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**MONIKA UTZIG**

Warsaw University of Life Sciences – SGGW, Poland

## **SUSTAINABLE FOOD CONSUMPTION IN RURAL AND URBAN AREAS IN POLAND**

Key words: sustainable consumption, food consumption, sustainable development, urban and rural areas

**ABSTRACT.** The aim of the paper is to identify changes in the food consumption of urban and rural households in Poland when it comes to sustainable consumption as well as evaluate if such changes are becoming more or less sustainable. Sustainable consumption is an element of sustainable development, which responds to the basic needs of people while not jeopardizing the needs of future generations. More sustainable food consumption is perceived to be a reduction of overconsumption, a decrease in the consumption of highly processed food and a shift in diet based less on animals and more on plants. The paper is mainly based on data from the Polish Central Statistical Office concerning meat, fruit and vegetable consumption. Some data about food waste were also used. The research shows that the food consumption pattern in rural households is less sustainable than in urban ones. Households living in rural areas consume more meat and less fruit and vegetables than urban ones. There is some evidence that the food consumption pattern in Poland is shifting towards a less sustainable one.

### **INTRODUCTION**

Sustainable consumption is a very important issue because small, everyday changes in people's behaviour can have significant positive environmental impacts. The aim of the sustainable (permanent) development idea is to integrate three essential aspects of development: environmental, economic and social. However, nowadays reality proves that the economy usually dominates the environment and society [Giddings et al. 2002].

Sustainable consumption and production was defined in 1994 by the Oslo Symposium as “the use of services and related products which respond to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardise the needs of future generations” [MEN 1994]. The objective of sustainable consumption and production is to promote resource and energy efficiency, a sustainable infrastructure and provide access to basic services, green and decent jobs as well as a better quality of life for all [UNEP 2010].

The three dimensions of food consumption include: energy/resources use, household expenditure by purpose and the food consumption pattern. The paper aims to identify

changes in rural and urban household food consumption in Poland in the context of sustainable consumption as well as evaluate if changes in food consumption are becoming more or less sustainable.

## THE THEORETICAL FRAMEWORK

The 2030 Agenda for Sustainable Development [UNEP 2015] is a plan for peace and prosperity for people and the planet. It contains 17 Sustainable Development Goals (SDGs), which recognize that ending poverty and other deprivation must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve oceans and forests. The SDG 12 is devoted to ensuring sustainable consumption and production patterns. The target is to achieve sustainable management and the efficient use of natural resources by 2030.

Although consumers approve of the idea of sustainable consumption, it is not easy to implement. Some consumers do try to be more sustainable and responsible. The attitudes of such consumers differ and concern e.g. no wastage, not seeking to satisfy artificial needs, green consumerism, ethical consumerism and political consumerism [Jastrzębska 2017]. The shift towards more sustainable consumption is determined by a set of factors [Terlau, Hirsh 2015]:

- individual factors (socioeconomic characteristics, needs/wants, personal values, habits/lifestyle, control of actions, capabilities/skills),
- social factors (social norms, culture, mass media),
- situational factors (the purchase situation, incentives, availability).

Sustainable food consumption is described as meeting three goals [Friel et al. 2017]:

- no consumption of food exceeding a person's energy requirement in line with the concept that overconsumption is damaging either for health or the environment,
- a reduction in the consumption of highly processed and packaged food,
- a change in diet towards less animal, more plant-delivered foods.

Sustainable consumption in food also reflects waste reduction. Some previous research shows that the place of living and education level are linked to the food waste scale [Secondi et al. 2015].

One of the ways of moving towards more sustainable food consumption is reducing meat consumption as well as replacing it with meat types with a lower environmental impact [Vanhonacker et al. 2013]. However, people eat meat because they believe that meat is: natural, normal, necessary and they fail to reduce meat consumption due to [Macdiarmid et al. 2016]:

- a lack of awareness of the association between meat consumption and climate change,
- the perception of personal meat consumption playing a minimal role in a global context,
- resistance to the idea of reducing personal meat consumption.

Sustainable food consumption should be based on vegetables because vegetables have a lower environmental impact than meat. According to the World Health Organization report, the amount of fruit and vegetables required by an individual per day is at least 400g [WHO 2004]. In Poland, the amount of fresh vegetable consumption is decreasing, while the consumption of processed vegetables is increasing [Murawska 2016].

