

# Product Sustainability Assessment (PROSA) as a tool to develop awarding criteria for eco-label

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**Abstract** Climate protection requires low-threshold offers for consumers to reduce their individual carbon footprint. With regard to his daily purchasing decision, the consumer must be enabled to pick the best product in terms of climate protection and to influence the market by his conscious consumption. Eco-labels which label excellent and exemplary products are a suitable tool for this purpose. The method used by the Öko-Institut to develop such eco-labels is Product Sustainability Assessment (PROSA). This method gives a market overview and an analysis of consumer behaviour, the technical data of the relevant products are analyzed and the best available technologies are identified. By means of a life cycle approach, particularly relevant effects of the products occurring during production, use and disposal are investigated. The focus of PROSA is not only on the energy consumption but also on other environmental and health aspects, social implications and on the economic impact of the product. Based on this analysis, eco-label criteria are developed.

## 1 Introduction

Products and services represent the major output of our economy. In simple terms, any business activity is designed to produce products and to provide the consumer with these products at a fee. Products are the interface between companies and consumers; they are the point at which social expectations are set out: the satisfaction of essential needs (food, health, housing, mobility) of pleasure, prestige and conscience. Knowing these consumer needs and responding to them appropriately, represents the prerequisite for the economic survival of businesses. To policymakers, the knowledge on the impacts associated with products on the environment, society and economy is a precondition to apply the available tools such as laws, taxes, subsidies, in a forward-thinking way.

## 2 PROSA

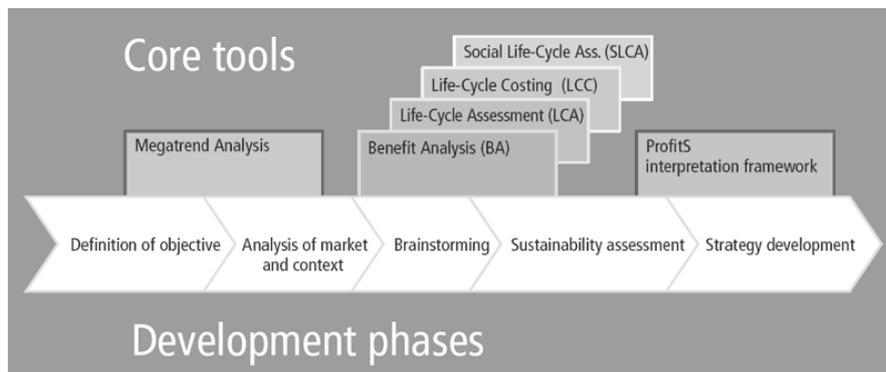
PROSA – Product Sustainability Assessment is the method developed by the Öko-Institut for a strategic analysis and assessment of product portfolios, products and services [1]. Typical users of this method are companies that like to know more about their product portfolio with regard to sustainability aspects. With these findings, companies can derive appropriate measures to improve their products' environmental, social or economic performance or they may open up promising new and sustainable markets. For the product policy, PROSA is an appropriate method to record the most important impacts of products and services and, for example, to therefrom ensue legal minimum requirements or incentives.

As a sustainability assessment, PROSA not only includes the environmental impacts of a product, as Life Cycle Assessment (LCA) does, but also examines the social and economic impacts. The investigation covers the entire life cycle of the research object from raw materials extraction to disposal.

PROSA is based on existing and well-established core tools and integrates them. The approach is process-oriented and iterative. An interdisciplinary project team actively supports the process and, as the assessment progresses, decides on further investigations. The participation of stakeholders provides an even broader social basis for this process. The following methods are constantly being used:

- Megatrend Analyses
- Life Cycle Assessment (LCA)
- Life Cycle Costing (LCC)
- Social LCA
- Benefit Analysis (based on consumer research)
- ProfitS evaluation tool (Products Fit to Sustainability)

The following chart shows the chronological order of the PROSA procedure:



Depending on the application, PROSA can be conducted with different goals and intensity. Especially for small and medium-sized enterprises, the Öko-Institut has developed a simplified screening PROSA method (s-PROSA), which already allows a general orientation of the key sustainability issues. As part of the project Top100 described below, in which awarding criteria for eco-label are developed, Öko-Institut has adapted the PROSA methodology in such a way that only those aspects are investigated which can currently be regulated by an environmental label.

