

About Sustainability between Responsible Production and Consumption [†]

Lucreția Dogaru

Department of Law and Public Administration, Faculty of Economics and Law, University of Medicine, Pharmacy, Sciences and Technology “G.E. Palade” of Tg-Mureș, 540142 Tg-Mureș, Romania; lucretia.dogaru@umfst.ro

[†] Presented at the 14th International Conference on Interdisciplinarity in Engineering—INTER-ENG 2020, Târgu Mureș, Romania, 8–9 October 2020.

Abstract: The concept of sustainable production and consumption is not only a complex one, but it is also one of great topicality and importance. It aims at the use of goods and services that meets basic needs and contributes to improving people’s living standards, correlated with reducing the use of natural resources and toxic materials as well as waste and polluting emissions during the lifecycle of products, in a way that is appropriate to the present generation’s needs but does not harm the needs of future generations. The current challenges of humanity have justified and determined a change in the way that goods are produced and consumed. Thus, it is necessary not only to create added value but also to reduce the use of natural resources related with reducing costs and minimizing the impact on the environment. In other words, we will have to do more and better with fewer resources. In the current national and European context, the integration of sustainable development objectives at the center of economic activities involves changing production and consumption standards. Starting from this reality, we will address in this paper the role that the promotion of sustainable production and consumption models has. We will also emphasize the role of European policy in promoting inclusive and sustainable industrialization as well as encouraging innovation.

Keywords: sustainable production; natural resources; sustainable consumption; eco-innovation

1. Considerations Regarding the Idea of Sustainable Consumption and Production

The modern world faces challenges that justify and determine changes in the production and consumption of goods. This context not only imposes the creation of more value but also demands the rational use of natural resources, conjugated with cost reduction and the attenuation of the overall impact on the environment.

It has been proven that efficient production processes, when associated with performant environment management systems, may result in a significant drop in waste and overall pollution, thus facilitating the conservation of natural resources while allowing enterprises to cut back on both exploitation costs and their dependence on raw materials.

The concepts of consumption and production are fundamental notions in the economy. Every time production and consumption become durable, economic growth dissociates from climate change.

On one hand, such a perspective includes the awareness of limited resources, and on the other hand, it involves applying sustainable measures that can safeguard a similar context to future generations. Obviously, this approach is meant to encourage more responsible conduct in the process of creating more efficient production and durable management of waste as a result of activities that must be consistent with the principles of environmental protection.

Consequently, the concepts of durable production and consumption are so intricate that they concern the use of goods and services that is in agreement with basic needs. Correlated with the reduction in the use of natural resources, toxic materials, waste, and hazardous discharge in a sustainable manner, it contributes to the improvement of the living standards of the population.

Doubtless, approaching production and consumption in a durable manner, from the perspective of product management, concerns every domain, starting with the natural resources that are being used and continuing with the design stage, the manufacturing process, marketing, shipment, sale, and the use of the resulting waste.

The decrease in the impact of the production of goods may be accomplished through ecological design and eco-innovation. These two methods significantly contribute to the betterment of the ecological performance of products during their entire life cycle and to the increase in requests for more performant production technologies.

While our general consumption (which is composed of food, means of transport, housing, and other goods) is capable of generating negative impacts on resources and the quality of the environment, people could contribute by making the right choices when deciding what they consume. It has been proven that improving construction and the use of buildings could reduce the final energy and water consumption by 40%. The same thing can be said about GHG emissions.

Even if responsible production and consumption is considered able to ensure sustainability, at the doctrine level, this idea has generated controversial debates [1] (pp. 257–265). However, it has gradually become a social objective that is generally accepted on a global and on a regional level, despite the fact that a unanimous implementation is quite difficult [2] (pp. 93–94).

In Europe, the quantification of the current state of sustainable production and consumption is done through classical indicators of sustainable production and consumption (such as the consumption of materials and energetic intensity) as well as through emerging approaches (for example, green GDP (Green Gross Domestic Product, which represents an economic growth index that takes into account the consequences on the environment of that growth factored into a country's conventional domestic product), carbon footprint, and ecological footprint [3] (pp. 121–124)). Taking these into account, authorities and institutions with prerogatives of measuring economic performance and social progress have been set up (for example, the economic Stiglitz Commission made, in 2009, many recommendations aimed at detaching economic growth from the consumption of natural resources, recommendations that focused on the impact that green GDP can have in this regard).