There is a gap between consumer attitudes towards sustainable consumption and behaviour. Consumers pay attention to ecological packaging, the origin of the food product or the absence of genetically modified organisms, however they also want the food product to be well priced and convenient. Regardless of this gap, there is a positive correlation between attitude and behaviour [Vermeir, Verbeke 2006]. The majority of people perceive sustainable development as an abstract goal that does not determine behaviour and that sustainable consumer decisions have possible consequences on humanity perhaps sometime in the future [Van Dam, Van Trijp 2016]. Unsustainable consumption is egocentric as it results in meeting the inflated needs of modern generations [Zalega 2015].

The food consumption pattern in developed countries is less sustainable than in developing ones. In a rapidly growing economy like China or India, the food consumption pattern is evolving to include more animal-based products [Nemecek et al. 2016].

Rural and urban households differ considerably in the field of the food consumption pattern. Rural households consume more basic, cheaper and natural food products, whereas urban households consume more highly processed products which are usually more expensive and of higher quality [Kwasek 2015]. Considering identical income per capita, rural households spend more money on food per capita compared to urban households. This may indicate that differences in income per capita in rural and urban households are, to some extent, equalized by the natural consumption of food by rural communities and that rural communities, including agricultural ones, rank food consumption higher in the hierarchy of needs and are willing to incur a relatively higher cost of food compared to urban ones [Gałazka 2013].

## MATERIALS AND METHODS

To evaluate if household food consumption in rural and urban households in Poland is going in a more sustainable direction, data concerning average meat, fruit and vegetable consumption from the Household Budget Survey and EU-SILC were analysed.

According to the goals of sustainable consumption, the idea is for meat consumption to decrease and fruit and vegetable consumption to increase. Replacing meat consumption with vegetable consumption is a sign of a diet change towards a less animal-more plant-centred food. The group called “meat consumption” includes separate product groups: raw meat, poultry, processed meat, and other meat preparations. A decrease in the consumption of processed meat and other meat preparations is desirable as a result of reducing the consumption of highly processed and packaged food.

## RESULTS AND DISCUSSION

The consumption expenditure value depends on the amount of money a household can spend (Table 1). In the years 2006-2017, the average monthly available income per capita in urban households increased by 85% while in rural households it increased by 106%. Based on these data, it can be stated that rural households have become relatively richer. The ratio between the average available income in rural households to the avail-

Table 1. Average monthly available income and expenditure per capita in rural and urban households in Poland for the years 2006-2017

Category	Average monthly available income and expenditure per capita [PLN]											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Available income – urban households	944	1,043	1,176	1,255	1,342	1,384	1,440	1,453	1,516	1,566	1,642	1,751
Available income – rural households	659	744	836	889	953	975	1,028	1,060	1,067	1,106	1,214	1,359
Expenditure – urban households	834	908	1,010	1,070	1,107	1,133	1,174	1,183	1,211	1,225	1,261	1,301
Expenditure – rural households	602	653	735	775	806	825	859	873	874	883	930	981

Source: [GUS 2007-2018]

able income in urban households increased from 69.8% in 2006 to 77.6% in 2017. Total per capita expenditure increased between 2006 and 2017 in urban households by 56% and in rural households by 63%.

More sustainable food consumption is more vegetable-based and less animal-based. Table 2 presents the average monthly consumption of selected categories of meat in rural and urban households between 2006 and 2017. It is noteworthy that data from the Household Budget Survey cover products purchased for cash, using debt or credit cards, on credit, received free of charge and taken from a private farm in agriculture or own business activity. The consumption of foodstuffs does not cover food consumed in catering services [GUS 2018a, p. 296].

In urban households, average total meat consumption was lower than in rural ones by 12% in 2006 and by 14% in 2017. The smallest difference occurred in 2013 and 2014 (7%). Per capita consumption of selected meat products in 2017 was smaller in urban households than in rural households: by 16% (raw meat), by 15% (poultry) and by 9% (processed meat and other meat preparations). Between 2006 and 2017, the total meat consumption, according to Household Budget Surveys, decreased by 2.7% in urban households and by 1.5% in rural households. But the Household Budget Survey excludes data from catering services. Comparing this information to the fact that, between 2005 and 2017, total yearly per capita consumption of meat in kg increased by 3.3kg (from 66.8 kg in 2005 to 70.1 kg in 2017) [GUS 2019b, p. 68-69]. It could be stated that meat is more often eaten in restaurants. Table 3 presents the average monthly consumption of selected categories of fruit and vegetables in rural and urban households between the years 2006-2017.

