

## SUSTAINABLE CONSUMPTION AS A BEHAVIOUR MODEL OF HOUSEHOLDS

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**Abstract.** The problem of sustainable consumption is an interdisciplinary issue. It constitutes an important element of interest in the area of sustainable development. Households, as the most numerous consumers in the national economy, creating various models of consumption can aim at positive influence over the natural environment, the sustainable use of possessed resources. The purpose of the study is to indicate differences in the attitude towards sustainable consumption on the basis of the declared consumer's attitude of a head of a household in relation to the natural environment. The declared attitude was presented through a subjective opinion of respondents in the scope of approach to purchase decisions in the context of the natural environment. To achieve such a goal, the following research questions were asked: whether households headed by respondents with the pro-ecological attitude more often took actions indicating for the implementation of sustainable consumption and whether there was a significant percentage of entities not implementing sustainable consumption among respondents who had declared the neutral attitude in all the examined behaviours. For the purpose of the study, survey research was conducted on the group of 100 heads of households chosen with the use of targeted choice method.

**Key words:** a household, sustainable consumption, consumer's attitude.

**JEL code:** D1, D12, Q01

### Introduction

The issue of Sustainable Consumption and Production (SCP) is the centre of interests of sustainable development since the conference which took place in Rio in 1992. It was defined in 1995 as "the use of goods and services which meet the basic needs and improve the quality of life with the simultaneous minimization of the use of natural resources, toxic materials and waste as well as the emission of pollution in the life cycle in order not to threaten the fulfilment of needs of future generations" (Lawrence, McManus, 2008). Sustainable consumption is the consumption which meets our needs without the destruction of the environment or the excessive use of natural resources and, as the result, without causing hazard to the potential of future generations to satisfy their needs (Mortensen, 2006).

A. Tukker and others indicate that sustainable consumption and production can be implemented with the use of various solutions introduced in the economic system. Those strategies can include the following solutions (Tukker et al., 2010):

1) the greening of production by among others minimization of intensity of influence of mining and production activity by the

- implementation of end-of-pipe technology (the technique of purification in the output);
- 2) the production of pro-ecological products and services by minimization of the use of materials and the use of energy per functional unit;
  - 3) the intensification of usage by encouraging to more effective introduction of products and services (for example by promoting actions such as car-pooling);
  - 4) pro-ecological patterns of consumption by redirecting expenditure in order to reduce the influence of alternative products and services;
  - 5) the reduction of the amount of use (consumption) with the preservation of life quality.

Sustainable consumption is the process of satisfaction of needs striving to raise the quality of life with the simultaneous use of possessed resources and preservation of the ability to use them by future generations. The implementation of sustainable consumption is connected with raising ecological awareness of the society. One of the elements of ecological awareness is ecological sensibility understood as an interest in the issue of the natural environment (Siedlecka, 2015).

The aim of the study is to present differences in the approach to sustainable consumption

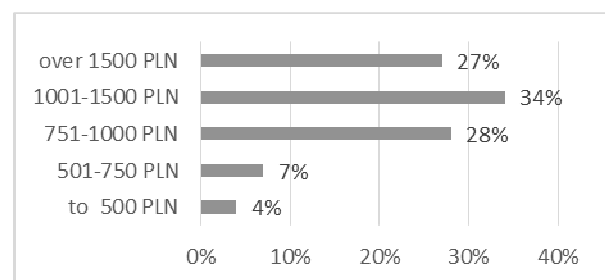
according to the declared consumer's attitude towards the natural environment. To attain such an objective, the following research questions were asked. 1. Do households headed by respondents with the pro-ecological attitude more often take actions indicating for the implementation of sustainable consumption? 2. Was there a significant percentage of entities not implementing sustainable consumption among respondents who had declared the neutral attitude in all the examined behaviours? To achieve the goals of the study, survey research was conducted on the group of 100 heads of households. The choice of the research sample was conducted with the use the method of targeted choice (non-probabilistic) - the snowball method. The main premise in the choice of respondents was the fact that they make purchases in the households. The research was conducted in the period April-June 2016.

