

Jora, Octavian-Dragomir; Pătruți, Alexandru; Iacob, Mihaela

Article

The vicious circles of bureaucratized circular economy: The case of packaging recycling euro-targets in Romania

Amfiteatru Economic Journal

Provided in Cooperation with:

The Bucharest University of Economic Studies

Suggested Citation: Jora, Octavian-Dragomir; Pătruți, Alexandru; Iacob, Mihaela (2018) : The vicious circles of bureaucratized circular economy: The case of packaging recycling euro-targets in Romania, Amfiteatru Economic Journal, ISSN 2247-9104, The Bucharest University of Economic Studies, Bucharest, Vol. 20, Iss. 48, pp. 478-497, <https://doi.org/10.24818/EA/2018/48/478>

This Version is available at:

<https://hdl.handle.net/10419/196445>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

THE VICIOUS CIRCLES OF BUREAUCRATIZED CIRCULAR ECONOMY: THE CASE OF PACKAGING RECYCLING EURO-TARGETS IN ROMANIA

Octavian-Dragomir Jora^{1*}, Alexandru Pătruți² and Mihaela Iacob³

¹⁾²⁾³⁾ The Bucharest University of Economic Studies, Romania

<p>Please cite this article as: Jora, O.D., Pătruți, A. and Iacob, M., 2018. The Vicious Circles of Bureaucratic Circular Economy: The Case of Packaging Waste Euro-Targets for Romania. <i>Amfiteatru Economic</i>, 20(48), pp. 478-497.</p> <p>DOI: 10.24818/EA/2018/48/478</p>	<p>Article History Received: Revised: Accepted:</p>
---	--

Abstract

The “circular economy” package put forward by the European Commission in 2015 is an ambitious plan in the area of environmental protection. The aim of this legal framework is to replace what is nowadays referred to as the “linear economy”, in which people consume and throw away, with an economic system which supposedly reuses all its available resources. In spite of its probably good intentions, the circular economy package contains at least one directive which under current economic conditions is practically inapplicable in countries such as Romania. The packaging waste directive, which we speak of, focuses on raising mandatory recycling rates above the current levels. Past experience has shown that the present recycling system in Romania was unable to fulfil even the exiting, more modest targets. The lack of a necessary infrastructure in waste management and collection, combined with poor legislative measures made fulfilling individual environmental obligations a real challenge for producers of packaged goods. All the more, the recycling targets increase, without being correlated with the other conditions required for their completion, would place an undue burden on producers, that would also trigger a significant rise in consumer prices, especially in the area of foodstuff products.

Keywords: circular economy, packaging and packaging waste directive, recycling and reuse targets, economic costs.

JEL Classification: Q53, Q58.

Introduction

Paradoxical and disturbing is the fact that, in all this revelation and revolution of the way of thinking from the logic of “linearity” to the logic of “circularity”, the only scarce resource that can never obey this paradigm is the human resource – obviously, seen as individuality, and not as class/species. As a rich deposit of capital of unicity, the individual crosses a one-direction biological path (some would even call it “destiny”), that can be however viewed

* Corresponding author, **Octavian-Dragomir Jora** – octavian.jora@rei.ase.ro

as “circular” from the point of view of the species’ generations, capable not only of reproducing itself, but also of improving the existential condition due to the unique capacity to learn and, hence, progress extensively and intensively. Physics, the science responsible with studying the changing/movement of “things”, and chemistry, which analyses the components of matter, reflect the constancy of the universal stock of substance and energy and their unsurprising patterns with which we can, theoretically, endlessly play, only their technological yield needing improvement.

The conscience and comprehension of one’s limited life is only specific to humans, and only they take interest in the problem of “increasing the life” of limited resources that they consider critical. Moreover, they do this in a logic that exceeds the horizon of their own existence, out of a feeling (or a mix of feelings) of instinctual loyalty towards their direct descendants, of empathic loyalty towards their kin (species) or of transcendental loyalty towards the divinity that offered them the gift of creation and this needs to be passed on with orderliness. The “linear paradigm” seems to have been particular to that era of human existence in which there still was enough to explore and exploit “first-hand”: it overlaps with the period culminating with the great geographical discoveries (which helped the charting of the world resources) and the technological revolution (which enlarged the potential of using those resources).

Nowadays, adepts of the new “circular paradigm” hold that the planet has become a fully known domain (already largely “conquered” and politically “tabularized” into different national jurisdictions); the resources themselves stand on the verge of depletion and a new type of conquering seems necessary: that in which the same unit of matter gets several chances to satisfy different needs.

The planet’s resources appear to be more and more difficult and costly to exploit: whether we are talking about the economic costs of extracting them from their “state of nature” (which include not only the direct costs of extraction, but also the indirect costs of internalizing the negative externalities that the process implicitly causes), or about the costs of the once fashionable politico-military operations needed to procure/secure them (which are not just those associated with the armed operations, but also with the compensation for the social disequilibria caused by such a non-solving approach). Businessmen and policymakers alike are considering new ways in which the same resources can enter multiple exploitation loops. Of course, the former are motivated by profit and loss (which implies economic calculations under the rigorous constraints of existing levels of technology and capital), while the latter can be motivated by practically anything, from honest concerns for the economic good to full-blown rent-seeking through carefully devised legislative mechanisms.

The present article plans to analyse, both pragmatically and programmatically, the circular economic (CE) in the following way: we will start by dwelling on the paradigm of sustainability (in which CE is included) and end up by thoroughly examining, through empirical research, the economic effects of the legal provisions put forward by the CE in the area of packing waste in relatively less developed countries, such as Romania. The first section emphasizes the family of abstract concepts (including here also their genesis) found in the mainstream sustainable development theory (and its consequent subset, the CE). Section two is reserved for criticism aimed at the sustainability/circularity paradigm, underlining the institutional aspect of the problem (free market vs. state interventionism as problem-solvers). The third section is dedicated to the analysis of the European

environmental legal system, one of the most “progressive” of its kind, and to pointing out the discrepancies between the economic reality and the legal objectives. Finally, the last section will illustrate the real problems in Romania generated by the mismatch between mandatory targets and the economy’s development, with the case study on packaging waste management.

1. Sustainability and circularity in standard economic thought

The scientific literature on the topic of *circular economy* revolves around numerous concepts. It can be considered: a multi-level construct (more likely linked to the “social” rather than “natural” phenomena); a challenger-paradigm to the current linear productive transformation of resources; a fresh set of tools and nothing more; an ideatic umbrella for one and the same body of reality; an envelope-discipline for a collection of long-studied disciplines. Defined as such by Pearce & Turner (1990), building on the foundations laid out by Leontief ([1928] 1991) and refined by Boulding (1966) and Meadows et al. (1972), the general idea behind it refers to a regenerative system, capable of working with a limited stock of primary resources and with minimum (to zero) energy loss. Thus, it is exactly what human kind “needs” in those areas of the planet where the *ecologic footprint* already has become alarming (areas in which the pace of consumption and waste is larger than the natural regeneration capacity), according to a renowned analysis initiated and periodically updated by Wackernagel and Rees (1996).

