GOVERNMENT INTERVENTION IN THE DEVELOPMENT OF THE CIRCULAR ECONOMY

PICIU GABRIELA CORNELIA,
SENIOR RESEARCHER, PHD, CENTRE FOR FINANCIAL AND MONETARY RESEARCH "VICTOR SLĂVESCU"
*e-mail:*gabriela_piciu@yahoo.com

Abstract
This article presents the way in which the state can intervene to facilitate the transition to a circular economic model, by creating a framework of government interventions, which must operate without distortion, designed to maintain or improve the intrinsic value of materials, along production systems and value chains and at the same time minimize the level of inflows of virgin materials.
Ensuring the conditions can have a fair competition for circular models that can ensure by eliminating subsidies can grant linear behaviors and to establish integrity for risks and external to be able to associate production and to be able to use linear for the material. Such a framework facilitates and accelerates the allocation of capital for investigating and activating traffic, stimulates private sector funding and allows for an optimal pension for public finance.
The analysis of institutional conditions that facilitate the transition to a circular economy by stimulating investment to improve natural capital and social equity includes environmental taxes, trade permits and the marketable certificate system, which focus on the economic role of government intervention, with a particular focus on government interventions.

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1. INTRODUCTION

The following principles must be taken into account when designing a functioning policy and regulatory framework: conservation / value creation; proportionality - at the level of externality; progressive dematerialization; openness to innovation.

Any policy-making should reflect the principle of additionally, namely the need to ensure that new policy interventions integrate and support the effective and timely implementation of existing policies or enhance their impact. Circular economic policy must reflect the adaptability of economic units and include appropriate mechanisms to avoid rebound effects.

The analysis of institutional conditions that facilitate the transition to a circular economy by stimulating investment to improve natural capital and social equity includes environmental taxes, trade permits and the marketable certificate system, which focus on the economic role of government intervention, with a particular focus on government interventions.

2. TYPES OF GOVERNMENT INTERVENTION

The government is the collective actor, which has both the capacity and the legitimacy to set standards and regulations, which can create mixtures of instrumental policies and can sanction and stimulate the behavior of private actors, who do not have a motivation to contribute to a public good of transition. towards the circular economy

There are the following types of government interventions: state regulation, economic instruments and the social balance mechanism.

State regulation

State regulation is the basis for promoting the circular economy, at the various levels of governments or public authorities in which traditional command and control measures are used to manage resources and protect the environment.

There are three characteristics of state regulation:

- the cost of pollution borne by polluters is internalized through state coercive measures
- state regulation can protect the accuracy of environmental management
- state regulation can promote equity.

The disadvantages of state regulations are the high application costs and the imperfect effects.

Its main types of state regulation include standard and technical control, control of the total amount of pollutant emissions, the "polluter pays" system and the environmental impact assessment system, etc.

Economic instruments

In order for economic instruments to fully fulfill their role, they must be under the protection and support of state regulations, which in turn need them (appropriate economic instruments) in order to reduce implementation costs.

There is a possibility that both state regulation and economic instruments will not work, and in this case, the mechanism of social balance will play a key role in building the circular economy.

To promote the circular economy, the government can apply measures that motivate companies or consumers to replace polluting processes and products with cleaner products. In general, three types of measures are available for this purpose: coercive measures, incentive measures and correct information.

Coercive measures are taken in order to discourage polluting activities by internalizing environmental costs. Environmental taxes, fees, emissions trading systems, setting and raising standards, and rules and bans are the best known examples of such measures.

Fines may be imposed for breaches of established rules and incentives to encourage producers or consumers to behave in an environmentally sound manner.

Subsidies, tax exemptions, pricing concessions, guarantees and loan facilities, as well as preferential treatment through tenders and facilitating the development of knowledge and innovation policy are among the incentives.

By properly informing producers and consumers about the consequences of their buying and using behavior, it is possible for them to adopt desirable social behavior, which involves concepts such as responsible professional conduct and civic sense.

In order to make optimal use of these financial instruments, we will consider four stages in the production and consumption chain. For each of the four steps, possible financial instruments are identified that can reduce the damage to the environment and encourage a more efficient use of raw materials, a lower volume of waste and a better reuse.

Financial instruments for the extraction of raw materials

With regard to environmental damage and the shortage of raw materials, existing financial instruments can be restructured to promote the circular economy.

Any import duty on raw materials from abroad is only possible under European Union law.

Financial instruments for the processing and production of raw materials

In absolute and relative terms, the negative externalities of raw material consumption mainly involve this phase, and the use of financial instruments must be carried out in such a way that producers are induced to apply circular principles from the raw material processing stage.

