Closing the eco-innovation gap: an economic opportunity for business

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Why should business eco-innovate? This brief presents two of the opportunities associated with eco-innovation. It is based on the EIO 2011 Annual Report and focuses on the economic perspective. Overall, eco-innovation can provide the framework for a future-orientated, sustainable and competitive business strategy.

The problem
There is an “eco-innovation gap” in Europe. This gap is two-fold, it exists in both the: Scale of eco-innovation activities (low eco-innovation activity and wide differences among actors), and the Scope of eco-innovation activities (with a tendency toward more incremental rather than radical change).

As regards scale, there is a gap between innovators and eco-innovators in the EU. According to the Community Innovation Survey, around 25% of the European companies which introduced an innovation (“innovators”) between 2006 and 2008 introduced an eco-innovation to reduce their material use (“eco-innovators”). As regards the share of eco-innovators in total companies, around 15% of companies across the EU1 have reported eco-innovative activity focused on material efficiency. There are also large differences between countries, sectors and sizes of companies. For instance, while around 39% of innovators in Germany are eco-innovating, this share is closer to 10% in Cyprus and Bulgaria.

As regards the gap between incremental and radical eco-innovation, little evidence is available. While there is a general trend towards more ‘environmentally-friendly’ products, particularly evident in the proliferation of eco-labels2 over the past 5 years, the trend toward increasing total consumption of natural resources in the EU has continued. This indicates that the intensity of changes have not been sufficient to counteract the overall trend. There is not, yet, evidence of systemic change which contributes to an absolute decrease of environmental pressures and impacts.

1 In countries reporting eco-innovation in the CIS survey—e.g. excluding the UK, Denmark, Slovenia, Greece and Spain.
2 The ecolabel index website (http://www.ecolabelindex.com/) has compiled a database of 431 ecolabels in 246 countries and 25 sectors at last count (17 April 2012).
The opportunity

There is mounting evidence that eco-innovation in companies leads to reduced costs, improves capacity to capture new growth opportunities as well as strengthens company image in the eyes of customers. There are at least two business cases for eco-innovation:

- **Saving costs**: e.g. improving efficiency to reduce material use
- **New markets and profits**: e.g. developing eco-innovative goods and services

Saving costs is especially associated with improving internal practices, e.g. through process innovation. Changes companies make to “clean-up” the environment are often driven by regulations, notably the polluter pays principle, while resource efficiency could generally be characterised by efficiency measures the firm chooses to implement, e.g. to remain competitive. The first is about cost avoidance, the latter about material cost savings. The EIO has focused on gathering evidence on the cost savings opportunity associated with efficiency.

Especially opportunities for “low hanging fruits”, which are simple to implement measures requiring either no monetary investments or having payback periods of around one year, are documented and widespread. Detailed analysis of around 100 cases where material efficiency measures were implemented (between 2006 and 2010) with support from the German Material Efficiency Agency (dema) reveals that typical investments pay-off within 13 months. Under the assumption that the same share of companies reporting material saving eco-innovations in the Community Innovation Survey would achieve the same level of savings in the demea case studies, around €5 billion in Germany and €10 billion in all manufacturing sectors of the EU could be saved every year.

Developing and selling eco-innovative goods and services represent the second broad type of economic opportunity. It can also be divided into two general opportunities:

1. Markets for environmental goods and services, also termed eco-industries: companies operating in these markets sell products intended to “clean-up” the environment (e.g. technologies for pollution management, cleaner production, etc).
2. Markets for more pervasive eco-innovation: these markets refer to more general opportunities related to process and product as well as systemic innovation that reduce resource use across all aspects of the economy.

Eco-industries have become a reputable segment of the EU economy, increasing European competitiveness and creating jobs. However, from an environmental perspective, while “clean-up” technologies can provide a contribution to reaching the EU’s sustainability vision, they are not sufficient to dematerialise the economy. For that, companies must reduce resource use in providing their core services. This will probably require asking more radical questions to develop creative “solutions” and new business models. For instance, what is the service of a company to customers and society at large? Can this service be delivered in other ways? This type of thinking has led to a proliferation of new markets for eco-innovative services. For example, car-sharing schemes, where a business does not sell a product (car), but rather a service (mobility), have become particularly successful. There is little evidence on the scope of the economic potential related to product and service eco-innovation at the European level.
Integrated navigation systems prevent drivers from getting lost; they contain minuscule amounts of critical metals (incl. germanium and indium).