### Research results and discussion

The examined households were headed equally by women (51 %) and men (49 %). The age of participants was at the level of 30.97 years, with a standard deviation of 9.57 (the coefficient of variation 30.9). The vast majority of heads of households were persons with higher education - 76 % (including 35 % with a bachelor degree, 32 % with a master degree and 9 % who declared degree in engineering). One of the factors influencing the level of consumption is an income in a household. In Analysing the average monthly net incomes per one person in a household in the last year, it should be noticed that respondents declared their various levels (Fig. 1).

Under current socio-economic conditions, more houses are being built. Although they are inhabited by a lower amount of people, they consume more electric energy and energy used for heating. The total amount of energy used for heating rises systematically (Mortensen, 2006). Such a problem applies also to the surveyed households since they possess houses with a

large usable area. This feature is characterized by a high coefficient of variation - over 60 %, which makes it impossible to use an average as a cognitive measure. However, it should be noted that the minimal size of a house/a flat indicated by respondents was 20m<sup>2</sup> while maximal 800m<sup>2</sup>. The number of rooms in respondents' houses and flats is also highly diversified. The average number of rooms reached the level of 5.27 with a standard deviation of 2.43 (the coefficient of variation 46 %). It should be indicated that the vast majority of respondents' households inhabit houses with a basic infrastructure.



Source: author's calculations based on research results

Fig. 1. The average monthly net incomes per one person in a household in the last year

### Consumers' attitudes

Consumers' attitudes are shaped by a number of various factors, however the most characteristic ones are attitudes which take into account environmental issues, values of the environment and the care for it. The parameter of the declared consumers' attitude was constructed on the basis of three variables obtained from opinions of heads of households. Respondents indicated if:

- their daily purchase decisions are made taking into account the care for the natural environment and if they have knowledge of its basic problems;
- they pay attention to the influence made by purchased products on the natural environment;
- they choose a service provider on the basis of its attitude towards the natural environment and if it is important that the service provider uses products and devices which are environmentally friendly.

Obtained answers allowed distinguishing three types of attitudes: **neutral** to the issues of the natural environment; **non-extreme** - respondents were unable to unambiguously indicate if their consumers' decisions are made on the basis of pro-environmental issues and the ecological attitude or not. In the last case, the most significant factor which respondents take into account by making decisions are aspects of the natural environment both in the context of daily decisions as well as the influence of service providers on the nature. Such an attitude was defined as **pro-environmental**. On the basis of that division there was made an analysis of

respondents' opinions connected with actions in the scope of consumption.

One of the areas that indicate at an endeavour to sustainable consumption is a proper use of resources as well as an approach to purchases of goods and services on the market. Among activities characterizing consumers' attitudes connected with pro-environmental attitudes, the most frequent ones were: the use of energy saving bulbs (99 % of households), the use of environmentally-friendly shopping bags (76 %) or the segregation of municipal waste (71 %) - table 1.

Table 1

**The implementation of activities in respondents' households**

Specification	Total	Neutral	Non-extreme	Pro-environmental	
<b>the use of energy saving bulbs</b>	99.0	100.0	97.7	100.0	p=0.512
<b>the use of environmentally-friendly shopping bags</b>	76.0	56.7	79.1	92.6	p=0.005 chi-square=10.445 V-Cramera=0.323
<b>the segregation of waste</b>	71.0	36.7	79.1	96.3	p=0.000 chi-square=26.926 V-Cramera=0.519
<b>the prevention of waste production in a household</b>	70.0	53.3	67.4	92.6	p=0.005 chi-square=10.665 V-Cramera=0.327
<b>the avoidance of objects and packaging containing toxic substances</b>	69.0	50.0	67.4	92.6	p=0.002 chi-square=12.138 V-Cramera=0.348
<b>disconnection of electric appliances from a power source after the end of work</b>	69.0	40.0	76.7	88.9	p=0.000 chi-square=17.994 V-Cramera=0.424
<b>the reduction of water consumption</b>	60.0	40.0	60.5	81.5	p=0.006 Chi-square=10.195 V-Cramera=0.319

*Source: author's calculations based on research results*

In fewer cases, the heads of households indicated use of energy from renewable sources (19 %) or the choice of means of transport taking into account the ecological criterion (31 %). In analysing implementation of examined activities in the context of sustainable consumption, it should be indicated that there were statistically significant differences between the declared consumers' attitude and the implementation of some activities.

