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RESILIENCE TO ENVIRONMENTAL PRESSURE THROUGH QUALITY FOOD DEMAND: MEAT CONSUMPTION IN ROMANIA

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Abstract

The paper focuses on Romanian consumers' habits and perceptions related to meat consumption, following that it is deeply embedded in their dietary food culture. The aim of this study was to determine the main directions for achieving environmental resilience through meat consumption. The novelty of the study originates from underlying consumers' contribution to sustainable development on two pillars – “buy less, eat the same” and “buy less, eat less”. Statistical analysis revealed that 13.3% of meat is perceived to be wasted, which is significantly less than other food waste ($Z=-5.485$, $p=0.000$). Two thirds (65.1%) of tested people eat meat at least 4 days/ week and, when an environmental motivation is added, 67.7% of them are willing to make a high reduction of their meat intake, casting light on a pro-environmental attitude. Based on the results, Romanian consumers should be considered as reliable partners in finding new ways for meat consumption reduction that can alleviate environmental pressure.

Keywords: consumer, environment, meat, resilience, wastage

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1. Introduction

Population growth has directly influenced the development of meat production and processing sector and has put it under continuous pressure for adaptation to market demands (Gorgitano and Sodano, 2014; Stanciu, 2014). Specialists draw alarm signals on the enormous consequences for the environment, as well as food security, if humankind does not succeed in turning the consumption of animal proteins into a more sustainable, plant-based diet (Audsley et al., 2009; Petrescu et al., 2015). In line with this objective, several courses of actions were recommended by researchers, such as smaller portions of meat, smaller portions using meat raised in a more sustainable manner, smaller portions and eating more vegetable protein, and meatless meals with or without meat substitutes (de Boer et al., 2014). Often, agriculture was pointed out as

responsible for environmental degradation, through continuous deforestation, pollution of soil, water, air, and loss of biodiversity (Burja and Burja, 2014). Consequently, the goal of human progress is no longer simply to maximize productivity, but to optimize across a far more complex landscape of production, environmental, and social justice outcomes (Godfray et al., 2010). In this context, the alleviation of the burden that meat production and consumption sector puts on the environment has become an issue of paramount importance for those interested in achieving sustainable development.

The focus of the present paper on meat consumption was driven by its multiple valences. Besides the environmental significance, already mentioned, meat consumption per capita represents an economic development degree indicator of an analyzed region and the population welfare degree, and it is used in assessing food safety (Stanciu,

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2014). Meat is also a centerpiece in the dietary of most developed countries, despite many safety-crisis which have greatly compromised the food industry over the last 25 years and despite the overall negative beliefs and attitudes toward meat consumption (Fonti-Furnols and Guerrero, 2014). These events with an evident impact on consumers' buying habits are considered to be the trigger for meat consumption decrease at the European Union level, especially of the red one; this trend is present mainly in the United Kingdom (Kearney, 2010) or Greece, where the lowest meat consumption is registered and most people eat meat two or three times a week, in contrast, for example, with majority of Danish people (55%), who eat meat more than five times a week (European Commission, 2013).