The financial instruments used in the processing and production stage of raw materials are:

a) Taxes on specific inputs - input tax is particularly effective in the production phase if it involves raw materials with negative externalities (environmental damage) that are insufficiently priced or that increase the risks of security of supply.

Effectiveness will vary from sector to sector or chain to chain, and the tax base and tax rate are decisive for the expected effect.

Other various criteria are important for the efficiency of taxation, such as: the possibilities of substitution, the possibility of integration into the tax system (feasibility, willingness to comply and enforcement) and a gradual introduction of taxes.

The development of a tax measure is of great importance for the competitive position of companies. Focusing on an input tax, for example, that in order to determine the tax rate, raw material-specific information is needed on substitution possibilities and price elasticity.

If there is no possibility of replacement, the demand for the raw materials in question will not be sensitive to a tax that increases prices and a gradual introduction would be desirable, with gradual increases in the tax rate.

b) Circular auction - public authorities and government organizations have the role of launching customers through design contests and stage bidding procedures, in which companies are challenged to work quickly to find solutions to the problems raised by the implementation of the circular model.

c) Approaching the top sector - government policy aims to focus on what is known as the top sector: energy, agriculture, advanced technology.

d) Subsidies for innovation in circular business operations - most often, existing instruments for innovation fail to properly address the requirements of the circular economy because they do not take into account social innovation, new forms of chain cooperation, innovative reuse, although these forms of innovation are of particular importance for circular business operations. It is therefore necessary to extend the tools for innovation.

e) Promoting the use of secondary materials - there is a system of subsidies for financing projects on energy from non-renewable sources. Similar to this operating subsidy, it is possible to verify whether the same mechanism can be used to reduce (temporarily) the price difference between relatively cheap primary raw material flows and relatively expensive secondary flows.

Financial instruments in the use of final products

With regard to the use of final products by consumers and producers, government instruments can provide incentives for greater reuse through second-hand marketing, repair, renovation and modernization of an existing product.

Consumers should also be offered incentives to buy products that cause less damage to the environment, damage or purchase of fewer products, for example, by using the products instead of owning them. The government itself also consumes goods and services and may therefore play a positive role in this area.

The financial instruments in the use of the final products are:

a) The price of environmental pollution for environmentally harmful products - the current set of financial instruments offers different forms of product-specific environmental pollution prices, through purchase and use taxes.

A better understanding of the opportunities and risks associated with product-specific purchasing fees for multiple product groups can have significant effects when used.

b) Accessibility of subsidy schemes for business units carrying out activities specific to the circular economy - innovations in the circular economy can be supported by energy saving and

environmental conservation schemes, such as a tax advantage for the acquisition of operating assets that contribute to closure cycle and the efficient use of raw materials.

Existing grant opportunities should be more accessible to companies wishing to implement the circular model.

c) Use of purchasing power by government institutions - circular procurement of public authorities can be an important incentive for entrepreneurs to design products in a circular and modular way, so that the materials used can have a maximum value.

d) Temporary subsidies for circular innovations - may be relevant if these innovations have not yet benefited from the improvement effects or as long as the damage to the environment is not priced or the prices are insufficient.

For example, a temporary subsidy for the purchase of products with a modular design that are easy to repair, renovate or upgrade can lead consumers to opt for recyclable products with a longer lifespan.

e) Financial instruments used for the transition from possession to use of products with less damage to the environment - the transition from ownership to use can lead to products that are manufactured and used in a smarter way, because it creates incentives for producers of products or parts of products which retain their value for as long as possible. As this is not always the case, it is necessary to find those product groups to which this applies and how financial instruments can help to move from holding to use (eg the case of those that can replace products with higher energy consumption, fuel etc.).

f) Financial instruments that encourage the reduction of repair costs and provide net environmental benefits - the costs of repairs can be reduced by reducing the tax, such as a reduction in VAT on repair services.

Financial instruments for waste processing and recycling

At the end of a product use cycle, there must be a set of tools applied that limit the damage to the environment during waste processing work.

In this context, it is important for financial instruments to generate, innovation policy, technological impetus, so that recycling is as cheap as possible and of the best quality.

• Efficient collection systems

Waste control tools - the introduction of a tax in the waste disposal phase leads to socially undesirable evasive behavior.

• Prevention of dumping - Waste prices create the risk that individuals and businesses will behave inappropriately. In this case, it is necessary to determine at what price level the disposal of waste becomes a substantial problem, and make the pricing policy inefficient.

• Financial instruments to optimize waste processing - landfill waste and incineration can be taxed for environmental damage. It is important that any environmental damage has a fair price, which does not mean exemptions, reduced rates or subsidies for waste incineration plants. Existing exemptions and low rates for incineration plants can be phased out, as the loss is associated with incineration-based power generation.