The most frequent activity connected with the effective use of resources is the reduction of consumption of energy, water or gas. Energy consumption in households (electric energy, gas etc.) and the energy used by cars constitute a share? of energy use (about 35 %) (Moll, 2005). A vast majority of examined households used energy saving bulbs in their houses (99 %). Also in this case, there were not statistically important differences in consumption between the groups of households (p=0.512). In both the households

which heads presented the pro-environmental attitude as well as in the neutral households such an activity was implemented. Likewise, statistically important differences did not occur in the area of declarations connected with an energy-efficient heating and the type of the attitude ( $p=0.372$ ). The lack of such a dependency is also visible in case of using renewable sources of energy in the examined households. However, it should be noted that in case of households of respondents whose attitude was defined as pro-environmental there occurred a significantly higher percentage of households using such a form of energy production (33.3 %) - table 2.

Climate changes have a significant influence on the policy of countries in the scope of electric energy. It is a particular priority in relation to households since they use 1/3 of energy in developed countries (Gram-Hanssen, 2009). The consumption in the stand-by mode was identified as a new challenge in 1990. During analyses, the attention was paid to "energy leakage". On

average, 20 % of energy consumption in a household is used by electric devices as well as information and communication technologies (ICT). The half of this value is consumed in the stand-by mode. Due to the fact that the number of household appliances and consumer electronics, which constitute the equipment of households, rises, it is an important problem (Gram-Hanssen, 2009). This is the reason why a meaningful form of energy saving is disconnecting electric appliances from a power source after the end of work. Such an activity was taken in 69 % of examined households, among which the significant share was constituted by households with the head whose attitude was characterized as pro-environmental (88.9 %). There occurred a statistically significant dependence between the endeavour to save energy by disconnecting electric appliances left in the stand-by mode and the declared consumers' attitude ( $p=0.000$ ; chi-square 17.994). The correlation between these variables was moderate (V-Cramera 0.424).

Table 2

**The implementation of activities in respondents' households**

Specification	Total	Neutral	Non-extreme	Pro-environmental	
<b>the avoidance of an excess of packages</b>	60.0	30.0	62.8	88.9	$p=0.000$ chi-square=20.778 V-Cramera=0.456
<b>the reduction of gas consumption</b>	48.0	33.3	46.5	66.7	$p=0.041$ chi-square=6.393 V-Cramera=0.253
<b>the use of the most environmentally friendly packaging</b>	45.0	3.3	44.2	92.6	$p=0.000$ chi-square=45.765 V-Cramera=0.676
<b>the energy-efficient heating</b>	39.0	30.0	39.5	48.1	$p=0.372$
<b>taking activities connected with the elimination of environmental damage</b>	32.0	10.0	34.9	51.9	$p=0.003$ chi-square=11.727 V-Cramera=0.342
<b>the choice of means of transport taking into account the ecological criterion</b>	31.0	16.7	32.6	44.4	$p=0.074$
<b>the use of energy from renewable sources</b>	19.0	13.3	14.0	33.3	$p=0.085$

Source: author's calculations based on research results

In case of other resources such as water and gas, respondents more often declared the endeavour to the effective use of water (60 %) than gas (48 %). However, taking into account

the fact that water resources in the global, worldwide scale are unsustainable, such amounts are unsatisfactory. Having regard to obtained data indicating that decisions on the reduction of

the use of both water and gas are more frequently taken by the heads of households who have the pro-environmental attitude, it should be considered how to aim at rising an amount of households taking active participation in the scope of consumption of resources they are in charge of.