Sustainable production and consumption pursues important objectives such as the implementation of a 10-year framework of programs for sustainable consumption and production models; the achievement of sustainable and efficient management and use of natural resources by 2030; the reduction by 50% of consumer-level food waste by 2030 [4] and reducing food loss in the production and supply processes; the achievement of ecological management of hazardous substances and workers while significantly reducing emissions; imposing the adoption of sustainable practices upon large and transnational companies, as well as making these companies integrate information regarding sustainability into the reporting cycle; promoting durable public acquisition practices.

An essential pillar of this process is eco-labeling, which can help consumers make informed choices about products and services. In this context, the European Union's eco-label policy aims to identify products and services that have a low impact on the environment throughout their life cycle. Of course, the role of public authorities in greening the economy of the community space is important and necessary. Thus, government spending on market sustainability has reached around 20% of the Union's GDP. We are convinced that by investing in green projects, public authorities have the opportunity to help increase the demand for more efficient products and services in terms of the use of natural resources.

Definitely, integrating sustainable development objectives at the core of economic activities involves changing production and consumption patterns. Surely, such a change can only take place through regulations and legal decisions, through appropriate tax measures, and with the aid of public

requests. At the same time, an essential aspect of the approach of sustainable production and consumption is the accountability of the business environment and the awareness of civil society.

Public strategies and policies in the field must include the concept of sustainable production and consumption, with the involvement of both the productive branch and the services, in other words, with the contribution of the business environment.

A different approach in the way we produce and consume, namely the transition from unsustainable production and consumption to sustainable production and consumption, is a process that involves the following directions: reinforcement of the business environment's access to various tools towards sustainable production and consumption; making the business environment responsible for promoting and supporting sustainability; civil society awareness of the demand for products and services that are designed in accordance with sustainable production and consumption models.

Promoting sustainable production and consumption patterns and improving management and avoiding the overexploitation of natural resources while recognizing the value of ecosystem services are two important objectives of the EU's 2020 Sustainable Development Strategy. At the Romanian national level, the National Strategy for Sustainable Development, entitled "Horizons 2013–2020–2030", identified a series of medium- and long-term solutions with reference to sustainable production and consumption. These solutions are aimed at reducing the material consumption of natural resources in order to dynamically disconnect GDP from the material consumption of resources and energy and to reduce the impact on the environment.

The main guiding targets of the "Europe 2020" strategy for achieving energy and climate change targets are a 20% increase of the contribution of renewable sources in the total energy balance, a 20% decrease in GHG emissions, and a 20% improvement in energy efficiency.

The revised European Union Strategy for Sustainable Development aims to develop and identify actions to enable the European Union to improve quality of life by creating sustainable communities capable of managing and using resources efficiently while exploiting the potential of eco-innovation and the social development of the economy, with the purpose of ensuring prosperity, environmental protection, and social cohesion. The main objectives are the following: the conservation of biodiversity and compliance with the limits of natural resources while ensuring a high level of protection and improvement of the quality of the environment; prevention and reduction of environmental pollution, as well as the promotion of production and consumption in the spirit of sustainable development, in order to break the link between economic growth and environmental degradation; promoting a prosperous, innovative, rigorous, competitive, and eco-efficient economy [5] (pp. 11–20).

2. The Role of Ecolabeling, Energy Labeling, and Eco-Design in the Sustainable Use of Natural Resources and in Promoting Responsible Consumption

An important pillar of this process is represented by eco-labeling (Regulation (EC) No 66/2010 of the European Parliament and of the Council, of 25 November 2009, on the EU Ecolabel, consolidated in November 2017), an approach able to provide a lot of information that can help consumers make informed choices about products and services. In other words, eco-labeling represents a modality of reducing the information gap between consumers and producers [6] (p. 2202). With eco-labeling, a good or a service is supposed to be green, and this implies a higher price for consumers, compared to a non-ecological good or service. It has been demonstrated that a conscious consumer (someone with a stronger ecological attitude) will usually demand ecological goods and services. On the other hand, consumers especially concerned about prices will demand less ecological goods and services. Therefore, the demand for environmentally friendly goods and services is conditioned by consumer awareness and declines for those categories of consumers oriented towards prices. Consumers of eco-labeled products prefer a subsidy for organic goods and services and a tax for non-ecological goods and services. Usually, consumers oriented only according to the price criterion will not take into account the environmental subsidy and they will be against taxes on non-ecological goods and services.

