

INNOVATION - THE WAY TO A SUSTAINABLE GLOBAL ECONOMY

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Abstract

Environmental protection activity involves managing numerous environmental policy instruments: administrative (command and control) instruments, economic instruments, private entities specific instruments, informational tools, environmental education, etc.

One of the responsibilities of environmental policy is to improve the quality of economic instruments in environmental protection. In the selection of the measures for environmental protection is necessary to consider those measures characterized by the criterion of minimizing the risk (reducing the risk to human health, reducing the risk to the natural environment, limiting unwanted results - emissions and waste) and the criterion of minimizing costs (risk reduction minimum cost, achieving maximum risk costs indicated). Other criteria include economic sustainability, social sustainability, political feasibility, regional and international acceptability and administrative requirements.

Key words: environmental protection, innovation, economic instruments for environmental protection, open innovation

Introduction

The decision making process regarding the effectiveness of environmental protection raises a number of difficulties. Common market criteria can not be used at the current level of knowledge for a correct assessment in terms of funds spent and the effects obtained.

Economic policies underlines the role of innovation in economic development in efficient production methods and in opening new markets. This is the source of our competitive advantage in the future. The Lisbon Strategy launched the necessity of increasing investment in innovation and diffusion of innovations throughout the economy, considering that the support of the competitive advantage in the future.

1. Innovation and environmental protection

Environmental policy is an important driver of innovation, the various environmental regulations contributing to innovations in various economic sectors and branches. To strengthen the above, we can argument with the following examples:

- in the field of renewable energy, environmental policy instruments (eg fiscal instruments) have proven effective with regard to the impact on innovation, impact measured by the number of patents in this field;
- environmental regulations have contributed to the development of more efficient vehicle technologies and innovations in technology afterburner;

Environmental regulations, designed properly, can stimulate innovation which in turn can compensate, partially or fully, the costs of complying with these regulations.

The following figure describes the causal chain that starts the implications of environmental policy instruments on Segment Research - Development (R & D), the results of environmental and economic performance.

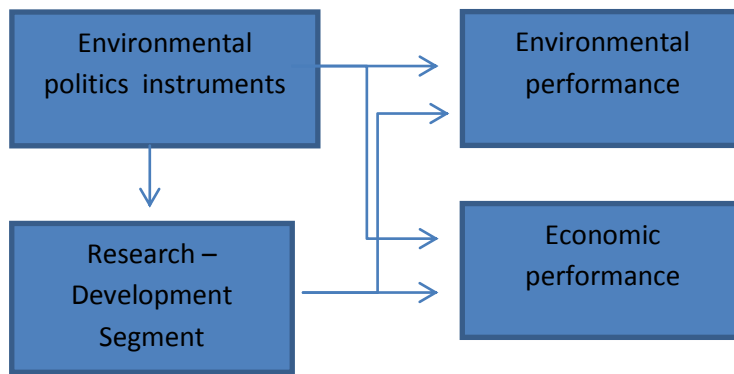


Figure. No. 1. Environmental policy performance

Source: *The economic benefits of environmental policy*, Institute for Environmental Studies, 2009, pag. 44

Regarding innovation at the microeconomic level, to be innovative requires that firms need to be opened, while being dependent on external resources in their innovation activities.

Open innovation refers to the use of input and output streams for the express purpose of knowledge to accelerate internal innovation, and expand the markets for external use of innovation. Open innovation model (which uses both external ideas as well as internal ideas, and internal and external paths to market, to discover, generate and exploit opportunities for innovation) differs from closed model where businesses generate and develop its own market ideas organized in-house research and development departments. Of course, in this model of open innovation, policies, practices and procedures related to be aligned and harmonized with the behavior of innovative firms and the external conditions that motivate and encourage enterprises to practice open innovation.

Growth, in terms of economic science of innovation is primarily the result of endogenous changes in technology and tastes and preferences resulting in changes in production and utility functions, the creativity and innovativeness main engine of economic agents.

Complexity theories of economic operators (entrepreneurs, companies, corporations) as complex adaptive systems whose interaction and dynamic developments are diverse, difficult to predict, contradictory, paradoxical to some stairs. In this perspective, innovation occurs as a natural phenomenon, endogenous, understandable of economic activity.

