Eco-design and Business

G.EN.ESI Education Centre

'Eco-design and Business' is part of a series from the G.EN.ESI Education Centre. The other titles in this series cover Eco-design, Life Cycle Thinking, Life Cycle Assessment, Eco-design Strategies, Legislation and Regulation and Eco-design Case Studies. To read or download any of these titles please visit www.genesi-fp7.eu/education-centre.

Introduction

Successful Eco-design implementation requires an organisational, as well as technical, approach. While it is often tempting to approach eco-design as a purely design or engineering issue, experience has shown that this can limit achievements and reduce reward. To ensure eco-design efforts have significant and economically beneficial outcomes, companies are advised to adopt a broader approach that addresses the strategic aspects of design and development. The first step in achieving a more strategic view is to understand the relationship between eco-design and wider business issues. To help you achieve this understanding, this document provides an introduction to the organisational elements of eco-design.

How eco-design influences business success

Recent studies corroborate the belief that eco-design is beneficial economically. Plouffe et al. [1] studied 30 companies that implemented eco-design; 24 of them increased their profit with the eco-designed range of products Most of the additional profit can be attributed to the rationalisation of the manufacturing process and there view of the design process. The systematic integration of environmental issues in the design process often leads to a review of the current design activities and to subsequent improvements, thereby benefiting the entire organisation.

Eco-design is also a solution to address the growing pressure caused by the increasing price of materials and energy, as well as growing legislative incentives and market demand[2].

Hence, to ensure effective eco-design implementation organisational and strategic implications should be considered. The modification of the design process should be planned accordingly and should incorporate the company's sustainability profile into the bigger picture.

How do I integrate environmental aspects within my business?

The first step of eco-design business integration is to define the objectives you want to reach both in terms of eco-design and the sustainability strategy of the company. The eco-design objectives are not always associated with environmental indicators but should be broken down into design objectives such as: including more recycled components or improving energy efficiency by 10%.

To define such objectives, different elements should be taken into account, such as:

- Significant environmental aspects of product life cycle, identified by a life cycle assessment,
- Potential areas for improvement of product design,
- External pressure from society and government relating to your industrial sector. For example in the electr(on)ic sector, energy efficiency and end-of-life are very important considerations for environmental Non Governmental Organisation's and for governments.

By dealing with global environmental issues at the strategic level and dealing with design targets at the operational level, the eco-design process is much more efficient. The breakdown of objectives into project milestones can help channel the design effort towards an environmental product design.

Using the G.EN.ESI methodology

Steps 1 to 3 of the G.EN.ESI methodology present a framework to align business objectives with design constraints:

1. Define environmental and business objectives

This aspect is crucial for efficient eco-design. Finding the right balance between ambitious and reasonable is the key to defining the appropriate objectives.

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[1] Plouffe, Sylvain, Paul Lanoie, Corinne Berneman, and Marie-France Vernier. 'Economic Benefits Tied to Ecodesign'. Journal of Cleaner Production 19, no. 6–7 (avril 2011): 573–79. doi:10.1016/j.jclepro.2010.12.003.

[2] http://ec.europa.eu/enterprise/policies/sustainable-business/

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Different methods can be used to define these strategic objectives. The two dimensions of business drivers and environmental issues should be considered at the same time. For example this can be done by using techniques such as back-casting, or exploring business context and consumers' expectation whilst keeping in mind environmental issues.

To reduce the uncertainty associated with back-casting activities, formalisation of scenarios that embody all constraints and trends regarding environmental impacts can help make informed decisions.

O'Hare suggested that objectives should be constructed based on feedback from[3]:

- Business: Global strategies (outside the environmental domain), competitor activities and customers
- Environmental Health and Safety evaluations of any previous product and current proposal
- Design: Potential for improvements and opportunities from research and development.

2. Establish a life cycle perspective for your product

See Education Centre document "Life Cycle Thinking".

3. Align hotspots and business context and determine design criteria.

With the objectives defined in 1 and the life cycle context in mind, a set of design indicators to drive the product development can be finalised.

These three activities are important to ensure that design constraints are aligned with the business objectives of your company.

