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ECOLOGICAL CONSCIOUSNESS IN THE LIGHT OF EMPIRICAL RESEARCH ON RECOGNIZING ECO-LABELS

1. Introduction

Nowadays much is being said about sustainable development, healthy food and the influence of our everyday life on the environment. Many discussions are being carried out regarding the state of the environment and about how to leave the environment in the best possible state for future generations. However, do we realize what sustainable development means? In our everyday lives do we have any influence on the state of the environment? This article aims to answer these questions, among other things.

Both production and service enterprises function in the natural environment. They obtain their raw materials and other goods from this environment. As a result of production processes many types of pollution are emitted into the environment, such as sewage, industrial gases, solid waste etc. The products and services of these companies are purchased by consumers. An increasing number of consumers are becoming aware of the negative effects of production and products themselves on the environment. This has created a need for a company to change attitudes towards environmental issues, otherwise it may lose part of its market share and even go bankrupt [see Fiedor, 2002].

Organizations wishing to satisfy the demands of consumers use eco-labeling to present their pro-ecological policies in relation to environmental protection and accent the ecological aspects of their products and services [see Kobyłko, 2000, 123–134]. This is one of the instruments of realizing a policy of environmental protection in an enterprise [see

Fiedor, 2002, 270–3]. This method is particularly important in relation to enterprises producing food goods.

Eco-labeling is defined by the ISO 14024 norm as a voluntary form of environmental labeling based on various criteria determined by a third party, who awards a firm with a label indicating that a product is environmentally friendly compared with other similar products on the basis of an analysis of its life cycle. This norm also gives the principles according to which an eco-label scheme should be run [PN-EN ISO 14024, 2002].

The goal of this article is to outline the level of knowledge regarding the concept of sustainable development, in particular with respect to ecological food products. However, the main aim of this article is to determine to what level people are aware of eco-labels regarding products and their packaging. The article also attempts to indicate the influence of various factors on how consumers make their purchasing decisions and whether they see a product as an ecologically friendly product or not. The influence of specific factors on consumers is also described. In order to carry out this research, 206 students of the Economics Faculty at the University of Opole were interviewed using a questionnaire at the beginning of March 2005. This is intended to be an initial survey and a wider survey is planned. Thus, the conclusions made here should not be treated as final.

The research carried out was aimed at determining to what level people take into account the ecological friendliness of a product, particularly in relation to food products. To what degree are their choices determined by the labeling of a product and to what degree by other factors. The article also attempts to present the present state of knowledge regarding ecological problems. The first section concentrates on the methods of research. The second section presents the results of this initial survey. The final section contains the conclusions made.

2. Description of the methods of research

Labels and information on packaging are the basic form of informing a consumer in an objective way as to whether a product is ecological. Such information may regard various elements of a product such as packaging, ingredients, the environment, as well as the region in which it was produced. Many labels refer to the life cycle of the product and its non-processed elements. In order for such information to be clear and understandable to consumers, they must become acquainted with the principles of the eco-labeling system. Otherwise, any assessment of the effect of such labels will not be objective. Hence, the level of consumer's

knowledge in this field seems to be a very important factor, as well as their general knowledge in the field of sustainable development and ecology [Adamczyk, 2004, 170–188].

Sustainable development is a concept that should be understood as a socio-economic program, which aims at preserving and renovation of ecosystems. This concept was defined in a somewhat different manner in Brundtland's report "Our Common Future" as the right to satisfying the present generation's aspirations, without limiting the rights of future generations to satisfying their aspirations [Czaja and Becla, 2002, 308–9]. Górka understands this concept as economic growth that is in harmony with the demands of protection of the natural environment [Górka, 1998, 11]. On the other hand, Borys [1999, 69] considers that the term eco-development can be used as a synonym for development that is not just continuous and balanced, but also self-supporting. Adamczyk [2001, 29] defines sustainable development as "... economic development which is adapted to the ecological sphere, that is to say to the efficiency of renewable and non-renewable resources and the capacity of the environment to absorb." She also thinks that it is a long-term process. However, Fiedor [2002, 228] among many other definitions of sustainable development presents the following one: it is an attempt to harmonize ecological, economic, scientific and technical, ethical and cultural aspects of growth and development.