At EU-28 level, the average yearly meat consumptions per capita by type of meat amounts to: sheep – 1.9 kg/capita, beef and veal – 11.1 kg/capita, poultry – 23.9 kg/capita, and pork – 32.3 kg/capita (OECD, 2017), thus resulting an monthly average of 5.8 kg/capita. In comparison to the standards of developed countries, Romania has a relatively low level of fresh meat and meat products consumption. In 2016, the monthly average consumption of fresh meat was 3.4 kg per capita and of meat products – 1.1 kg per capita (National Institute of Statistics, 2017). However, the trend is increasing, as in 2016 compared to 2013, in Romania, fresh meat consumption was 6.5% higher and meat products increased by 8.6% (National Institute of Statistics, 2017). By type of meat, in Romania, both beef and pork consumption had an upward trend during the last years: beef consumption increased by 23% between 2013 and 2016 [from 102,909 thousand tons (TT) of carcass weight in 2013 to 113,719 TT in 2015, to 126,960 TT in 2015, and to 127,000 TT in 2016]; pork consumption increased by 9% during the same period (from 591,566 TT in 2013 to 623,281 TT in 2014, to 663,611 TT in 2015, and to 674,000 TT in 2016) (Dobrescu, 2016). Regarding meat production, in 2015, Romania had a small share at EU level. Thus, it contributed with 0.6% to the EU-28 beef production (with 44.5 TT), with 1.4% to the EU-28 pigs production (with 330.5 TT), with 1.3% to EU-28 sheep production (9.2 TT), with 0.2% EU-28 goat production (0.1 TT), and with 2.7% to EU-28 poultry production (374.8 TT) (EUROSTAT, 2016). In 2013, the European Union, with a weight of about 22% of the global consumption, occupied the second place in the world, after China (Stanciu, 2014).

An opposed situation is witnessed in several developing countries, where a dramatic increase in total meat consumption per capita/ year is observed: in China, from 30.7 kg in the mid-1980s to 36.4 kg in 2015 (FAO, 2015), in Brazil, from 32 kg in the mid-1970s to 71 kg in 2015 (FAO, 2015) and 2050 projections suggest that the consumption of meat will increase moderately, mostly in pork and poultry (Kearney, 2010). However, in other parts of the world, such as India and Africa, it is not expected to see similar boost in consumption of meat in the

coming decades (Kearney, 2010). Meat demand is generally associated with higher incomes and with a shift in diet in favor of increased proteins from animal sources (shift usually triggered by urbanization) (OECD, 2016).

Based on the assumption that meat consumption has direct and indirect influences on meat production sector, environmental deterioration, and population health state, consumer contributions must be taken into consideration in the efforts of increasing resilience to environmental pressure in the agri-food sector (Dorward, 2012; Petrescu and Petrescu-Mag, 2015). Resilience is understood as the ability to adapt to or tolerate disturbance without collapsing into a qualitatively different state. Consumers are key players in shaping the economic, social, and natural environment by their choices – purchases or lack of purchases – with consequent implications on supply and demand (Petrescu et al., 2015). It is important to acknowledge that the choice of a product implies the selection of a specific production and consumption pattern, with their consequences (Bascoul and Moutot, 2009) and that consumers' choice can be influenced towards sustainability by including relevant information in advertisements (Bascoul et al., 2015) and other forms of ecological marketing (Danciu, 2006). There are divers sectors where individuals, as consumers and/or citizens, can contribute to resilience (Stokols et al., 2013): consumption (Brown and Cameron, 2000; Calina and Calina, 2015; Curran and de Sherbinin, 2004; Franklin et al., 2011; Lamine, 2015), preparedness for natural or technological disasters (Constantin et al., 2015; Ozunu et al., 2011), direct involvement in environment protection actions – payment for environmental services or volunteer actions (Gómez-Baggethun et al., 2010; Petrescu, 2014) and so on. Within the food market, consumption of organic food, selection of closer production location, lower meat consumption or innovative marketing-management solutions of companies can contribute to environment protection (Bran et al., 2011; Gorgitano and Sodano, 2014; Nastase et al., 2011). Meat consumers' beliefs, knowledge, and behaviors can form a knowledge system, seen as the advice and the research systems (Jørgensen, 2007), capable to stimulate a shift in meat consumption, by increasing awareness of meat production impact on environment, necessity of reducing wastage, and health implications. For example, a less meat oriented diet is recognized to be able to reduce Green House Gases emissions (Harland et al., 2012; Hedenus et al., 2014; Stehfest et al., 2009).