In a increasingly complex world, globalized, in a period of profound changes in the environment, it is preferable, in fact, necessary, that innovative - entrepreneurial action to be seen as imperative to innovate in the service to transform the current economic activity in a sustainable one based on methods to harmonize the interests of entrepreneurs with environmental stringency.

In the study "Refurbishment program and technological modernization of Romania", the authors exemplify special interest in our country for innovation to ensure a balance between growth and environmental protection because, in our country there are "a number of laboratory research and Romanian inventions that are the prototype stage and can bring products to market that meet the needs of the ecological crisis, energy, raw material consumption, or efficiency in different sectors. There is a set of inventions that are global or national news and can be the starting point for the creation of the development of a program of refurbishment. Answering these research and inventions, and improve their marketing can be done through organizational and financial effort that has to come from both public and private sectors."

The same authors consider that the existence of these innovations in the economic processes of modernization and refurbishment is an opportunity that our country should take advantage, especially in the current economic - financial crisis that we are in, by developing a market that offers competitive products characterized by quality, but also by price, a network of sales and / or post-sales services that can be quickly absorbed by the markets.

Competitiveness and environmental standards are often regarded as enemies. There is evidence, however, that trade policy and environmental policy can act as complementary factors in the development of the conditions under which companies can innovate and become more internationally competitive. Germany and Japan are the most illustrative in this regard. They are among the toughest environmental regimes in the world, but both are the most competitive economies in the world, their strategies are clear: to innovate now and capture markets in the future.

Europe is a world leader in green technology effective. EU Eco-industries, employing over two million people, represent about one third of the global market and are growing by about 5% per year. However, there are significant obstacles to exploiting these opportunities, especially environmentally harmful subsidies, and the lack of financial incentives for eco-innovation. Move towards a sustainable economic era with zero emissions at the

continental level depends on a combination of actions involving all segments of society: from governments to researchers, businesses and citizens.

As oil prices continue to climb and an increasing level of carbon dioxide continues to impact the earth's climate and ecosystems, the adoption of environmental technologies is essential for sustainable development of our economies.

Environmental technologies offer solutions to reducing the intake of materials, reducing energy consumption and emissions, recover valuable by-products and minimize waste disposal problems. They increase environmental efficiency or, in other words, "do more with less," supports the implementation of environmental management systems and cured production processes.

There are great opportunities in Europe to streamline the use of the latest technologies in energy, transport and use of materials. European companies are strong especially in the production of renewable energy and waste management and recycling, the sectors with a global market share of 40% and 50% respectively.

Environmental technologies are also used to collect information about the environment - monitoring and data collection to identify the presence of pollutants, changes in terms of land area, or for detecting human health effects through biomonitoring.

Environmental technologies have the ability, in the next decade, to help reduce emissions by 25-80% GHG emissions, ozone depletion by 50% and to acidification and eutrophication by 50%. For the water industry, the challenge is due to the development of new technologies and cost that takes into account the external environmental factors and energy issues. Significant technological developments and market expansion are they expected energy production solutions from small scale waste and development of systems for producing energy from waste biomass scale.

To reach the capacity of environmental technologies it must be generated a greater market acceptance. The lack of awareness of the real costs of production, use and disposal of materials and energy is still a significant barrier to wider implementation of many green innovations.

Customers and investors need to know more precisely the performance and environmental benefits of different technologies so that they can buy and finance with confidence the products that are often new to the market. To assist the decision makers in Europe are currently discussing how to carry out such checks on these technologies.

In the figure below is represented the process of innovation by fostering technological innovation and market expansion.