### **3 The research project Top100**

The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) recommends in a memorandum about Product Carbon Footprint [2] the well-established Blue Angel eco-label as an appropriate label for the communication of the most eco-friendly products in Germany.

According to the expectation of the ministry, the Blue Angel which is known by 80% of consumers in Germany, should be developed to a national climate protection label for products.

The label therefore was extended by the addition "protecting the climate" and, in all major product segments (except food), will mark in the future these products and services that are particularly energy-efficient or make a particularly large contribution to energy savings. Additionally, these products meet requirements relating to other important environmental characteristics such as harmful substances, recyclability, complying with water conservation and low noise emissions.

Blue Angel is a Type I environmental label according to ISO 14024, the application of the label is voluntary. The development of criteria to be met is based on a life cycle approach.

The research institutes Öko-Institut, IFEU Heidelberg and Ökopol form a consortium within the project, which, under the National Climate Initiative, is responsible for determining the 100 most climate-relevant products and services (Top100) and for developing eco-label criteria for these.

Examples of these products and services are boilers, solar panels, wood fuel, insulation, lamps, televisions, computers, washing machines and dishwashers, refrigerators, freezers, coffee machines and energy services.

The project represents a special case of application of the PROSA methodology. Based on a market analysis, this particular PROSA includes a simplified life cycle assessment of a representative product, the calculation of typical life cycle costs of

the product and an analysis of use of the product group. Along the life cycle of the product, sustainability aspects are investigated, whereby the specific hot-spots of the product are being identified. As a consequence of ambitious requirements, as, for example, on material composition, on energy consumption or the availability of spare parts, a list of criteria is created which can only be met by about 20 percent of the products available on the market.

As basis for the award of the eco-label "Blue Angel", the criteria developed by the consortium, led by the Öko-Institut, following a transparent stakeholder process will finally be submitted to the independent "Environmental Label Jury" for adoption.

The development of award criteria for eco-labels has a major impact which goes far beyond the identification of specific items:

- The eco-label anticipates legal regulations and tests their applicability in the market. Example: In the late 1970s, "The Blue Angel" to CFC-free spray anticipated the German CFC Halon Prohibition Ordinance.
- The catalogue of criteria helps to make a choice between "toprunner" products which, in the context of award programs for more energy-efficient products or through information campaigns such as EcoTopTen by the Öko-Institut, for example, can strategically be promoted.
- The high energy efficiency of eco-label products sets the standard for the development of European eco-design requirements, minimum standards for products that can be marketed in the European Economic Area being defined at EU level.
- The award criteria of the eco-labels are frequently applied in private and public procurement. In order to serve this market, manufacturers have to develop their products according to the requirements of the label

#### **4 The role of PROSA in the development of award criteria**

For the Top100 project, a simplified screening PROSA method is applied. This is partly attributable to the time and financial constraints of the project, in which many product groups have to be processed in a relatively short period of time. Above, certain problems relating to products cannot be remedied by eco-labels. Social issues, for example, that could be analyzed by the Social LCA, are usually exempted from the investigation, and are only considered in very obvious cases (such as child labour in the manufacture of toys or textiles or working conditions on board of cargo ships).

In accordance with the schema described above, the definition of objective is defined as follows:

- identification of organic top products (focusing on climate change)
- description of the products by setting minimum requirements
- derivation of criteria for the award of a voluntary eco-label

As a first step, the market and environment of the product are investigated:

- market overview of the product group with prices, price trends, sales figures, typical features, consumer trends and consumer-related issues. In addition to manufacturers' data, information provided by market research companies and internet-based market researches, comparative product tests conducted by neutral consumer magazines are important sources of information,
- analysis of the legal framework of a product, such as Ecodesign requirements, REACH, tax treatment of the product (e.g. fuels),
- researching the existing eco- or product labels (e.g. the EU Eco-label, Nordic Swan, Energy Star, TCO) and the underlying criteria,
- identification of standards and admission requirements relating to the product which have to be met in order to market the product on the European market (European CE standards mark).