There did not occur the statistically important difference between households characterized by three declared consumers' attitudes and the choice of means of transport by taking into account the ecological criterion ( $p=0.074$ ). However, it should be mentioned that the phenomenon of sharing economy is becoming more and more popular in Poland. It includes a number of various phenomena for example BlaBlaCar (Jaros, 2016). It is a social network based on trust which connects drivers who have empty seats with passengers travelling in the same direction (<https://www.blablacar.pl>). R. Botsman indicates that it is used by 2 millions of people per month (Botsman). Such phenomena allow effective use of means of transport and, as a result, reduce its negative influence over the natural environment.

Another problem which is faced by households and enterprises in the context of environmental issues is waste. The production of waste in households is connected with the style of consumption. There is a relation between waste production and changes in consumption patterns (Tudor et al., 2011). Waste was once perceived as a burden to industry and societies. Changing attitudes, understanding of the problem of global warming and the loss of resources led to identification of waste as a valuable resource. The resource which requires proper collection, separation, management and recovery in order to be reused (Lehmann, 2011). In analysing obtained research results, it should be indicated that about 70 % of households' heads declared the endeavour to prevent waste production in a household as well as to segregate them. Taking into consideration the approach to the problem in

three groups of households in relation to declared consumers' attitudes, it should be noted that significantly more frequent activities in this scope were taken by respondents declaring the pro-environmental attitude than in other groups. Over 90 % of households' heads who declared the pro-environmental attitude indicated that they aim at the reduction of waste production and segregate them. In case of households' heads whose attitude was described as neutral, these values were significantly lower (merely 36.7 % declared the segregation of waste in a household, while 53.3 % declared activities reducing their production - table1).

Currently, there can be observed a growing number of enthusiasts who aim at the reduction of waste, the minimization of the use of food, clothing and house goods purchases as well as the use of reusable packaging or even buying products without packaging (Blumenfeld, 2015). Among matters being the object of research, there was the choice of respondents in the scope of the avoidance an excess of packages, the avoidance of objects and packaging containing toxic substances and taking into account the influence of packaging on the natural environment. In all of these aspects, there were statistically significant differences in the approach to this issue by three types of households ( $p<0.005$  - table 2). Frequently, the decisions on the choice of products in packaging which is less detrimental for the environment were made in households headed by a person with the pro-environmental attitude (92.6 %), while only 3.3 % of households' heads with the neutral attitude answered that they paid attention to abovementioned issues. In this case we can speak of a strong dependence between the type of the attitude of a household's head and actions in this scope ( $V\text{-Cramera}=0.676$ ). In other two cases (the avoidance of an excess of packages, the avoidance of objects and packaging containing toxic substances), the differences are lower, however they still indicate for significant

discrepancies in the activities taken in households - table 2. The matter connected with packaging issue is the use of reusable shopping bags. The usage of such a type of shopping bags indicates for the level of ecological awareness but is also dependant on financial factors. Currently in Poland, one-time bags are paid at the points of sale. There are being elaborated the amendments to the Act of 13 June 2013 on the management of packaging and packaging waste, which will lead to the considerable rise of their price. Such a solution may have an important influence on the resignation from buying them and the use of reusable shopping bags. The planned maximum price for a light plastic one-time bag is at the level of 1 zloty (currently, it is for example 0.08 zlotys). In the examined group, 76 % of respondents indicated that they use environmentally-friendly shopping bags. Nonetheless, it is possible to say that there is a statistical dependence between households ( $p=0.005$ ). Households headed by persons with the pro-environmental attitude more often use reusable bags (92.6 %), in comparison to neutral households (56.7 %) and non-extreme ones in their attitude (79.1 %). After analysing the frequency of their use, it can be indicated that households' heads whose attitude was characterized as pro-environmental much more often declared their usage - average 4.89 with a standard deviation of 1.01. In case of other groups, the average was at the level of 3.83 for the neutral attitude and 4.53<sup>1</sup> for the non-extreme one.