The paper contribution is integrated in the context of the European Union and Romania efforts to cut food waste. Thus, the European Parliament called on EU countries to achieve food waste reductions of 30% by 2025 and a further 50% by 2030, compared to 2014 level (European Parliament, 2017a). In this context, the aim of the study was to

determine the main directions for achieving environmental resilience through meat consumption.

2. Research objectives and novelty

For many modern food consumers, collective issues like environmental pollution, animal welfare, use of biotechnology or fair trade influence their individual purchase decisions to different degrees (Bakker and Dagevos, 2010). Scientific evidence shows that, at EU level, there is strong support for changes in meat consumption for environmental reasons: four out of five would be willing to eat less meat, but of certified origin (80%), and three quarters would be willing to replace beef or pork with poultry or fish (72%) (European Commission, 2013). Under these circumstances, the general goal of this study is to investigate if Romanian consumers can and should be considered as partners that must be involved in finding new ways for meat consumption reduction that contribute to a more sustainable world. This is done by assessing the importance that consumers attach to animal product safety, animal welfare, and environmental effects from today’s common livestock production methods (Verbeke and Viaene, 2000).

The specific objectives of this analysis were to identify several meat consumption habits and perceptions, meat purchase habits, food wastage behavior, propensity to meat consumption behavior changes, and meat consumption hindering factors. The Romanian context was the framework for the development of the research, as the complexity of the subject required a context-specific investigation, particular for each country, market or consumers group, avoiding, therefore, generalizations (Mathijs, 2015). In Romania, most part of food production comes from small and medium enterprises (SMEs), as in agro-food sector 92% of enterprises are SMEs (Chiciudean et al., 2014)(reality in line with the findings regarding the purchasing source of meat – Table 2). In 2013, in Romania, 99.8% of agricultural enterprises were SMEs (16732 SMEs) and 99.7% of enterprises from industry, constructions, commerce and other services were SMEs (accounting for 459912 companies) (National Institute of Statistics, 2015). In rural area, especially, the consumption from self-production occupies more than 55% of consumption expenditures (Alexandri and Alboiu,

2009). A study on food perceived as being natural (but without organic certification) highlighted that the prevalence of farmers’ markets and self-production (79.3% and 84.8% of total natural food consumption, respectively) (Petrescu et al., 2017). In Romania, there are several dietary guidelines providing recommendations for appropriate meat consumption (encouraging it), for example, “National Action Plan on Food and Nutrition” and “National Sustainable Development Strategy. Romania 2013-2020-2030”. Specific levels of meat intake are not indicated in these official documents, but there are dedicated awareness campaigns that draw attention on moderate consumption of pork and lamb meat which are broadcasted during Christmas and Easter holydays. Regarding food waste, the Law no. 217/2016 on reducing food waste is in force in Romania since May 2017 and it imposes to economic operators obligations to take preventive measures to diminish food waste, such as low-priced sale of products close to the expiry date, direction of agri-food products that have become unfit for human or animal consumption to composting, etc. (Parliament of Romania, 2016). The investigation demarche started with the identification of the current consumption and purchase habits and perceptions and continued with an inquiry on two courses of action identified as solution for environmental resilience in the current context: (1) “buy less, eat the same”: reduction of purchase by diminishing meat wastage, but maintaining current consumption level, and (2) “buy less, eat less”: reduction of meat consumption (Fig. 1). The latter investigation section included food wastage behavior, willingness to accept meat consumption reduction, and meat consumption hindering factors.

The novelty of the study originates from this approach of underlying consumers’ contribution to a more sustainable environment on two pillars – “buy less, eat the same” and “buy less, eat less” and through the investigation of a series of consumption deterring factors, which were not analyzed, until now, in relation to Romanian meat consumer. The results obtained will have a contribution in developing communications strategies targeting meat consumption reduction, along with a stronger environmental resilience, and associated with higher consumers’ awareness.

