



EFEB  
Network

# PRODUCT ECO-INNOVATION

*Organization: NGO Agricola*

*Author: Kateryna Neiko*

*«European Region Entrepreneurship Connection»*

*EFEB Network*



## CONTENT:

1. Product life-cycle analysis and management
2. Sustainable sourcing of raw materials and product chain assessment
3. The role of triple helix partnerships (government, research bodies, private sector)
4. European Research Infrastructure Consortium
5. Knowledge and Innovation Communities
6. Eco-friendly certification systems, including EU Flower scheme
7. Marketing to target groups
8. Training of and communication with employees

EFEB  
Network

## 1. PRODUCT LIFE-CYCLE ANALYSIS AND MANAGEMENT

### Product eco-innovation

Product that is novel to the company and which results, throughout its life cycle, in a reduction of environmental risk, pollution and other negative impacts of resources use (including energy use) compared to relevant alternatives.

### Product Life Cycle Stages

As consumers, we buy millions of products every year. And just like us, these products have a life cycle. Older, long-established products eventually become less popular, while in contrast, the demand for new, more modern goods usually increases quite rapidly after they are launched.

Because most companies understand the different product life cycle stages, and that the products they sell all have a limited lifespan, the majority of them will invest heavily in new product development in order to make sure that their businesses continue to grow.

The product life cycle has 4 very clearly defined stages, each with its own characteristics that mean different things for business that are trying to manage the life cycle of their particular products.

**Introduction Stage** - This stage of the cycle could be the most expensive for a company launching a new product. The size of the market for the product is small, which means sales are low, although they will be increasing. On the other hand, the cost of things like research and development, consumer testing, and the marketing needed to launch the product can be very high, especially if it's a competitive sector.

**Growth Stage** - The growth stage is typically characterized by a strong growth in sales and profits, and because the company can start to benefit from economies of scale in production, the profit margins, as well as the overall amount of profit, will increase. This makes it possible for businesses to invest more money in the promotional activity to maximize the potential of this growth stage.

**Maturity Stage** - During the maturity stage, the product is established and the aim for the manufacturer is now to maintain the market share they have built up. This is probably the most competitive time for most products and businesses need to invest wisely in any marketing they undertake. They also need to consider any product modifications or improvements to the production process which might give them a competitive advantage.

**Decline Stage** - Eventually, the market for a product will start to shrink, and this is what's known as the decline stage. This shrinkage could be due to the market becoming saturated (i.e. all the customers who will buy the product have already purchased it), or because the consumers are switching to a different type of product. While this decline may be inevitable, it may still be possible for companies to make some profit by switching to less-expensive production methods and cheaper markets.

### What is a Life Cycle Analysis?

The concept of conducting a detailed examination of the life cycle of a product or a process is a relatively recent one which emerged in response to increased environmental awareness on the part of the general public, industry and governments.

The immediate precursors of life cycle analysis and assessment (LCAs) were the global modelling studies and energy audits of the late 1960s and early 1970s. These attempted to assess the resource cost and environmental implications of different patterns of human behavior.

LCAs were an obvious extension, and became vital to support the development of eco-labelling schemes which are operating or planned in a number of countries around the world. In order for eco-labels to be granted to chosen products, the awarding authority needs to be able to evaluate the manufacturing processes involved, the energy consumption in manufacture and use, and the amount and type of waste generated.

To accurately assess the burdens placed on the environment by the manufacture of an item, the following of a procedure or the use of a certain process, two main stages are involved. The first stage is the collection of data, and the second is the interpretation of that data.

A number of different terms have been coined to describe the processes. One of the first terms used was *Life Cycle Analysis*, but more recently two terms have come to largely replace that one: *Life Cycle Inventory (LCI)* and *Life Cycle Assessment (LCA)*. These better reflect the different stages of the process. Other terms such as *Cradle to Grave Analysis*, *Eco-balancing*, and *Material Flow Analysis* are also used.

Whichever name is used to describe it, LCA is a potentially powerful tool which can assist regulators to formulate environmental legislation, help manufacturers analyse their processes and improve their products, and perhaps enable consumers to make more informed choices. Like most tools, it must be correctly used, however. A tendency for LCAs to be used to 'prove' the superiority of one product over another has brought the concept into disrepute in some areas.

Taking as an example the case of a manufactured product, an LCA involves making detailed measurements during the manufacture of the product, from the mining of the raw materials used in its production and distribution, through to its use, possible re-use or recycling, and its eventual disposal.

LCAs enable a manufacturer to quantify how much energy and raw materials are used, and how much solid, liquid and gaseous waste is generated, at each stage of the product's life.

Such a study would normally ignore second generation impacts, such as the energy required to fire the bricks used to build the kilns used to manufacture the raw material.

However, deciding which is the 'cradle' and which the 'grave' for such studies has been one of the points of contention in the relatively new science of LCAs, and in order for LCAs to have value there must be standardisation of methodologies, and consensus as to where to set the limits. Much of the focus worldwide to date has been on agreeing the methods and boundaries to be used when making such analyses, and it seems that agreement may have now been reached.