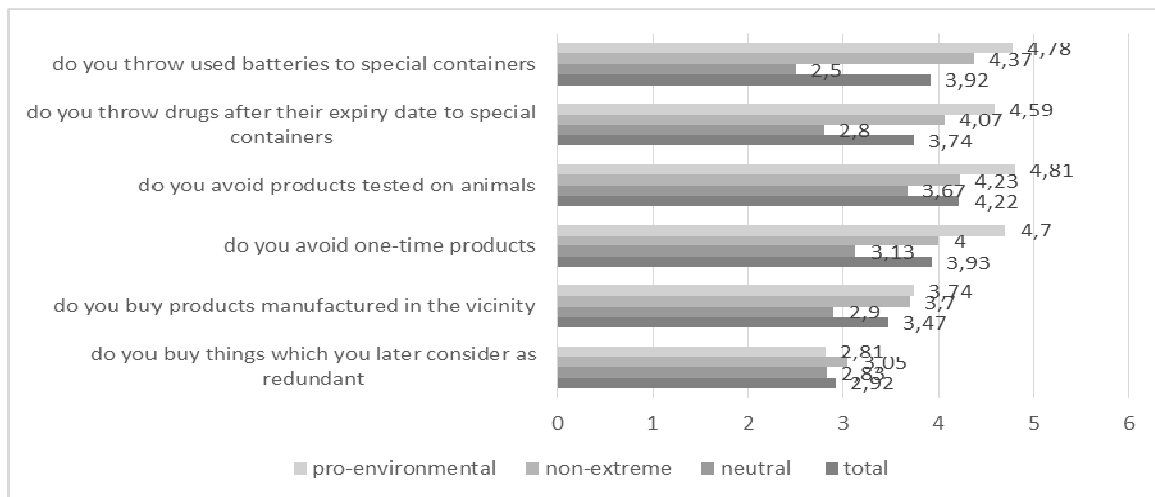
The use of reusable bags and the reduction of water, energy or gas consumption are activities which have an indirect influence on the natural environment. The other area of households' activities is taking actions directed towards the elimination of environmental damage. It can take various forms such as participation in non-governmental organizations dealing with

problems of the natural environment, forests cleaning. Such a form of activity is not the object of interest of examined respondents. Only 1/3 of households' heads with the non-extreme consumers' attitude and 10 % of neutral ones indicated that there are any activities in this scope taken in their households. In case of households' heads with the pro-environmental attitude, such a percentage reached the level of 51.9 % (table 2)

Another area enabling to analyse consumers' behaviours in the scope of the attitude towards sustainable consumption is the consideration of frequency of activities taken by respondents.

Respondents were asked to specify the frequency of six activities. They made an assessment with the use of the six-level scale from 1 to 6, where 1 meant that the activity was never exercised, while 6 meant that it was exercised very often. Among the examined activities the most popular one was the avoidance of purchasing products tested on animals (average 4.22; standard deviation 1.21). The renouncement of buying products tested on animals is a feature which is recognized by researchers as the factor determining behaviours of aware consumers. J. Lehota and others took that feature into account in relation to the style of Hungarian consumers (Lehota et al., 2012). However, referring to the results of research on three groups of households there are visible only slight differences in the declared frequency of that activity. Definitely, more often such products were not purchased by the members of households in which the head had declared the pro-environmental consumer's attitude (average 4.81; standard deviation 1.10).

<sup>1</sup> the assessment was made by respondents in the scale from 1 to 6, where 1 meant never, while 6 very often.



\* the assessment was made by respondents in the scale from 1 to 6, where 1 meant never, while 6 very often.

Source: author's calculations based on research results.

Fig. 2. The average frequency of taking actions\*

Households produce three main fractions of regular waste: kitchen, packaging and other raw materials, hygienic waste and others. The rest part of waste produced irregularly is among others: ashes and cinders from boiler-houses, green waste, large-scale waste, used electrical and electronic equipment as well as hazardous waste (Golen, 2014). Among hazardous waste there should be listed first and foremost batteries and accumulators as well as drugs after their expiry date. In the examined group of households' heads, the respondents with the pro-environmental attitude throw used batteries and drugs to special containers much more often than others – Fig. 2. Such an activity was far less popular in households in which their heads had declared the neutral attitude towards the natural environment. Differences between these two groups are major, which indicates that the use of specially labelled containers allowing separation of batteries from other waste, despite social campaigns, is not exercised by a large group of consumers. Throwing drugs together with other waste is also a hazardous phenomenon due to the issues of the natural environment itself as well as the risk of their uncontrolled consumption.