In a nutshell, the ideal ingredients for a circular economy would be the following: an explicitly systemic design, a closed-loop functioning, the capacity to continually regenerate, the productive reintegration of waste, the focusing primarily on effectiveness (and not on “efficiency”) and supplying the productive processes with energy from renewable sources. The concept appears to still be evolving and adapting, and its character is a multi-/inter-/trans-disciplinary one. We have so far mentioned only a few attributes of the circular economy, which is also only a part of *the sustainability / responsibility / intergenerational* aspect of environmentalism (see Table 1). Notions as *sustainable development*, *ecological transition*, *green economy*, *functional economy*, *life cycle thinking*, *shared value*, *cradle-to-cradle thinking*, *industrial ecology*, *extended producer responsibility* and *eco-design* suggest a huge number of visions and tools that govern the relationship between man and environment, not so much on technical, but more on social grounds. Table 1 and Figures 1 and 2 synthetically describe the essence of these concepts, the way in which they relate to and, respectively, differ from one-another.

“Circularity” = “sustainability +”

The promoters of the CE claim that the concept goes a step further than *sustainable development (SD)*, criticizing the latter for being overwhelmingly focused on efficiency. However, the circular economy seems to largely respect the *sustainability* philosophy, as it is presented in the famous Burndtland Report (1987), even if sustainability would be considered a “weaker” concept. McDonough and Braungart (2013) argue that the ecological efficiency strategies used for attaining sustainability objectives preserve the linear economy model, with the only modification in the fact that they “lengthen the line”. For example, recycling currently may lead to *down-cycling*, meaning that there are less and less materials recovered, and with a decreasing quality with each cycle.

Adepts of CE demand solving the ethical/normative problems first (“doing what’s right”), and only after tending to the economic problems (“using efficient means to achieving given ends”). Braungart and McDonough (2008) propose that *cradle-to-cradle* (C2C) arrangements and CE should be used for creating eco-efficient systems – where production flows are sustained by never ending cycles of reusable materials (Figure 1). Even if we concede that time is needed for these revolutionary ideas to mature, there still are numerous problems, as we shall see in the case of Romania, where these targets (usually bureaucratically implemented) are just not correlated with the development trend of the real economy.

In spite of all these new concepts, the fundamental economic problem remains the same, respectively “*how to allocate scarce resources for satisfying practically unlimited needs?*”. Any paradigmatic change in the environmental sciences must take into consideration the teachings of the economic science. Forgetting this simple lesson will only lead to a suboptimal allocation of resources, as we will further show.

Table no. 1: Principles of sustainability

Concept	Characteristics
<i>Nature's lessons</i>	Miller and Spoolman (2012, chap. 1) observed ecological systems in depth and formulated the basic principles of a durable system: <ul style="list-style-type: none"> – focus on solar energy flows (which fuel the fundamental biological, but also physical processes); – biodiversity (this has a role of its own, but also provides a cushion for environmental changes); – chemical and biochemical cycles (the planet does not have exogenous input of resources, thus there is a need to close the production cycles).
<i>The relation between ecosystem and society</i>	Robèrt (2000, p.245) sees sustainability as that state in which nature is <i>not</i> systematically burdened by: <ul style="list-style-type: none"> – an increase in the exploitation of resources drawn from the earth's crust; – an increase in human-created resources; – an increase in the physical deterioration caused artificially; – and people are not facing conditions which systematically affect their ability to satisfy their needs.

Source: synthesis after Miller and Spoolman (2012, chap. 1) and Robèrt (2000, p.245).

Table no. 2: The family of sustainability concepts

Concept	Brief explanation
<i>Sustainable Development</i>	The harmonious reconciliation of three dimensions of development – economic, ecological and social – in the inter-/intra-generational dynamics
<i>Ecological Transition</i>	The relationship between culture, ecology and social policy, given human behaviour in conditions of a limited stock of resources
<i>Green Economy</i>	A non-polluted economy, efficient and socially inclusive, capable of offering a better quality of life to everyone, within ecological limits
<i>Functional Economy</i>	An economy which aims to create the highest possible use value for goods and services and for the most extensive period of time possible

Concept	Brief explanation
<i>Life Cycle Thinking</i>	Each step of the production and life cycles for a good, monitored in such a way as to have the possibly to (re-)plan it in the most durable way
<i>Cradle-to-Cradle Thinking</i>	Approach based on the circulation of technical and biological “nutrients” in order to obtain increasingly smoother “metabolisms” of the production flows
<i>Shared Value</i>	The business environment is called upon to serve social needs through dedicated products and markets, given a communitarian sense related to value chains
<i>Industrial Ecology</i>	Creating and conserving an industrial ecosystem which would mirror the natural one, where waste becomes new input for the productive circuit
<i>Extended Producer Responsibility</i>	The producer is always responsible for everything related to his products, even paradoxically after they become the property of someone else (the “polluter pays” principle extended)
<i>Eco-Design</i>	Ecological aspects incorporated in the construction of the product, foreseeing possible adverse environmental effects

Source: synthesis after CIRAIG (2015), Berndtsson (2015), Heshmati (2015) and Rizos et al. (2017).

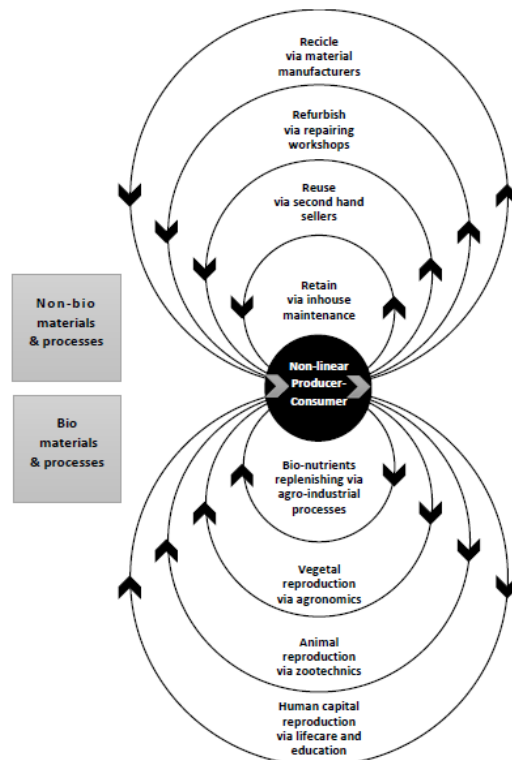


Figure no. 1: Material and biological regeneration in the circular economy

Source: own representation.

Previews of circularity¹

The first conceptual seeds of the circular economy were planted at the end of the 19th century, although they were to bear fruits only after the first half of the next one. The people, affected by two world wars and a devastating economic crisis, did not yet have the luxury to reflect on the issues of new global ecological disequilibria. Thus, in the 1960s concepts like *Spaceship Earth* (a metaphor to planetary ecosystems) or even precursors to LCT (*life cycle thinking*) appeared. The 70s come with new concepts – *cradle to cradle*, *eco-design* and *industrial ecology* –, all of them dedicated to a symbiosis between the natural and man-made environment.