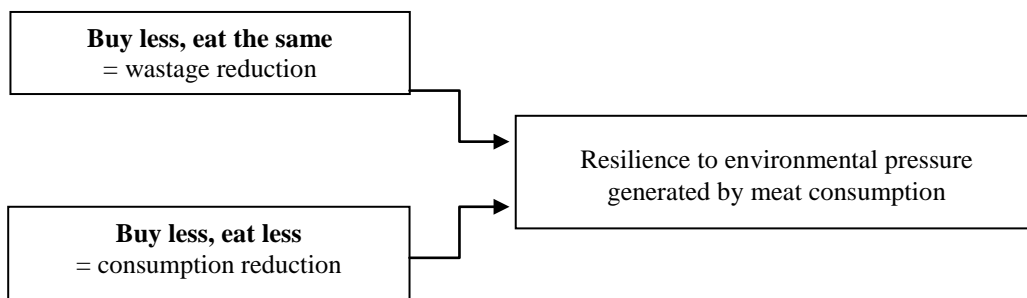


Fig. 1. Courses of action identified as solution for resilience to environmental pressure generated by meat consumption

3. Material and methods

The results are based on a non-probabilistic survey which used a convenience sample of 195 persons, from Romania, with an average age of 30 years, 37% of them men and 63% women. They were interviewed face-to-face and they were recruited in the neighborhood of 2 hypermarkets and 7 small shops by asking every fifth person who came out of the shop to participate to the study. Data analysis was carried out in Excel and SPSS version 21. The Mann-Whitney U test was used to compare differences regarding a continuous/ordinal variable between two groups. The Wilcoxon Signed Ranks Test was used to evaluate the difference between two measures of the same group for variables that were non-normally distributed. The relationship between two continuous/ordinal variables was investigated using Spearman's Rank Order Correlation. The level of statistical significance was set at $p < 0.05$.

The variables analyzed and the reasoning that sustains their selection are included in Table 1. A test on 150 persons was applied for the choice of the most relevant hindering factors on meat consumption. The starting point for creating the list of hindering factors was the Special Eurobarometer 440 of the European Commission where quality of products, welfare of animals, and environmental protection were indicated as the most important functions that the CAP should have (European Commission, 2016).

The hindering factors from the pre-test linked to safety, animal welfare and environment had the highest appearance frequency and they were retained for the present investigation (and were included in Table 1, point 5). The list does not claim to be exhaustive, on the contrary, future studies should enlarge it to contain more variables, such as substances for which levels were found to be outside of legal limits (Hoha et al., 2014), storage conditions (Moldovanu and Laslo, 2010), type of production (free range, intensive etc.) (Botha et al., 2014), or the context where the perceptions are formed (Korzen and Lassen, 2010).

4. Results and discussion

Around two thirds of consumers (65.1%) have a high meat consumption frequency (at least 4 days/week), which confirms that meat is dominant in Romanians' food culture, but reveals a lower extension of the "addiction" to this food category (Table 2), compared to other states. Taking into account that the monthly meat consumption in Romania is 4 kg per person (National Institute of Statistics, 2017), it can be inferred that, for this group of people, the consumption is 1 kg per week, distributed among at least 4 days. In Belgium, higher shares of consumers reported frequent consumption of meat – 48% every day, 46% several times a week, and 6% once a week or less (Verbeke and Viaene,

2000), and in the Netherlands, 28% of people ate meat daily (Schösler et al., 2012). Almost two thirds (68.7%) of Romanians perceive their consumption level as appropriate, leaving little space for dietary change.

Mann Whitney U test indicates there is a statistically significant difference between genders concerning meat consumption frequency ($p < 0.05$), with men eating meat more frequently, but no difference ($p > 0.05$) regarding desired meat consumption reduction, nor meat and other foods waste.

A clear preference for small producers/self-production (79% of tested consumers) is favorable to less intensive agricultural practices which are nature friendlier (Table 2). In a study of Bernués et al. (2012), a high percentage of Spanish consumers (67%) were similarly drawn towards traditional sources in relation to lamb meat. The relevance of food production source for environmental resilience is based on the fact that the scale and intensity of animal production generate an increasing proportion of global environmental pressure, mainly related to climate change (Schösler et al., 2012) and resource depletion.