Between 2006 and 2017 fruit consumption per capita increased in urban households (by 7.5%) but decreased in rural households (by 5.8%). Fruit consumption in urban

Table 2. Average monthly per capita consumption of meat consumption in households in Poland

Category	Average monthly consumption [kg/per capita]											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Meat (total) – urban areas	5.12	5.13	5.35	5.31	5.32	5.27	5.24	5.10	5.13	5.07	5.06	4.98
Meat (total) – rural areas	5.85	5.82	6.00	5.94	5.96	5.81	5.71	5.51	5.53	5.57	5.73	5.76
Raw meat – urban areas	2.88	2.89	2.91	2.87	2.92	2.88	2.85	2.85	2.89	2.88	2.86	2.79
Raw meat – rural households	3.41	3.34	3.38	3.34	3.37	3.30	3.20	3.14	3.17	3.24	3.33	3.33
Poultry – urban areas	1.46	1.38	1.42	1.41	1.46	1.45	1.47	1.47	1.49	1.47	1.48	1.45
Poultry – rural areas	1.62	1.54	1.58	1.62	1.62	1.61	1.62	1.56	1.59	1.63	1.71	1.70
Processed meat and other meat preparations – urban areas	2.10	2.10	2.12	2.31	2.27	2.27	2.27	2.02	2.01	1.96	1.97	1.96
Processed meat and other meat preparations – rural areas	2.33	2.36	2.36	2.50	2.48	2.40	2.39	2.09	2.08	2.06	2.12	2.16

Source: see Table 1

households was higher than in rural households by 14% in 2006 and by 30% in 2017. Vegetable (without potatoes) consumption decreased in rural households (by 11.3%) and stayed at a similar level in urban households. Regarding fruit and vegetable consumption, it can be stated that rural households are less sustainable than urban ones. In the analysed period, urban households consumed more fruit and vegetable juices than rural households but between 2006 and 2017 this difference shrank. Comparing data from the Household Budget Survey with data presenting total per capita fruit and vegetable consumption, it can be stated that between 2005 and 2017, yearly fruit consumption decreased by 1.1 kg (from 54.1 kg in 2005 to 53 kg in 2017) and vegetable consumption decreased by 5 kg (from 110 kg in 2005 to 105 kg in 2017) [GUS 2018b, 68-69].

Some interesting observation can also be made based on EU-SILC (Statistics on Income and Living Conditions) results. In urban households in 2017, food consumption was more sustainable than in rural ones as the diet of urban households is characterised by more frequent fruit and vegetable consumption (Figure 1).

Urban people eat fruit and vegetables more often than people from rural areas. 68% of children from urban areas and 63% of children from rural areas eat fruit and vegetables at least once a day. Among adult people the proportion is similar. 53% of persons aged 16+ living in urban areas eat fruit and vegetables at least once a day while only 47% of

Table 3. Average monthly per capita consumption of fruit and vegetables and fruit and vegetable juices in households in Poland

Category	Average monthly consumption [kg, l/per capita]											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Fruit – urban areas	3.72	3.60	3.78	3.90	3.66	3.53	3.67	3.7	3.92	3.91	3.97	4.00
Fruit – rural areas	3.27	3.09	3.28	3.57	3.05	2.89	3.10	3.00	3.08	3.08	3.19	3.08
Vegetables without potatoes – urban areas	5.13	5.00	5.07	5.05	5.00	5.04	5.14	5.01	5.11	5.06	5.11	5.10
Vegetables without potatoes – rural areas	5.67	5.47	5.51	5.46	5.34	5.31	5.28	4.98	5.01	4.9	5.13	5.03
Fruit and vegetable juices – urban areas	1.34	1.27	1.29	1.27	1.22	1.08	0.99	1.00	1.02	1.08	1.08	1.07
Fruit and vegetable juices – rural areas	0.71	0.76	0.77	0.80	0.82	0.73	0.68	0.67	0.68	0.72	0.80	0.83

Source: see Table 1

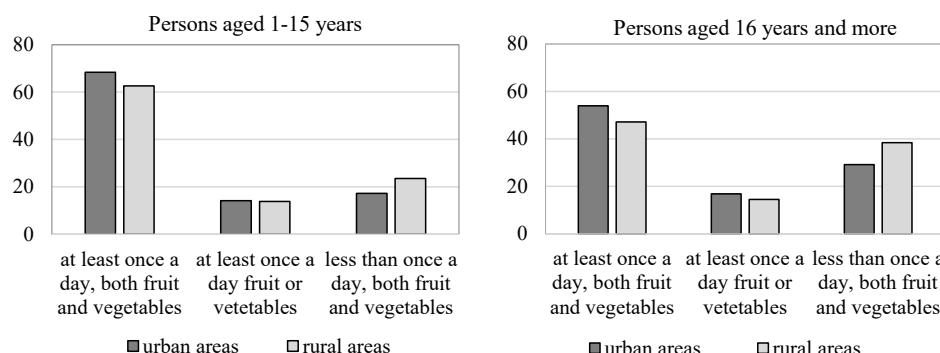


Figure 1. Frequency of fruit and vegetable consumption in a typical week by persons aged 1-15 and 16+

Source: [GUS 2018c, p. 175,182]

adult people living in rural areas do the same. The data presented above also indicates that children eat fruit and vegetables more often than adults. It can be taken as proof that children's food consumption is more sustainable than adult consumption.