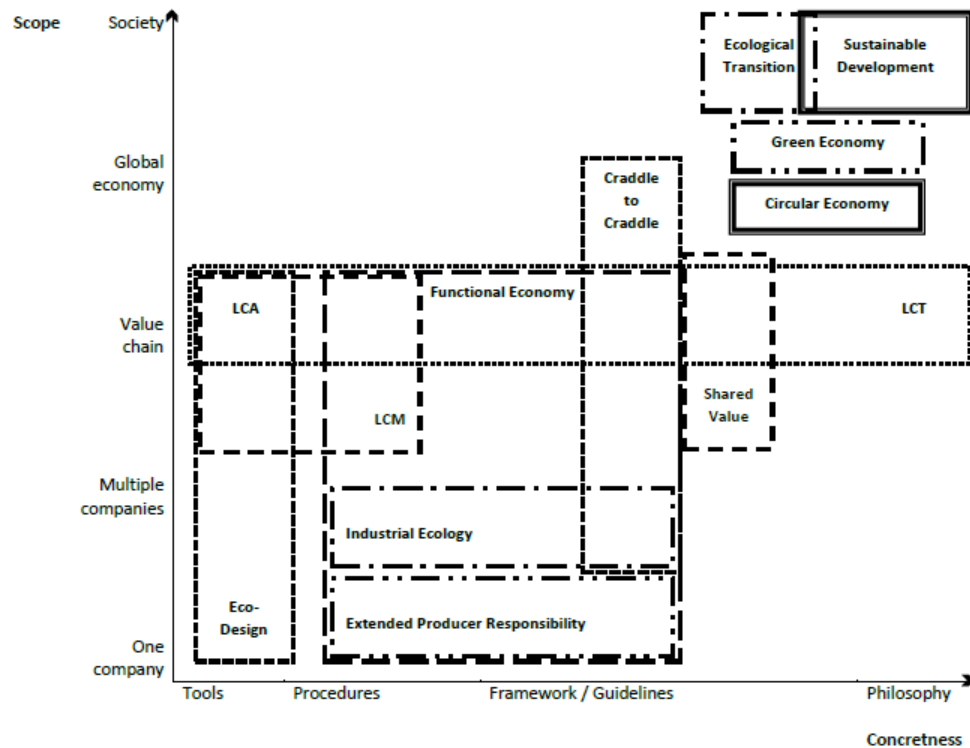


Figure no. 2: Dimensions of the concepts within the sustainability family

Source: Ellen MacArthur Foundation circular economy team.

The 1980s represented the coagulation of the ideas of *sustainable development*, *functional economy*, but also the empirical studies of *industrial ecology* and *green economy*. The jargon of researchers, but also of managers and policymakers was augmented with even more terms in the 1990s, such as *circular economy* (1990) and *extended producer responsibility* (1992); the subject *cradle-to-cradle* is undertaken by the Hannover Principles

¹ For discussions regarding the genesis of the concepts related to CE, see Braungart and McDonough (2008), McDonough and Braungart (2013), EMAF (2013), European Commission (2014), Lacy et al. (2014), CIRAIG (2015), Kopnina and Blewitt (2015), Wijkman and Skånberg (2015).

(1992), the first book on industrial ecology sees the light of the print, while the United Nations Environment and Development Conference (UNEDC) came forward with a new concept: *sustainable consumption*.

The rise of the new millennia came with the report regarding the implementation of the Johannesburg plan on *sustainable consumption and production* (SCP), the creation of UN Environment (UNEP) and of the Society of Environmental Toxicology and Chemistry (SETAC), and the new vision of product life cycle. The Marrakech Process is set in motion for implementing SCP and creating “transition cities” meant to illustrate the change in paradigm. Surprisingly (but fortuitous), China is among the first countries to adopt a law regarding the circular economy, while UNEP relaunched the *green economy* idea, giving the concept of *shared value* a new hope.

*Reviews of circularity*²

The global environmental problems of the last decades caused not only the explosion of the scientific literature in the field of the CE, but also the inclusion of many of its recommendations in the national legislation of different countries. Germany is considered a pioneer in the matter, because as early as 1996 it underlined the necessity of implementing CE mechanisms and actually adopted specific legislation in the areas of reusable waste and environmentally compatible waste discharge regime. Japan has created legislation concerning the transition of the Japanese society, in time, towards a “dematerialized” economy.

China is considered to be the third country in the world that expressed, through a specific legal framework, its commitment towards implementing the CE. Possessor of an energy-intensive and polluting economy, China has both urgent reasons and a timed *modus operandi*, inherited from Deng Xiaoping’s reforms, to reach them. Thus, unlike the German and Japanese governments, the Chinese intend to initially introduce the CE framework on a smaller scale through a series of pilot experiments/experiences. These are intended to provide a suggestive picture on whether CE targets are compatible with the competitiveness targets on which their impressive (but risky) economic growth is based.

Other countries, like Sweden, have successively introduced various CE incentive programs. They have also tried to facilitate optimal conditions for a gradual and efficient increase in recycling rates through public education. The policy was successful and appreciated by the various stakeholder categories in society. Another interesting observation can be made regarding the transformation of the political landscape in such countries. In Germany and Scandinavia, an ecological civic culture has developed and this culture is the premise of any reform process. Change will thus not be seen as a disruption of the traditional economic and social processes, but as an improvement in the interest of and in tune with the community.

² For discussions on the different legal acts passed in different national jurisdictions as a consequence of the CE philosophy, see EMAF (2014), Butterworth et al. (2014), Government of the Netherlands (2014), Naustdalid (2014), European Parliament (2015), Lassaux (2015).

2. A skeptical look towards state-captured environmental concerns

The distinction between the linear economy (condensed in the expression “take-make-waste”) and the circular economy (concentrated on the “reuse-refurbish-recycle” triad) is already theoretically popular, while the struggle for the conversion of the former into the latter has already begun in markets. But what is more or less encountered in public discourse and policy design is that the transformation is not just about political will, but is based on economic considerations related to the production structure and state of technology undergoing calculations (not at all mechanical) of *opportunity costs*, with their implacable properties:

- are *subjective* (the scarification of objective aspects is not perceived in the same manner between different agents, but according to the individual’s own value/utility scale and to the understanding and action skills);
- are *dynamic* (their appraisal can change from one moment to the next, and even more so between epochs, as consumer preferences and production technologies change);
- are *non-comparable/non-quantifiable/non-computable* interpersonally (despite many sophisticated methodological tools – i.e., cost-benefit analyses – that maintain this appearance).