Meat waste among tested people is lower than other food waste, but high, if we take into account the value of the wasted product in environmental, moral, and economic terms. Also, food wastage is lower compared to estimations in other countries, for instance UK, where 25% of food seems to be thrown away (Quested and Johnson, 2009). At EU level, it was calculated that private consumers (households) have the highest share of waste generation (among manufacturing, wholesale/retail, and food service/catering sectors), with 42%, equivalent of 76 kg/capita/year (Monier et al., 2011). Perceptions of food waste show that tested Romanian consumers perceive themselves as moderate food wasters (17.6% of food wasted) and, implicitly, suggest they accept there is place for improvement – food waste reduction (Table 3). However, the quantities obtained in this investigations are subjective, consumers' self-estimations, therefore, they offer an image of the perceived waste and not the objective one, which should also be measured in order to obtain a more comprehensive description of waste phenomenon. However, they are in line with objective quantitative data obtained at EU level: among EU-27 countries, household waste in Romania, accounts for 32 kg/capita/year, placing the country on the 25th place, a very good result (Monier et al., 2011).

At EU-28 level, in 2012, it was calculated that, on average, 173 kilograms of food are wasted per person, which represents 20% of the total food produced (Stenmarck et al., 2016). At global level, Europe accounts for 14% of total food loss and waste (100 % = 1.5 quadrillion kcal), out of which meat represents 4% (in tonnes) (while vegetables and fruits are on the first place amounting 44% of total waste) (Katsarova, 2016).

Table 1. Variables used in the current study and the reasoning that sustains their selection

<i>Reasoning</i>	<i>Variable</i>	<i>Categories of variables</i>
The identification of the current meat consumption pattern is mandatory for the establishment of future measures related to environment resilience in connection to meat sector.	1. Meat consumption habits and perceptions	
Consumption frequency is a better indicator of consumer dependency on meat consumption (compared to quantity consumed) and this dependency has an important influence on a potential meat consumption reduction.	1.1. Meat consumption – quantitative evaluation	7 days/ week, 6 days/ week, ..., 1 day/ week (or less frequent)
Health concern is a top influential factor on consumption; therefore, the perception of the self-consumption of meat compared to the ideal level for a good health will reflect the necessary future action for consumers' information/education: change or strengthening of current perceptions.	1.2. Meat consumption – qualitative evaluation; reference for comparison: ideal level for good health	too high, appropriate, too low
Production type – large or small scale – is linked to purchase sources and it has a particular environmental pressure. Consumers' preference for a specific purchase source can influence the level of environmental resilience.	2. Meat purchase habits: source	Supermarkets and small producers/self-production
Environmental resilience (through meat production and consumption) can be achieved following two main directions: (1) "buy less, eat the same": reduction of purchase by diminishing meat wastage, but maintaining current consumption level and (2) "buy less, eat less": reduction of meat consumption.	3. Food wastage behavior. "Buy less, eat the same"	
	3.1. Meat products	percentage between 0% and 100% from total meat purchased
	3.2. Other foods	percentage between 0% and 100% from total food purchased
	4. Meat consumption behavior changes. "Buy less, eat less"	
	4.1. Desired reduction of meat consumption (regardless of the reason)	very high reduction, high reduction, moderate reduction, small reduction, no reduction
	4.2. Willingness to accept meat consumption reduction with the purpose to protect the environment	yes, no
Consumers' perceptions related to the most relevant variables connected to food safety – health, animal welfare, and other environmental aspects – were investigated to identify potential motivations towards meat consumption reduction.	5. Meat consumption hindering factors. "Buy less, eat less"	
	5.1. You know that animals whose meat you eat were treated with antibiotics.	very high reduction, high reduction, moderate reduction, small reduction, very small/no reduction of consumption
	5.2. You know that animals whose meat you eat were treated with hormones to grow faster and bigger.	
	5.3. You know the animals whose meat you consume were fed with concentrates.	
	5.4. You know the animals whose meat you consume were fed with GMO feed.	
	5.5. You know the consumption of meat generates a strong negative impact on the natural environment because a large amount of resources (water, forests) was consumed for its production and an intense pollution was generated (through fertilizers, pesticides for feed etc.).	
	5.6. You know that animal welfare did not complied with legal and ethical requirements, and thus: the animals were treated badly during their lifetime (they were fed by force, they had no freedom of movement), they suffered when they were slaughtered etc.	
	5.7. Doctors say that a high consumption of meat is unhealthy.	
Gender is one of the most important differentiating variables in marketing campaigns.	6. Gender	