We believe that an important key to market uptake is represented by the sustainable communication related to the environmental benefits of bio or green products and services. In this regard, the use of ecolabels, in its new version of ISO 14024 Environmental labels and declarations—Type I environmental labelling, is relevant (ISO 14024 Version 2018 was developed by technical committee ISO/TC 207, Environmental management, subcommittee SC 3, Environmental labelling). This document establishes the main principles and procedures for developing Type I environmental labeling programs, as well as the selection of product categories, product environmental criteria, and characteristic functions, and for assessing and demonstrating compliance with requirements. It also establishes the certification procedures for awarding an ecological label [7].

We recall in this context that the eco-label introduced by the European Union aims to identify those types of products and services that generate less impact on the environment throughout their life cycle. The eco-labeling criteria are established and reviewed periodically by the European Union Eco-Labeling Committee (EUEB) (European Commission Decision of 22 November 2010 establishing the European Union Ecolabelling Board (2010/709/EU)), which has related assessment and verification tasks. Of course, these criteria are based on studies to analyze the impact that certain products or services have on the environment.

Introduced in 1995, the EU Energy label has gradually become an important guide for producers and consumers. This Energy Labeling Directive was revised by Directive 2010/30/EU with a view to extending its scope to a wider range of products, including energy-using products and other categories of energy products. Thus, in 2015, the European Commission proposed a return to a single product labeling scale, from “A to G”. As a consequence, during 2017, the Regulation (EU) 2017/1369 was adopted for the purpose of establishing a new framework for energy labeling, as well as for repealing the provisions of Directive 2010/30/EU (Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017, setting a framework for energy labeling and repealing Directive 2010/30/EU, was published in Official Journal of the EU, L 198/28 July 2017, pp. 1–23). The revised EU Regulation simplifies and updates the energy efficiency labeling requirements for all kinds of products sold in the European Union. Starting with these new regulations, all products will be labeled on a new, updated, and much clearer scale, namely, from energy scale A (which is the most efficient) to the energy scale G (which is the least efficient). Under this new system, the system of A+++ to G labels will be gradually replaced as a result of the development of more energy-efficient products, in order to allow the consumers to clearly distinguish the most energy-efficient items. In this context, new energy labeling requirements have been created for specific product groups. Specifically, starting in 2021, five product groups will be reclassified, taking into account energy efficiency (these product groups include refrigerators, dishwashers and washing machines, televisions and lamps) [8] (pp. 1888–2000). Based on these provisions, a product belonging, for example, to the highest energy-efficiency class (A+++), will move to the class B after reclassification, but without any kind of change in its energy consumption. Moreover, although class A will remain empty at the beginning, it will later include more energy-efficient models. It is believed that such a procedure will allow consumers more clearly distinguish the most energy-efficient products. In the last period, the increased use of energy from renewable sources will also play a fundamental role in promoting sustainable energy, technological development, and innovation as well as technological and industrial leadership, providing at the same time a lot of environmental and social benefits. Such classifications justify the Directive (EU) 2018/2001 of the European Parliament and of the European Council of December 2018 regarding the promotion of the use of energy from renewable sources [9] (pp. 399–400).

Another tool with relevant implications in responsible production and consumption is represented by ecological design. This can be defined as any form of design that minimizes negative impacts on environmental factors and that puts the ecology in the foreground [10]. Its main role is to optimize the environmental performance of products by maintaining their functional qualities and providing new opportunities for producers, consumers, and society.

Taking into consideration that the eco-design of products represents a crucial factor in the Community strategy on Integrated Product Policy at the European level, the Directive 2005/32/EC on

Eco-design was adopted to ensure the technical improvement of products. This document represents an important regulation that establishes the framework for eco-design requirements for energy-using products [11].

It should be noted that, with the European Directive revision through Directive 2009/125/EC (Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009, establishing a framework for the setting of eco-design requirements for energy-related products, consolidated in December 2012), its scope was extended to other energy products besides energy-using products, namely products that, while not consuming energy during the use, still have an indirect impact on energy consumption (such as water-using devices or windows).

However, one of the controversial issues that have arisen in this sector is about the relationship between the standards and the taxes required, namely, if there is a balance between them [12].

