

BUSINESS OF ECO INNOVATION



Background

Sustainable products and services are more and more labeled as quality products. Governments, designers, project developers, producers and suppliers are all getting more and more convinced of their value. Both from a view of urgency as from a view of social responsibility.

Both the supply of and the demand for eco innovations have risen significantly during the last years. These are necessary conditions for new markets. An important issue in marketing the Eco Innovations is the business model that is chosen by single companies or cooperating companies to scale up technologically successful innovations. Business models are an important criteria for funders to provide access to venture capital.

When entrepreneurs meet and start talking about their business model everyone seems to have a different perception of the business model. New products are made very quickly, lean and efficient production is a challenge from the past (although many managers still manage on this), the network economy challenges companies to create different value proposition for every possible group of clients and experiment on this.

Disruptive innovations bring both winners and losers. The roadmap to business success in a period of change will demand a premium for innovation, collaboration and smart investments to shape a globally prosperous and sustainable future.

In what way are business models of Eco Innovations different from 'regular' innovations? Which factors determine the business model used? What kind of business models are distinguished in up scaling Eco Innovations? What is the role of the investors and their interaction and influence on the business model? How can governments stimulate business models - single companies in both business to business markets - business to consumer markets - more complex models of cooperating companies.

Characteristics of Eco Innovations

Definitions and categories

The interdisciplinary project "Innovation Impacts of Environmental Policy Instruments" has introduced the term environmental innovation (short: Eco Innovation) and defined it very broadly as follows (FIU, 1998): "Eco Innovations are all measures of relevant actors (firms,

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politicians, unions, associations, churches, private households) which: Develop new ideas, behavior, products and processes, apply or introduce them; Contribute to a reduction of environmental burdens or to ecologically specified sustainability targets."

In 2007 a new European program was initiated aimed at facilitating access to finance for innovative small and medium sized enterprises (SME's): the Competitiveness and Innovation Framework Program (CIP). CIP defines Eco Innovation as followed:

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"Eco Innovation is any form of innovation aiming at significant and demonstrable progress towards the goal of sustainable development, through reducing impacts on the environment or achieving a more efficient and responsible use of natural resources, including energy".

The program divides Eco Innovations in roughly two categories, namely:

1. Activities of traditional Eco Industries, i.e. products and services whose main purpose relates to pollution prevention and management, or natural resources management. In this case, any innovation related to their core activities can be considered Eco Innovation.
2. Other activities where Eco Innovation can reduce pollution and/or optimize resources use. In this case, an innovation can be considered to be an Eco Innovation if the expected benefit for the environment is clearly identified (measurable as far as possible) and substantial (going beyond gains in re- sources efficiency generally resulting from process improvements).

A life-cycle approach should ensure that the environmental impact is not shifted from one part of the life-cycle to another (for example from production to use or disposal).

To overcome the barriers that hinder the development of environmental technologies, is being achieved through a series of measures to promote Eco Innovation and the take-up of environmental technologies. Priority is given to: Getting inventions from the research laboratories to markets; Improving market conditions, particularly by providing positive incentives such as a supportive regulatory framework and access to finance; Acting globally with actions supporting developing countries and promoting foreign investment.

The innovations in three phases differ in complexity and scope: short term (<10 years), midterm (10-40 years) and the long term (>40 years).

Short term

In the first phase technologies can be used mainly for 'good housekeeping' and 'end-of pipe' measures. Good Housekeeping entails all actions within the organization to prevent waste of material and energy. A more efficient organization and communication in the production process is often sufficient to prevent unnecessary emissions. This goes hand-in hand with cost reductions and support is therefore easily found. End-of-Pipe measures are intended to counter attack polluting emissions. This technology does not alter the production process dramatically and is

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therefore relatively easy to install and implement. Companies most of the times do not implement this technology unless it is compulsory by regulation.

Mid term

Contrary to end-of pipe measures that counter attack the emissions, process innovations prevent emissions. Environmental Process Innovations are aimed at the prevention of unnecessary emissions in the productions process. Environmental Product Innovations aimed to the development of new products with the characteristics to minimize the use of resources, minimize the use of energy, minimize emissions and upgrade the quality, life cycle and the ability to be repaired and taken apart of the ultimate product.

Integral Supply chain Management contains a broader scope than production within one company, but instead examines the entire supply chain as a whole. It examines environmental load in four phases, the use of resources, production, use of the product and the disposal phase. The goal is to develop products and services designed to their entire life cycle. To close the material and energy cycles. This can be done by designing products or services that are easily recycled for example. The promising these types of innovations appear, there is a remark to be made. The risk of these types of innovations is that the focus lies within known framework of production processes. By focusing on integral supply chain management one builds upon processes that itself are in essence not environmental friendly and thereby possibly restraining the development 'real' Eco Innovations.

Long term

System Innovations are fundamental changes in the way demand is met (and markets arise or are created). Innovative solutions to reach a more sustainable society can only be reached by changing vested interests and processes (transitions), creating new products and services to fulfill demand. The question is not how we can make cars more environmental friendly, but the question is, how to fulfill the demand for transport in a sustainable fashion.

Determinants of Eco Innovations

Significant Eco Innovations have occurred in the energy sector but only a small share has been implemented and been scaled up. Higher initial costs are one of the major barriers for Eco Innovations. Together with information asymmetries this prevents the market diffusion of Eco Innovations. Information asymmetries are based upon the general impression of 'green and expensive' versus 'brown and cheap'. Recently suggested research on energy efficient products breaking down the costs of eco-innovations into two dimensions, namely initial costs and operating costs. This in order to clarify that a wide range of eco-innovations has a different investment profile, higher initial costs versus lower operating costs.

