similar and more ecologically-friendly materials, and rate similar products according to their characteristics. Requiring manufacturers to report material components and disposal instructions, with the understanding that this information is publicly accessible is also likely to result in more innovative, socially-responsible, and environmentally-friendly decisions.

Finally, the inclusion of disassembly/disposal instructions may also be considered the first crucial step towards the future development of extended producer responsibility directives (extending Directives like ELV to all consumer products) and consumer information initiatives.

Policy weaknesses

These bureaucratic requirements may be difficult to implement and may require hiring and training additional staff. Companies will resent this investment without any immediate associated economic gains. Moreover, if implementation costs are passed to consumers, public and consumer associations will likely oppose this measure.

This proposal may also be particularly hard to implement and to enforce for corporations whose supply chain includes manufactured components sourced outside the European Union, where this level of reporting is not required. Manufacturers may be forced to substitute various components or vendors, compromising operations in the short term. However, as the business community adjusts to this regulation, this effect is projected to stabilize. On top of that, Member State governments will also need to develop and implement a system for verifying/regulating product passports, which may entail a significant investment.

Finally, industry resistance may stem from concerns about this disclosure as a threat to trade secrets. However, revealing a product's composition does not equate to revealing the fabrication processes. Taking into account that patents require a similar disclosure, this concern is unlikely to pose a significant barrier to policy implementation.

Rationale

The material composition of products closely relates to product design. While current policy on ecodesign exists in the form of Directive 2009/125, our proposal focuses on the energy consumption associated with product manufacturing and usage. Directive 2009/125 does not effectively address the ecological concerns associated with the materials used, nor does it address the recyclability of these materials.

This policy proposal also aligns with the principles outlined in Directive 2008/98 (the Waste Framework Directive). This directive indicates that all EU member states should prioritize preparation for reuse and recycling above other disposal mechanisms. The introduction of a Product Passport is expected to enable innovative reuse and recycling of all the raw materials used in product manufacturing.

The Products Passport, despite its initial costs and the difficulties associated with its implementation, will allow the European economy to prepare itself for a new era of resource scarcity. This preparation will result in significant financial benefits in the decades to come, increase the EU's resilience to the exogenous factor of resource price, and reduce environmental externalities associated with resource use.

Alternative solution 2: SustainaLabel

Proposal

This second proposal is based on the introduction of a sustainable label or “sustainaLabel” on products that would inform the consumers about the cycle of life of the product and particularly the possibility of the product to be recycled or reused, either by the consumer or by the companies. The main goal is to create a rating-label system similar to the A-G letters of the energy label though focused on the reusability and recyclability grade of the products.

For the “sustainaLabel” to be effective, it should be clear and of large font and conspicuously displayed on products so that it is obviously and immediately visible for the consumers, like a symbol based in a color code. Plus, the color code should be accompanied by other visual symbols to also allow people with color blindness to understand the label. These symbols could be numerical or of other type, though we would encourage the use of letters in order to benefit from the already existing public knowledge on the A-G letters system of the energy-label.

Strengths

Bearing in mind the importance of building communicating vessels between companies and consumers as there is a mutual dependence between them, the instruments that are already in use, although considered to be a great achievement, clearly are not enough when facing challenges that increase each day, concerning sustainable development and efficacy, which influence deeply the quality of life of consumers.

An integrated approach that links consumers and corporations is urgent as, on one hand, production patterns are currently unsustainable and, on the other hand, consumption should be based on information and keep solidarity towards next generations as a constant principle. A key element on changing consumers’ behavior is consumer information, and as the market is not likely to deliver appropriate product information by itself, the “sustainaLabel” could serve as a means to increase consumer awareness about the products available to them, and influence their behavior towards acquiring the product made in accordance with the highest circular economy standards. The consumer could easily and accessibly get relevant data about the products they are going to acquire and be helped to develop a more informed opinion.

Indirectly, the increase on demand of such products can serve as a motivation for companies to adequate their materials to the most reusable ones. Furthermore, it would facilitate the companies to

retrieve themselves of those materials and reintroduce them to the production process, hence reducing their costs in purchasing such materials. This way, the “sustainaLabel” could bring strong potential benefits for both consumers and entrepreneurs, and have an impact on the functioning of the economic system towards a reduction of the need of raw materials by the industry, and of the unused waste.