Be it only for contemplating the eternal economic problem of *choosing*, we understand that the preoccupation for *sustainability* is still in need of consolidation not only of theoretical-methodological-type (from which the arguments of fundamental economic theory cannot be overlooked), but also of practical-applicative-type (from which the analysis of market vs. statist solutions cannot be omitted). The dominant mark of current research focuses on inventorying sustainability issues and specific jargon, developing indicators and metric systems, shaping the transition paths to sustainable development, setting out methodological instructions for national sustainable development strategies (Zaman, 2014), although still debatable subjects are being left behind.

We are still in the area of defining and understanding sustainable production, consumption and regulation, where the link between scientific research, innovation and governance is nodal. “[S]ustainability science³ analyses the evolution of the structure of complex non-linear adaptive systems, which aim at the human-nature relationship, taking into account and using the latest achievements of all other scientific fields and disciplines” (Zaman, 2014), while the role of the *market-state* game remains critical in this landscape where institutional design is a crucial detail for the (dis)coordination of social information and incentives (Pohoață, 2003), aspect that the *neoclassical economics theory* has not been able to incorporate, choosing instead to ignore it.

³ It is to be seen, however, whether we can speak coherently of a “science of sustainability”. Having rather the status of theory, it contains a significant number of vaguely defined terms, as we argue in this paper, many times combined with fanciful proposals that do not take into account the limitations imposed by economic reality.

Sustainability/circularity and capital

The economic theory of intergenerational sustainability is undoubtedly a product of the neoclassical paradigm⁴. The claim of this theory is to provide a normative framework on how current generations can use the “available resources” to secure and enhance the well-being of both current and future generations. Intergenerational sustainability is based on the idea that this generation fails to fulfil its societal or public responsibility to “maintain” a “capital stock defined in a broad sense” in order to sustain an income defined in a broad sense for the benefit of future generations (Brätland, 2006, p.13). In the “positive economics” order, the descriptive ambience is eminently *macroeconomic*, and in the “normative economics” order, inevitably, the prescriptions show towards the *state* as the institution capable of rebuilding the failed inter-temporal social order.

From the praxeological⁵ point of view (the analysis of society in light of the elementary logic of human action, opposed to positivistic extrapolation of natural sciences), many terms and concepts of neoclassical-type reveal their conceptual vulnerability once imported in the framework of sustainability perspective. For example, the idea of “capital stock defined in a broad sense” (which needs to be sustainable) refers practically to all aspects of the physical environment considered to support human welfare – ecosystems, the atmosphere, the oceans, scarce resources or various other “environment assets” –, not noticing its subtle gradual architecture. The analysis of capital (with that of the associated imputed income) from the neoclassical economics of sustainability seems unrefined (lacks the analysis of micro-allocations within the “capital stock”) and hasty, inferring the need for “public” investment (done by the state) for its maintenance.

Moreover, the supporters of the sustainability theory brought a change, not very subtle, even to the idea of capital in the classical sense. Ever since Adam Smith (1776), the triad of production factors involved a clear separation between nature and capital, the latter consisting only of economic goods *created by individuals*. The theory of sustainability resembles confusion in this sense, calling practically all the material things “capital”, without taking into account the fact that not all that falls into this category has the same economic properties.

Sustainability/circularity and calculation

When Mises (1920) launched the “economic calculation debate”, few economists understood it correctly in the context, and even fewer understood the complex and complete extension of the argument, which has the property of remaining valid for any kind of alteration of the monetary price system through public/governmental interventionism. The baseline of resource allocation is lacking in the neoclassical sustainability economics. Such an observation is not at all surprising if we comprehend the epistemological premises of neoclassicism. Therefore, the alleged objectivity of value (utility) and the imputability of “income defined in a broad sense” led the sustainability economists towards significant analytical errors. For example, what is highlighted by the term “capital stock defined in a broad sense” ignores the intra-stock allocation function of property rights and exchanges

⁴ For a short review of the persistent shortcomings in the neoclassical paradigm, see Hülsmann (1999).

⁵ For an introduction into the evolution of praxeology, the Austrian School method, see Hülsmann (2003).

intermediated by money. By default, sustainability is treated as a “public good/service”, provided by the public authority.

However, without private property and monetary exchange, there can be no calculation regarding capital nor rational means of maintaining the capital or the income for current or future generations. This subject, obvious for the scholars of the Austrian School of economics, is overlooked or ridiculed by neoclassical economists (R. Solow, G. Heal). They seem ignorant of the importance of monetary economic calculation based on real prices, not on values derived from fictional function, in appreciating the need to preserve resources. Neoclassical economists do not recognize that there is a link between intergenerational sustainability and the calculationist foundation of private property and monetary transactions (Brätland, 2006). Even when talking about circularity in economy, option regarded as “systemic”, it does not follow that it should not be subject to considerations of opportunity for which the free market is better equipped to discover efficient flows, their timing, localization, so that we do not reach the absurd point of “circularization” of welfare loss.

Sustainability/circularity and entrepreneurship⁶

The reduction of the role of the state in the eco-administration of resources does not lead to a management vacuum; it can be reorganized into a legal arrangement based on rigorously defined and responsibly managed property rights, correctly stimulating the entrepreneurial environment, having as consequences: (a) an inclination towards decreasing individual time preference (the certainty of expropriating servitudes encourages consumption, inhibiting saving) and the induction of a private attitude favourable to saving and sustaining the stock of resources for personal future and that of the next generation; (b) an inclination to take well-founded “risks” (Mises, 1949), to make “creative destruction” of obsolete configurations (Schumpeter, 1942) and to “alertly” discover emerging rarities (Kirzner, 1973), regardless of the fact that the “eco-entrepreneurial” exercise takes place in small and medium enterprises or in multinational corporations. The great drawback of the sustainability economics is that it starts from the idea that unsustainability is a market failure, when, on the contrary, in the logic of ownership and free market, the viability and reliability of the incentive of one’s own interest (Smith, 1776), the aggregation through prices of the social information (Hayek, 1945) and the economic calculation in markets of private properties (Mises, 1949) prove apriori the contrary.

The literature on the relationship between entrepreneurship and sustainability/circularity isn’t for now vast. Much of it over-appreciates the role of the state as facilitator (York and Venkataraman, 2010), although many times the unintended consequences of public policies apparently benevolent with the environment increase the social costs. The true entrepreneurial action manifests itself precisely when the arbitrary legal servitudes do not override the elementary rule of respecting the property (of third parties) and the (mutually accepted) contracts. Such an illustration is also the lamentation that entrepreneurship is captive in a “green prison” (Pacheco et al., 2010), constrained to behave with negligence regarding the environment due to the divergences between the individual rewards and the

⁶ A very representative collection of perspectives on entrepreneurship and the theory of the firm seen from the angle of several schools of thought can be found in Langlois et al. (2003). For a review of the literature on the entrepreneurial phenomenon between the economic and the political field, as well as between different economic systems, see also Apăvăloaei (2015; 2017).

collective goals for sustainable development, the state being called upon to help the entrepreneurs get out of this “ecological prisoner’s dilemma”. A simpler answer would be to make them responsible as owners, in a minimal state engaged in law enforcement, eliminating legal provisions that can be speculated in the sense of privatizing profits and socializing costs towards the community⁷, a logic eloquently presented in Rothbard (1982), Block (1990), Anderson and Leal (2001) or Cordato (2004)⁸.