The amount of wasted food can also be seen as an indicator of sustainable food consumption. Reducing food waste contributes to Sustainable Development Goals, such as zero hunger (SDG2), economic growth (SDG8) and climate action (SDG 13) [EC 2019]. In EU-28 countries the estimated amount of food waste equals 173 kg per person per year. The sector contributing most to food waste are households (53%) and processing (19%) [Stenmarck et al. 2016]. The most frequently wasted food categories in Polish households are: bread, fruit and processed meat [Banki Żywności 2018]. According to published research [Śmiechowska 2016] in rural households, the share of bread thrown away is lower (7%) than in households located in cities with 200 thousand inhabitants (10-12%). In that respect, food consumption in rural areas is more sustainable than in urban ones.

## CONCLUSIONS

The paper points to certain differences in the sustainability of food consumption between urban and rural households, such as:

- rural people consume, on average, less fruit and vegetables and more meat than urban ones, thus indicating that the food consumption pattern in rural households is less sustainable than in urban households,
- according to EU-SILC data urban people (aged 1-15 and 16+) more often eat fruit and vegetables than rural people; it also indicates a less sustainable food consumption pattern in rural areas,
- there are some signs that the amount of food waste is lower in rural households than urban ones.

The presented data does not allow to unambiguously state whether the food consumption pattern in households in Poland is shifting towards a more or less sustainable one:

1. According to EU-SILC data, younger people (both urban and rural) more often eat fruit and vegetables than adults, which is a positive observation as it points to a more sustainable food consumption pattern among youth.
2. According to the Household Budget Surveys, before 2006 and 2017, the consumption of meat decreased together with the consumption of vegetables. Fruit consumption decreased in rural households and increased in urban ones.
3. Between 2005 and 2017, the total yearly consumption of vegetables per capita decreased by 4.5% and fruit consumption decreased by 2.1%. In the same period, the total yearly consumption of meat per capita increased by 4.9%. This points to the fact that the share of food consumption outside the home is increasing.

To sum up, there are a lot of factors influencing sustainable consumption decisions. Consumers often perceive sustainable consumption as an abstract goal. As a result, implementing the concept of sustainable consumption into everyday decisions loses out to the pursuit of convenience.

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Słowa kluczowe: zrównoważona konsumpcja, konsumpcja żywności, rozwój zrównoważony, obszary wiejskie i miejskie

### ABSTRAKT

Celem opracowania jest identyfikacja zmian konsumpcji żywności w wiejskich i miejskich gospodarstwach domowych w Polsce pod względem zrównoważenia konsumpcji, a także ocena, czy zmiany konsumpcji żywności zdają się w bardziej zrównoważonym kierunku. Zrównoważona konsumpcja jest elementem zrównoważonego rozwoju, odpowiadającym za realizację podstawowych potrzeb ludzkich, bez odbierania możliwości ich zaspokojenia przez przyszłe pokolenia. Bardziej zrównoważona konsumpcja żywności jest postrzegana, jako ograniczanie konsumpcji, ograniczanie spożycia wysoko przetworzonej żywności oraz przesunięcie wzorca spożycia żywności w kierunku opartego w mniejszym stopniu na produktach zwierzęcych, a większym na roślinnych. Wykorzystano głównie dane Głównego Urzędu Statystycznego, dotyczące spożycia mięsa, owoców oraz warzyw. Wykorzystano również dane dotyczące marnowania żywności. Z badań wynika, że wzorzec spożycia żywności w wiejskich gospodarstwach domowych jest mniej zrównoważony niż w gospodarstwach miejskich. W gospodarstwach domowych znajdujących się na terenach wiejskich konsumuje się więcej mięsa, a mniej owoców i warzyw niż w miejskich gospodarstwach domowych. Można też stwierdzić, że następuje przesuwanie wzorca konsumpcji żywności w Polsce w kierunku mniej zrównoważonego.

### AUTHOR

MONIKA UTZIG, PHD  
ORCID: 0000-0003-4143-967X  
Warsaw University of Life Sciences – SGGW  
Institute of Economics and Finance  
166 Nowoursynowska St., 02-787 Warszawa. Poland