In order to correctly estimate the specific effects of financial instruments on the various commodities, chains and sectors, we will consider the following aspects:

- If the taxation of raw materials is higher, for example through an income-based tax, the first effect will be to increase costs for economic units that are large consumers of raw materials. The extent to which these cost increases also increase prices for buyers (other economic units in the chain and consumers) depends in part on:
  - the possibilities for manufacturing companies to replace materials;
  - the part of the total operating costs represented by raw materials and energy costs;
  - market conditions that determine whether producers can pass on cost increases to their buyers.

- As the tax on raw materials becomes more efficient, tax revenues will decrease if tax rates remain the same
- In addition to correcting unwanted side effects that may occur following the introduction of new tools, a comprehensive assessment of them is also needed, in which the links that are established with other areas are also important. For example, there is a clear connection between the transition to a circular economy and the energy transition. Reducing emissions and the consumption of raw materials and other materials, together with the promotion of recycling and reuse will lead to a reduction in environmental damage in the form of CO2 emissions, as less energy will be needed for the production process.

An important role in this approach is to identify the criteria for using financial instruments that can be used to stimulate the circular economy. A number of financial instruments are effective and can be easily integrated, for example: circular tenders and public procurement by governments and related organizations, the use of circularity as one of the basic principles of the new flagship sector policy, and an extension of subsidies for innovation, which stimulates circular business operations.

States' difficulty in finding new landfills leads to their adoption of a simple solution, which often involves the lowest costs, namely sending waste to another country for disposal or storage. In some cases, for economic and technical reasons, the treatment of different categories of waste in a foreign country is appropriate. Thus, many companies producing hazardous waste in developed countries have noticed how the economic costs they have had to face in their national territories lead to an exponential growth in a relatively short period of time. On the other hand, the tightening of environmental legislation, the lack of adequate facilities and the increase of social pressure, determined the export of waste. The dramatic rise in economic and social costs has led to the emergence of many hazardous waste brokers that manage their exports to developing countries where economic costs are significantly lower and social costs do not have a direct impact on their business.

3. ANALYSIS OF GOVERNMENT INTERVENTIONS THAT FACILITATE THE TRANSITION TO A CIRCULAR ECONOMY

As the governance system plays a decisive role in the transition of economies to sustainability, in order to understand the role and diversity of government interventions, it is important to analyze how different governance measures can influence specific opportunities for innovation, sustainability and circular economy-oriented transformation, for different target sectors and governance mechanisms (Table 1).

Table 1: Operationalization of governance mechanisms forthe transition to the circular economy

Main governance mechanisms	Transition indicators to the circular economy
- macro-governmental regulations, - changing the structure of the market - setting incentives	- increasing renewable energy and energy efficiency - ensuring security and stability of supply
- public procurement and investment that stimulates the participation of private actors	- reducing emissions - energy saving - job creation

	- local participation
- building networks and strengthening support capacity between private actors	- circular resource flows and resource efficiency and local added value
- public investment in research, information and monitoring tools	- reduction of emissions and material losses, environmental footprint and well-being

Source: author's construction

The government interventions analyzed range from direct measures, such as regulation, through the government's own public procurement and (infrastructure) investment activities, to indirect measures, such as the establishment of incentives and "more flexible" measures, such as be supporting capacity building and information and monitoring tools.

4. EXAMPLES OF GOVERNMENT REGULATION AND MARKET INTERVENTIONS

Government regulation and market interventions are direct means that allow innovation for the transition to the circular economy, the regulation of people's economic behavior through a set of legal provisions and standards that allow or prohibit a certain type of action.

A country's energy transition includes changes at various levels of the system, from innovations in niche technologies for renewable energy, at the actor and organizational level, to regime changes at the market and governance levels.

The widespread use of renewable energy sources is mainly encouraged through state intervention in the form of policies that eliminate fossil fuels and support the competitiveness of innovative solutions in the energy sector.

Government market intervention causes a systemic change in production patterns and enables renewable energy companies to succeed in a relatively oligopolistic market structure. It stimulates innovative capacities and the creation of employment opportunities in future growth markets.

In this sense, the energy transition is an example of improving societal and environmental conditions, enabling new market segments through subsidies and disabling energy based on nuclear and fossil fuels. This has led to an increase in the production of electricity from renewable energy sources and, consequently, to a reduction in greenhouse gases, the creation of new business and employment opportunities.

An important example of such direct regulation is the energy transition, which has been characterized as a regime change, an environmentally friendly industrial policy and a sustainability project.

The German energy transition has strong elements of direct government regulation, but is also based on market intervention, achieved through a set of incentives for renewable energy. Between 1990 and 2000, effective support policies for renewable energy sources were introduced in Germany. Those policies have led to a change in market conditions and, consequently, to the economic viability of energy production technology.