3. Recycling of packaging in the EU and the legislation - economy mismatch

We argue in the previous sections of our paper that the targets of the circular economy are not correlated with the economic realities. There are probably only a few areas where this truth is so obvious, as in the case of the recycling industry. The targets imposed by international organizations, such as the European Union, create apparently insurmountable problems for relatively less developed countries. To point this out, we will analyse the legal obligations of the CE package, comparing them with the evolution of the Romanian economy in the packaging recycling sector up to now.

At the heart of the whole circular economy debate lie six legal documents proposed by the European Commission in 2015. These documents aim at the general scope of reducing the waste of useful materials by recycling or other methods. All of the six legislative proposals are directives, namely they fix certain targets that all member states must later incorporate in their own legal systems. In our view, the most important legislative proposal is the one that amends the so-called *Packaging and packaging waste directive* (Directive 94/62/EC)⁹. We make this claim because it particularly affects all private companies operating in the EU in a negative manner (all producers use packaging for their goods).

The main obligation contained in the *Directive*, which has been around for a long while, is that the member states must recycle a certain proportion of the packaging that is placed on their internal markets. However, the Directive leaves national governments some flexibility concerning the *actual way* they choose to fulfil these targets. Given the fact that practically all producers use different kinds of packaging for the products which they sell on the market, companies must find a plan (in partnership with the governments or, most of the times, on their own) to recycle and reuse their packaging.

In Romania, the recycling targets were implemented through *Law no. 621/2005* with its subsequent amendments and later through *Law no. 249/2015*. The current minimum

⁷ From the perspective of free market adherents, environmental problems and their current unsatisfactory solutions are due to the conceptual framework in which these issues are addressed: environmental goods are “common goods”, pollution is a “negative externality”, while waste of resources is a “market failure”. It does not follow from here that the answer to such observations must be governmental, since, for many other goods, private property rights and a legal system that unequivocally protects them have shown a particularly effective disciplinary function both in terms of their well-balanced use (soundly correlating incentives and opportunity calculations), and in terms of not interfering in the property of third parties (the property violation bears legal penalties).

⁸ A brief discussion on the “privatization” of public environmental concerns as a solution for their efficiency can be found in Jora (2017).

⁹ The other five directives refer to issues such as: waste in landfills (Directive 1999/31/EC), used batteries and accumulators (Directive 1999/31/EC), used vehicles (Directive 2000/53/EC), electrical equipment (Directive 2012/19/EU) and the general directive on waste (Directive 2008/98/EC).

recycling targets in Romania (which are the same in all member states in the EU¹⁰) can be found in Table 3:

Table no. 3: Current targets for reuse and recycling in Romania

Material type	Minimum targets (by weight)
Glass	60%
Plastic	22.5%
Paper	60%
Metal	50%
Aluminium*	21%
Wood	15%
Total	60%

Source: Directive 94/62/EC.

Given the fact that Romania is a member of the European Union only since 2007, it was able to negotiate a preferential timespan in which these targets had to be fulfilled. Thus, Romania had to achieve the aforementioned recycling objectives until 2013. However, if the current proposal made by the European Commission to amend the old *Directive 94/62/EC* will pass, the situation will become even more complicated for companies which operate on the internal market. The mandatory recycling targets will increase progressively until 2030, as we can see in Table 4:

Table no. 4: Current and future targets for reuse and recycling in the EU

Time period	2013	2025	2030
Material type	Minimum targets (by weight)		
Glass	60%	75%	85%
Plastic	22.5%	55%	55%
Paper	60%	75%	75%
Metal	50%	75%	85%
Aluminium	21%	75%	85%
Wood	15%	60%	75%
Total	60%	65%	75%

Source: EC proposal for amending Directive 94/62/EC on packaging waste (2015).

The increase in the numbers is considerable.

- Firstly, there is a rise in the *general objective* from 60%, which we currently have, to 75%, which means that companies will have to recycle or reuse three quarters of the total packaging they use. This is extremely complicated for relatively less developed countries such as Romania because, as we will further show, it considerably raises the cost for private companies which operate on the market.

- Secondly, the increase in *individual targets* is even more striking. In roughly 12 years, we have a rise in the target for plastics from 22.5 to 55%, for aluminium, from 21 to 85% and for wood, from 15 to 75%. These numbers seem even for someone who is not familiar with the market highly unrealistic, given the current economic conditions.

¹⁰ There is one exception here, given the fact that the Romanian authorities decided to implement *additional* targets for PET and aluminium (55% and, respectively, 21%). This is a somewhat odd decision, given the fact that Romania did not fulfil its mandatory targets, as we shall later stress.

The case in Romania is even further complicated by the existence of a *penalty contribution* for companies that do not live up to their obligations. Thus, if individual producers fail to fulfil the above mentioned targets¹¹, they are obliged to pay a fine of 2 lei per kilogram (approximately 0.44 euro) of packaging that they have put on the market, according to the Romanian Law no. 196/2005, with all further amendments.

4. Costs in Romania of hasty alignment to Directive 94/62/EC

The main reason for which we claim that the proposals made by the European Commission are unrealistic is *past experience*. Romania is a perfect example (although by no means the *only* example) of a relatively poorer European country which fails to comply with such ambitious environmental legislation.

Induction is certainly not the most rigorous scientific method, but it is a legitimate one. What we mean to say by this is that if the current targets have not been fulfilled until now, it is a *prima facie* argument that it is unlikely that they will be fulfilled in the near future.

How the circular economy moves itself in Romania?

The data regarding waste recycling and reuses in Romania can hardly be called reliable, but there are at least two official sources which can provide us with some information on the mater, respectively the European statistics (Eurostat, 2018) and the National Waste Management Plan (NWMP, 2018), which was just recently published in the Official Monitor. Unfortunately, both of them contain data only until 2014, but we can convincingly say that one cannot find any newer information which could be even remotely called reliable.

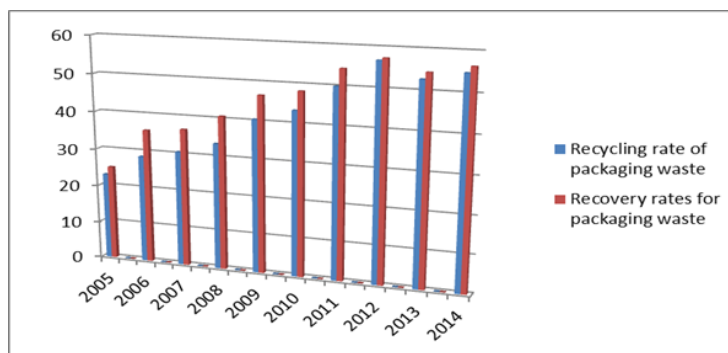


Figure no. 3: Recycling and recovery rates for packaging waste in Romania (2005-2014)

Source: Eurostat (2018)

Figure 3 comparatively shows the global targets for recycling and reuse of packaging waste in Romania from 2005 until 2014. As pointed out earlier, by 2013 Romania should have reached a limit of 55% for recycling and a 60% limit for recovery¹². But looking at the graph, we can

¹¹ If we are to be rigorous, this is generally not the case. Producers do not fulfil their obligations by themselves, but pay specialized intermediaries to do this for them. We will elaborate on the nature of these specific companies further on in the article.