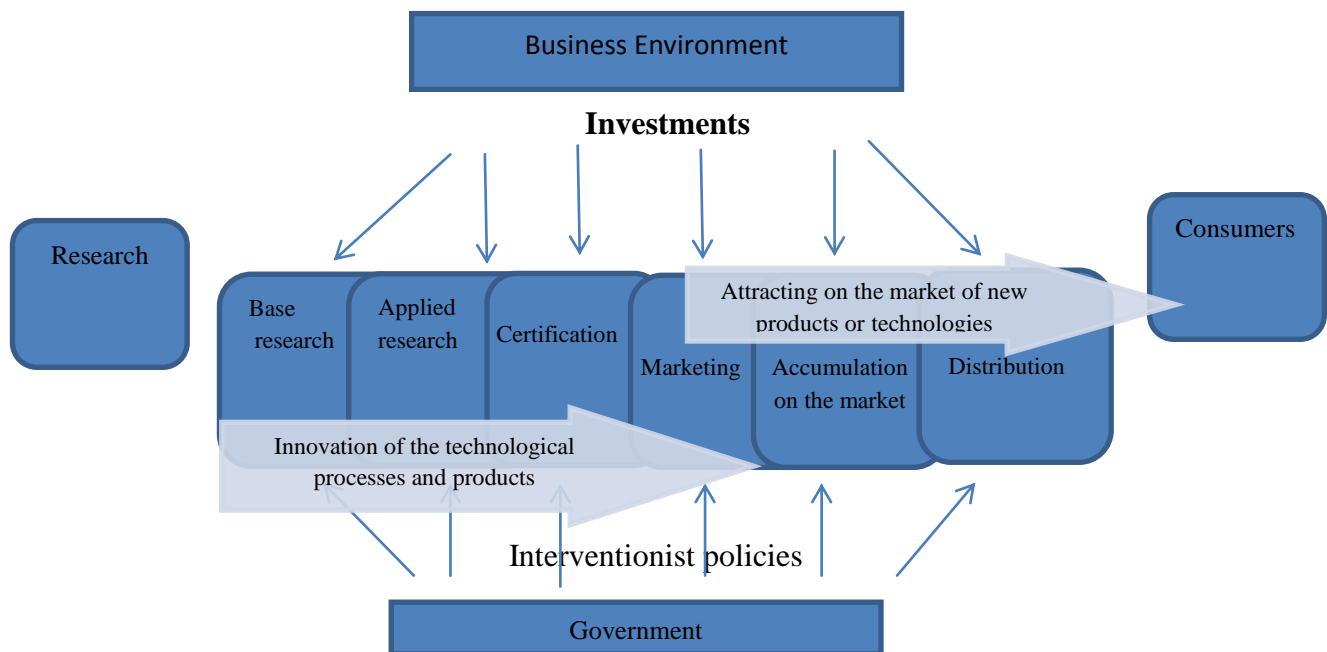


Figure. No. 2. Stages of the innovation chain

Source: Stern Review: The Economic of Climate Change, 2006, pag 349

In the early stage innovation is characterized by stimulating research to reorient traditional processes involving high energy consumption and wasteful use of resources to eco - technology that ensures a fair approximation between the profit motive and reduce damage to the environment. Research is action that ensures

technological modernization of production equipment and ensure eco - innovation. In the next stage of the innovation process, an important factor in ensuring the effectiveness of innovation is consumer segment, according to the request which show for eco - technology or eco - products may lead to innovation in the market.

2. Types of innovation and its phases

Nicholas Stern has identified four types of innovation in relation to technological change:

⊖ incremental innovations - are the continuous improvements of existing products, improving their quality, design and performance (eg car engines);

⊖ radical innovations - are new inventions that lead to a significant departure from previous production methods such as hybrid cars;

⊖ changes in technological systems - appear at the system level when a group of radical innovations affect many sectors of the economy;

⊖ techno-economic paradigm changes - occur when technological changes have an impact on each other branches of the economy.

Joseph Schumpeter identified three phases of innovation: invention of the first practical demonstration of an idea, innovation as the first commercial application, and dissemination of technology or process that spread throughout the market. The traditional representation of the distribution process is an S-shaped curve, where the acquisition of new technologies start slowly and then increases rapidly, and provides a rapid distribution period, followed by a slow gradual depending on how they are reached saturation levels . He proposed the concept of "creative destruction" to describe the replacement of old firms and old firms products and new, innovative products.

Conclusion

Basically, a green economy based on innovation means organic products constantly updated, customized to the unique, globally marketed through eco markets with much lower transaction costs. The green economy based on innovation means new business strategies, focusing on exploitation of niches and benefits of scale greatly reduced. By default, it introduces new principles of organization of firms and hierarchical structures as well as new financing schemes less sensitive to intrinsic risk for the development of the green economy and the stock of intangible synergy formation of networks of their own.

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