3. Waste Reduction to Support Sustainable Production and Consumption Policies

In a complex production process, there are many natural resources wasted, some of them limited and others non-renewable. This creates major pressures on the environment, especially the fact that some wastes are returned to nature, often in proportions that exceed the possibility of the environment to recycle them. For such reasons, waste has recently become a major environmental problem, in terms of both quantity and variety but also in terms of hazards [13]. More and more, at globally level, attention has been drawn to the increasingly alarming rates of waste and their contributions to the depletion of natural resources and rise in greenhouse gas emissions. Within the last ten years, the discovery of the rippling impacts of this interrelationship has generated increased urgency in efforts amongst global leaders, materialized in comprehensive plans and goals in addressing and reducing the rates of global waste. Waste lessens the quantity of available resources but also the availability of the many natural resources required to produce goods. This will certainly become an important factor as the entire world population will increase by more than 30% by the year 2050. For example, at present, approximately 1.4 billion tons of food are wasted every year due to various causes and challenges, which represents an increase in the usage of natural resources. In the EU, food and agriculture consume up to 15% of energy and account for 62% of freshwater use. The rate of natural resource depletion is not sustainable, and it endangers the ecosystem, involving both negative environmental consequences and the necessity of sustainability-compliant actions.

In this regard, many recommendations have been taken for primary production, manufacturing, and retail stages and for food services and consumer services (EC.2020: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions; A Farm to Fork Strategy for a Fair, Healthy and Environmentally Friendly Food System, COM (2020) 381 Final). For example, the EU Platform on Food Losses and Food Waste has set many recommendations, which are common across various stages of the food value steps and are needed to achieve the global food loss and waste targets. The recommendations are addressed to both public and private entities, suggesting cooperation amongst the different actors concerned, to prevent food losses and food waste, as well as to provide important direction for all players, including European citizens.

Limiting food losses has been identified as representing an essential means of increasing food security while also reducing pressure on the natural resources of the environment. According to statistical data, in Romania, almost 25% of national food production is estimated to be lost or wasted. It is also estimated that each citizen throws away foods around 200 € per year.

At the European level, improving the food supply chain efficiency has also been identified as an important means to enhance food security and is correlated with reducing pressure on natural resources. However, these situations can be among the most unpredictable and difficult to manage for various reasons.

It is worth remembering that, due to the exceptional lockdown measures imposed by the Romanian government as a consequence of the emergence in this year of coronavirus pandemic, COVID-19, food production and consumption systems have undergone significant changes, which categorically require urgent and effective plans and strategies. Statistics show that during the first

weeks of the COVID-19 lockdown, there was no significant food loss on waste generation, but it increased by about 10% the reallocation of extra-domestic households' consumption. These measures, correlated with the economic impact (around +10%) and gas emissions (around +8%), complete the profile that the pandemic COVID-19 had on food loss waste generation and their management.

4. Infringement Procedures as a Means towards Sustainable Development

The European Commission published its July infringement package with some cases (on biodiversity, nuclear safety, energy efficiency, etc.) that show that some Member States (Romania, Croatia, Ireland, Spain) are not doing enough, especially in relation to sustainability.

In this context, the Commission is calling on Romania to combat illegal logging and better protect forests in its Natura 2000 sites. The European Commission is urging Romania to properly implement the European Union Timber Regulation (Regulation (EU) No. 995/2010 of the European Parliament and Council of 20 October 2010, laying down obligations of operators who place timber and timber products on the market, published on Official Journal of the European Union, L 295/2010, pp. 23–33), which forbids producing and placing on the European Union market products made from illegally harvested logs. European Commission shows that the Romanian authorities have been unable to effectively check the economic operators and to apply appropriate legal sanctions. It is also mentioned that the inconsistencies existing in national legislation do not allow Romanian authorities to check large amounts of illegally harvested timber. In addition, the Commission found that the Romanian authorities manage forests, including by authorizing logging, without evaluating beforehand the impacts on protected habitats as required under the Habitats Directive and Strategic Environmental Assessment Directives. The European Commission points out that if Romania does not act within one month, it will be able to refer the case to the Court of Justice of the European Union.

5. Conclusions

We consider that the role of public authorities in greening the economy of the communitarian space is an important and necessary one. This explains why the entire government spending on market sustainability has reached around 20% of the Union's GDP (High-Level Expert Group on sustainable finance (HLEG), Final Report 2018 by the High-Level Expert Group on Sustainable Finance Secretariat provided by the European Commission, Financing a Sustainable European Economy). We are also convinced that, by investing in green projects, public authorities will have the opportunity to contribute to increasing the demand for more efficient products and services in terms of sustainable use of natural resources.