¹² There is a *technical* difference between recycling and recovery that we did not feel the need to stress, but which we will briefly point out here. There are more than one way to recuperate a used

easily observe that this is not the case. The recovery rate has actually *never* reached 60% in Romania. One can indeed notice a gradual increase in both rates from 2005 to 2012, but then 2013 marked a drop in both targets. If in 2012 we had a 57.4% *reuse rate* and a 56.8% *recycling rate*, in 2013 the former dropped to 54.5% and the latter to 52.8% (Eurostat, 2018). The year 2014 marked a small increase, but still both rates were kept *just under* the targets.

One could argue that the differences are small and yes, they are. But the tendency clearly shows a struggling system which is unable to reach the finish line¹³. The National Waste Management Plan (2018, p.95) clearly states that Romania *did not meet its two global objectives* of 55% and, respectively, 60%, neither for 2013 nor 2014. Moreover, it also *failed to reach the individual recycling rate for glass waste* in the aforementioned years.

One could also argue that these are just *statistics* and that *statistics are only relevant for states*. But in this particular case, statistics transform themselves into *costs* and costs are particularly relevant for producers which operate on the Romanian market. If the country will continue to fail to achieve its targets, the authorities will use this as a political argument to increase the financial burden placed on the private sector¹⁴.

The following section will further analyse the cost perspective for Romanian companies, picturing what financial obligations they are likely to incur in the following years.

How much does the circular economy cost in Romania – qualitative assessments

The main argument one can raise against the circular economy package (which contains, as we previously pointed out, six directives on the topic of waste management) is the huge costs that it places on the *private sector*. Although this may seem a generic claim, in the particular case of the Romanian economy we can actually calculate the financial burden generated by the *Directive 94/62/EC*. One should not be fooled by its specific appearance, because the Directive affects all the producers which sell packaged products, and practically *all* producers use different forms of packaging for their goods. They will be harder hit by the Directive if the value of the product is relatively small as compared to the value of the package (such as foodstuffs, beverages, cleaning products, etc.) and relatively less affected for high value products (such as computers, furniture and the like).

material (for example, incinerating the material and using it for heating), but the most important recuperation method is recycling. Thus, what the Directive technically says is that a country has to recuperate 60% of its packaging waste, but only 55% needs to be recycled, the rest being allowed to be recovered by some other method.

¹³ There are also supplementary problems in particular fields. In spite of the increase in general reuse and recycling rates from 2013 to 2014, there was a significant *decrease* in the recycling rate for *plastic* from 51.4% to 44.5% in the same time period (Eurostat, 2018). This will prove a serious problem if the EU will decide to increase the target rates for plastics from the current 22.5% to 55%, as stated in the Commissions' proposal.

¹⁴ On top of this, there is always the threat of nationalization. The state can always argue that private companies "fail to do their jobs" and that it is a form of market failure. Given the large amounts of money that are connected to the packaging waste recycling market, as we shall further point out, the waste collection and recycling industries are in this sense ideal targets for government ownership. Economic theory, on the other hand, clearly points out that this situation should be avoided because the chaotic economic calculation made by government sectors always leads to an extremely poor allocation of resources.

Below we will attempt to calculate the costs that the private sector incurs at present because of the legislation currently implemented in the field of packaging waste. After we have these numbers, we will be able to estimate the financial impact of the *revised Directive* proposed in the circular package proposal. But before we can do that, we must dwell on a few particular characteristics of the Romanian system regarding recycling and reuse.

How much does the circular economy cost in Romania – quantitative assessments

As mentioned earlier, the Romanian *Law no. 196/2005* contains a provision which states that if a company does not fulfil its recycling and reuse targets, it is liable to pay a penalty of 2 lei for each kilogram of packaging that falls short of the target. Paying this contribution to the Environmental Fund Administration (EFA) – which is the branch of the Romanian government responsible with collecting environmental taxes – would significantly increase the costs of any company. Producers, given their nature and function on the market, cannot recycle packaging by themselves. If they would do that, they *would stop being producers and become recyclers*. This is, of course, not feasible from the point of view of the market.

The principle of specialisation and its role in a capitalist system has been studied at least since the 17th century (i.e., Adam Smith). This is the reason why the only way in which the Romanian producers could avoid paying the aforementioned penalty was by using specialised companies that would fulfil the recycling obligations in their name. These specialised companies are called Producer Responsibility Organisations (*PRO's*)¹⁵ and they collect a fee from the producers, which is generally lower than the 2 lei per kilogram. In Romania there is a mandatory legal requirement that the fees charged by the *PRO's* are to be made public and freely available on their websites.

This provision considerably makes easier our task to collect the specific data and to calculate the *average fee* that a Romanian producer would normally pay to a *PRO* in 2017 for each waste category. There are currently 16 companies which are authorized by the Romanian authorities to fulfil the recycling obligations on behalf of the producers (Environmental Ministry, 2018). We collected data concerning the fees charged for each category of packaging waste by 13 of the total 16 companies, the information for the remaining 3 being currently unavailable. Afterwards, we computed the *average* amount charged by *PRO's* in Romania, the results being presented synoptically in Table 5.

Table no. 5: Average fees practiced by *PRO's* in Romania (2017)

Material type	Average fee (lei per tonne)
Glass	540
Plastic	620
Paper	420
Metal	590
Wood	430

Source: own calculation, based on the data available (Green Resources, 2018).

¹⁵ It is not the scope of the current article to explain the genesis and role of the *PRO's*. They are, shortly put, intermediaries between producers, collectors and recyclers which, for a fee, fulfil the producers' targets on their behalf. They are not typical only for the Romanian market, but are a general phenomenon throughout the EU. One can find more information on them by consulting the website of their umbrella-corporation (Pro Europe, 2018).

In order to compute the total sum paid by the Romanian private sector for packaging waste management, we only have to multiply the total quantities of packaging sold on the market in one year with the above mentioned fees and then compare the result with what producers would normally pay to Environmental Fund Administration at the price of 2 lei per kilogram.

Unfortunately there are no data available for the year 2017. The only reliable information regarding the total quantity of packaging placed on the market is for the year 2014 (NWMP, 2018, p.88). But if we consider an average annual increase of 5%¹⁶ for the packaged goods market, we will arrive at a total number which we estimate to be very close to the quantities available for 2017.