While carrying out an LCA is a lengthy and very detailed exercise, the data collection stage is - in theory at least - relatively uncomplicated, provided the boundary of the study has been clearly defined, the methodology is rigorously applied, and reliable, high-quality data is available. Those of course are fairly large provisos.

### Interpretation

While such a record is helpful and informative, on its own it is not sufficient. Having first compiled the detailed inventory, the next stage should be to evaluate the findings.

This second stage - *life cycle assessment* - is more difficult, since it requires interpretation of the data, and value judgements to be made.

A Life Cycle Inventory will reveal - for example - how many kilos of pulp, how much electricity, and how many gallons of water, are involved in producing a quantity of paper. Only by then assessing those statistics can a conclusion be reached about the product's environmental impact overall. This includes

the necessity to make judgments based on the assembled figures, in order to assess the likely significance of the various impacts.

### Problems

It is here that many of the problems begin. Decisions, without scientific basis, such as whether three tonnes of emitted sulphur is more or less harmful than the emission of just a few pounds of a more toxic pollutant, are necessarily subjective.

- How can one compare heavy energy demand with heavy water use: which imposes greater environmental burden?
- How should the use of non-renewable mineral resources like oil or gas (the ingredients of plastics) be compared with the production of softwoods for paper?
- How should the combined impacts of the landfilling of wastes (air and groundwater pollution, transport impacts etc) be compared with those produced by the burning of wastes for energy production (predominantly emissions to air)?

Some studies attempt to aggregate the various impacts into clearly defined categories, for example, the possible impact on the ozone layer, or the contribution to acid rain.

Others go still further and try to add the aggregated figures to arrive at a single 'score' for the product or process being evaluated. It is doubtful whether such simplification will be of general benefit.

Reliable methods for aggregating figures generated by LCA, and using them to compare the life cycle impacts of different products, do not yet exist. However, a great deal of work is currently being conducted on this aspect of LCAs to arrive at a standardised method of interpreting the collected data.

### Contradictions

Many LCAs have reached different and sometimes contradictory conclusions about similar products.

Comparisons are rarely easy because of the different assumptions that are used, for example in the case of food packaging, about the size and form of container, the production and distribution system used, and the forms and type of energy assumed.

To compare two items which are identically sized, identically distributed, and recycled at the same rate is relatively simple, but even that requires assumptions to be made. For example, whether deliveries were made in a 9-tonne truck, or a larger one, whether it used diesel or petrol, and ran on congested city centre roads where fuel efficiencies are lower, or on country roads or motorways where fuel efficiencies might be better.

Comparisons of products which are dissimilar in most respects can only be made by making even more judgements and assumptions.

Preserving the confidentiality of commercially-sensitive raw data without reducing the credibility of LCAs is also a major problem. Another is the understandable reluctance of companies to publish information which may indicate that their own product is somehow inferior to that of a competitor. It is not surprising that many of the studies which are published, and not simply used internally, endorse the views of their sponsors.

### Recycling

Recycling introduces a further real difficulty into the calculations. In the case of materials like steel and aluminium which can technically be recycled an indefinite number of times (with some melt losses), there is no longer a 'grave'. And in the case of paper, which can theoretically be reprocessed four or five times before fibres are too short to have viable strength, should calculations assume that it *will* be recycled four times, or not? What return rates, for example, should be assumed for factory-refillable containers?

For both refillable containers and materials sent for recycling, the transport distance in each specific case is a major influence in the environmental impacts associated with the process.

An LCA which concludes that recycling of low-value renewable materials in one city is environmentally preferable may not hold good for a different, more remote city where reprocessing facilities incur large transport impacts.

### LCA in waste management

LCA has begun to be used to evaluate a city or region's future waste management options. The LCA, or environmental assessment, covers the environmental and resource impacts of alternative disposal processes, as well as those other processes which are affected by disposal strategies such as different types of collection schemes for recyclables, changed transport patterns and so on.



The complexity of the task, and the number of assumptions which must be made, is shown by the simplified diagram (above) showing some of the different routes which waste might take, and some of the environmental impacts incurred along the way. Those shown are far from exhaustive.

### Why perform LCAs?

LCAs might be conducted by an industry sector to enable it to identify areas where improvements can be made, in environmental terms. Alternatively the LCA may be intended to provide environmental data for the public or for government. In recent years, a number of major companies have cited LCAs in their marketing and advertising, to support claims that their products are '*environmentally friendly*' or even '*environmentally superior*' to those of their rivals. Many of these claims have been successfully challenged by environmental groups.

## European Region Entrepreneurship Connection - EFEB Network

All products have some impact on the environment. Since some products use more resources, cause more pollution or generate more waste than others, the aim is to identify those which are most harmful.

Even for those products whose environmental burdens are relatively low, the LCA should help to identify those stages in production processes and in use which cause or have the potential to cause pollution, and those which have a heavy material or energy demand.