Table 2. Meat consumption and purchase habits and perceptions (percentage of total sample)

Variable	Categories						
	7 days/ week	6 days/ week	5 days/ week	4 days/ week	3 days/ week	2 days/ week	1 day/ week or less frequent)
Meat consumption frequency	18.5%	9.7%	15.4%	21.5%	19.5%	10.8%	4.6%
Perception of meat self-consumption	too high			Appropriate		too low	
	24.1%			68.7%		7.2%	
Meat purchase habits: source	supermarkets				small producers/self-production		
	21%				79%		

Table 3. Food wastage behavior (for meat and other foods; percentage wasted of total meat/ other food), willingness to accept meat consumption reduction (percentage of total sample), and perceptions of the influence of meat consumption hindering factors (percentage of total sample)

Variable	Categories				
	very high reduction	high reduction	moderate reduction	small reduction	very small/ no reduction
Food wastage behavior: meat products	average level				
	13.3%				
Food wastage behavior: other foods	average level				
	17.6%				
Meat consumption – desired reduction	4.6%	8.2%	28.7%	25.7%	32.8%
WTA meat consumption reduction for environmental protection	yes			no	
	67.7%			32.3%	
Meat consumption hindering factors	very high reduction, %	high reduction, %	moderate reduction, %	small reduction, %	very small/ no reduction, %
You know that animals whose meat you eat were treated with antibiotics.	39.5	23.1	20.5	11.8	5.1
You know that animals whose meat you eat were treated with hormones to grow faster and bigger.	44.1	27.7	12.8	11.3	4.1
You know the animals whose meat you consume were fed with concentrates.	15.4	25.1	29.2	20.5	9.7
You know the animals whose meat you consume were fed with GMO feed.	40.5	25.1	17.4	8.7	8.2
You know that the consumption of meat generates a strong negative impact on the natural environment.	23.6	19.5	33.3	15.4	8.2
You know animal welfare was not complied with.	24.1	29.2	22.1	16.9	7.7
Doctors say that a high consumption of meat is unhealthy.	21.5	26.7	25.6	17.9	7.7

With regard to country ranking within EU-27, in 2010, Romania was placed on the 25th place (together with Malta) with 76 kg/person annually, while the first place belonged to the Netherlands with 541 kg/person (European Parliament, 2017b).

There is a statistically significant difference between the percentage of meat which is wasted (of total meat purchased/ produced) compared with the percentage of other wasted food (of total other food bought/produced), with less waste in the case of meat ($Z=-5.485$, $p=0.000$; Table 4). From an environmental perspective related to meat production impact, this finding is an encouraging one.

In relation to prognosis of the quantity consumed, only a small share of Romanian consumers (12.8%; Table 3) is willing to make a high reduction of the quantity they eat; this result is in line with findings of other studies, which stressed out the difficulty of changing meat eating habits (Graça et al., 2014, 2015). However, more of them are open to

small “concessions” and, when the environmental motivation is added, the percentage increases significantly to 67.7% (Table 3), casting light on a pro-environmental attitude. These findings, strengthened by those related to animal welfare and environmental impact of meat production (Table 3, Fig. 2), suggest that Romanians’ concern for environment is able to support a behavioral shift towards a more sustainable meat consumption pattern.