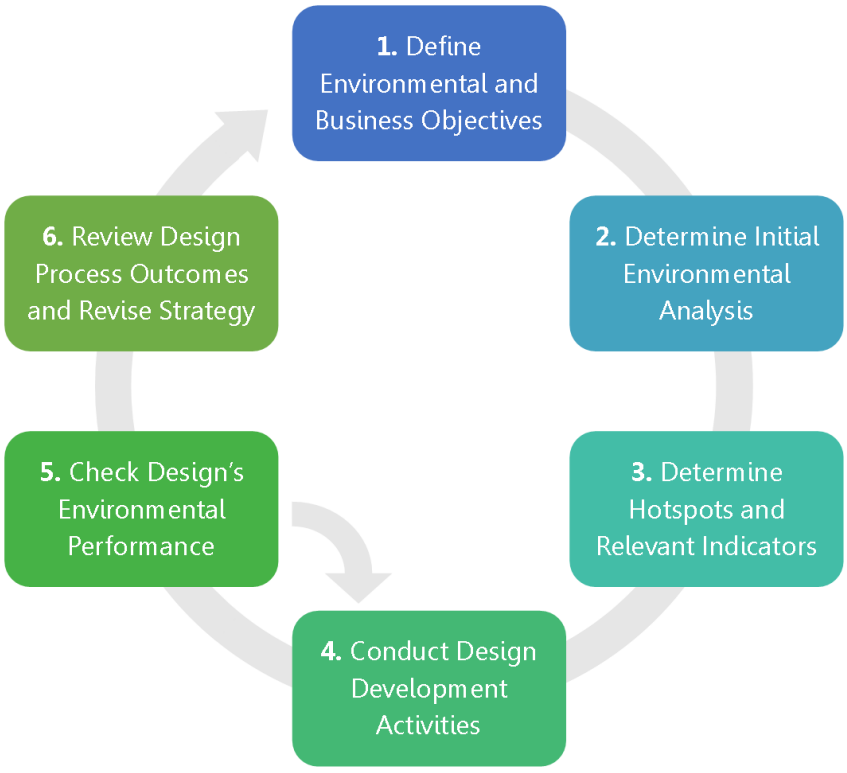

Figure 1: Overview of G.EN.ESI Methodology

Step 6 (review of the process) is also crucial at the business level. It keeps the company updated with success and failure to reach the different environmental objectives. This update can be then used to modify strategic goals regarding the environment and sustainability in general.

[3] O'Hare, Jamie A. 'Eco-Innovation Tools for the Early Stages: An Industry-Based Investigation of Tool Customisation and Introduction'. Phd, University of Bath, 2010. http://opus.bath.ac.uk/20208/.

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This process is similar to the one adopted by Philips Sound and Vision in 1995 to drive the environmental strategy for product development[4]. They used a five-step methodology:

1) Identify the driving forces of the business strategy in general:
   Wherein Market research and definition of cultural and future societal trends for the sector can be used to identify the strategic targets
2) Specify scenarios to realise the strategy identified. Identify key product market strategies:
   These scenarios need to integrate uncertainty, competitive advantage and interaction between the company strategy and the sector response to the implementation of such strategy.
3) Link environmental opportunities or threats to the scenario based on the design options:,
   To manage the uncertainty of environmental assessment, Philips developed a checklist to validate whether or not they would realise a design option on a specific product. This checklist includes targets for production, for the product, for use and reuse as well as recyclability. Based on the results of the checklist, a board of strategic, production and environmental experts would approve the implementation of the design option on the product.
4) Define environmental opportunities by product that can lead to substantial improvement of environmental performance:
   Corporate objectives are then defined for the business units and each of them can develop an updated list of challenges specific to their product category. Collaborative sessions can be organised to review all potential proposals for environmental improvement.
5) Implement the challenges into the design process requirements:
   Strategic management will then construct the roadmap to reach each of the different business units' objectives.

Going a step further

At the business level, sector engagement with sustainability best practices can help promote your company image. Voluntary agreements to adopt common environmental targets for the entire sector can help improve society's perception of the environmental impact of your products. Engaging with the relevant environmental standardisation committee can help promote your specific approach to eco-design. This will reduce the cost of ensuring compliance to mandatory regulations in your sector, specifically if your product is likely to be targeted by the eco-design directive on Energy Related Products[5].

PEP ecopassport program

The drive towards transparent information on environmental performance of products has been recognised by environmental leaders in the electronic sector. A consortium including major actors in green electronics have been working on a specific standard to demonstrate improvements in product design and environmental performance of products. The PEP ecopassport program defines rules for transparent communication on electronic products' performance. The sector engagement towards transparency on environmental issues is promoting environmental leaders within the sector for manufacturers of different product types, for example: Nexans for cables, Legrand for electro-domestic products and ABB for robotics applications.

Further Reading

- http://genesi-fp7.eu/methodology/
- http://ec.europa.eu/enterprise/policies/sustainable-business/

[4] Cramer, J. M., and A. L. N. Stevels. 'Strategic Environmental Product Planning within Philips Sound & Vision'. Environmental Quality Management 7, no. 1 (1 September 1997): 91–102. doi:10.1002/tqem.3310070109.
[5] European Commission. DIRECTIVE 2005/32/EC: Establishing a Framework for the Setting of Ecodesign Requirements for Energy-Using Products, 2005.

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- Dewulf, W., and J. R. Duflou. 'Integrating Eco-Design Into Business Environments'. In Product Engineering, edited by Doru Talabă and Thomas Roche, 55–76. Springer Netherlands, 2005. http://link.springer.com/chapter/10.1007/1-4020-2933-0_4.
- http://www.pep-ecopassport.org/

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