In general terms it can be said that sustainable development is balanced development which is continuous and self-supporting [Fiedor, 2002, 229].

In order to carry out the research and answer the questions set out, I decided to use a questionnaire. 33 labels were used in the research, including [see Adamczyk, 2004, 179–232; Kobyłko, 2000, 130–4]:

– Three eco-labels from Scandinavian countries "Good Environmental Choice – Falkon", which is certified by a non-governmental ecological organization, the Swedish Society for Nature Protection. "Krav" and "Svanen" (Swan), which is a label common to the Scandinavian countries (Norway, Denmark, Sweden, Finland, Iceland).¹

– The German eco-label "Blue Angel", which is the oldest eco-label in Europe.²

– The "Margerytka" symbol with twelve stars is designed to be an alternative to the eco-label schemes of the EU member states. This eco-la-

¹ <http://www.ekokonsument.pl/strona.php?sub=ekoetykiety&menu=4>

² http://msp.money.pl/firma/firma_ue/artykuly/oe/

bel is granted on the basis of a simplified analysis of the life cycle of the product.

- Ecological Production. A uniform logo for the whole of the EU.³
- Fair Trade. This is a logo which goes beyond just ecological issues, but also assesses the social and ethical aspects of production.
- The Polish Eco-label "Eko-znak" (Polskie Centrum Badań i Certyfikacji – Polish Centre for Research and Certification).
- Ekoland (Poland) is the best known and recognized eco-label on the Polish domestic market (the logo of Stowarzyszenia Producentów Żywności Metodami Ekologicznymi – Society of Ecological Food Producers – "Ekoland").
- Eco-label of certified ecological farming granted by the Polish Centre for Research and Certification. This label indicates that food has been produced and processed by ecological means.
 - Logo – Packaging is suitable for recycling
 - Logo – Ozone friendly
 - Label – Not tested on animals
 - Eco-label – "ZIELONE PŁUCA POLSKI" (Greek Lungs of Poland – Poland)
 - Logo – Care about cleanliness
 - Logo – Product satisfies European Union norms
 - USA – Eco-label "Green Seal"
 - Symbol indicating that the packaging is suitable for repeated use
 - Symbol indicating that the packaging is suitable for recycling
 - Recycling symbol.
 - The Greek Dot symbol, which informs that such packaging is collected and recycled within the framework of a communal system of refuse collection
 - A group of symbols related to biodegradable packaging:
 - Symbol indicating that the packaging is completely biodegradable
 - Symbol granted to plastic packaging, paper packaging covered with plastic and cartons
 - Symbol OK. Compost
 - Symbol OK. Biodegradable
 - Symbol indicating the recycling of oil
 - Symbol indicating the recycling of glass
 - Symbol encouraging users to care about the environment
 - Symbol "Care about the environment"

³<http://www.ziemia.org/zywnosceekologiczna.php>

- Symbol warning that the product contains toxic substances (*e.g.* paints, batteries) and should not be thrown into domestic waste
- Symbol indicating that the printing on the packaging is environmentally friendly. This symbol does not, however, mean that entire packaging is environmentally friendly
- A symbol which is often mistaken for an eco-label. In reality it does not have any ecological meaning, but is simply a green symbol placed on a product to encourage customers to purchase it.⁴

These symbols are not an exhaustive list. However, the goal of the research was not to study the entire range of ecological symbols, but simply to describe the knowledge of consumers regarding eco-labels.

Similar studies have been carried out, among other places, in the Department of Technology and Ecology at the Economic Academy of Kraków between 1999 and 2002. These studies were related to knowledge regarding eco-labels and their names, as well as their influence on purchasing decisions [Adamczyk, 2004, 232–5]. The range and results of this research are presented in Tables 1 and 2.

Table 1. Influence of an eco-label of purchasing decisions

Year	Large Influence	Small Influence	No Influence
1999	13%	75%	12%
2002	10%	65%	25%

Source: Adamczyk, 2004, 234.