Breaking down the manufacturing process into such fine detail can also be an aid to identifying the use of scarce resources, showing where a more sustainable product could be substituted.

### Eco-design

Eco-design aims to reduce the environmental impact of products considering their entire lifecycle. The manufacture, distribution, use and end of life of ErP&EE (Energy-related Products & Electrical-Electronic sector) involve significant environmental impacts (e.g. energy and raw material consumption, waste production, emission of pollutants, etc.). It is considered that 80% of all the environmental impacts can be determined during the product design phase. Eco-design can improve the environmental performance of products, starting from the systematic and early integration of environmental considerations in the design phase, without compromising the other properties of the product (e.g. cost, quality, appearance, functionality, internal and external requirements, etc.). If the environmental improvement comes as a result of a technological improvement or breakthrough (e.g. a new material, a new technology, etc.), then it should be called eco-innovation. Ecodesign is an increasingly common practice among manufacturers belonging to the ErP&EE sector. This strategy helps them to market "better" products: environmentally friendlier products, more energy efficient products, more technologically advanced products, and with their manufacturing costs within reasonable limits, and so on. This strategy, if well managed, brings differentiation and visibility in the marketplace back, and, ultimately, contributes to improve the competitiveness of the companies.

### The 2009 European Union's Ecodesign Directive

The European Union's Ecodesign Directive (Directive 2009/125/EC) establishes a framework to set mandatory ecological requirements for energy-using and energy-related products sold in all Member States. Its scope currently covers more than 40 product groups (such as boilers, lightbulbs, TVs and fridges), which are responsible for around 40% of all EU greenhouse gas emissions.

The 2009 revision of the Directive extended its scope to energy-related products such as windows, insulation materials and certain water-using products.

The ultimate aim of the Ecodesign Directive is that manufacturers of energy-using products will, at the design stage, be obliged to reduce the energy consumption and other negative environmental impacts of products. While the Directive's primary aim is to reduce energy use, it is also aimed at enforcing other environmental considerations including: materials use; water use; polluting emissions; waste issues and recyclability.

The Ecodesign Directive is a framework directive, meaning that it does not directly set minimum ecological requirements. These are adopted through specific implementing measures for each group of products in the scope of the Directive. The implementing measures are adopted through the so-called comitology procedure. Implementing measures are based on EU internal market rules governing which products may be placed on the market. Manufacturers who begin marketing an energy using product covered by an implementing measure in the EU area have to ensure that it conforms to the energy and environmental standards set out by the measure.

## 2. SUSTAINABLE SOURCING OF RAW MATERIALS AND PRODUCT CHAIN ASSESSMENT

### Raw Materials sourcing

Raw materials are unprocessed resources from nature that a company uses to make a product, such as latex, cotton, crude oil, wood, or metal. The growing, extraction, and sourcing of these materials often have a significant impact on the environments from which they come.

It is important that companies source raw materials in a way that preserves their sustainability, meaning that the resource will be available for the future. Activities such as clearing forests for agriculture or grazing of animals can damage ecosystems and make it impossible to continue deriving resources from the land. Also, large scale mining or failure to reuse or recycle metals makes it more likely that the supply of ore will be exhausted.

For a business, raw materials are necessary for the sustainability and health of the company, and without them, the business would not exist. By striving for sustainability and environmental protection, companies are protecting their business assets. Companies do this first through environmental management, or responsible stewardship of the environment to maintain healthy ecosystems. Secondly, companies must practice consumption management, which involves controlling the amount of the raw material that is used, and making the entire production process more sustainable. A socially responsible company makes sure that none of its policies and practices create a situation where raw materials sourcing or use harms the environment or adversely impacts the sustainability of raw material supplies.

Sustainability and environmental management must account for all of the natural systems impacted by the company's raw materials sourcing and use. Good environmental management minimises impacts on forests, oceans, the atmosphere, freshwater systems, land, and land use throughout the entire product lifecycle.

Maintaining responsible raw materials sourcing and use practices will help you meet legal requirements, protect the environment, avoid penalties, protect your business assets, and meet your customers' requirements. There can also be business benefits, such as:

- Long-term sustainability and health of the business.
- Decreased costs for waste disposal, energy and packaging.
- Confidence in the long term availability of needed raw materials.
- Improved company reputation and image gained through environmental responsibility.

### EU policy and strategy for raw materials

Securing reliable and unhindered access to raw materials is important for the EU. In the EU, there are at least 30 million jobs depending on the availability of raw materials. The European Commission's actions to ensure a sustainable supply of these materials can be divided into two interlinked parts: the Raw Materials Initiative and the European Innovation Partnership on Raw Materials.