Market pull factors

A supportive basis from the demand side is vital for sustainable up scaling of our long term Eco Innovation. Customer support has several known barriers that can occur while up scaling the innovation. Long term systematic innovation demands a broad social basis in which customer support plays a vital role for long term transition in a systematic scope.

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Four barriers influencing the market pull factors: “Customer investment decisions regarding Eco Innovations are characterized by:

1. Different investment profiles over time – that is, often higher initial costs (purchase price and set-up costs) and lower operating costs (maintenance and running costs).
2. Information asymmetries due to search experience, and credence attributes
3. Externalities (e.g. environmentally sound alternatives imply a higher collective benefit but lower or equal private benefits than conventional alternatives; Environmental benefits have the characteristics of a public good and therefore underlie double externality and enhanced quality does not benefit solely the innovator.
4. Infrequent decisions that require the consumer to engage in an extensive decision making process, which implies high involvement, high cognitive effort, and a substantial need for information due to limited experience.

Up-scaling phase of Eco Innovators in entering the niche-markets; Every niche market exhibits several barriers. Aside from the barrier of infrequent decision making, it is to be believed that the barriers in the business to consumer market are equal to the barriers in the business to business market, so called customer barriers.

Technology push factors

Often when firms fail to commercialize their product or innovation it is perceived as a failure in their vision or management. However in reality there seems to be a gap in what is demanded from investors and what investors are willing to provide. Public funding is aimed at the early innovation phases and decreases rapidly when the innovation reaches market introduction. Private investors and angel investors have to take over. In this phase the demand for capital is high but the availability is rather low (or very expensive). This is called the ‘Valley of Death’.

Eco Innovations in niche markets can experience serious barriers in the access to capital, as niche markets are often small and/or immature markets. Investors tend to be careful in providing capital given the uncertainty concerning up scaling a niche markets.

Eco Innovations experience the problem of the unknown. Investors are often not familiar with the Eco Innovative technology. This combined with the barrier, asymmetric information, that Eco Innovations have to cope with the ‘green=expensive’ label, fosters the gap between investors and the Eco Innovation. Investors often use the tool of credit rating to make the judgment whether or not to make the investment. However these ratings are designed for traditional innovations and do not capture all features of an attractive Eco Investment. There seems to be a mis-link. The current focus is still on conventional innovations and the characteristics they display. This conventional method of analysis is embedded in fiscal policies. Depreciation of economic assets is determined within fiscal policy. The number of years one is allowed to depreciate its assets is the base of the conventional investment analysis.

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There is clearly a demand for more awareness of the need for Eco Innovations. People tend to be skeptical about ongoing changes in our climate. This skepticism blinds the eyes for societal demand that is rising. Investors need to be familiarized in the field of Eco Innovations and new tool need to be developed to address the new characteristics of these investment opportunities.

Regulatory push factors

An innovation can be supported by the government in several ways. Government institutes can function as early adaptors, the so called launching customers. There are several programs to facilitate this functioning with Eco Innovations. This way government institutions can set an example and thereby create a market (launching customer).

Innovation and environment together demand for a sustainable marriage between policymakers. Taxations and substitutions can however also be a barrier for Eco Innovations. These policy instruments are often based upon existing knowledge about resources and methods. This forces innovators to innovate within an existing framework (box) of resources and production methods. By stepping back and facilitating an innovative platform which can be supported but less regulated, the government can support Eco Innovations with less involvement. The situation in the United States is a good example where government let commercial organizations be the driver of innovations by simply giving them space to innovate.

Government institutes can act as a partner or facilitator in this up scaling phase, the so called Public Private Partnerships (PPP). Research has shown us that a consistent policy is expected to stimulate this acceptance. Entrepreneurs and organizations ask for a consistent governmental policy to ensure them a calm and consistent entrepreneurial climate.

Definitions and Categories

Every business organization has a business model or a business concept. This is a growing field of research initiated around the dot.com boom. Schmidt et al. (2001) state that there is little explicit reference to business models and its key elements. Business model is a often used term in various contexts. There are many used definitions of a business model. This paper gives a short overview of these definitions to show their similarities and differences. We can divide definitions used in two categories based upon their point of view:

1 The first category is characterized by the aim of value creation. Rappa (2001) and Turban (2002) define a business model as the method of doing business by which a company can generate value to sustain itself. Linder and Cantrell (2000) describe the business model as the organizations core logic to create value.

2 The second category is characterized by a more organizational point of view. A broad definition is provided by Weil and Vitale (2001), they define a business model as a description of roles and relationships among firms consumers, customers, allies and suppliers that identifies the major flows of product, information, money and the major benefits to participants. Amit and Zott (2001) give a transaction-based definition of a business model: "a business model depicts the content, structure, and governance of transactions designed as to create value through the exploitation of business opportunities.

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A business model includes the design of: transaction content (goods/services; re-sources/ capabilities), transaction structure (parties involved; linkages; sequencing; exchange mechanisms), transaction governance (flow control). A business model describes the steps that are performed in order to complete transactions.” Timmers (1998) gives us a general understanding of what a business model seems to be, its key elements, dimensions and frameworks: “a business model is an architecture for the product, service and information flows. It gives an description of the various business actors and their roles, the potential benefits for the various actors and the sources of revenues”.