While nuclear energy is being phased out (target year 2022), fossil fuels are on a longer transition path, but both are excluded in the long run. In contrast, renewable energy is strongly promoted through fixed tariffs. The energy transition encompasses changes at different levels of the system, ranging from innovations in renewable energy technologies, at the actor and organization level, to regime change, the market and governance.

Technological advances and falling prices determine the momentum towards the production of low-carbon energy, and implicitly, the decline of global warming. Fossil fuels were absolutely

essential for the initial industrial revolution, for the increase in prosperity we have achieved in a growing number of countries in the last 200 years. To limit global warming to below two degrees above pre-industrial levels, we will need to move away from fossil fuels, while providing more energy consumption in many countries than at present, thus making an energy transition that uses enough energy to provide prosperity for everyone, but with much reduced carbon emissions ".

Therefore, the energy transition is an example of successful systemic innovation in the circular economy, which is substantially facilitated by government regulation and market intervention, leading to large-scale investment and economic incentives for actors, organizations and markets.

5. PUBLIC PROCUREMENT AND INFRASTRUCTURE INVESTMENTS

Government interventions aim to create the institutional conditions that facilitate the transition to a circular economy by encouraging investment in improving natural capital and social equity.

Government, financial institutions and corporations play an important role in creating a sustainable demand for circular products and services through procurement and facilities policies.

The government is the biggest buyer, and its impact could be significant. An indirect, but potential, lever for the government to stimulate demand is the differentiated taxation of inputs used for circular and linear products. For example, the environmental costs of producing and disposing of linear products could still be reflected in the taxes levied.

Similarly, labor is taxed more than the use of raw materials, which makes labor-intensive business models, such as extending the life of products, less competitive.

Government influences both society, through employment and public procurement, and the environment through infrastructure development, and public spending can influence green innovation on both the supply and demand sides.

The adoption of innovative technologies in the energy efficiency, renewable energy, housing and transport sectors at regional level can be done through an entrepreneurial network coordinated by an environmental authority (Environmental Agency).

The process of coordinating activities in a wider network of businesses, municipalities and residents is an important element that facilitates survival in current market conditions.

The development of a dynamic regional innovation system based on strong horizontal cooperation, through the active involvement of the authorities at regional level can create a demand and therefore market opportunities for energy efficient products by reducing entrepreneurial risk and contributing to local learning about energy saving.

Therefore, individual and entrepreneurial innovation must be supported and facilitated by proactive municipal administrative involvement in public procurement and investment, which in turn has positive effects on other businesses, residents and municipalities.

6.THE POLICY MIX

The policy mix must be designed to help manage innovation risks, to support the organization of economic unity, and to shift the market to more favorable conditions so that the transition to a circular economy can truly materialize social sustainability transformations. of the current system.

If we discuss current EU policy, we find that it is waste-centered, with a multitude of related directives and regulations. Although, ideally, such a system would lead to waste minimization and increased reuse and recycling, the situation is different, as most product policies do not incorporate material resource efficiency clauses in a significant way.

Moreover, a striking gap in consumption policies explains the persistent linearity of the current economy, where products almost always become waste and all other options for conserving resources and value remain marginal.

In this context, three policy areas have significant potential for promoting greater resource efficiency over the life cycle of a product. The 3 areas are:

- reuse, repair and reconditioning policies;
- public procurement and procurement for innovation;
- policies to facilitate the efficient functioning of waste markets and to promote Extended Producer Responsibility (EPR).

All policy measures have the potential to directly influence the resource efficiency of products and services, reflecting the fundamental principles of the circular economy. The transition to the circular economy can be achieved through the development of the policy mix, rather than through single policy instruments.

Both individual policies and policy mixes need to be rigorously assessed for potential return effects that could slow the transition to a circular economy.

7. CONCLUSIONS

The effectiveness of each of the measures mentioned in stimulating the circular economy depends on the specific circumstances, the design and the proposed objectives.

This does not change the fact that setting a price of negative effects on society is considered an essential precondition for correcting market failure and promoting social prosperity.

Pricing the negative externalities of business units is also useful for obtaining financing for circular business models.

Other obstacles to financing profitable business models are the asymmetry of information due to which financiers cannot make an accurate estimate of risks and rewards, lack of a history, dependence on supply chain partners and lack of experience of new financing structures (eg model use of a product as a service).

Financial instruments, such as taxes, subsidies and public procurement, can effectively contribute to accelerating the transition to a circular economy. In this process, it is important to take into account the damage to the environment and the use of raw materials throughout the production, consumption and waste chain.

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