Replacing heavy materials (such as steel and iron) could reduce the weight of cars by around 20%\(^1\). A weight reduction of 100 kg lowers fuel consumption by 0.3 to 0.4 litres per 100 km\(^2\).

Production of catalytic converters releases CO\(_2\); a typical diesel car (2004) must drive nearly 100,000 km for the catalytic converter to reach carbon neutrality\(^3\).

Nearly 9% of the 4.7 million cars produced in Germany were small cars in 2000. If this share were 100%, resource savings up to 29% (compared to production of medium and large vehicles), were possible\(^4\).

100% of germanium must be imported to the EU (72% from China). Indium is imported from China (58%), Japan (11%), Korea (9%) and Canada (9%)\(^5\).

Public transportation, cycling, walking and car sharing may reduce the need for private automobiles, especially in cities. Each car-sharing vehicle replaces for example five to six private cars\(^6\).

36% of people living in Copenhagen ride their bikes to work due to an extensive bike lane system. The target is to increase this percentage up to 50% by 2015\(^7\).

A standard car in 2000 consists of 55% steel, 15% plastics, 14% elastomers, 10% aluminum, and 6% other nonferrous metals\(^3\).

Catalytic converters reduce CO, NO\(_x\) and SO\(_2\) emissions when driving\(^8\).

Steel is currently recycled in the EU at 55%, copper at 48%, and aluminum at 52%; feasible potentials are 82% for steel, 100% for copper and 76% for aluminum\(^9\).

The recycling of 1 kg of copper saves in general about 20 kg of copper ores\(^9\).

End of life vehicles generate between 8 and 9 Mt of waste annually in the EU. Export of these vehicles is a loss of valuable materials. For this reason, the EU has set targets for a 95% reuse and recovery rate by 2015\(^10\).

City planning reduces the need for motorized mobility; Community office space allows people to walk to work.

Using the train instead the car would reduce per capita CO\(_2\) emissions from 144 g to 52 g per km\(^11,12\).

Pathways to systemic change

Changing business models are key to creating and capturing new profit opportunities. For eco-innovation, key is understanding how environmental value is captured and turned into profitable products and services. Because the true cost of natural resources have not typically been reflected in the price of those resources, value has been created in the past by selling products, with little regard to where the materials in those products end up. New business models that incorporate systems thinking may consider both value creation (selling a product) and also value recovery (end-of-life options). This is just one example of how business models may change in the future. These more disruptive eco-innovations imply a degree of risk taken by pioneers of new approaches. Such thinking may, however, lead to new and radically innovative ways of doing business, offering innovators a first-comer premium and the benefit of anticipating more systemic shifts.

Key messages

• Closing the eco-innovation gap between countries, sectors and companies could save costs, create new business opportunities and enhance European competitiveness overall.

• Material efficiency is a low-risk innovation strategy for SMEs. There is strong evidence that it saves material and energy costs for companies, and can be achieved with relatively small investments. A growing number of information sources and public support are available for companies interested in improving their material efficiency.

• Business opportunities from eco-innovation are widespread and can be captured across sectors and by knowledge sharing and partnerships among sectors. European and global markets for eco-innovation, notably environmental technologies, are growing fast.

• Novel eco-innovative business models are emerging to deliver value to customers. To reduce resource use, eco-innovative companies ask themselves how they can provide their core service to customers with minimum material input. This can lead to systemic change and decrease the gap between incremental and radical eco-innovation.

Further links and resources


• Further EIO products (Eco-Innovation Scoreboard, Country reports, good practice examples) are freely available at www.eco-innovation.eu

• The EIO database can be used to develop personalised charts and figures; visit http://database.eco-innovation.eu