In 2008, the Commission adopted the Raw Materials Initiative which set out a strategy for tackling the issue of access to raw materials in the EU. This strategy has three pillars which aim to ensure:

1. Fair and sustainable supply of raw materials from global markets;
2. Sustainable supply of raw materials within the EU;

## European Region Entrepreneurship Connection - EFEB Network

### 3. Resource efficiency and supply of "secondary raw materials" through recycling.

The strategy covers all raw materials used by European industry except materials from agricultural production and materials used as fuel. Ensuring sustainable access to these raw materials is crucial to the competitiveness and growth of the EU economy and to the objectives of the Europe 2020 strategy.

The Commission also regularly publishes a list of critical raw materials in the EU.

A Commission expert group – the Raw Materials Supply Group, with representatives from EU countries, European Economic Area countries, EU candidate countries, and organisations representing stakeholders - industry, research and civil society - advises the Commission and oversees the initiative's implementation.

#### Case study of Kering Group

Kering is the French luxury goods holding company owner of Alexander McQueen, Balenciaga, Brioni, Gucci, Puma, Volcom, Saint Laurent Paris, and other luxury, sport & lifestyle brands distributed in 120 countries.

Kering looked not only at its own actions, but of those of its suppliers, taking into account its entire impact. It found that it generates 12 percent of carbon emissions for its products, while the supply chain is responsible for the remaining 88 percent, making raw materials a key priority.

When Kering established the goals in 2012, it sought to reduce its footprint within the most important raw materials for its business at the time: leather, precious skins, furs, gold, diamonds, paper and PVC. It then found through an Environmental Profits & Loss study that it needed to not only look at its priority materials, but also at those that were most apt to harm the environment, including cotton, cashmere, silk and wool.

As 50 percent of Kering's environmental impact comes from raw materials, it sought out alternatives and seeking and supporting new ways of cultivating materials.

Leather, which makes up 24 percent of Kering's total footprint, was a key concern. Kering established a Leather Sourcing Policy, which stood for traceability and against the conversion of natural ecosystems into grazing land.

Individual labels also took up the cause, as Gucci worked with EcoAge's Green Carpet Challenge to create a Zero Deforestation handbag with sustainable leather from Brazil, including an information card in each bag telling the consumer the story of the leather. The company reached 91 percent of its target for luxury bovine leather.

Kering is 99 percent toward its goal of eradicating PVC from its collections, as its brands have sourced alternative plastics. For instance, Stella McCartney, which does not use leather, began using Eco Alter Nappa, a coating derived from vegetable oil instead of harmful petroleum.

While Kering has made moves within plastic, it mentions that it alone cannot enact a large enough force on the plastic industry, requiring collaborators to create real viable solutions.

In 2012, Kering aimed toward having all of its precious skins and furs come from verified captive breeding operations or from sustainably managed wild animal populations. The group has partnered with conservation NGOs and has worked with stakeholders on research about practices.

While Kering has made strides in sustainable sourcing of skins, it says there are not enough suppliers that meet its standards of transparency in animal welfare. Again, if the industry as a whole put pressure on producers, it says it would be more apt to incite action.

## European Region Entrepreneurship Connection - EFEB Network

Kering in 2012 aimed to have all of its gold and diamonds sourced in a way that does not negatively impact local communities or ecosystems. The group is 15 percent of the way toward fulfilling its target, with a number of its brands, including Boucheron and Gucci, opting for Fairmined gold. Kering also worked to promote certification and verification for artisanally mined gold, helping to support the livelihood that 200 million people rely on.

Kering aimed for 100 percent of its packaging to be derived from sustainable forests, with at least 50 percent recycled materials used. The group is 81 percent toward its goal.

Bottega Veneta has been sourcing its paper from Khan Na since 2013, a project that plants trees for paper around rice fields, working against climate change while also helping local farmers see better profits.

In general, Kering has seen an 11 percent reduction in carbon emissions, reaching 44 percent of its goal. The group has lowered its waste by 16 percent, achieving 64 percent of its target, while its water use has dropped by 19 percent over the past four years, 79 percent of the reduction it aimed for.

In 2013, as Saint Laurent was going through a rebranding, it began a "Second Life" program, which donated, recycled or sold materials it could no longer use, such as mannequins, visual merchandising and hangers. Meanwhile, Stella McCartney introduced "Clevercare" labels that suggested low impact garment care to stretch the lifespan of apparel and also reduce water and energy use.

Since 2012, Kering has grown the amount of renewable energy it purchases by 4.5 times. By 2015, almost a quarter of its total energy came from renewable sources.

Looking ahead, Kering has promised to omit hazardous chemicals from the production process. It will also be evaluating its suppliers every two years to ensure they are keeping to its standards.

Adding an additional layer of transparency, Kering hosted a public Q&A livestream on May 2. During the broadcast, Ms. Daveu was on hand to respond to audience questions about Kering's efforts.

"Our Final Sustainability Target report, and the experience and learnings we have had in working towards attaining these Targets, are helping guide us on the next chapter of our sustainability strategy and redefining our Targets," Ms. Daveu said. "We now have a framework and foundation in place with a deeper understanding of our supply chains, tools and stakeholder relationships to go further in becoming a more sustainable company in the future."