In the top100 project, the process step "brainstorming" is understood as an interdisciplinary exchange of the people and institutions involved in the product group processing. The other focus, i.e. sustainability assessment, is defined and the product group is limited or extended as required.

The actual sustainability analysis ("Sustainability Assessment") is divided into the following methods:

- Analysis of Benefit and Utility
- Indicative Life-Cycle Assessment (LCA)
- Life-Cycle Costing (LCC)

In the context of PROSA, the analysis of the product benefit (analysis of benefit and utility) is an essential tool. Using checklists, consumer benefit (practical utility), symbolic value (symbolic utility) and social benefits (public value) of a product is investigated. Based on the benefit analysis, action alternatives (such as hiring instead of buying) or product alternatives (e.g. notebook instead of desktop PC) can already be identified.

For the methods LCA and LCC which are subsequently applied, a typical product is defined and assumptions are made about the typical use and lifetime of the

product. These assumptions can, for example, be made on the basis of existing product category rules, as they are used in the context of environmental product declarations or under consideration of case studies from the European eco-design process.

For the typical product, an indicative life cycle assessment (LCA) is performed, which at least calculates the cumulative primary energy demand (CED) and the Global Warming Potential (GWP) of manufacture, use and disposal of the product. As household and office appliances have been assessed as part of Top100, it was found that the use of products makes up a significant share in energy consumption over the entire life cycle. The use of a 32-inch LCD TV, for example, contributes with 86% to the total greenhouse gas emissions within the product life cycle [3]. Against this background, for certain household appliances, such as refrigerators and freezers, the replacement of functional, but inefficient equipment by high-quality, energy-saving devices can make a significant contribution to climate protection.

The analysis of life cycle costs (LCC) makes such an investment decision even easier. In LCC, investment costs, operating costs such as energy and repair costs and possibly disposal costs are calculated down to a year of use. This way, a statement about the actual cost burden of a product can be made. A more expensive but energy-efficient product can result in substantially lower annual costs than a cheap or even free (already paid) product. The results of the LCC, however, can also reveal that certain efficiency measures may be associated with disproportionately high costs (e.g. very high spin speeds in washing machines) and therefore should not be set as minimum standards.

By the individual tools that are used within PROSA, one gets a very differentiated view of the relevant product group and gets to know the different aspects of sustainability with regard to this product group. In the next process step, the award criteria for an eco-label will be formulated.

Typical criteria in this respect are:

- Maximum energy consumption per year for a given usage profile
- Durability
- Usability (minimum functionality, upgradeability, security)
- Maximum noise emissions
- Repairability (design and delivery of spare parts)
- Absence of materials that pose a risk to human health and/or the environment
- Recyclability
- Good consumer information

As already mentioned above, the criteria describe about 20% of the best products available on the market. This means that none of the criteria must be set too sharply so as to possibly exclude all products or to prefer just one manufacturer.

To ensure this, a compulsory expert consultation takes place as part of the development of the eco-labels under Blue Angel, to which interested parties such as producers, but also environmental and consumer organizations, academia and government agencies are invited. This involvement of stakeholders complies with the PROSA methodology in the process step "Strategy Development", in which the findings one more time have to be subjected to an interdisciplinary discourse. The experts will discuss the proposals on the award criteria and will consider whether they are in principle applicable to their products. Ideally, the criteria are adapted to such an extent that a consensus between the stakeholders will be reached. However, there is no reason to fear that the criteria will be set too weak because of the influence of the manufacturers, as manufacturers only may use an eco-label as a positive distinction feature if their (environmentally friendly) products stand out from those of competitors. If an agreement with the experts cannot be reached, the points at issue are documented.

At the end of the development of a new eco-label under Blue Angel, there is the "Jury Umweltzeichen" ("Environmental Label Jury"). It is composed of representatives of socially relevant groups and is appointed by the Environment Minister. The Jury Umweltzeichen will review the submitted draft again and then adopt it in a democratic process.

From that time, products may bear the label Blue Angels and thus show the consumer which of the products are particularly exemplary in terms of the requested aspects of sustainability. The sign enables the consumer to purchase strategically, and to prefer those companies and products that meet his expectations to a maximum extent.

## 5 References

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