Table 2. Results of the questionnaire regarding identification of eco-labels and their names

Identified	Blue Angel	Does not contain FCKW	Eco-Mark	European Union's Eco-label	Not tested on animals	Green dot
Symbol	33%	72%	8%	11%	63%	80%
Name	21%	58%	10%	20%	67%	37%

Source: Adamczyk, 2004, 233.

3. Results of the research

Have you come across the concept of sustainable development? 140 respondents gave a positive reply, which means that over 30% of the respondents do not know this concept.

⁴<http://www.ziemia.org/inneopakowania.php>

Do you consider that through your everyday shopping you have any influence on environmental protection? 170 respondents gave a positive reply. This means that 17% of the respondents consider that they cannot have any effect on environmental protection through their day to day shopping.

The respondents were asked to assess the various factors which influence our purchasing decisions when shopping for food and what factors influence our assessment of whether a product is ecological and to what extent do these factors influence our purchasing decisions. The respondents assessed the influence of given factors on a scale from 1 (very little importance) to 7 (of crucial importance). The general results are given in Tables 3 and 5 and Tables 4 and 6 present the mode (most common answer [Crawshaw and Chambers, 1994, 2]), median (the central observation in the ordered list of all the observations [Crawshaw and Chambers, 1994, 62]), as well as the mean.

206 respondents answered the question "how important to you is it that the food you eat is healthy?" (Fig. 1 and Table 3). This is a very important factor for the majority of the respondents. This means that the respondents pay a lot of attention to whether the food they purchase is healthy and ecological. On the other hand it is less important to them whether packaging is ecological. 204 respondents answered the question "how important to you is it that the packaging of a product is ecological?" The most common response was that it is important. It is clear that the importance of the ecological nature of the food itself is much greater than the importance of the ecological nature of packaging. This may

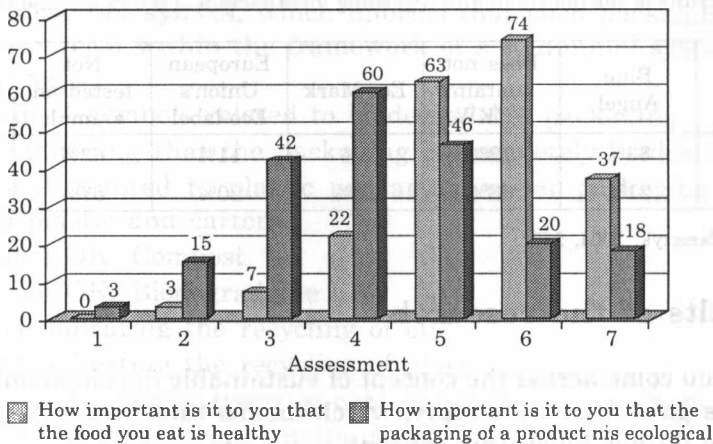


Fig. 1. Assessment of the importance of the ecological nature of packaging and food
Source: Author's own research.

Table 3. Assessment of the importance of the ecological nature of packaging and healthiness of food – mode, median and mean

Question	Mode	Median	Mean
How important to you is it that the food you eat is healthy?	6	6	5.50
How important to you is it that the packaging of a product is ecological?	4	4	4.29

Source: Author's own research

Table 4. Which factors influence whether respondents consider a product to be ecological

Factor	Assessment							Sum
	1	2	3	4	5	6	7	
Opinions of others	6	4	20	56	45	16	3	150
My own opinion	0	4	6	32	64	57	42	205
Ingredients (contents) of a product	3	5	20	27	35	59	55	204
Adverts	18	25	46	62	31	18	4	204
Labeling	4	15	28	40	51	48	20	206
Place of production (country, region)	12	35	40	48	38	23	9	205
The fact that it is a Polish product	11	19	44	53	34	3	12	205
Packaging	7	25	32	61	43	31	6	205

1 = very little importance; 7 = of crucial importance, N = 206

Source: Author's own research.

mean that the respondents do not see the issue of ecological protection in its entirety with respect to waste, its disposal, and recycling, as well as with respect to the ecological problems caused by used packaging.