EFEB  
Network

### 3. THE ROLE OF TRIPLE HELIX PARTNERSHIPS (GOVERNMENT, RESEARCH BODIES, PRIVATE SECTOR)

The interaction among university, industry, and government is the key to innovation and growth in a knowledge-based economy. The Triple Helix as a physical device is succeeded by university-industry-government interactions that have led to the venture capital firm, the incubator, and the science park. These social inventions are hybrid organizations that embody elements of the triple helix in their DNA.

The university is the generative principle of knowledge-based societies just as government and industry were the primary institutions in industrial society. Industry remains a key actor as the locus of production, government as the source of contractual relations that guarantee stable interactions and exchange.

The competitive advantage of the university, over other knowledge-producing institutions, is its students. Their regular entry and graduation continually bring in new ideas, in contrast to the research and development (R & D) units of firms and government laboratories that tend to ossify, lacking the "flow-through of human capital" that is built into the university. Universities, firms, and governments each "take the role of the other" in triple helix interactions even as they maintain their primary roles and distinct identities.

The university takes the role of industry by stimulating the development of new firms from research, introducing "the capitalization of knowledge" as an academic goal. Firms develop training to ever higher levels and share knowledge through joint ventures, acting a bit like universities. Governments act as public venture capitalists while continuing their regulatory activities.

In contrast to theories that emphasize the role of government or firms in innovation, the triple helix focuses on the university as a source of entrepreneurship and technology as well as critical inquiry.

The Triple Helix concept is now widely spread all over the world. To give just a few examples, one of them is the Swedish Governmental Agency for Innovation Systems VINNOVA, which devotes an important part of its activities to stimulating the cooperation between firms, universities, research institutes and other Swedish innovation actors - a mission adopted in the early 2000s, shortly after the agency's inception, and achieved through, among others, the VINN Excellence Centres and the VINNVÄXT Programme. Brazil's 2004 Innovation Law incentivizes the interaction between firms, public universities and research centres, allows grants to innovative firms, the set-up of private firms' incubation facilities in public universities and the shared use of university infrastructure.

University-industry-government cooperation has a central role also in European Union (EU) innovation policies, such as the Innovation Union flagship initiative of the Europe 2020 Strategy, and is perceived as a solution to the "innovation emergency" that Europe now faces. The European Regional Development Fund and the European Social Fund allocate significant funding for these objectives and several EU initiatives have been designed for this purpose, such as the European Union Business Forum, the Knowledge partnerships, the European Institute of Technology (EIT), the Knowledge and Innovation Communities (KICs), the Erasmus for All programme and the Agenda for Modernisation of Europe's Higher Education.

Triple Helix Systems have the capacity to provide solutions to current major challenges in higher education, R&D, competitiveness, labour market by better training students and researchers, creating more and better jobs, ensuring a sound and sustainable economic growth and solving structural problems arising from the shift from the Industrial Society to the Knowledge Society.

### 4. EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM

A **European Research Infrastructure Consortium – ERIC** is a full legal entity under Union law. With a membership of at least one EU Member and two EU member or associated states, it has legal personality and full legal capacity recognized in all Member States.

The primary objective of an ERIC is to establish and operate, through its Members, a Research Infrastructure of European importance on a non-economic basis. In order to promote innovation and knowledge and technology transfer, the ERIC should be allowed to carry out some limited economic activities if they are closely related to its principal task and they do not jeopardize its achievement.

The research infrastructure to be established by an ERIC shall meet the following requirements:

- it is necessary for the carrying-out of European research programmes and projects, including for the efficient execution of Community research, technological development and demonstration programmes;
- it represents an added value in the strengthening and structuring of the European Research Area (ERA) and a significant improvement in the relevant scientific and technological fields at international level;
- effective access, in accordance with the rules established in its Statutes, is granted to the European research community, composed of researchers from Member States and from associated countries;
- it contributes to the mobility of knowledge and/or researchers within the ERA and increases the use of intellectual potential throughout Europe;
- it contributes to the dissemination and optimisation of the results of activities in Community research, technological development and demonstration.

EFEB  
Network

### 5. KNOWLEDGE AND INNOVATION COMMUNITIES

Europe's Knowledge and Innovation Communities (KICs) have a huge collaborative research and postgraduate training networks initiative is well under way.

Three KICs have been established and a call for proposals recently went out for another two, with more planned in the coming years. The initiative is being run by the European Institute of Innovation and Technology, or EIT, an independent body set up by the European Union in 2008 to deliver advanced training in innovation and entrepreneurship and to help overcome some of Europe's grand challenges. Under the European Union research programme Horizon 2020, the EIT has a budget of EUR2.7 billion and it is financing the KICs by providing 25% of their running costs.

The KICs coordinate cooperation between higher education institutions, research institutes and the private sector across countries to train the next generation of European researchers and entrepreneurs, conduct research and take its innovative results to market. This makes the EIT the only mechanism within Horizon 2020 that links the three sectors, the idea being to create bridges between ideas and business creation. Further, says the EIT on its website, "it connects centres of excellence around Europe to create real European innovation networks".