Table no. 6: Total costs incurred by the private sector for packaging waste management (2017)

Total contribution paid to PRO's	Total contribution paid as a fee to EFA
722 mil. lei	1.729 mil. lei
157 mil. euros	376 mil euros

Source: own calculation, based on the data available (Green Resources, 2018).

Table 6 contains the information needed to reinforce our argument against the circular economy. The current obligations created by *only one directive* from the circular economy package, namely the packaging waste *Directive 94/62/EC*, creates a minimum financial burden on the Romanian private sector of approximately 157 million euros each year. We say “minimum”, because this represents the case when *all* producers fulfil their targets by using PRO's.

On the other extreme, if *none* of the targets will be fulfilled, the producers will be forced to pay to the Environmental Fund Administration a sum of approximately 376 million euros. We know for a fact that Romania did not reach its recycling and reuse targets either in 2013, or in 2014. From this information we can easily draw the conclusion that some of the companies managed to use PRO's to fulfil their obligations, while others did not. According to the press, 2015 and 2016 were actually even worse years for the recycling market. This is why we claim that in 2017 the total cost incurred by the private sector was somewhere between 157 and 376 million euros (Table 6).

Until 2030, which is the year when the new increased targets should be achieved by the member states, the growth alone in the packaged goods market would most likely double these digits. On top of that, there will also be a rise in costs caused by the increased targets. It is only fair to assume that the Romanian industry is not yet able to support all these expenses and that there are also other relatively less developed member states in similar situations. Without a calibration of the political objectives with the possibilities of national markets/economies, the “virtuous circle” of the circular economy is in risk of becoming vicious.

¹⁶ This average annual increase is also suggested by the data available in the NWMP (2018, p.88) for the time period between 2010 and 2014.

Conclusions

Although the circular economy remains a legitimate preoccupation of humanity within a scarce resources framework, its understanding must not begin with the false impression that it is subject to a different human rationality or different social laws. The economic activities, common to all individuals, remain tributary to the logic of scarcity (which is implacable), of human preferences (which can be educated), of efficiency (which can be calculated) and of human cooperation (which can be improved).

Forcing the limits of circularity and replacing market coordination through entrepreneurs, who are alert to opportunities and aware of risks, with bureaucratic mechanisms can both distort problem awareness and delay consistent responses to environmental problems, which may be legitimate in spirit.

The theories of the structure of production, economic calculation, and the role of the entrepreneur remain fundamental keystones, and any new paradigm concerning the allocation of resources must be compatible with them.

The discrepancies between the bureaucratic ambitions of the EU and the ability of member states to set up a functional recycling infrastructure reflect serious planning errors. The one size fits all problem solving approach adopted by Brussels can ignore the disparities between economic development in different regions. The case of Romania's recycling sector perfectly suggests all these issues, especially the impossibility of reaching targets uncorrelated with current economic realities. It should be understood that only capital accumulation, and not legislation, can lead to progress.

References

- Anderson, T. and Leal, D., 2001. *Free Market Environmentalism*. Rev. Ed. New York: Palgrave Macmillan.
- Apăvăloaei, M.A., 2015. A Note on the Political Entrepreneur and the Limits of Pure Theory. *OEconomica*, 24(1), pp.87-107.
- Apăvăloaei, M.A., 2017. Teoria antreprenorială și sistemele economice – O viziune austriacă din două perspective diferite. *OEconomica*, 26(1).
- Berndtsson, M., 2015. *Circular Economy and Sustainable Development*. Master thesis in Sustainable Development at Uppsala University. [pdf] Available at: <<https://uu.diva-portal.org/smash/get/diva2:847025/FULLTEXT01.pdf>> [Accessed 1 December 2017].
- Block, W., 1990. *Economics and the Environment: A Reconciliation*. Vancouver: Fraser Institute.
- Boulding, K., 1966. The economics of the Coming Spaceship Earth. In Jarrett Henry (ed.). *Environmental Quality in a growing economy*. Baltimore, MD: Johns Hopkins Press.
- Brätland, J., 2006. Toward a Calculational Theory and Policy of Intergenerational Sustainability. *Quarterly Journal of Austrian Economics*, 9(2), pp.13-45.
- Braungart, M. and McDonough, W., 2008. *Cradle-to-cradle; Remaking the way we make things*. New York: North Point Press.
- Butterworth, J.; Bleriot, J.; Zhu, D.; Auken, I.; Wijkman, A.; Ekins, P.; Stahel, W.R.; Braungart, M.; Lacy, P.; Hendricks, B.; Braam, G.; Van Der Plas, A. and Cramer, J.,

2014. Special section: towards a circular economy. *Europe's World Summer 2014* (Greener Europe), pp.47-67.
- Comisia Europeană [European Commission], 2014. *Coping study to identify potential circular economy actions, priority sectors, material flows and value chains*. [pdf] Available at: <http://www.ieep.eu/assets/1410/Circular_economy_scoping_study_-_Final_report.pdf> [Accessed 1 December 2017].
- Comisia Europeană [European Commission], 2015a. *Closing the loop – An EU action plan for the Circular Economy*. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2015) 614 final. [pdf] Available at: <http://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC_2&format=PDF> [Accessed 1 December 2017].
- Comisia Europeană [European Commission], 2015b. *Proposal for a Directive of the European Parliament and of The Council*, COM(2015) 596, final 2015/0276 (COD). [online] Available at: <<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015PC0596&from=EN>> [Accessed 1 December 2017].
- Cordato, R., 2004. Toward an Austrian Theory of Environmental Economics. *The Quarterly Journal of Austrian Economics*, 7(1) (Spring), pp.3-16.
- Ellen MacArthur Foundation (EMAF), 2012. *Interactive system diagram*. [pdf] Available at: <<http://www.ellenmacarthurfoundation.org/circular---economy/circular---economy/interactive---system---diagram>> [Accessed 1 December 2017].
- Ellen MacArthur Foundation (EMAF), 2013. *The circular model – an overview*. [pdf] Available at: <<http://www.ellenmacarthurfoundation.org/circular---economy/circular---economy/the---circular---model---an---overview>> [Accessed 1 December 2017].
- Ellen MacArthur Foundation, 2014. *Towards the Circular Economy: Accelerating the scale-up across global supply chains*. Ellen MacArthur Foundation. [pdf] Available at: <http://www3.weforum.org/docs/WEF_ENV_TowardsCircularEconomy_Report_2014.pdf> [Accessed 1 December 2017].
- Europa.eu, 2018. *Recovery rates for packaging waste*. [online] Available at: Eurostat databases <<http://ec.europa.eu/eurostat/tgm/download.do?tab=table&plugin=1&language=en&code=ten00062>> [Accessed 1 December 2017].
- Europa.eu, 2018. *Recycling rates for packaging waste*. [online] Available at: Eurostat databases <<http://ec.europa.eu/eurostat/web/products-datasets/-/ten00063>> [Accessed 1 December 2017].
- European Parliament, 2015. *Questions parlementaires. Objet: Abandon du paquet sur l'économie circulaire dans le programme de travail de la Commission pour 2015*. [pdf] Available at: <<http://www.europarl.europa.eu/sides/getDoc.do?type=WQ&reference=E---2015---001198&language=FR>> [Accessed 1 December 2017].
- Government of the Netherlands, 2014. *Knowledge map for circular economy*.
- Green Resources, 2018. *Tarife preluare responsabilitate de către operatori economici licențiați*. [tarife-preluare-responsabilități] Tarife preluare responsabilitate de către operatori economici licențiați. [online] Available at: <<https://green-resources.ro/tarife-preluare-responsabilitate/>> [Accessed 1 December 2017].
- Hayek, F.A., [1945] 2011. The use of knowledge in society. *The American Economic Review*, 35(4) (Sep.), pp.519-530.