Among the factors influencing respondents' opinion regarding whether a given product is ecological or not, the most important are the ingredients (contents). The influence of this factor can be said to be very large. The second most important factor according to the respondents was the labelling of a product. The respondents assessed the influence of this factor to be more than important. A respondent's own opinion was assessed to have a similar influence. Other factors such as the opinion of others, adverts, place of production and packaging was assessed to have an important influence. The responses to these questions are presented in Tables 5 and 6.

The respondents said they were also influenced by the following factors: their shopping habits, the renown of a producer, press articles

Table 5. Assessment of the factors which influence respondents in deciding whether a product is ecological – mode, median, mean

Factor	Mode	Median	Mean
Opinion of others	4	4	3.77
My own opinion	4	5	5.41
Ingredients (contents) of a product	6	6	5.37
Advertising	4	4	3.65
Labelling	5	5	4.67
Place of production (country, region)	4	4	3.83
Whether the product is Polish	4	4	4.09
Packaging	4	4	4.10

Source: Author's own research.

Table 6. Assessment of the factors which influence respondents in deciding whether a product is ecological

Factor	Assessment							Sum
	1	2	3	4	5	6	7	
Opinion of others	7	28	28	48	61	28	5	205
Ingredients (contents) of the product	0	7	14	35	54	58	37	205
Advertising	14	24	40	60	33	27	5	203
Place of production (country, region)	9	27	43	47	42	26	10	204
Labelling	9	24	35	65	45	22	5	205
Price	0	3	10	22	56	69	44	204
Habit	1	3	6	20	62	73	39	204
Packaging	5	17	41	54	50	30	6	203

1 = of very little importance; 7 = of crucial importance, N = 206

Source: Author's own research.

about a given product, taste, brand, price, where a product is sold and whether a product is genetically modified.

Respondents stated that purchasing decisions regarding food products are greatly influenced by price and habit (Table 6). Both these factors have the same mode, median and mean. These factors were closely followed by the ingredients (contents) of a product. The remaining factors: opinion of others, advertising, the place of production, labelling and packaging are all factors of medium importance. The means of the assessment of the importance of these factors varies between 3.86 and 4.19.

Some respondents also mentioned other factors such as: season of the year, taste, quality, distance to a shop and the place in which products are bought. These factors had a large influence on the purchasing decisions of these respondents.

Table 7. Factors influencing purchasing decisions

Factor	Mode	Median	Mean
Opinion of others	5	4	4.13
Ingredients (contents)	6	5	5.23
Advertising	4	4	3.86
Place of production (country, region)	4	4	4.00
Labelling	4	4	3.97
Price	6	6	5.52
Habit	6	6	5.52
Packaging	4	4	4.19

Source: Author's own research

The next question was "do you recognize the following logos" (Table 8). The following belonged to the group of most commonly recognized symbols: the symbols informing the buyer to throw packaging and/or product into a waste basket, not to litter the environment and care about cleanliness in the environment (no. 24 and 29), the symbol representing the fact that the product satisfies EU (no. 30), symbol no. 11 representing the fact that the packaging is suitable for recycling. The following labels were also very commonly recognized: logo no. 25 representing the recycling of glass and logo no. 27 encouraging purchasers to care about the environment. These logos were recognized by more than 75% of the respondents. The most commonly recognized logo was the logo encouraging consumers to throw packaging into a waste basket, 99% of the respondents recognized this logo. It should be noted that none of these logos were related to healthy food and none are of Polish origin.

The following symbols were also recognized by at least 50% of respondents: the German eco-label "Blue Angel" (no. 4), Ekoland (no. 9), recycling of glass (no. 23), as well as the eco-label "Green lungs of Poland" (no. 28). Among this group are symbols directly related to food products, including 2 Polish symbols.