Weaknesses

The main critiques in this proposal are of an economic type, considering it would require an extra investment from the companies in collecting all the necessary data on the reusability of their materials and tailoring it to the color-scale-rate labelling system, thus also necessitating a superior administrative coordination. Nevertheless, academic research proves how strong an influence the A-G energy label scale has had on the consumer’s final purchasing decision and on their readiness to invest a higher amount for the top classes of the A-G scale. Consequently, the same reaction can be expected from the “sustainaLabel” with regards to the consumer’s awareness that, once bought, products do not cease to be useful but can be reused by the factories in producing new goods.

In addition, although EU citizens have expressed interest in receiving more detailed information regarding the products that they are consuming (specifically in the domain of health, environment and sustainability), the current challenge is to integrate a new label among the existing ones so that it does not undermine the role of the existing labels as well as maintaining a certain level of distinctiveness. A survey of more than 1,000 international companies including Hewlett-Packard, Nestlé, Canon, and other worldwide renowned brands showed that consumers and companies alike are becoming “confused” and “overwhelmed” by eco-labeling and casting doubts on its credibility. Although the suggested label is not narrowly related to this particular domain, it still runs the risk of becoming less visible in the pool of the existing European and national labels.

In any case, the existing EU environmental labels have had a great impact in influencing consumers to buy more energy-efficient goods, resulting in an increase of approximately 70% in consumer demand for energy-efficient appliances. The progressive increase in the price of energy has been a major concern for European consumers during the last decade and has had a positive impact on the demand of energy-efficient products, which allow for financial savings throughout their usage despite their higher initial price. Therefore, although there is a risk of the “sustainaLabel” colliding with other label systems, the real reduction of its effectiveness when introduced still remains uncertain.

Rationale

An initial handicap, consequence of the setting of any type of environmental standards, is the increase in the purchase price of products elaborated in conformity with such standards, which in many cases decreases the willingness of consumers of acquiring the more expensive environmentally friendly product.

The main policies adopted by the European Union in the field of sustainable consumption and production have primarily been concerned with providing energy-related information of the final products to the consumers, the results of which have shown their positive advantages to both sectors, companies and consumers. A further effort, however, is needed. Without intending to substitute the promotion of energy-saving measures, a paradigm change that successfully addresses other parameters is necessary. Scarcity of resources, some of which will be soon reaching their final end-of-life, or increase in the production of waste boosted by the growth of the population are other factors that have been left aside from the core European Union environmental policy.

A good example of this is the Eco-design Directive, which permits to examine the environmental impact of the product from resources to waste disposal, focusing on energy-efficiency, but does not address numerous other parameters of importance when measuring the sustainability of a product, such as the use of natural resources and materials, the use of hazardous chemical substances, or waste management.

This would also be in line with the establishment by the European Commission of Green Public Procurement criteria in a wide range of sectors (based on Commission Communication Public procurement for a better environment COM/2008/0400 final). As such, it has tried to serve as an example to consumers of all around Europe by ensuring that Europe's public authorities acquire environmentally friendly goods, services and works. All these measures show the willingness of the European institutions to tackle environmental problems, but the comprehensiveness of the policy is still to be achieved, and in the remaining gaps the "sustainaLabel" would be an effective measure.

Alternative Solution 3: *Status quo*

An alternative choice for the proposed policy would be to maintain the *status quo* by not further regulating on the transparency of products' materials. If that scenario were to occur, a trend towards the voluntary adoption by companies of measures similar to the one proposed here could be expected in the upcoming decades. Increasing energy and resource price volatilities will put higher pressures on manufacturers to reduce raw material consumption by increasing reuse and remanufacturing rates, taking advantage of emerging arbitrage opportunities to identify material leakage points along their supply chains; to that effect, those companies will have to undertake more thorough identification and control of suppliers and materials, effectively creating internal bills of materials similar to the product passport proposed here.