Headquartered in Budapest, Hungary, the EIT has expanded operations considerably, and the KICs have established 'co-location centres' in Belgium, Finland, France, Germany, Hungary, Italy, The Netherlands, Poland, Spain, Sweden, Switzerland and the United Kingdom.

The European Union launched three KICs - Climate-KIC, EIT ICT Labs and KIC InnoEnergy - in 2009. Since then more than 1,000 students have been trained and more than 100 start-up companies have been established. The Climate-KIC aims "to provide the people, products and leadership to confront the climate challenge globally" and, by driving innovation for climate change mitigation or adaptation, help shape the next global economy. With 47% of partners from business, 32% from academia and 21% being public bodies, it is assessing climate change and managing its drivers, studying transitions to low carbon cities, advancing adaptive water management and developing zero-carbon production systems. It has co-location centres - or 'innovation factories' - across Europe, led by world-class universities and companies, and regional innovation communities led by local or regional governments that support the testing, implementation and scaling up of innovation.

Climate-KIC takes research results and identifies a market for them through three areas of expertise: an open network that manages community partnerships to create climate innovation and rallies companies, cities and universities around delivery of new projects and services; masters and PhD courses that combine climate change science, entrepreneurship and exposure to innovation activities; and connecting students, young entrepreneurs, research centres and investors to encourage climate-related start-ups and their growth into businesses.

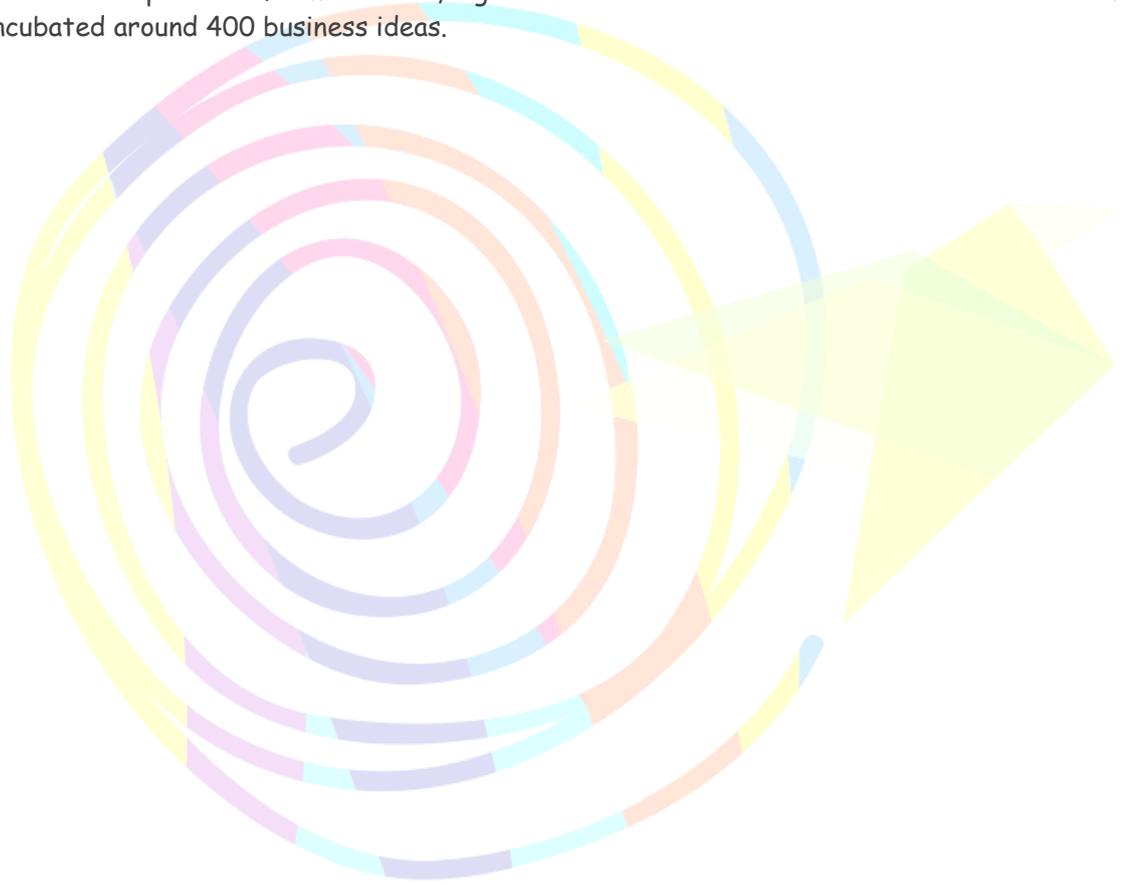
KIC InnoEnergy is tackling the need for new technologies for sustainable energy and a climate-neutral Europe and developing new energy products, notably alternatives to fossil fuels. It has six regional 'innovation factories' and partners that include eight companies, seven research institutes and 13 universities and business schools.