The following were in the group of symbols recognized by at least 25% of the respondents: Eco-label (no. 8), the certificate of ecological agricultural products granted by the Polish Centre for Research and Certifica-

Table 8. Results of investigating recognition of ecological symbols

No.	Symbol	I recognize this symbol	I know what this means	No.	Symbol	I recognize this symbol	I know what this means	No.	Symbol	I recognize this symbol	I know what this means
1		5%	0%	12		5%	2%	23		65%	51%
2		7%	0%	13		11%	6%	24		93%	79%
3		8%	2%	14		73%	57%	25		77%	64%
4		57%	27%	15		14%	6%	26		33%	23%

Table 8. Cont.






















No.	Symbol	I recognize this symbol	I know what this means	No.	Symbol	I recognize this symbol	I know what this means	No.	Symbol	I recognize this symbol	I know what this means
5		8%	3%	16		61%	39%	27		80%	66%
6		30%	14%	17		70%	45%	28		51%	33%
7		5%	0%	18		18%	9%	29		99%	85%
8		30%	14%	19		3%	1%	30		93%	51%

Table 8. Cont.

No.	Symbol	I recognize this symbol	I know what this means	No.	Symbol	I recognize this symbol	I know what this means	No.	Symbol	I recognize this symbol	I know what this means
9		54%	27%	20		5%	3%	31		16%	6%
10		46%	34%	21		1%	0%	32		35%	19%
11		92%	62%	22		2%	0%	33		20%	10%

Source: Authors own research; ecological symbols:

<http://www.ekokonsument.pl/strona.php?sub=ekoetykiety&menu=4;>

[http://msp.money.pl/firma/firma_ue/artykuly/oe/;](http://msp.money.pl/firma/firma_ue/artykuly/oe/) <http://www.ziemia.org/zywnosceekologiczna.php;>

<http://www.ziemia.org/inneopakowania.php;> Adamczyk, 2004, 179–232; Kobyłko, 2000, 130–4.

tion (no. 6), the symbol "Ozone friendly" (no. 10), the symbol warning that a product contains toxic substances (e.g. paints, batteries) and so should not be disposed of in household waste (no. 26), as well as the symbol representing the fact that the printing on a label is environmentally friendly (no. 32). Among this group there are symbols which are directly related to food and also Polish symbols.

The following question was "do you you what this symbol means?" A positive answer was given to this question by over 75% of the population in relation to symbols 24 and 29. These symbols both refer to care about the environment and encouraging not to litter.

The following symbols were understood by more than 50% of the respondents: symbol no. 11, 23, 25, 27, 30. There are no symbols directly related to healthy food nor Polish symbols in either of these groups.

The following symbols were understood by at least 25% of the respondents: symbol no. 4, 9, 10, 28. Among these symbols there are logos related to ecological food, as well as Polish symbols.

4. Summary and conclusions

Firstly, the respondents are poorly orientated with the field of environmental protection, they do not see the opportunity of improving the state of the environment through their day to day shopping. This may suggest that the ecological awareness of Polish students, and as a consequence Polish people, is low.

Secondly, students consider that healthy food is very important, but do not see that the ecological packaging of products is also important.

Thirdly, in order to decide whether a product is ecological or not students take into account mainly its ingredients and the labeling.

When buying food, students pay attention to price, their own habits, as well as ingredients. The packaging of a product is of less importance. This means that even if it is important to us that the food we eat is healthy and ecological, this is not an important factor when it comes to our purchasing decisions.

The research regarding the recognition of various symbols showed that there is a great lack of knowledge, especially if one is asked what a symbol means exactly. The only generally recognized symbols are those that are very commonly placed on packaging, such as symbols indicating that packaging should be disposed of in a waste basket, that the environment should not be littered and encouraging to care for the environment (no. 24 and 29). The level of recognition of symbols directly related to ecological food products was low. Knowledge regarding Polish symbols was also poor.

In order to overcome these lack of knowledge regarding the concepts of ecological protection, a large scale information campaign should be undertaken in the national media and at all levels of the education system. However, a question remains whether the level of awareness of Poles regarding ecological labels and the concepts of environmental protection will quickly rise due to such a campaign, as this study shows that ecological awareness among a group that should be relatively well-informed (students) is low.

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