However, the opportunities created by this policy are unlikely to fully materialize in the same time-frame as they would if it were to be implemented. Voluntary adoption would be stronger in very resource-intensive industries where the cost of raw materials is a larger part of total costs, whereas companies who enjoy low raw material prices will have little incentive to act. Within individual sectors, companies with more financial resources might be more able to close knowledge gaps, optimize material flows and enjoy first mover advantages, preventing the environmental and economic benefits of this measure to fully spread across society.

In that time, the increased price of raw materials would drive manufacturers' costs up, either leading to smaller profits or increasing sales prices. Reduced access to manufactured goods would hinder economic growth, lead to decreased quality of life and contribute towards inequality. Certain resources could run an actual risk of depletion, potentially bringing to a halt whole sectors of the economy that depend on their availability. For all these reasons and more, urgent action towards reducing resource consumption is necessary, and simply maintaining the status quo and waiting for voluntary measures to be undertaken by companies might not be a viable option.

Policy Recommendation and Implementation

Recommendation

The impending era of resource scarcity necessitates a transition to a circular economy. In the face of increasing resource prices, maintaining consumption patterns will require a decrease in resource throughput throughout the value chain. This renders following the status quo unattainable and calls for significant changes in product design and recycling practices.

Enabling the effective reuse and recycling of raw materials, thereby turning supply chains into supply loops requires closing the current knowledge gap faced by companies with respect to the composition and disassembly of their products. The development of a product passport is a crucial step towards this paradigm shift. As such, alternative three (as discussed above) is a passive solution to a pressing problem which demands proactive intervention.

The adoption of the “sustainaLabel” is a less effective solution than the Product Passport within the current manufacturing structure when it comes to ensuring that the conditions for the move towards a circular economy are available. Changes in material use would only be indirect and current research indicates that it might have the undesirable effect of confusing customers already subjected to a proliferation of eco-labels. While such measures may ultimately be adopted as the EU successfully transitions to a circular economy, the introduction of a Product Passport regulation remains a more reasonable short-term goal given the present status quo. The implementation of the Product Passport and the availability of product information it entails could, in future, be used for the more efficient development of “sustainaLabel” regulations.

Steps of Implementation

1. The European Commission should develop a common product passport template in order to achieve homogenization within the European Union.
2. A legal regulation should make product passports mandatory for every item sold by a company operating in the European Union.
3. This legal regulation should not come into force before 2024, in order to allow companies time to restructure their productive structures and to provide their staff with relevant education concerning the transition to new production models.
4. The regulation should contain an entire section dedicated to the specific measures that member states and governments should take to enforce this regulation.
5. The regulation should include the possibility of subsidizing small companies that show a strong interest in adjusting their productive structures (e.g. own a detailed plan concerning how to restructure) but struggle financially in order to do so.
6. As part of a public awareness campaign, an online platform should be created in order to inform companies about the importance and advantages of starting to necessary measures before the law comes into effect and to exchange best practices.

7. The regulation should include measures to take into consideration the adaptability of the requirements to companies that are in the process of being created.

ANNEX

Waste Management Directive 2008/98 acquaints new provisions in order to set the basis to encourage waste prevention and recycling as a part of the waste hierarchy. As a matter of fact this hierarchy establishes measures for treatment of the wastes, which is listed in order of priority.

Directive 2012/19: In the context of our proposal Article 4 concerning product design is particularly relevant. It requires Member States to encourage cooperation between producers and recyclers and measures to promote the design of EEE in view of facilitating reuse and recovery of WEEE, its components and materials. We believe that our proposal to introduce product passport will lead to the further development of eco-design, as well as the facilitation of recovery and recycling of WEEE. It can be an additional incentive for companies to take into account the whole life cycle of their products and re-design them in order to achieve optimal reuse and recovery level.

Directive 2011/165: In our view our proposal could make the RoHS Directive more effective and lead to the actual elimination of unsafe materials from the production. Since it introduces the obligation to report every material which has been used in the production, companies will no longer be able to hide any components which may contain hazardous substances. Moreover, we recommend extending the list of hazardous substances. However, first we need to gain more understanding of the impact that the materials we use might have on the human health and the natural environment and try to identify relevant replacements and alternative solutions.