EIT ICT Labs is building ICT talent through higher education programmes that promote innovation and entrepreneurship. Its co-location centres bring people from different countries, disciplines and organisations together, working in six focus areas: smart spaces, smart energy systems, health and

## European Region Entrepreneurship Connection - EFEB Network

well-being, digital cities, future media and content delivery, and intelligent mobility and transportation systems.

In all, the KICs until now have established 17 innovation hotspots across Europe, with the participation of more than 350 partners from business, higher education and research and other institutions. They have incubated around 400 business ideas.



# EFEB Network

"The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein."



Erasmus+

Co-funded by the European Union

## 6. ECO-FRIENDLY CERTIFICATION SYSTEMS, INCLUDING EU FLOWER SCHEME



### EU Ecolabel

The EU Ecolabel helps you identify products and services that have a reduced environmental impact throughout their life cycle, from the extraction of raw material through to production, use and disposal. Recognised throughout Europe, EU Ecolabel is a voluntary label promoting environmental excellence which can be trusted.

The EU Ecolabel scheme is a commitment to environmental sustainability. The criteria have been developed and agreed upon by scientists, NGOs and stakeholders to create a credible and reliable way to make environmentally responsible choices.

From the raw materials to manufacturing, packaging, distribution and disposal, EU Ecolabel products are evaluated by independent experts to ensure they meet criteria that reduce their environmental impact. The EU Ecolabel is an easy way to make an informed choice about the products you're buying.

The scheme is voluntary, but hundreds of companies across Europe have joined up because of EU Ecolabel's competitive edge and commitment to the environment. Customers can rely on the logo because every product is checked by independent experts.

### LEED Certification

More and more people are becoming aware about the LEED Certification nowadays. The sustainability of a building is measured by the terms of whether it is constructed with eco friendly materials, whether the machineries are run by the natural and environmental resources, whether it makes proper use of the energy available etc.

With this certification, the professionals will be able to raise consumer awareness on the advantages of remodeling or investing on green buildings. The LEED Certification will help the professionals rate the buildings according to the Location and Planning, sustainability of the site, efficient utilization of water and energy, the materials and resources used in the internal systems, the indoor environment or air quality, inflow and outflow of air thorough duct and insulation systems, innovation and Design Process, etc.

Getting your building constructed by a person accredited with a LEED certificate not only ensures you a cozy, happy and clean house, but it also promises you a clean and healthy environment. Not only the above-mentioned sources, but so many more sources can be put in to use.

These buildings are eco friendly. The building is constructed using many natural resources like tidal energy, solar energy, wind energy, geothermal energy etc. As these natural resources are abundant and free of cost, the cost of construction of the building is lower compared to the buildings built with fuel energy. As a result of this, a huge amount of money is saved for the builders and contractors.

## 7. MARKETING TO TARGET GROUPS

Marketing eco-innovation involves changes in product design or packaging, product placement, product promotion or pricing. It involves looking at what marketing techniques can be used to drive people to buy, use or implement eco-innovations. In marketing terms, brand (a collection of symbols, experiences and associations connected with a product or service by potential customers) has become key to understanding the process of commercialization of products and services. Buying into a brand through purchasing a product, service or technology is to a large extent about choosing to trust in the organization owning the brand, which implies that the consumers' choices are not always rational. Better understanding of the specificity (or lack of it) of the market and consumer response to brands related to eco-innovations, i.e. products, services, technologies or companies, becomes strategic knowledge in the market, for actors such as SMEs.

Communication with the target groups is an important factor in the success of eco-innovation. Through suitably chosen marketing communications the firm discloses to the target groups that it offers its products that can satisfy their needs and meet required quality attribute, what also corresponds to the price. The way the message is received by the target groups is crucial, it is important to ensure that it will not cease to exist in the amount of information and that it will be interesting for them. It requires flexible thinking, creativity, and constant search for ideas. Target groups (consumers) today require products and services adjusted to their needs and wishes what means an individual approach.

Marketing communication strategy in designing and implementing eco-innovations is very important and is related to the overall environmental orientation and communication of the company. The success of the new product as a result of the innovation process is determined by the quality of implementation of all its parts, thus not only scientific research and technical activities, as well as marketing. This means that the innovative project of a new product requires comprehensive, complex elaboration of such strategies as product-technical and production-technological and not least the marketing strategy.

Sustainable marketing strategy should be included in the eco-innovation process as an integral part of eco-innovation project of the enterprise being innovated. The main objective of the marketing strategy is to gain a competitive advantage in a competitive market. The achievements of realized marketing strategy can be measured by indicators such as sales, market share, profits, share prices etc. However, if managers in creating the marketing strategy paid attention only to short-term targets, increasing sales or profits, it can have a negative impact on society in terms of sustainability.

Innovation is now considered as an important competitive advantage in building a sustainable marketing strategy. When implementing environmentally friendly products, companies use marketing tools that are well established and proven for other products. It is important to build the trust of customers that these products deliver measurable benefits to the environment and are equally well-suited and cost-effective as the previously used product that was not environmentally significant and beneficial.