The power of each hindering factor was estimated calculating a score based on the declared influence of each factor on meat consumption [(4*no. of “very high reduction” evaluations + 3* no. of “high reduction”+ ... + 0* no. of “very small/ no reduction” evaluations)/195] and with possible values between [0, 4]. All tested factors have a high power to reduce meat consumption (above the average) and the strongest ones are fear of hormones, GMO feed, and antibiotics (Fig. 2). Similarly, being free of

harmful substances was found to be important (top 5) for 32% of 320 Belgian meat consumers and animal welfare was also mentioned (Verbeke and Viaene, 2000). In Finland, environmental effects of meat and animal welfare issues were found to stimulate decrease of meat consumption (Latvala et al., 2012). Besides general concerns about food safety, specific food hazards, such as pesticide residues, toxins, hormones, microbiological contaminants and food additives preoccupy worldwide consumers (Behrens et al., 2010). Meat production process characteristics, such as animal welfare friendly, GMOs-free, environmental friendly systems, lack of medical residues are of increasing importance in driving food product choice (Brunsø et al., 2002; Grunert, 2005; Van Loo et al., 2010) and their power to influence consumption decisions were assessed by various studies in order to reveal consumers' awareness and concerns

In the case of tested deterring factors, gender makes a difference ($p < 0.05$) only for two variables, those directly linked to environment – animal welfare and meat production impact on environment, with women more prone to reduce their meat consumption under the influence of these variables. According to Mann Whitney U test, there is a statistically significant difference ($p < 0.05$) between people who prefer to buy meat from supermarkets and those who purchase it from small producers, concerning the

influence of studied hindering factors: the latter group is more strongly determined to reduce meat consumption by each of the seven factors.

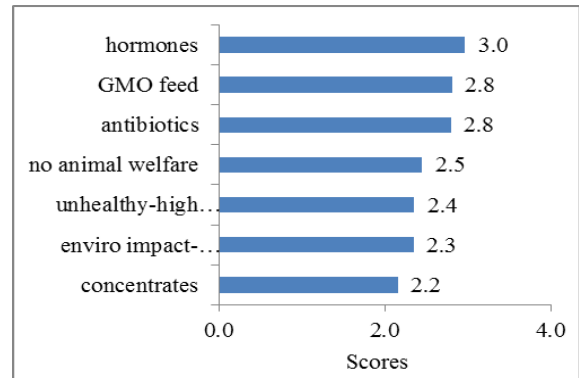


Fig. 2. Power of each hindering factor on meat consumption reduction

Strong and medium positive correlations are present, for Romanians, among almost all tested hindering factors [$r \in (0.401, 0.769)$, $n=195$, $p < 0.05$]; (Table 5), revealing a unitary perception of these food threats. Following the same trend, British consumer choices of food are frequently based on a perception of a link between animal welfare, protection of the environment and food safety (Toma et al., 2011).

Table 4. Wilcoxon Signed Ranks Test for differences between meat waste and other foods waste

Ranks				Test Statistics ^d	
		N	Mean Rank	Sum of Ranks	Waste other - Waste meat
Waste other - Waste meat	Negative Ranks	34 ^a	59.69	2029.50	Z
	Positive Ranks	99 ^b	69.51	6881.50	Asymp. Sig. (2-tailed)
	Ties	62 ^c			
	Total	195			

^aWaste other < Waste meat; ^bWaste other > Waste meat; ^cWaste other = Waste meat; ^dWilcoxon Signed Ranks Test; ^eBased on negative ranks

Table 5. The strength and direction of the linear relationship between two ordinal variables (Spearman's Rank Order Correlation)

