

Environmental Footprint Evaluation of Eco-Friendly Products in the Global Economy

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Abstract. Ecological products, their terminology, and the process of certification are not unified within the global economy. This paper gives a comprehensive overview of organic products labelling. The novelty of the contribution is the effort to introduce the evaluation of the environmental footprint of eco-friendly products.

Key words: eco-friendly products, environment, evaluation, environmental footprint

1 Introduction

Environmentally friendly, environment-friendly, eco-friendly, nature-friendly, or green products have many different names and may be subject to many different certification processes to verify their environmental footprint.

Food, agricultural products, clothing, cars and other consumer products have a number of eco-labels or green stickers. Some supranational organizations are trying to unify it, but there is no global consensus.

Most of these labels use only a binomial scale (product meets or does not meet the conditions) or a discrete scale (products are grouped into several groups). A continuous scale (the product is rated by the value of an environmental footprint) is not widely accepted for the time being. The paper proposes just such a continuous scale, the units of which would be money.

2 Current State of Eco-Friendly Products Labelling

In the past, many non-governmental organizations (NGOs) have been involved in the labelling of organic products. The attempt is now for global harmonisation, unification, and standardization of these efforts. An example of such standardization is the International Organization for Standardization ISO and the European Union of the EU.

Standards for labelling procedures by the International Organization for Standardization ISO in the framework of ISO 14000 Environmental management [1-3]:

- Type I Environmental Labelling (ISO 14024:2018) [1];
- Type II Self-Declared Environmental Claims (ISO 14021:2016) [2];

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- Type III Environmental Declarations (ISO 14025:2006) [3].

The European Union is particularly involved in energy labels. The energy consumption labelling system is regulated by EU Council Directive 92/75/EEC [4], Directive 2010/30/EU of the European Parliament and of the Council [5], and Regulation (EU) 2017/1369 of the European Parliament and of the Council [6]. This applies to the following groups of appliances:

- Refrigerating appliances;
- Washing machines;
- Dishwashers;
- Ovens;
- Air conditioning;
- Bulbs;
- Television;
- Cars;
- Tires.

2.1 Organic Label

The organic label is assigned to food, clothing or wine that has been produced by organic farming methods and is thus certified according to organic farmer standards. [7] The organic label has a number of regional variants.

2.1.1 Eco Label and Bio Label

The sign of the inconsistency of labelling is the fact that in some countries “eco” or “bio” abbreviations have been used to designate organic food:

- Spanish “Eco”;
- French “Bio”;
- German “Bio” or “Öko”.

2.2 Natural Label

The organic designation is natural. Here, in many countries, there is a lower level of regulation. Again, this is a marking that is or is not assigned. This marking does not bring any deeper information.

2.3 Energy Label

In terms of energy consumption labelling, the European Union has a very sophisticated system that puts appliances in categories from A to G. The most inefficient category G is not used in many products, yet the most efficient category A is divided into subgroups A, A⁺, A⁺⁺, A⁺⁺⁺.

3 Environmental Footprint Evaluation

The idea of assessing the environmental impact is based on the fact that the impact of production, consumption and disposal of the product (or service) on the environment would be assessed. Unit outputs of this expertise would be the currency unit (Euro, US Dollar,

etc.) Natural resources of the Earth are limited and production and consumption must take this into account [8].

3.1 Environmental Footprint of Production

The environmental footprint of production represents the positive or negative externalities of the production process. Positive externalities in production are external benefits; negative externalities in production are external costs. Both examples affect the offer of the product or service.

3.1.1 Positive Externalities in Production

When positive externalities are produced, private marginal cost (private supply) is higher than the social marginal cost (social supply). The consequence is that the actual market quantity is lower than the socially optimal quantity. Production reductions are accompanied by increased sales.

Benchmarking positive production externalities is part of a positive environmental footprint of eco-friendly products.

3.1.2 Negative Externalities in Production

This case is characterized by the fact that the private marginal cost (private supply) is lower than the social marginal cost (social supply). The consequence is that the market quantity is higher than the socially optimal quantity. The increase in production is accompanied by a sale at reduced prices.

For eco-friendly products, it is not possible to predict a greater expansion of negative externalities in production, but this case cannot be totally excluded.

3.2 Environmental Footprint of Consumption

In analogy with the above, the environmental footprint of consumption represents the positive or negative externalities of the consumption phase of product life. Positive externality in consumption is external benefits; negative externalities in production are external costs. Both examples affect the demand for a given product or service.

3.2.1 Positive Externalities in Consumption

If positive externalities are used in consumption, private marginal benefit (private demand) is lower than the social marginal benefit (social demand). The consequence is that the actual market quantity is lower than the socially optimal quantity. Reduction of production is accompanied by sales at reduced prices.

Positive consumption externalities are part of a positive environmental footprint of eco-friendly products.

3.2.2 Negative Externalities in Consumption

This case is characterized by the fact that private marginal benefit (private demand) is higher than the social marginal benefit (social demand). The consequence is that the market quantity is higher than the socially optimal quantity. Increases in production are accompanied by increased sales.

In the case of organic products, it is not possible to predict the widening of negative externalities in consumption, but this case cannot be entirely ruled out.

3.3 Environmental Footprint of Disposal

To the above, we also have to add the ecological impacts of the possible ecological disposal of products that are at the end of their life.

4 Proposed System of Eco-Friendly Products Labelling

The proposed system is based on the current Ecolabel and Energy Sharing Scheme, each product being characterized by the value of an environmental footprint expressed in money. The customer can compare the financial and environmental demands of the purchased products.

The new label might contain the following information:

- Product identification;
- Energy and environmental footprint of production;
- Energy and environmental footprint of consumption;
- Energy and environmental footprint of disposal;
- Total environmental footprint value.

5 Conclusion

Eco-friendly products are subject to many different certification processes with many different eco-labels or green stickers. There is no global unity. Attention is paid especially on agricultural products (such as food and clothing) and consumer products (such as cars).

There are different rating-approaches 1) Binomial Scale, 2) Discrete Scale, or 3) Continuous Scale. This paper suggests the use of a continuous scale with money units.

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