One of areas of sustainable consumption is the approach to one-time products. Taking into account their variety and availability on the

market (e.g. packages, vessels) consumers have a wide range of choices. In the vast majority of examined consumers, such goods are avoided. Most often one-time products are avoided by households' heads with the pro-environmental attitude (average 4.70; standard deviation 1.07). Respondents whose attitude was qualified as neutral more often used such products more often (average 3.13; standard deviation 0.8). Another important aspect connected with sustainable consumption is the endeavour to purchase products (mainly food) produced by local manufacturers. However, as it was noted by B. Kryk, it is hard to unambiguously answer the question if their purchase is connected with the growth of ecological awareness and sustainable consumption or economic and marketing factors. Advertisements of well-known shopping chains Biedronka and Lidl in their promotional activities use information about selling products from local manufacturers (Kryk, 2013). Among examined households', those heads who had declared pro-environmental and non-extreme attitudes more often aimed at purchasing such products (Fig. 2). However, such a phenomenon may be connected with issues concerning the availability of ecological products produced in the vicinity of households as well as other food products of which supplier is known.

The large availability of products and services owing to globalization is the factor influencing consumers' behaviours on the market. Currently, one of the attitudes visible on the market is consumption model. A household follows the theory of the consumer rational behaviour aims at achieving the highest level and standard of life (Siedlecka, 2015). One of its forms are consumer activities for showing off, which includes buying everything what is or is not needed. The purpose of such behaviour is the desire to show off (Włodarczyk, 2015). In the examined group of 100 heads of households, only 11 of them indicated that they never did that. The average frequency of purchasing redundant goods which are later classified by respondents as unnecessary reached the level of 2.92 (standard deviation 1.02). Taking into account the fact that the assessment was made in the scale from 1 to 6 (where 6 meant very often phenomenon, while 1 - it never occurred), the obtained result indicates that such a phenomenon is frequent. It was less often declared by households in which the pro-environmental attitude that was declared by the heads of households (average 2.81; standard deviation 0.7). However, differences between three types of households are minor.

## Conclusions

- 1) The conducted analysis of the primary data makes it is possible to speak of differences in purchasing behaviours according to the declared consumers' attitude. The respondents with the pro-environmental approach more often implemented activities indicating the direction towards sustainable consumption. However, it should also be mentioned that in case of respondents whose attitude was neutral, the percentage of positive answers was also high.
- 2) The conducted statistical analyses of obtained data indicated that there did not occur statistically significant differences between the type of a household taking into account the declared attitude of a household's head and

certain activities indicating for sustainable consumption (the use of energy saving bulbs, the energy-efficient heating, the choice of means of transport paying attention to the ecological criterion or the use of energy from renewable sources). It means that in the examined group such activities are taken regardless of the consumer's attitude towards the natural environment. Oftentimes it is assumed that pro-environmental activities are undertaken in households if there is an opportunity to gain financial benefits. Interestingly, statistical differences occurred in other cases enabling respondents to make savings in relation to the reduction of water and gas consumption. A particularly interesting phenomenon is the fact that it is possible to speak of statistically significant differences among examined households in reducing the use of energy connected with the stand-by mode of domestic appliances. Therefore, it is possible to assume that the economic factor is not the only determinant influencing activities connected with the environment protection, sustainable consumption activities.

- 3) The obtained research results indicate for the need to search for factors which allow answering the question: what has an influence on the shaping of pro-environmental attitudes in households. The conducted analyses do not expose decisive discrepancies between the gender or the education of respondents and the presented attitude.
- 4) The surveyed respondents declared that they had bought products which they later considered as redundant and unused. It is possible to assume that there is a need to build consumers' awareness in the context of the analysis of possessed resources and their influence on the natural environment in order to implement sustainable consumption based on the effective use of owned assets.



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