	Antibiotics	Hormones	Concentrates	GMO feed	EnviroImpact Negative	NoAnimal Welfare	Unhealthy HighCons
Antibiotics		$r=.769$; $p=.000$	$r=.522$; $p=.000$	$r=.546$; $p=.000$	$r=.405$; $p=.000$	$r=.476$; $p=.000$	$r=.405$; $p=.000$
Hormones			$r=.545$; $p=.000$	$r=.611$; $p=.000$	$r=.401$; $p=.000$	$r=.570$; $p=.000$	$r=.358$; $p=.000$
Concentrates				$r=.575$; $p=.000$	$r=.430$; $p=.000$	$r=.620$; $p=.000$	$r=.439$; $p=.000$
GMO feed					$r=.410$; $p=.000$	$r=.532$; $p=.000$	$r=.265$; $p=.000$
EnviroImpactNegative						$r=.554$; $p=.000$	$r=.484$; $p=.000$
NoAnimalWelfare							$r=.430$; $p=.000$
UnhealthyHighCons							$r=.440$; $p=.000$

Legend: Antibiotics="5.1. You know that animals whose meat you eat were treated with antibiotics", Hormones="5.2. You know that animals whose meat you eat were treated with hormones to grow faster and bigger", Concentrates="5.3. You know the animals whose meat you consume were fed with concentrates", GMO feed="5.4. You know the animals whose meat you consume were fed with GMO feed", EnviroImpactNegative="5.5. You know the consumption of meat generates a strong negative impact on the natural environment because...", NoAnimalWelfare="5.6. You know that animal welfare was not complied with: the animals were treated badly during their lifetime...", UnhealthyHighCons="5.7. Doctors say that a high consumption of meat is unhealthy."

**Correlation is significant at the 0.01 level (2-tailed).

As any research, the present one is not without limitations. One concern is the type of sample and, therefore, the authors plan to develop a new study based on a representative sample at national level. Another concern is related to the motivations that support people choice of less meat intake, which are important for adopting sustainable diets, as it is reflected in other papers (de Boer et al., 2007, 2009). Motivations were not taken under detailed analysis due to time and budget restraints. Despite its inherent limitations, this study still provides useful information for those interesting in consumers' behavior related to meat consumption.

5. Conclusions

The image depicted by the survey results is favorable to building resilience to environment pressure: meat consumption is lower among tested Romanians compared to other EU citizens, environmental motivations are capable to trigger meat consumption reduction, all tested factors, related to nature protection, have the power to deter meat consumption, and last, but not the least, food waste is lower than in other countries.

Research reveals that meat is dominant in Romanian food culture, but at much lower levels compared to other Western countries, as it is frequently (at least 4 days/week) consumed by two thirds of tested people and intensively consumed (6-7 days/ week) by almost one third of them. Correlating this finding with the fact that meat consumption is an indicator of economic wellbeing and that Romanian income level is lower than in other EU states, it can be assumed that this low intake is rooted in financial shortages, rather than in health or environmental concerns.

The study focused on two main directions, conceived by the authors for sustaining environmental resilience related to agri-food industry: (1) "buy less, eat the same" and (2) "buy less, eat less". Based on the previously mentioned consumption frequency and taking into account the necessity of a diet with sufficient animal proteins, the first direction, which gravitates around wastage reduction, is the most appropriate for the Romanian context. Additionally, the second one, relying on willingness to accept meat consumption reduction and on the capacity of certain environmental related factors to reduce meat intake (fear of hormones, GMO feed, pesticides, etc.), has a high potential to decrease consumption. Data indicates that environmental motivations are very powerful on Romanian consumers, as the majority (67.7%) declares to be willing to reduce their meat consumption based on environmental justifications. This second direction can be successfully used for influencing the segment of consumers who are "addicted" to meat.

Based on the results, a special consideration should be awarded to meat consumption policy-

making in order to engage production-consumption sector in building resilience to environmental pressure through quality food demand.

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