The most important determinants of consumer purchase decisions are the price and performance/quality of the product. Business competitiveness is conditioned by the innovation ability not only of products but also of processes. Enterprises therefore have started to move attention from product quality to effectiveness of internal business processes. Purchasing decision is also influenced by their faith in the brand. Companies can increase consumer confidence and encourage enthusiasm for products friendly to the environment through a comprehensive and clear communication about what this means for the company to be "eco". Marketing communication should be based on significant environmental and sustainable marketing, taking care to the enterprise business orientation, how it uses different tools to create its own communication mix.

## 8. TRAINING OF AND COMMUNICATION WITH EMPLOYEES

As organizations increasingly focus on building corporate cultures that are more open to new ideas, they are examining ways that they can engage a range of employees in innovative thinking and actions. In the past, the answer to this kind of effort was to run a challenge and pat yourselves on the back for a job well done.

Over the last couple of years that thinking has evolved, and innovation leaders are now considering approaches that are perceived to have a longer-term impact on their employees. In response, there is now a rush for innovation leaders to train and engage their employees on innovation skills.

The choices of training approaches are endless; top-down, bottom-up, self-managed, employer led, online, in-person, etc. Similarly, there are many methodologies to be considered, such as Design Thinking, Lean, TRIZ, business case development, business model canvas, etc. Just as every company has its own unique innovation mix, there is no one prescribed pathway towards boosting innovation skills for employees. Admittedly, some ways are more effective than others, and in this era of blended learning, companies are likely to employ a mix of training methods that can be directed to different employee groups, at different points of need. But, there is one way, which is guaranteed not to work, and that is closed-minded one-way instruction.

### Building a framework

When considering training for employees on innovation skills, it is important to visualize (and record) the desired results and impact. This often results in an employee engagement framework around innovation concepts and skills. As part of this framework, employee training may be viewed as an opportunity to engage key employees and expand organisational capacity for developing innovative ideas. In this case, skills such as collaboration, communication, idea development planning, and stakeholder identification may all help to increase interactions and thus boost the flow of executable ideas. But beware; using a broad brush or scattergun approach to instilling these attributes is not necessarily going to result in a culture of innovation. Whatever method-or methods-of training are followed, they have to be targeted and focused on achieving the specific, achievable goals.

With this in mind, let's take a brief look at top-down and bottom-up training opportunities. At a strategic level, bottom-up approaches work particularly well when an innovation program is trying to make a statement about a move to a more open culture and also broaden the capacity to innovate. Because we are looking here towards a broad-based approach it is important that training is scalable, incorporates an understanding of the corporate priorities of the organisation, as this will help participants to direct their thinking towards future innovation possibilities. In addition, this kind of training is generally more focused on skills to move ideas forward.

### Innovating with purpose

We call this approach "innovating with purpose". It encourages employees to understand real problems and then to work towards creating a solution. This, in essence, is the difference between invention and innovation. When you want to invent, to come up with new ideas, you simply sit people in front of a whiteboard and brainstorm or 'ask' for their ideas. When you want to innovate, you start by identifying real problems and then look to devise solutions. You still need their ideas but it's not about 'asking' for random ones, it's about asking for solutions to genuine problems. The key to "innovating with purpose" is that employees develop the skills to frame problems in the first place, and then better understand the viability and path to implementation of their best ideas.

## European Region Entrepreneurship Connection - EFEB Network

In line with the more holistic view of innovation training, approaches and channels should be scalable across an organisation. This means that training can be carried out over a period of time as well as being phased across the organisation, thereby helping to maximise the impact. For example, those who have a natural inclination around innovation can be used to reinforce training for those who follow later. These “early adopters” can help to drive innovation value and assimilation across the organisation. When formalized into networks, those with the most interest and investment in innovative thinking can be called i-agents, intrapreneurs, innovation catalysts, champions, ambassadors, etc.

As with bottom-up training, the top-down approach requires the development of a longer-term engagement model and should align with the broader corporate strategies and goals. However, unlike the bottom-up approach, top-down training tends to focus more around enhancing innovative teams and organizations, rather than focusing on the development of specific ideas. These efforts often tend towards more personalized training approaches, in line with the expectations of this group.

Whichever direction innovation training takes, in order for it to drive cultural change it needs to be at the top of the agenda. CEOs and leadership teams simply cannot afford to pay lip service to the vital subject of building a culture of innovation. It's one thing to establish a strategy around engaging employees in innovative thinking, quite another to personally buy-in to the required change in attitude and behaviour. As innovation is cascaded throughout the organisation (up or down), leaders at every level have to support the end goals and drive the change. If they don't, the innovation imperative will stall, leading to employee cynicism and disengagement.

Training is not an end in itself, but innovation leaders who use the right mix of training to develop the skills which enable organizational innovation will see their people start to create game-changing solutions to real problems and in turn, real competitive advantage.

EFEB  
Network