- Heshmati, A., 2015. *A Review of the Circular Economy and its Implementation*. Discussion Paper No. 9611. [pdf] Available at: <<http://ftp.iza.org/dp9611.pdf>> [Accessed 1 December 2017].
- Hülsmann, J.G., 1999. Economic Science and Neoclassicism. *The Quarterly Journal of Austrian Economics*, 2(4) (Winter), pp.3-20.
- Hülsmann, J.G., 2003. From value theory to praxeology. Introduction to the third edition *Epistemological problems of economics*, Ludwig von Mises, ix-lv. Auburn, AL: Ludwig von Mises Institute.
- International Reference Centre for the Life Cycle of Products, Processes and Services (CIRAIG), 2015. *Circular Economy: A Critical Literature Review of Concepts*. Montréal: Polytechnique Montréal.
- Jora, O.D., 2017. For a Privatization of Environmental Public Policies (Towards an intellectual climate change on sustainable development). *The Market for Ideas*. [online] Available at: <<http://www.themarketforideas.com/for-a-privatization-of-environmental-public-policies-towards-an-intellectual-climate-change-on-sustainable-development-a295/>> [Accessed 1 December 2017].
- Kirzner, I.M., 1973. *Competition and Entrepreneurship*. Chicago: University of Chicago Press.
- Kopnina, H. and Blewitt, J., 2015. *Sustainable business: key issues*. Oxon: Routledge.
- Lacy, P.; Keeble, J.; McNamara, R.; Rutqvist, J.; Eckelle, K.; Haglund, T.; Buddemeier, P.; Cui, M.; Sharma, A.; Copper, A.; Senior, T. and Petterson, C., 2014. *Circular Advantage: Innovative Business Models and Technologies to Create Value in a World without Limits to Growth*. Chicago, IL: Accenture.
- Langlois, R.N.; Yu, T. F.-L. and Robertson, P.L. (eds.), 2003. *Alternative theories of the firm*. Edward Elgar.
- Lassaux, M., 2015. *Economie Circulaire et politiques européennes*. Montréal: Institut EDDEC et HEC Montréal.
- Leontief, W.W., [1928] 1991. The economy as a circular flow. *Structural Change and Economic Dynamics*, 2(1), pp.181-212.
- McDonough, W. and Braungart, M., 2013. *The upcycle: beyond sustainability – designing for abundance*. New York: North Point Press.
- Meadows, D.H.; Meadows, D.L.; Randers, J. and Behrens, W.W. III, 1972. *The Limits to Growth*. New York: Universe Books.
- Miller, G.T. and Spoolman, S.E., 2012. *Living in the environment*. Eighteenth edition. Stamford: Cengage Learning.
- Ministerul Mediului [Environmental Ministry], 2018. *Lista operatorilor economici care au licență de operare*. [Gestionare Deșeurilor>Comisie ambalaje>Lista operatorilor economici care au licență de operare]. [online] Available at: <<http://www.mmediu.ro/categorie/comisie-ambalaje/196>> [Accessed 1 December 2017].
- Mises, L. von, [1949] 1998. *Human action. A treatise on economics*. Auburn, AL: Ludwig von Mises Institute.
- Naustdalslid, J., 2014. Circular economy in China – the environmental dimension of the harmonious society. *International Journal of Sustainable Development & World Ecology*, 21(4), pp.303-313.
- Pacheco, D.F.; Dean, T.J. and Payne, D.S., 2010. Escaping the green prison: Entrepreneurship and the creation of opportunities for sustainable development. *Journal of Business Venturing*, 25(5), pp.464-480.

- Pearce, D.W. and Turner, R.K., 1990. *Economics of Natural Resources and the Environment*. Hemel Hempstead: Harvester Wheatsheaf.
- Planul Național de Gestionare a Deșeurilor – PNGD [National Waste Management Plan – NWMP], (2018). Official Monitor of Romania, no. 11bis/5.1.2018.
- Pohoată, I., 2003. *Filosofia economică și politica dezvoltării durabile*. București: Editura Economica.
- Pro Europe, 2018. *Who we are*. [About us > Who we are]. [online] Available at: <<http://www.pro-e.org/about-us/who-we-are>> [Accessed 1 December 2017].
- Rizos, V., Tuokko, K. and Behrens, A., 2017. *The Circular Economy: A review of definitions, processes and impacts*. [pdf] Available at: <http://circular-impacts.eu/sites/default/files/CircularEconomy_A%20review%20of%20definitions%20C%20processes%20and%20impacts.pdf> [Accessed 1 December 2017].
- Robèrt, K.-H., 2000. Tools and concepts for sustainable development, how do they relate to a general framework for sustainable development, and to each other? *Journal of Cleaner Production*, 8(3), pp.243-254.
- Rothbard, M.N., [1982] 1998. *Ethics of liberty*. New York: New York University Press. Originally published: Atlantic Highlands, N.J.: Humanities Press, 1982.
- Schumpeter, J.A., [1942] 2008. *Capitalism, socialism and democracy*. Harper Perennial Modern Thought.
- Smith, A., [1776] 1994. *An Inquiry into the Nature and Causes of the Wealth of Nations*. New York: Modern Library Edition.
- Wackernagel, M. and Rees, W.E., 1996. *Our Ecological Footprint: Reducing Human Impact on the Earth*. Gabriola Island, British Columbia, Canada: New Society Publishers.
- Wijkman, A. and Skånberg, K., 2015. *The circular economy and benefits for society*. Club of Rome. [pdf] Available at: <<https://www.clubofrome.org/wp-content/uploads/2016/03/The-Circular-Economy-and-Benefits-for-Society.pdf>> [Accessed 1 December 2017].
- World Commission on Environment and Development, 1987. *Our Common Future* (Brundtland Report). Oxford: Oxford University Press.
- York, J.G. and Venkataraman, S., 2010. The entrepreneur-environment nexus: Uncertainty, innovation, and allocation. *Journal of Business Venturing*, 25, pp.449-463.
- Zaman, G., 2014. *Abordările inter, intra, trans și pluridisciplinare, cerințe ale sustenabilității și complexității proceselor economico-sociale*. [pdf] Available at: <<http://mone.acad.ro/wp-content/uploads/2014/08/Prelegere3sept.pdf>> [Accessed 1 December 2017].