The integration of sustainable development objectives at the center of economic activities involves changing production and consumption patterns. Of course, such a change could take place only through regulations and legal decisions as well as through appropriate tax measures. At the same time, an essential aspect of approaching sustainable production and consumption is the responsibility of the business environment and the awareness of civil society. Public strategies and policies in the field must include the concept of sustainable production and consumption, as well as involvement from the production and services sides, namely, from the business environment.

The change of attitude in the way of producing and consuming and the transition from unsustainable to sustainable production and consumption is a complex process that involves the following directions (United Nations 2019. Sustainable Development Goal 12: ensure sustainable consumption and production patterns. United Nations. Retrieved from <https://sustainabledevelopment.un.org/sdg12>): accountability of business environment to various tools towards sustainable production and consumption and awareness of civil society to have products and services designed according to sustainable production and consumption models.

In conclusion, to achieve sustainable production and consumption, a systems and life cycle approach is necessary, taking into consideration all economic, environmental, and social concerns of the stakeholders. In order to facilitate this complex process, new decision-support frameworks have been developed that are able to incorporate such an approach. These frameworks include many tools

regarding strategy analysis, life cycle costing and life cycle assessment, social sustainability assessment, and system optimization.

References

1. Fontenelle, I.A. Global Responsibility through Consumption Resistance and assimilation in the anti-brand movement. *Strateg. Dir.* **2011**, *27*, 256–272.
2. Azapagic, A.; Stamford, L.; Youds, L.; Barteczko-Hibbert, C. Towards sustainable production and consumption: A novel DEcision-Support Framework IntegRating Economic, Environmental and Social Sustainability. *Comput. Chem. Eng.* **2016**, *91*, 93–103.
3. Galli, A.; Wackernagel, M.; Iha, K.; Lazurus, E. Ecological Footprint: Implications for biodiversity. *Biol. Conserv.* **2016**, *173*, 121–132.
4. Kajcsa, A. Liability and responsibility of local public administration authorities in the field of waste management. Theoretical and practical study. *Jurid. Curr.* **2019**, *79*, 31–36.
5. Garcia-Herrero, I.; Hoehn, D.; Margallo, M.; Laso, J.; Bala, A.; Battle-Bayer, L.; Fullana, P.; Vazquez-Rowe, I.; Gonzalez, M.J.; Durá, M.J.; et al. On the estimation of potential food waste reduction to support sustainable production and consumption policies. *Food Policy* **2018**, *80*, 24–38.
6. Lewinson, A. Energy Efficiency Standards Are More Regressive Than Energy Taxes: Theory and Evidence. *J. Assoc. Environ. Res. Econ.* **2019**, *6*, S7–S36.
7. Dogaru, L. *The Relationship between Environmental Protection and Economic Growth from the Perspective of Sustainable Development*; Current Issues in Business Law; ADJURIS: Bucharest, Romania, 2018.
8. Wunderlich, S.M.; Martinez, N.M. Conserving natural resources through food loss reduction: Production and consumption stages of the food supply chain. *Int. Soil Water Conserv. Res.* **2018**, *6*, 331–339.
9. Costa, I.; Massard, G.; Agarwal, A. Waste management policies for industrial symbiosis development: Case studies in European countries. *J. Clean Prod.* **2010**, *18*, 815–822.
10. Schumacher, I. Ecolabeling, consumers' preferences and taxation. *Ecol. Econ.* **2010**, *69*, 2202–2212.
11. van der Rhyn, S.; Cowan, S. *Ecological Design*, 10th ed., Island Press Publisher: Washington, USA, 2013.
12. Wurster, S.; Ladu, L.; Arisaktiwardhana, D., Bio-Based Products: Suggestions for Ecolabel Criteria and Standards in Line with Sustainable Development Goals, *Int. J. Stand. Res.* **2019**, *17*, 23–39.
13. Mahlia, T.M.I.; Saidur, R. A review on test procedure, energy efficiency standards and energy labels for room air conditioners and refrigerator–freezers, *Renew. Sust. Energy Rev.* **2010**, *14*, 1888–1900.



© 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).